

Statement of Basis

**Permit to Construct No. P-2019.0009
Project ID 62183**

**Maravia Corporation of Idaho
Boise, Idaho**

Facility ID 001-00361

Final

July 19, 2019
Morrie Lewis 
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
BRC	below regulatory concern for criteria pollutants as provided in IDAPA 58.01.01.221.01 or for TAP as provided in IDAPA 58.01.01.223.01
Btu/hr	British thermal units per hour
CAA	Clean Air Act
CAS No.	Chemical Abstracts Service registry number
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gr/dscf	grains (1 lb = 7,000 grains) per dry standard cubic feet
H12MDI	Dicyclohexylmethane-4-4' Diisocyanate, or Methylene Bis (4-Cyclohexyl Isocyanate)
HAP	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
Maravia	Maravia Corporation of Idaho
MDI	4,4'-Diphenylmethane Diisocyanate, or Methylene Diphenyl Diisocyanate
MDI-based	MDI- or H12MDI-containing material
mg/m ³	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O ₂	oxygen
PAH	polycyclic aromatic hydrocarbons
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
T/yr	tons per consecutive 12-calendar-month period
TAP	toxic air pollutants
VOC	volatile organic compounds
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Maravia Corporation of Idaho (Maravia) operates an existing inflatable boat manufacturing facility at 602 E. 45th Street in Boise, Idaho. At this facility cleaning, cutting, gluing, and spray coating operations are conducted on polyvinyl chloride (PVC) boat fabrics in the manufacture and repair of inflatable boats. Particulate matter (PM) emissions are controlled by the use of spray booth filtration systems. Five natural gas-fired heaters provide indirect heating.

Permitting History

This is the initial PTC for an existing facility that was constructed in December 1994, thus there is no permitting history.

Application Scope

This permit is the initial PTC for this facility.

The applicant has proposed to increase cleaning, cutting, gluing, and spray coating operations to accommodate growth.

Application Chronology

February 13, 2019	DEQ received an application and an application fee.
February 19 – March 6, 2019	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
March 15, 2019	DEQ determined that the application was incomplete.
April 10, 2019	DEQ received supplemental information from the applicant.
April 18, 2019	DEQ received supplemental information from the applicant, including updates to the process weight rate PM compliance demonstration.
April 22, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 22, 2019	DEQ determined that the application was complete.
June 3, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
June 18, 2019	DEQ made available the draft permit and statement of basis for applicant review.
June 27, 2019	DEQ received comments from the applicant concerning the facility draft permit (Appendix C).
July 16, 2019	DEQ received the permit processing fee.
July 19, 2019	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source	Control Equipment
Hot-knife cutting operations	<u>Reasonable control of fugitive emissions</u> Cutting operations are conducted within the building.
Cleaning operations	<u>Reasonable control of fugitive emissions</u> Cleaning solvents are hand-applied within the building.
Gluing operations	<u>Reasonable control of fugitive emissions</u> Glue adhesives are hand-applied within the building.
<u>Spray booth and Heater 1</u> Manufacturer: Dayton or equivalent ^(a) Model: unknown ^(a) Burner manufacturer: Mestek Intertek or equivalent ^(a) Burner model: TF/BTU150 or equivalent ^(a) Maximum capacity: 150,000 Btu/hr Fuel: natural gas Date of installation: 1998 Maximum operation: as limited by Emission Limits and Operating Requirements	Coatings are spray-applied within the spray booth enclosure. The booth heater is used for seasonal heating of inlet air. <u>Spray booth filter system</u> Particulate filtration method: dry filters Manufacturer: Paint Arrestors ^(a) Model: RP or equivalent ^(a) PM Control Efficiency: 90% or greater
<u>Spray guns</u> Manufacturer: Graco or equivalent ^(a) Model: 288420 or Silver Tip Plus airless, or equivalent ^(a) Maximum operation: as limited by Emission Limits and Operating Requirements	<u>Spray guns</u> Type: reduced pressure (RP) or equivalent ^(a) Transfer Efficiency: 40% or greater
<u>Heater 2</u> Manufacturer: Evaporator or equivalent ^(a) Model: BVR22 ^(a) Maximum capacity: 24,000 Btu/hr Fuel: natural gas Date of installation: (unknown)	Heaters are used for seasonal indirect heating needs. None
<u>Heater 3</u> Manufacturer: Evaporator or equivalent ^(a) Model: BVR22 36-CYN18 NTF ^(a) Maximum capacity: 36,000 Btu/hr Fuel: natural gas Date of installation: (unknown)	None
<u>Heater 4 and Heater 5</u> Manufacturer: Lennox or equivalent ^(a) Model: LF24-250A-5 ^(a) Maximum capacity: 250,000 Btu/hr each (500,000 Btu/hr combined) Fuel: natural gas Date of installation: April 2013	None

a) "or equivalent" equipment is equipment which has equivalent or less maximum capacity and equivalent or lower pollutant emission rates, whether calculated based on maximum design capacity or based on established permit limits. Use of replacement equipment shall not result in the emission of any regulated air pollutant not previously emitted, and shall not result in an emission increase as defined in IDAPA 58.01.01.007.

Emission Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit (PTE) as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state- or federally-enforceable. Secondary emissions do not count in determining the PTE of a facility or stationary source.

Using this definition of PTE, emission inventories were developed for cutting, cleaning, gluing, and spray coating operations and indirect heating at the boat manufacturing facility (see Appendix A). Estimates of criteria pollutant, hazardous air pollutant (HAP), and toxic air pollutant (TAP) PTE were based on natural gas combustion emission factors from AP-42,¹ adhesive and coating material formulation data from safety data sheets (SDS), manufacturer specification sheets for spray booth filtration, and daily and annual usage limits and formulation requirements (Permit Conditions 2.9 and 2.10) for this proposed project.

Reliable emission factors could not be obtained for manual hot-knife cutting operations, but based on the nature and frequency of such operations the contribution of emissions is not expected to cause PM emissions to exceed regulatory concern thresholds. Although personnel conducting hot knife cutting may experience emission concentrations at which respiratory protection is recommended, concentrations at the facility boundary are not expected to reach such concentrations (refer to Appendix C for additional information).

Uncontrolled Potential to Emit

Using the definition of PTE, uncontrolled PTE is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled PTE is used to determine if a facility is a “Synthetic Minor” source of emissions. Synthetic Minor sources are facilities that have an uncontrolled PTE for criteria pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the uncontrolled PTE for criteria pollutants as determined by DEQ staff. Uncontrolled PTE was based upon worst-case for operation of the facility of 2,080 hr/yr (8 hr/day x 260 days/yr) with all coating operations occurring during this time. Since there is prep time and drying time associated with applying coatings, this was considered to be the worst-case maximum for which emissions would occur.

Table 2 UNCONTROLLED PTE FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		HAP	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Heaters 1-5	0.005	0.023	0.0005	0.002	0.07	0.30	0.06	0.26	0.004	0.02	0.015	0.016
Cutting, cleaning, gluing, and spray coating	13.30	13.84	0.00	0.00	0.00	0.00	0.00	0.00	46.80	48.68	7.88	8.20
Post-Project Totals	13.31	13.86	0.001	0.002	0.07	0.30	0.06	0.26	46.81	48.70	7.90	8.22

¹ Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Fifth Edition (AP-42), Tables 1.4-1, 1.4-2, 1.4-3 and 1.4-4 in Section 1.4 – Natural Gas Combustion, Office of Air Quality Planning and Standards Office of Air and Radiation (OAQPS), EPA, July 1998.

Post-Project Potential to Emit

Post-project PTE is used to establish the change in emissions at a facility and to determine the facility’s classification as a result of this project. Post-project PTE includes all permit limits resulting from this project.

The following table presents the post-project PTE for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST-PROJECT PTE FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Heaters 1–5	0.005	0.023	0.0005	0.002	0.07	0.30	0.06	0.26	0.004	0.02
Cutting, cleaning, gluing, and spray coating	1.33	~ 0.54	0.00	0.00	0.00	0.00	0.00	0.00	46.80	19.0
Post-Project Totals	1.34	< 0.99	0.001	0.002	0.07	0.30	0.06	0.26	46.81	19.02
BRC thresholds ^(c)		1.0		4.0		4.0		10.0		4.0

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
- b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
- c) Potential emissions are considered “below regulatory concern” (BRC) for criteria pollutants when less than 10% of significant emission rates as defined in IDAPA 58.01.01.006.

With the exception of volatile organic compounds (VOC), facility-wide emission rates of criteria pollutants (PM_{2.5}, PM₁₀, SO₂, NO_x, CO, and Pb) were below the “below regulatory concern” (BRC) threshold levels of less than 10% of “significant” emission rates for criteria pollutants defined in IDAPA 58.01.01.006.

TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic and carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 4 POST-PROJECT TAP PTE

Non-Carcinogenic Toxic Air Pollutant (24-hr Average)	Emission Increase (lb/hr)	Screening Emission Level (lb/hr)	Exceeds TAP EL? (Yes/No)
Acetone	1.30E+00	1.19E+02	No
Barium	3.06E-06	3.30E-02	No
Butyl Acetate	1.91E+00	4.73E+01	No
Carbon Black	6.93E-03	2.30E-01	No
Chromium	9.75E-07	3.30E-02	No
Cobalt	5.85E-08	3.30E-03	No
Copper	5.92E-07	6.70E-02	No
Dichlorobenzene	8.35E-07	2.00E+01	No
Ethyl Acetate	8.78E+00	9.33E+01	No
Manganese	2.65E-07	6.70E-02	No
4,4'-Diphenylmethane Diisocyanate (MDI) [Methylene Diphenyl Diisocyanate]	2.93E-03	3.00E-03	No
Dicyclohexylmethane-4-4' Diisocyanate (H12MDI) [Methylene bis (4-cyclohexyl isocyanate)]	7.97E-02	7.00E-03	Yes
Mercury	1.81E-07	3.00E-03	No
Methyl ethyl ketone	1.34E+01	3.93E+01	No
Molybdenum	7.66E-07	3.33E-01	No
Naphthalene	4.25E-07	3.33E+00	No
Selenium	1.67E-08	1.30E-02	No
Toluene	1.30E+00	2.50E+01	No
Vanadium, as V ₂ O ₅	1.60E-06	3.00E-03	No
Zinc	2.02E-05	6.67E-01	No

Table 4 POST-PROJECT TAP PTE

Carcinogenic Toxic Air Pollutant (Annual Average)	Emission Increase (lb/hr)	Screening Emission Level (lb/hr)	Exceeds TAP EL? (Yes/No)
Arsenic	1.4E-07	1.5E-06	No
Benzene	1.5E-06	8.0E-04	No
Beryllium	8.4E-09	2.8E-05	No
Cadmium	7.7E-07	3.7E-06	No
Formaldehyde	5.2E-05	5.1E-04	No
3-Methylchloranthene	1.3E-09	2.5E-06	No
Nickel	1.46E-06	2.7E-05	No
Polycyclic Aromatic Hydrocarbon (PAH) ^(a)	4.7E-07	9.1E-05	No
Polycyclic Organic Matter (7-PAH Group) ^{(a)(b)}	7.9E-09	2.0E-06	No

- a) Polycyclic aromatic hydrocarbons (PAH). Value represents the maximum individual emission rate of all PAH emitted.
 b) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

With the exception of dicyclohexylmethane-4-4' diisocyanate (H12MDI), all TAP emission increases rates were below screening emission levels (EL) as a result of this project. Therefore, modeling was required for H12MDI because the annual average carcinogenic screening EL identified in IDAPA 58.01.01.586 was exceeded. Modeling was not required for any non-carcinogenic TAP because none of the 24-hour average non-carcinogenic screening EL identified in IDAPA 58.01.01.585 were exceeded.

Post-Project HAP Emissions

The following table presents the post-project HAP PTE from all emissions units at the facility as submitted by the applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of emissions from each emissions unit.

Table 5 HAP PTE SUMMARY

Hazardous Air Pollutant	PTE (T/yr)
Arsenic	6.1E-07
Benzene	6.4E-06
Beryllium	3.7E-08
Cadmium	3.4E-06
Chromium	4.3E-06
Cobalt	2.6E-07
Dichlorobenzene	3.7E-06
Formaldehyde	2.3E-04
Hexane	5.5E-03
4,4'-Diphenylmethane Diisocyanate (MDI) [Methylene Diphenyl Diisocyanate]	7.5E-02
Lead	1.5E-06
Manganese	1.2E-06
Mercury	7.9E-07
Naphthalene	1.9E-06
Nickel	6.4E-06
PAH ^(a)	2.1E-06
Selenium	7.3E-08
Toluene	3.1E+00
TOTAL	3.2

- a) Total of all PAH.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM₁₀, PM_{2.5}, SO₂, NO_x, CO, VOC, and TAP with the exception of HDMI from this project were below applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline.²

Facility-wide emission rates of criteria pollutants (PM_{2.5}, PM₁₀, SO₂, NO_x, CO, and Pb) were below the “below regulatory concern” (BRC) threshold levels of less than 10% of “significant” emission rates for criteria pollutants defined in IDAPA 58.01.01.006, and therefore modeling was not required.²

The estimated emission rates of H12MDI were above applicable EL and required modeling to demonstrate compliance with the corresponding acceptable ambient concentration for carcinogen (AACC). Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ’s satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ’s satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or AACC for TAP.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Ada County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
- B = Use when the PTE (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

² Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011 (September 2013), criteria pollutant BRC thresholds as provided in IDAPA 58.01.01.221.01, and DEQ guidance pertaining to BRC (2009ACF12).

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the PTE (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 6 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	< 0.99	100	B
PM ₁₀ /PM _{2.5}	< 0.99	100	B
SO ₂	0.002	100	B
NO _x	0.30	100	B
CO	0.26	100	B
VOC	19.02	100	B
HAP (single)	3.1E+00	10	B
HAP (Total)	3.2	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to this existing facility to account for proposed modifications to operations. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200–228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Particulate Matter – Fuel-Burning Equipment (IDAPA 58.01.01.675-681)

In accordance with IDAPA 58.01.01.677, PM shall be limited to 0.015 gr/dscf corrected to 3% oxygen concentration for natural gas-fired fuel-burning equipment with a maximum rated input of less than 10 million Btu/hr.

This requirement was incorporated in Permit Condition 2.5. This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The heaters (Heaters 1–5) are used for the primary purpose of producing heat by indirect heat transfer.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post-project facility-wide emissions from this facility do not have a PTE greater than 100 tons per year for criteria pollutants (i.e., PM_{2.5}, PM₁₀, SO₂, NO_x, CO, VOC, and Pb) or 10 tons per year for any one HAP or 25 tons per year for all HAP combined, as demonstrated previously in the Emission Inventories section. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

As presented in the preceding tables (Table 5 and Table 6) the PTE for each criteria pollutant is less than 100 T/yr, the PTE for each HAP is less than 10 T/yr, and the PTE for all HAP combined is less than 25 T/yr. Therefore, this facility is not a Tier I source subject to Tier I requirements.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52.21(b)(1). Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

The facility is not subject to any New Source Performance Standard (NSPS) requirements 40 CFR Part 60. See Appendix D for additional information regarding NSPS regulatory analyses.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements in 40 CFR 61. See Appendix D for additional information regarding NESHAP regulatory analyses.

MACT/GACT Applicability (40 CFR 63)

The facility is not subject to any Maximum Achievable Control Technology (MACT) standards in 40 CFR Part 63. See Appendix D for additional information regarding NESHAP regulatory analyses.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Permit Conditions 1.1 and 1.2

These permit conditions describe the scope of this permitting action, and the emission sources and control equipment regulated by this permit.

Permit Conditions 2.1 and 2.2

These permit conditions describe the cutting, cleaning, and gluing operations and associated control equipment used in the manufacturing and repair of inflatable boats.

Permit Condition 2.3

These permit conditions establish annual emission limits corresponding to the usage rates for adhesive and coating materials as proposed by the applicant.

Because PM_{2.5} emissions were limited to below regulatory concern (BRC) levels, no demonstration of compliance with short-term (PM) ambient air quality standards was required. As a result, annual limits for PM₁₀/PM_{2.5}, VOC, and Total HAP were considered sufficient for demonstrating compliance with applicable standards. These emission rates are consistent with the emission rate estimates provided in the application.

Compliance is assured by complying with operating requirements (Permit Conditions 2.7–2.14), including use of control equipment (Permit Condition 2.7), and compliance with either approved or alternate daily adhesive and coating material usage scenarios (Permit Conditions 2.9 and 2.10, or 2.11 through 2.14).

Permit Conditions 2.4 and 2.15

These permit conditions incorporate odor emission limits in accordance with IDAPA 58.01.01.775-776.

Compliance is assured by monitoring and responding to all odor complaints received. This was required because adhesives and coatings are expected to have odors that might be offensive to immediate neighbors.

Permit Condition 2.5

This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The heaters (Heaters 1–5) are used for the primary purpose of producing heat by indirect heat transfer.

Permit Condition 2.6

This permit condition incorporates opacity limits for spray booth and heating unit stacks in accordance with IDAPA 58.01.01.625.

Permit Condition 2.7

This permit condition establishes control equipment requirements for spray application of adhesive and coating materials as specified by the applicant.

Any period of time that spray application of adhesives or coating materials is conducted outside of the spray booth or while the filtration system is not running shall be reported as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

Particulate matter emissions, including emissions of particulate TAP, rely upon filtration control equipment to ensure that facility-wide emissions remain below regulatory concern and particulate TAP increments, as described in the Emission Inventories and Ambient Air Quality Impact Analyses sections.

Permit Condition 2.8

This permit condition incorporates fugitive emission requirements in accordance with IDAPA 58.01.01.650-651.

Any period of time that spray application of adhesives or coating materials is conducted outside of the spray booth or while the filtration system is not running shall be reported as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

Permit Conditions 2.9 and 2.10, 2.11 through 2.14, and 2.16 through 2.19

These permit conditions establish approved daily and annual usage limits for adhesives and coatings as proposed by the applicant and to ensure compliance with emission limits. To allow for the introduction of new or reformulated adhesives and coatings, alternate daily usage limits were also established as a compliance option available to be used in lieu of previously-approved limits. Alternate scenarios should only be used after already determining they will comply with all daily and annual emission limits in the permit.

Compliance is assured by monitoring, recordkeeping, and reporting (MRR) requirements, including:

- Recordkeeping of all adhesive and coating material purchases and SDS.
- Daily and monthly monitoring and recordkeeping of usage rates of all adhesive and coating materials.
- Daily monitoring and recordkeeping, and annual reporting of all alternate daily adhesive and coating material usage scenarios used.
- Reporting of any excess emissions.

These operating limits were used in developing TAP, HAP, and criteria pollutant emission inventories resulting from cleaning, cutting, gluing, and spray coating operations; were relied upon to limit criteria pollutant emissions to BRC; were relied upon to demonstrate compliance with TAP EL; and were relied upon in evaluating ambient impacts of dicyclohexylmethane-4-4' diisocyanate (H12MDI) emissions. The H12MDI emission limit was established based on modeling analyses as described in the Ambient Air Quality Impact Analyses section, in accordance with IDAPA 58.01.01.210.08. Refer to the Emission Inventories and Ambient Air Quality Impact Analyses sections for additional information.

In the case of alternate daily coating usage scenarios, it is important to note that to ensure compliance with emission limits and TAP screening emission rates, compliance must be determined in advance of implementing any alternate scenario. In an effort to maximize operational flexibility, different scenarios may be implemented each calendar day, which necessitates compliance demonstrations on a daily basis. TAP emissions require assessment in pounds per calendar day (lb/day), while PM, VOC, and HAP emissions require assessment in either pounds per calendar day (lb/day) or (as implemented in this permit) in tons per consecutive 365-calendar-day period (T/yr).

General Provision 3.1

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

General Provision 3.2

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

General Provision 3.3

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

General Provision 3.4

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

General Provision 3.5

The permit expiration construction and operation provision specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

General Provision 3.6

The notification of construction and operation provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

General Provision 3.7

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

General Provision 3.8

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

General Provision 3.9

The performance test report provision requires that the permittee report any performance test results to DEQ within 60 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

General Provision 3.10

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

General Provision 3.11

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

General Provision 3.12

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

General Provision 3.13

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

General Provision 3.14

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

General Provision 3.15

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

General Provision 3.16

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSION INVENTORIES

Table 3-1: Heater Combustion Emissions

Sources	No. of units	Input Duty	
		BTU/hr	MMBtu/hr
H1 Mestek Intertek TF/BTU150	1	150,000	0.1500 MMBtu/hr
H2 Evaporator BVR22	1	24,000	0.0240 MMBtu/hr
H3 Evaporator BVR22 36-CYN18 NTF	1	36,000	0.0360 MMBtu/hr
H4, H5 Lenox LF24-250A-5	2	250,000	0.5000 MMBtu/hr
Total	5		0.71
0.71 MMBtu/hr ÷		1,020 MMBtu/MMs	6.96E-04 MMscf/hr
Operating Assumptions:		24 hr/day	0.017 MMscf/day
		8,760 hr/yr³	6.098 MMscf/year

Fuel Use:
0.017 MMscf/day
6.098 MMscf/year

Criteria Air Pollutants	Emission Factor ¹	Emissions		Greenhouse Gas Emissions ⁵
	lb/MMscf	lb/hr	T/yr	
NO ₂	100	0.07	0.30	CO ₂ = 0.054 kg/scf Natural Gas CO ₂ = 3.6E+02 Tons/year
CO	84	0.06	0.26	CH ₄ = 0.00103 g/scf Natural Gas CH ₄ = 6.9E-03 Tons/year
PM ₁₀	7.6	0.005	0.02	N ₂ O = 0.0001 g/scf Natural Gas N ₂ O = 6.9E-03 Tons/year
PM _{2.5}	7.6	0.005	0.02	Total CO ₂ e = CO ₂ + (CH ₄ * 25) + (N ₂ O * 298)
SO ₂	0.6	4.2E-04	1.8E-03	CO ₂ e = 364.44 Tons/year
VOC	5.5	3.8E-03	1.7E-02	
Lead	0.0005	3.5E-07	1.5E-06	
		2.5E-04	lb/month	
Total Criteria Emissions (ton/yr) = 0.60				

Hazardous & Toxic Air Pollutants (HAP & TAP)	Emission Factor ¹	Emissions		Modeling Threshold TAP Screening Emission Level	Modeling Required?
	lb/MMscf	lb/hr ²	T/yr		
PAH HAPs					
2-Methylnaphthalene	2.40E-05	1.67E-08	7.3E-08	9.1E-05 lb/hr	No
3-Methylchloranthrene	1.80E-06	1.25E-09	5.5E-09	2.5E-06 lb/hr	No
Acenaphthene	1.80E-06	1.25E-09	5.5E-09	9.1E-05 lb/hr	No
Acenaphthylene	1.80E-06	1.25E-09	5.5E-09	9.1E-05 lb/hr	No
Anthracene	2.40E-06	1.67E-09	7.3E-09	9.1E-05 lb/hr	No
Benzo(a)anthracene	1.80E-06	1.25E-09	5.5E-09		See POM
Benzo(a)pyrene	1.20E-06	8.35E-10	3.7E-09	2.0E-06 lb/hr	See POM
Benzo(b)fluoranthene	1.80E-06	1.25E-09	5.5E-09		See POM
Benzo(g,h,i)perylene	1.20E-06	8.35E-10	3.7E-09	9.1E-05 lb/hr	No
Benzo(k)fluoranthene	1.80E-06	1.25E-09	5.5E-09		See POM
Chrysene	1.80E-06	1.25E-09	5.5E-09		See POM
Dibenzo(a,h)anthracene	1.20E-06	8.35E-10	3.7E-09		See POM
Fluoranthene	3.00E-06	2.09E-09	9.1E-09	9.1E-05 lb/hr	No
Fluorene	2.80E-06	1.95E-09	8.5E-09	9.1E-05 lb/hr	No
Indeno(1,2,3-cd)pyrene	1.80E-06	1.25E-09	5.5E-09		See POM
Naphthalene	6.10E-04	4.25E-07	1.9E-06	3.33 lb/hr	No
Naphthalene	6.10E-04	4.25E-07	1.9E-06	9.1E-05 lb/hr	No
Phenanthrene	1.70E-05	1.18E-08	5.2E-08	9.1E-05 lb/hr	No
Pyrene	5.00E-06	3.48E-09	1.5E-08	9.1E-05 lb/hr	No
PAH Max. total		4.7E-07	2.1E-06		
Polycyclic Org. Matter (POM, 7-PAH Group)		7.94E-09	3.5E-08	2.0E-06 lb/hr	No
Non-PAH HAPs					
Benzene	2.10E-03	1.46E-06	6.4E-06	8.0E-04 lb/hr	No
Dichlorobenzene	1.20E-03	8.35E-07	3.7E-06	20 lb/hr	No
Formaldehyde	7.50E-02	5.22E-05	2.3E-04	5.1E-04 lb/hr	No
Hexane	1.80E+00	1.25E-03	5.5E-03	12 lb/hr	No
Toluene	3.40E-03	2.37E-06	1.0E-05	25 lb/hr	No
Non-HAP Organic Compounds					
Pentane	2.60E+00	1.81E-03	7.9E-03	118 lb/hr	No
Metal HAPs					
Arsenic	2.00E-04	1.39E-07	6.1E-07	1.5E-06 lb/hr	No
Beryllium	1.20E-05	8.35E-09	3.7E-08	2.8E-05 lb/hr	No
Cadmium	1.10E-03	7.66E-07	3.4E-06	3.7E-06 lb/hr	No
Chromium	1.40E-03	9.75E-07	4.3E-06	0.033 lb/hr	No
Cobalt	8.40E-05	5.85E-08	2.6E-07	0.0033 lb/hr	No
Manganese	3.80E-04	2.65E-07	1.2E-06	0.067 lb/hr	No
Mercury	2.60E-04	1.81E-07	7.9E-07	0.003 lb/hr	No
Nickel	2.10E-03	1.46E-06	6.4E-06	2.7E-05 lb/hr	No
Selenium	2.40E-05	1.67E-08	7.3E-08	0.013 lb/hr	No
Non-HAP Metals					
Barium	4.40E-03	3.06E-06	1.3E-05	0.033 lb/hr	No
Copper	8.50E-04	5.92E-07	2.6E-06	0.013 lb/hr	No
Molybdenum	1.10E-03	7.66E-07	3.4E-06	0.333 lb/hr	No
Vanadium	2.30E-03	1.60E-06	7.0E-06	0.003 lb/hr	No
Zinc	2.90E-02	2.02E-05	8.8E-05	0.667 lb/hr	No
Total HAP Emissions (ton/yr) = 0.006					

Notes:

1. Emission factors taken from AP-42, Section 1.4 *Natural Gas Combustion (7/98)*
2. TAPs lb/hr emissions are 24-hour averages unless shown in bold. Bold emissions are annual averages for carcinogens.
3. Booth Make-up Air heater is used only during cold weather, so actual on-line rating is significantly less.
4. Maravia billed 19101 100's of natural gas Oct 2017 - Nov 2016 = 1,910,100 scf/year = 1.91 MMscf/year vs. 6.1 MMscf/yr. max. duty

27%

Table 3-2: Cleaning, Gluing, Coating Chemical Analysis

Max. PTE Restricted Daily Use (gal/day)	Max. PTE Restricted Annual Use (gallyear)	Maker	Coating Material (Notes)	Density	Solids	VOC (non-exempt)	acetone 67-64-1	methyl ethyl ketone 78-93-3	4,4-diphenylmethane-diisocyanate(MDI) 101-68-8	toluene 108-88-3	butyl acetate 123-86-4	ethyl acetate 141-78-6	copper 141-14-8	carbon black 1333-86-4
Max. Daily ^{1,2,3,4}			(see Coating Material Notes)	lb/gal	Weight Percentage Content Data									
0.09	29	Royal Adhesives and Sealants		10.35		0.0%			50.0%					
6.70	1755	Royal Adhesives and Sealants	Catur LA4009	7.16	15.2%	84.8%	50.0%	50.0%						
30.0	1479	Virginia Harbor Services	Technthane 90SS-MB Part B	7.80	25.0%	90.0%					18.0%	90.0%		
30.0	1479	Virginia Harbor Services	Technthane 90SS-MB Part A	8.50	93.0%	19.0%								
43.2	2074	Univar	MEK	6.70	0.0%	100.0%		100.0%						
	86	Technical Urethanes	Pigment Kits ⁸											
			Black	10.92	40.0%	5.0%							4.0%	1.0%
			Emerald/Rib Green	10.00	100.0%	0.0%								
			Forest Green	10.08	60.0%	5.0%								
			Golden	14.20	100.0%	0.0%								
			Gray N1	15.96	90.0%	5.0%								
			Kiwi (Green LMG-04)	10.92	60.0%	5.0%							1.0%	
			Light Blue MAR Light Blue 1	16.30	100.0%	0.0%								
			Lime Green	12.60	60.0%	5.0%								
			Magenta	10.08	30.0%	5.0%								
			Medium Blue	12.60	40.0%	5.0%								
			Olive Drab	12.60	60.0%	5.0%								
			Orange	10.92	60.0%	5.0%								
			Purple	12.60	50.0%	5.0%								
			Red C-13	10.08	50.0%	5.0%								
			Royal Blue Mar Blue 12	12.90	100.0%	0.0%							2.0%	2.0%
			Teal	10.45	100.0%	0.0%								
			White C-08	18.48	80.0%	5.0%								
			Yellow	12.60	60.0%	5.0%							0.04	0.02
7.5	86		Composite Pigment	18.48	100%	5%	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02
			If volatile, enter "1" =>				1	1	1	1	1	1	1	1
			Component Characteristics											
			Hourly Spray Calculations (lb/hr)											
			(Based on 24-hr averaging period, see sample calc below)											
			Royal Adhesives and Sealants	10.35	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
			Royal Adhesives and Sealants	7.16	0.39	2.20	1.30	1.30	0.00	1.30	0.00	0.00	0.00	0.00
			Virginia Harbor Services	7.80	2.44	8.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Virginia Harbor Services	8.50	9.88	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Univar	6.70	0.00	12.06	0.00	12.06	0.00	0.00	0.00	0.00	0.00	0.00
			Technical Urethanes	18.48	5.78	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.12
			Composite Pigment	18.48	18.49	25.34	1.30	13.36	0.02	1.30	1.91	8.78	0.23	0.12
			Total (lb/hr)											
			Coating Material											
			Maker											
			Royal Adhesives and Sealants											
			Royal Adhesives and Sealants											
			Virginia Harbor Services											
			Virginia Harbor Services											
			Univar											
			Technical Urethanes											
			Composite Pigment											
			Total (tons/yr)											
			Annual Spray Calculations (tons/yr)											
			(See sample calc below)											
			Royal Adhesives and Sealants	10.35	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
			Royal Adhesives and Sealants	57.98	0.95	5.33	3.14	3.14	0.00	3.14	0.00	0.00	0.00	0.00
			Virginia Harbor Services	7.80	1.44	5.19	0.00	0.00	0.00	0.00	0.00	5.19	0.00	0.00
			Virginia Harbor Services	8.50	5.85	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Univar	6.70	0.00	6.95	0.00	6.95	0.00	0.00	0.00	0.00	0.00	0.00
			Technical Urethanes	18.48	0.80	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
			Composite Pigment	18.48	9.04	18.70	3.14	10.09	0.06	3.14	1.13	5.19	0.03	0.02
			Total (tons/yr)											
			Conservative Production Growth Increase											
			145%											

Table 3-3: Cleaning, Gluing, and Coating Emissions

Toxic Air Pollutants	CAS	Restricted Maximum Spray Rate ¹ (lb/hr)	Spray Retention Rate ^{2,3} (%)	Restricted Potential to Emit (lb/hr)	Paint Filter Efficiency ⁴ (%)	Controlled Emission Rate (lb/hr)	TAP EL	% TAP EI
4,4-diphenylmethane-diisocyanate (MDI) Methylenediphenyl diisocyanate	101-68-8	0.020	85%	0.0029	0%	0.0029	0.003	98%
acetone	67-64-1	1.2978	0%	1.2978	0%	1.298	119	1%
butyl acetate	123-86-4	1.913	0%	1.9125	0%	1.913	47.3	4%
carbon black	1333-86-4	0.116	40%	0.0693	90%	0.007	0.23	3%
copper	141-14-8	0.231	40%	0.1386	90%	0.014	0.067	21%
Dicyclohexylmethane-4-4' diisocyanate (H12MDI) [Methylene bis (4-cyclohexyl isocyanate)]	5124-30-1	0.531	85%	0.0797	0%	0.080	0.007	1138%
ethyl acetate	141-78-6	8.775	0%	8.7750	0%	8.775	93.3	9%
methyl ethyl ketone ⁵	78-93-3	13.357	0%	13.3572	0%	13.357	39.3	34%
Polyphenyl Isocyanate	9016-87-9	0.039	0%	0.0391	0%	0.039	NA	NA
toluene	108-88-3	1.298	0%	1.2978	0%	1.298	25	5%

Criteria Air Pollutants	Maximum Spray Rate ¹		Spray Retention Rate ²	Potential to Emit		Paint Filter Efficiency ³	Controlled Emissions	
	lb/hr	ton/yr	%	lb/hr	ton/yr	%	lb/hr	ton/yr
PM ₁₀	18.49	9.04	40%	11.09	5.42	90.0%	1.109	0.54
PM _{2.5}	18.49	9.04	40%	11.09	5.42	90.0%	1.109	0.54
VOC	25.34	18.70	0%	25.34	18.70	0%	25.34	18.70

Hazardous Air Pollutants (HAP)	CAS	Maximum Spray Rate ¹ (ton/yr)	Spray Retention Rate (%)	Potential to Emit (ton/yr)
4,4-diphenylmethane-diisocyanate (MDI) methylene diphenyl diisocyanate	101-68-8	0.08	0.00	0.08
Toluene	108-88-3	3.141	0%	3.14

Notes:

- The maximum hourly or annual Spray Total of the coatings.
- Non-volatile emissions are calculated using a coating retention rate of 40%

Tables 4-1a to 4-1c:
 Facility-Wide Unrestricted Criteria Regulated Pollutant Emissions

Table 4-1a: Pre-Project Potential to Emit

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead	Greenhouse Gases CO ₂ e
	tons/yr							
Heaters	0	0	0	0	0	0	0	0
Cleaning, Gluing, Urethane Spray	0	0	0	0	0	0	0	0
Total =	0	0	0	0	0	0	0	0

Table 4-1b: Post-Project Potential to Emit (based on maximum continuous operations)

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead	Greenhouse Gases CO ₂ e
	tons/yr							
Heaters	2.3E-02	2.3E-02	1.8E-03	3.0E-01	2.6E-01	1.7E-02	1.5E-06	3.6E+02
Cleaning, Gluing, Urethane Spray	2.4E+00	2.4E+00				8.2E+01		
Total =	2.4E+00	2.4E+00	1.8E-03	3.0E-01	2.6E-01	8.2E+01	1.5E-06	3.6E+02

Table 4-1c: Changes in Potential to Emit (based on maximum continuous operations)

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead	Greenhouse Gases CO ₂ e
	tons/yr							
Heaters	2.3E-02	2.3E-02	1.8E-03	3.0E-01	2.6E-01	1.7E-02	1.5E-06	3.6E+02
Cleaning, Gluing, Urethane Spray	2.4E+00	2.4E+00	---	---	---	8.2E+01	---	---

**Tables 4-2a to 4-2c:
Facility-Wide Restricted Criteria Regulated Pollutant Emissions**

Table 4-2a: Pre-Project Potential to Emit (based on existing permit conditions)

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead
	tons/yr						
Heaters	0	0	0	0	0	0	0
Cleaning, Gluing, Urethane Spray	0	0	0	0	0	0	0
Total =	0	0	0	0	0	0	0

Table 4-2b: Post-Project Potential to Emit (based on requested permit conditions)

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead
	tons/yr						
Heaters	2.3E-02	2.3E-02	1.8E-03	3.0E-01	2.6E-01	1.7E-02	1.5E-06
Cleaning, Gluing, Urethane Spray	5.4E-01	5.4E-01	0.0E+00	0.0E+00	0.0E+00	1.9E+01	0.0E+00
Total =	5.7E-01	5.7E-01	1.8E-03	3.0E-01	2.6E-01	1.9E+01	1.5E-06

Table 4-2c: Changes in Potential to Emit

Emissions Unit	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO	VOC	Lead
	tons/yr						
Heaters	2.3E-02	2.3E-02	1.8E-03	3.0E-01	2.6E-01	1.7E-02	1.5E-06
Cleaning, Gluing, Urethane Spray	5.4E-01	5.4E-01	0.0E+00	0.0E+00	0.0E+00	1.9E+01	0.0E+00
Total =	5.7E-01	5.7E-01	1.8E-03	3.0E-01	2.6E-01	1.9E+01	1.5E-06

Table 4-3 Criteria Pollutant Restricted Controlled Emissions

Max Restricted Controlled PTE Criteria Air Pollutants	Estimated Emission Rate	10% Significant Emission Rate	BRC Exemption
	(T/yr)	(T/yr)	Below 10% Sig. Rate? (Y/N)
NO ₂	3.05E-01	4	Yes
CO	2.56E-01	10	Yes
PM	5.66E-01	2.5	Yes
PM ₁₀	5.66E-01	1.5	Yes
PM _{2.5}	5.66E-01	1	Yes
SOx	1.83E-03	4	Yes
VOC	1.87E+01	4	No
Lead	1.52E-06	0.06	Yes

**Table 4-4:
Facility-Wide Toxic Air Pollutant Emissions**

Non-Carcinogenic Toxic Air Pollutant (24 hr Average)	Restricted Controlled Hourly Emissions		Controlled Emission Change (lb/hr)	Screening Emission Level (lb/hr)	Controlled Exceeds TAP EL?
	Pre-Project (lb/hr)	Post Project (lb/hr)			
Acetone	0	1.30E+00	1.30E+00	1.19E+02	No
Barium	0	3.06E-06	3.06E-06	3.30E-02	No
Butyl Acetate	0	1.91E+00	1.91E+00	4.73E+01	No
Carbon Black	0	6.93E-03	6.93E-03	2.30E-01	No
Chromium	0	9.75E-07	9.75E-07	3.30E-02	No
Cobalt	0	5.85E-08	5.85E-08	3.30E-03	No
Copper	0	5.92E-07	5.92E-07	6.70E-02	No
Dichlorobenzene	0	8.35E-07	8.35E-07	2.00E+01	No
Ethyl Acetate	0	8.78E+00	8.78E+00	9.33E+01	No
Manganese	0	2.65E-07	2.65E-07	6.70E-02	No
4,4-diphenylmethane-diisocyanate (MDI)	0	2.93E-03	2.93E-03	3.00E-03	No
Dicyclohexylmethane-4-4' diisocyanate (H12MDI) [Methylene bis (4-cyclohexyl isocyanate)]	0	7.97E-02	7.97E-02	7.00E-03	Yes
Mercury	0	1.81E-07	1.81E-07	3.00E-03	No
Methyl ethyl ketone	0	1.34E+01	1.34E+01	3.93E+01	No
Molybdenum	0	7.66E-07	7.66E-07	3.33E-01	No
Naphthalene	0	4.25E-07	4.25E-07	3.33E+00	No
Selenium	0	1.67E-08	1.67E-08	1.30E-02	No
Toluene	0	1.30E+00	1.30E+00	2.50E+01	No
Vanadium, as V2O5	0	1.60E-06	1.60E-06	3.00E-03	No
Zinc	0	2.02E-05	2.02E-05	6.67E-01	No
Carcinogenic Toxic Air Pollutant (Annual Average)	Restricted Controlled Hourly Emissions		Emission Change (lb/hr)	Screening Emission Level (lb/hr)	Controlled Exceeds TAP EL?
	Pre-Project (lb/hr)	Post Project (lb/hr)			
Arsenic	0	1.4E-07	1.4E-07	1.5E-06	No
Benzene	0	1.5E-06	1.5E-06	8.0E-04	No
Beryllium	0	8.4E-09	8.4E-09	2.8E-05	No
Cadmium	0	7.7E-07	7.7E-07	3.7E-06	No
Formaldehyde	0	5.2E-05	5.2E-05	5.1E-04	No
3-Methylchloranthene	0	1.3E-09	1.3E-09	2.5E-06	No
Nickel	0	1.46E-06	1.46E-06	2.7E-05	No
Polyaromatic Hydrocarbon (Max)	0	4.7E-07	4.7E-07	9.1E-05	No
Polycyclic Organics: 7-PAH Group	0	7.9E-09	7.9E-09	2.0E-06	No

**Table 4-5:
Facility-Wide Hazardous Air Pollutant Emissions**

Hazardous Air Pollutant	Unrestricted Uncontrolled Potential to Emit (tons/yr)	Restricted Controlled Potential to Emit (tons/yr)
Arsenic	6.1E-07	6.1E-07
Benzene	6.4E-06	6.4E-06
Beryllium	3.7E-08	3.7E-08
Cadmium	3.4E-06	3.4E-06
Chromium	4.3E-06	4.3E-06
Cobalt	2.6E-07	2.6E-07
Dichlorobenzene	3.7E-06	3.7E-06
Formaldehyde	2.3E-04	2.3E-04
Hexane	5.5E-03	5.5E-03
4,4-diphenylmethane-diisocyanate (MDI) methylene diphenyl diisocyanate	3.3E-01	7.5E-02
Lead	1.5E-06	1.5E-06
Manganese	1.2E-06	1.2E-06
Mercury	7.9E-07	7.9E-07
Naphthalene	1.9E-06	1.9E-06
Nickel	6.4E-06	6.4E-06
Polycyclic Organic Matter (PAH MAX.)	2.1E-06	2.1E-06
Selenium	7.3E-08	7.3E-08
Toluene	1.4E+01	3.1E+00
TOTAL =	14.1	3.2

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: April 23, 2019
TO: Morrie Lewis, Permit Writer, Air Program
FROM: Pao Baylon, Modeling Review Analyst, Air Program
PROJECT: P-2019.0009 PROJ 62183, Initial Permit for an Inflatable Boat Manufacturing Facility
SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

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Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality modeling system
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
gals/day	Gallons per day
H12MDI	Dicyclohexylmethane-4-4' diisocyanate
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
lb/hr	Pounds per hour
Maravia	Maravia Corporation of Idaho
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	Ozone
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per billion
PTC	Permit to Construct
PTE	Potential to Emit
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide
TAP	Toxic Air Pollutant
Torf	Torf Environmental Management
VOC	Volatile Organic Compounds
µg/m ³	Micrograms per cubic meter of air

1.0 Summary

Maravia Idaho Corporation (Maravia) submitted a Permit to Construct (PTC) application for its inflatable boat manufacturing facility located at 604 E. 45th Street in Boise, Idaho. Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that emissions associated with the facility operations would not cause or significantly contribute to a violation of any applicable ambient air quality standard as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of DEQ's review of the ambient air impact analyses submitted with the permit application.

Torf Environmental Management (Torf), on behalf of Maravia, prepared the PTC application and performed ambient air impact analyses for this project to demonstrate compliance with applicable National Ambient Air Quality Standards (NAAQS) and Toxic Air Pollutant (TAP) increments. The DEQ review of submitted data and analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emission calculation methods were not evaluated in this modeling review memorandum.

The submitted information and analyses: 1) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration, or b) that criteria pollutant emission increases resulting from the proposed project are below site-specific modeling applicability thresholds, developed to assure that emissions below such levels will not result in ambient air impacts exceeding Significant Impact Levels (SILs); 2) showed that TAP emission increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed project will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
General Emission Rates. Emission rates used in the air impact analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emission rates greater than those used in the air impact analyses.
TAP Emission Sources. TAP emission sources, as constructed and operated, must be accurately represented by the analyses submitted with the PTC application.	Important parameters include release point locations and release height.
Techthane Coating Daily Use. A growth factor of 45% was incorporated in the maximum PTE calculation for all coating materials (both daily use and annual use), except for the daily use of Techthane coating. The maximum historical daily use for Techthane is 24 gals/day. In the PTE calculation used for modeling, a maximum of 30 gals/day was conservatively assumed. This represents a 25% growth from the maximum historical daily use of Techthane.	Compliance has not been demonstrated for Techthane maximum daily use of greater than 30 gals/day.

Summary of Submittals and Actions

- February 13, 2019: Application received by DEQ.
- April 22, 2019: Application determined complete by DEQ.

2.0 Background Information

Background information on the project and the air impact analyses was provided in the Modeling Analysis Report submitted with the application.

2.1 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:

02. NAAQS. *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*

03. Toxic Air Pollutants. *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

02. Estimates of Ambient Concentrations. All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).

2.2 Significant Impact Level and Cumulative NAAQS Impact Analyses

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Model* (Appendix W). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a "significant contribution" in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

2.3 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the

stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Impact Levels ^a ($\mu\text{g}/\text{m}^3$) ^b	Regulatory Limit ^c ($\mu\text{g}/\text{m}^3$)	Modeled Design Value Used ^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.2	12 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest ⁿ
	8-hour	500	10,000 ^m	Maximum 2 nd highest ⁿ
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ^o (7.8 $\mu\text{g}/\text{m}^3$)	75 ppb ^p (196 $\mu\text{g}/\text{m}^3$)	Mean of maximum 4 th highest ^q
	3-hour	25	1,300 ^m	Maximum 2 nd highest ⁿ
	24-hour	5	365 ^m	Maximum 2 nd highest ⁿ
	Annual	1.0	80 ^r	Maximum 1 st highest ⁿ
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb (7.5 $\mu\text{g}/\text{m}^3$)	100 ppb ^s (188 $\mu\text{g}/\text{m}^3$)	Mean of maximum 8 th highest ^t
	Annual	1.0	100 ^r	Maximum 1 st highest ⁿ
Lead (Pb)	3-month ^u	NA	0.15 ^v	Maximum 1 st highest ⁿ
	Quarterly	NA	1.5 ^v	Maximum 1 st highest ⁿ
Ozone (O ₃)	8-hour	40 TPY VOC ^w	70 ppb ^w	Not typically modeled

- ^a Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- ^b Micrograms per cubic meter.
- ^c Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- ^d The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- ^e Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- ^f Not to be exceeded more than once per year on average over 3 years.
- ^g Concentration at any modeled receptor when using five years of meteorological data.
- ^h Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- ⁱ 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
- ^j 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
- ^k 3-year mean of annual concentration.
- ^l 5-year mean of annual averages at the modeled receptor.
- ^m Not to be exceeded more than once per year.
- ⁿ Concentration at any modeled receptor.
- ^o Interim SIL established by EPA policy memorandum.
- ^p 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
- ^q 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
- ^r Not to be exceeded in any calendar year.
- ^s 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
- ^t 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
- ^u 3-month rolling average.
- ^v An annual emissions rate of 40 ton/year of VOCs is considered significant for O₃.
- ^w Annual 4th highest daily maximum 8-hour concentration averaged over three years.

Per Section 210, if the total project-wide emission increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

3.0 Analytical Methods and Data

The submitted modeling report provides a detailed discussion of the methods and data used to demonstrate compliance with applicable standards.

3.1 Emission Source Data

Emission increases of criteria pollutants and TAPs resulting from the facility were estimated by Torf for various applicable averaging periods.

Emission rates used in the dispersion modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All modeled criteria air pollutant and TAP emission rates must be equal to or greater than the potential emission increase calculated in the PTC emission inventory or proposed permit allowable emission rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emission Rates

If project-specific emission increases of criteria pollutants would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.¹" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in cases where a PTC is required for the action regardless of emission quantities, such as the modification of an existing emissions or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such

emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*¹. These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If project-specific total emission rate increases of a pollutant are below Level I Modeling Applicability Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds are conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emission sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

NAAQS compliance demonstrations were not required for this project since the submitted application demonstrated that the project qualified for the BRC NAAQS compliance demonstration exemption. Table 3 provides a comparison between facility-wide allowable emissions and BRC levels.

Table 3. NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY ANALYSIS RESULTS			
Pollutant	Annual Allowable Emissions^a (tons/year)	BRC Level (tons/year)	NAAQS Compliance Demonstration Required
PM _{2.5}	5.66E-01	1.0	No
PM ₁₀	5.66E-01	1.5	No
NO ₂	3.05E-01	4	No
CO	2.56E-01	10	No
SO ₂	1.83E-03	4	No
Pb	1.52E-06	0.06	No

^a As stated in the application materials.

Ozone (O₃) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O₃ is formed in the atmosphere through reactions of VOCs, NO_x, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O₃ impacts resulting from VOC and NO_x emissions from an industrial facility. O₃ concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource-intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting. Addressing secondary formation of O₃ within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

... footnote 1 to sections 51.166(l)(5)(I) of the EPA's regulations says the following: "No de

minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY.

DEQ determined it was not appropriate or necessary to require a quantitative source-specific O₃ impact analysis because allowable emissions estimates of VOCs and NO_x are below the 100 tons/year threshold.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NO_x, SO₂, and/or VOCs was assumed by DEQ to be negligible based on the magnitude of emissions and the short distance from emission sources to locations where maximum PM₁₀ and PM_{2.5} impacts are anticipated.

3.1.2 Toxic Air Pollutant Emission Rates

TAP emission regulations under Idaho Air Rules Section 210 are only applicable to new or modified sources constructed after July 1, 1995.

Table 4 provides a summary of TAP emission increases for the project for those TAPs that had an increase exceeding the ELs of Idaho Air Rules Section 585 or 586. Table 5 lists source-specific emissions of TAPs used in the impact analyses.

Table 4. TAP EMISSION INCREASES THAT TRIGGER MODELING		
Toxic Air Pollutant	Emissions (lb/hr)^a	Screening Emissions Level (lb/hr)
H12MDI ^b	7.97E-02	7.00E-03

^a Pounds per hour.

^b Non-carcinogenic TAP. ELs are daily maximum emissions expressed as pounds/hour. The emissions rate is the daily emissions divided by 24 hours/day.

Table 5. MODELED EMISSION RATE FOR TOXIC AIR POLLUTANTS		
Source ID	Source Description	Emission Rate (lb/hr)
SPRAYBOOTH	Spray booth	7.97E-02

3.1.3 DEQ Review

DEQ determined the following from review of the Air Modeling Analysis Report submitted with the application:

- The appropriate atmospheric dispersion model was used for the proposed project.
- The facility, as described in the protocol and in the submitted modeling report, was adequately

represented in the model, regarding geographical location, terrain, structures, emission point locations, and areas of potential exposure.

- Appropriate meteorological data were used with the dispersion model.
- Appropriate averaging periods were selected for model output, corresponding to the form of applicable standards.
- The modeling report indicates that all TAPs with project-wide emissions increases above the ELs of Idaho Air Rules Section 585 and 586 were modeled to evaluate compliance with applicable AACs and AACCs.
- Through review of the submitted Air Modeling Analysis Report, it appears that the TAPs air impact analyses were performed using recommended data and methods prescribed in the *Idaho Air Quality Modeling Guideline*¹.

DEQ determined the review of the air impact analyses, as described above, was adequate to provide assurance that the proposed project will not result in increases in ambient air TAP levels that exceeded the specific AACs or AACCs. This conclusion is based on the general type and magnitude of the facility, the types of methods and data used in the analyses, and the modeled results in comparison to applicable AACs/AACCs.

4.0 NAAQS and TAPs Air Impact Modeling Results

4.1 Results for NAAQS Analyses

A NAAQS compliance demonstration was not required for permit issuance because facility-wide emissions of criteria pollutants were below BRC levels.

4.2 Results for TAPs Impact Analyses

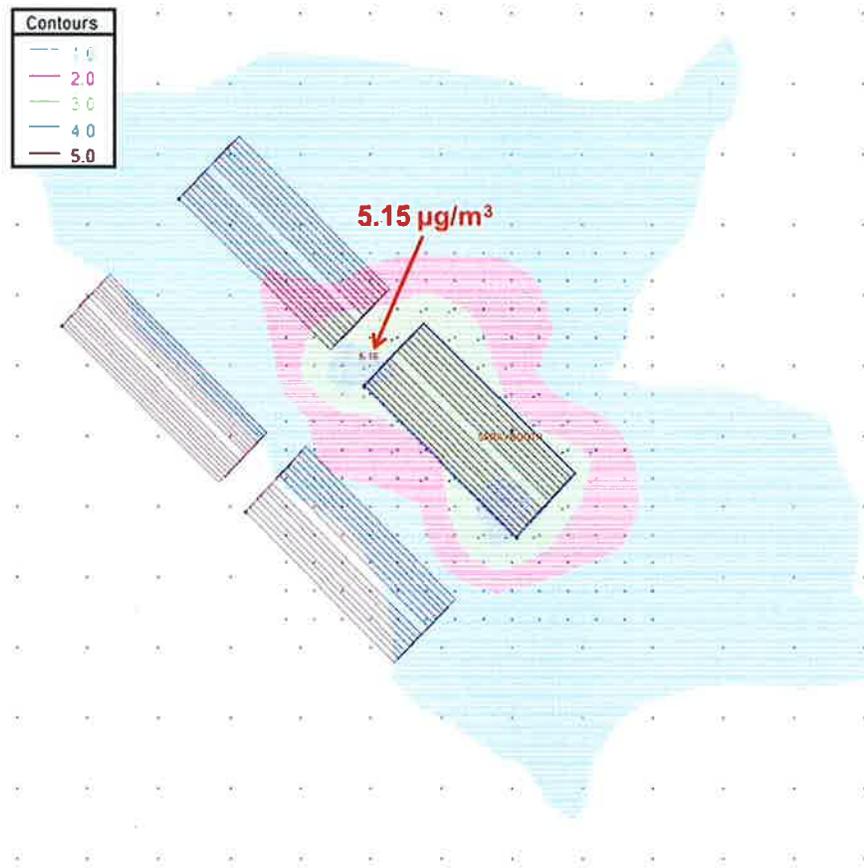
Table 6 lists the maximum modeled impacts for H12MDI. Figure 1 shows a plot of highest modeled 24-hour H12MDI concentrations. The maximum modeled concentration is shown in red font. All modeled impacts are below applicable AACs and AACCs.

Table 6. TAP AIR IMPACT ANALYSIS RESULTS			
TAP	Maximum Modeled Impact ($\mu\text{g}/\text{m}^3$)^a	AAC ($\mu\text{g}/\text{m}^3$)	Percent of AAC
H12MDI ^b	5.15	5.5	94%

^a Micrograms per cubic meter.

^b Non-carcinogenic TAP. Modeled impact and AAC represent a 24-hour averaged concentration.

Figure 1. HIGHEST MODELED 24-HR H12MDI CONCENTRATIONS



5.0 Conclusions

The information submitted with the PTC application demonstrated to DEQ's satisfaction that applicable emissions resulting from the Maravia facility will not cause or significantly contribute to a violation of any ambient air quality standard or TAP increment.

References

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at <http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf>.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on June 27 and July 3, 2019:

Facility Comment: The applicant requested the option to keep building doors open during operations including hot-knife cutting to allow for moderation of building temperature and to facilitate work flow. Concentrations outside the building next to the open doors were not expected to exceed regulatory concern levels nor levels that would require respirator use. Standard fugitive dust prohibitions should be sufficient without the need to include a specific requirement to keep doors closed.

DEQ Response: Permit Conditions 1.2 and 2.8 were revised to accommodate this request, retaining the requirement to conduct operations inside the building but not requiring doors to remain closed. DEQ still recommends keeping doors closed during such operations if at all possible in an effort to minimize emissions and if circumstances dictate this to be a reasonable precaution in accordance with IDAPA 58.01.01.650-651.

Facility Comment: The applicant noted that the annual limit in tons per year (T/yr) for dicyclohexylmethane-4-4' Diisocyanate (H12MDI) should be 0.05 T/yr for consistency with annual urethane usage rates and emission estimates provided in the application. The applicant also noted that monthly and annual evaluation should not be required to ensure compliance with TAP increments and with PM, VOC, and HAP limits. Compliance with annual limits can instead be determined by assessing emissions on a daily basis.

DEQ Response: Permit Conditions 2.3, 2.14, and 2.17 were revised, and Permit Conditions 2.4 and 2.19 were removed to reflect only annual PM, VOC, and HAP emission limits. DEQ agreed that daily limits were sufficient to ensure compliance with TAP screening emission rates, including H12MDI in accordance with IDAPA 58.01.01.585, and that daily compliance with annual PM, VOC, and HAP limits was sufficient.

Because H12MDI and other TAP screening emission rates were established in Permit Condition 2.14, additional H12MDI limits were considered unnecessary and were removed.

Because PM_{2.5} emissions were limited to below regulatory concern (BRC) levels, no demonstration of compliance with short-term (PM) ambient air quality standards was required and therefore compliance with annual criteria pollutant limits (PM, VOC, and HAP) on a daily basis was sufficient.

In the case of alternate daily coating usage scenarios, it is important to note that to ensure compliance with emission limits and TAP screening emission rates, compliance must be determined in advance of implementing any alternate scenario. In an effort to maximize operational flexibility, different scenarios may be implemented each calendar day, which necessitates compliance demonstrations on a daily basis. TAP emissions require assessment in pounds per calendar day (lb/day), while PM, VOC, and HAP emissions require assessment in either pounds per calendar day (lb/day) or (as implemented in this permit) in tons per consecutive 365-calendar-day period (T/yr).

Air Quality

PERMIT TO CONSTRUCT

Permittee	Maravia Corporation of Idaho
Permit Number	P-2019.0009
Project ID	62183
Facility ID	001-00361
Facility Location	602 E. 45 th Street Boise, ID 83714

Permit Authority

This permit (a) is issued according to the "Rules for the Control of Air Pollution in Idaho" (Rules), IDAPA 58.01.01.200-228; (b) pertains only to emissions of air contaminants regulated by the State of Idaho and to the sources specifically allowed to be constructed or modified by this permit; (c) has been granted on the basis of design information presented with the application; (d) does not affect the title of the premises upon which the equipment is to be located; (e) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (f) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; and (g) in no manner implies or suggests that the Idaho Department of Environmental Quality (DEQ) or its officers, agents, or employees assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment. Changes in design, equipment, or operations may be considered a modification subject to DEQ review in accordance with IDAPA 58.01.01.200-228.

Date Issued DRAFT XX, 2019

Morrie Lewis, Permit Writer

Mike Simon, Stationary Source Manager

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2	Boat Manufacturing and Repair	5
3	General Provisions	15

1 Permit Scope

Purpose

1.1 This is an initial permit to construct (PTC) an inflatable boat manufacturing facility.

Regulated Sources

1.2 Table 1.1 lists all sources of regulated emissions in this permit.

Table 1.1 Regulated Sources

Permit Section	Source	Control Equipment
2, 3	Hot-knife cutting operations	Reasonable control of fugitive emission Cutting operations are conducted within a 2 enclosed building.
2, 3	Cleaning operations	Reasonable control of fugitive emission Cleaning solvents are hand-applied within a 3 enclosed building.
2, 3	Gluing operations	Reasonable control of fugitive emission Glue adhesives are hand-applied within an 4 enclosed building.
2, 3	<u>Spray booth and Heater 1</u> Manufacturer: Dayton or equivalent ^(a) Model: unknown ^(a) Burner manufacturer: Mestek Intertek or equivalent ^(a) Burner model: TF/BTU150 or equivalent ^(b) Maximum capacity: 150,000 Btu/hr Fuel: natural gas Date of installation: 1998 Maximum operation: as limited by Emission Limits and Operating Requirements	Coatings are spray-applied within the spray booth enclosure. The booth heater is used for seasonal indirect heating of inlet air. <u>Spray booth filter system</u> Particulate filtration method: dry filters Manufacturer: Paint Arrestors ^(a) Model: RP or equivalent ^(a) PM Control Efficiency: 90% or greater
2, 3	<u>Spray guns</u> Manufacturer: Graco or equivalent ^(a) Model: 388420 or Silver Tip Plus airless, or equivalent ^(a) Maximum operation: as limited by Emission Limits and Operating Requirements	<u>Spray guns</u> Type: reduced pressure (RP) or equivalent ^(a) Transfer Efficiency: 40% or greater

Request deleting word "enclosed" since it could imply that operations can only be conducted with doors always closed. Since volatile TAP emission analyses from these operations assumed 100% emission, since PM emissions are very low and have not been historically observed emitting from the building, this "enclosed" requirement is not required.

Table 1.1 Regulated Sources

Permit Section	Source	Control Equipment
2, 3	<u>Heater 2</u>	
	Manufacturer: Evaporator or equivalent ^(a)	Heaters are used for seasonal indirect heating needs.
	Model: BVR22 ^(a)	
	Maximum capacity: 24,000 Btu/hr	
	Fuel: natural gas	None
	Date of installation: (unknown)	
	<u>Heater 3</u>	
	Manufacturer: Evaporator or equivalent ^(a)	
	Model: BVR22 36-CYN18 NTF ^(a)	None
	Maximum capacity: 36,000 Btu/hr	
	Fuel: natural gas	
	Date of installation: (unknown)	
	<u>Heater 4 and Heater 5</u>	
Manufacturer: Lennox or equivalent ^(a)		
Model: LF24-250A-5 ^(a)		
Maximum capacity: 250,000 Btu/hr each (500,000 Btu/hr combined)	None	
Fuel: natural gas		
Date of installation: April 2013		

a) "or equivalent" equipment is equipment which has equivalent or less maximum capacity and equivalent or lower pollutant emission rates, whether calculated based on maximum design capacity or based on established permit limits. Use of replacement equipment shall not result in the emission of any regulated air pollutant not previously emitted, and shall not result in an emission increase as defined in IDAPA 58.01.01.007.

2 Boat Manufacturing and Repair

2.1 Process Description

Maravia Corporation of Idaho operates an inflatable boat manufacturing facility at 602 E. 45th Street in Boise, Idaho. At this facility cutting, cleaning, gluing, and spray coating operations are conducted on polyvinyl chloride (PVC) boat fabrics in the manufacture and repair of inflatable boats. Particulate matter emissions are controlled by the use of spray booth filtration systems. Five natural gas-fired heaters provide indirect heating.

2.2 Control Device Descriptions

Table 2.1 Boat Manufacturing Description

Source Descriptions	Control Equipment
Cutting, cleaning, and gluing operations	<p><u>Reasonable control of fugitive emissions</u> Cutting operations are conducted within an enclosed building. Cleaning solvents and glue adhesives are hand-applied within an enclosed building.</p>
Spray guns	<p><u>Spray booth filter system</u> Particulate filtration method: dry filters Manufacturer: Paint Arrestars^(a) Model: RP or equivalent^(a) PM Control Efficiency: 90% or greater</p> <hr/> <p><u>Spray guns</u> Type: reduced pressure (RP) or equivalent^(a) Transfer Efficiency: 40% or greater</p>
Heater 1	None
Heater 2	None
Heater 3	None
Heater 4	None
Heater 5	None

a) "or equivalent" equipment is equipment which has equivalent or less maximum capacity and equivalent or lower pollutant emission rates, whether calculated based on maximum design capacity or based on established permit limits. Use of replacement equipment shall not result in the emission of any regulated air pollutant not previously emitted and shall not result in an emission increase as defined in IDAPA 58.01.01.007.

Emission Limits

2.3 Daily Emission Limits

Emissions from cleaning, gluing, and spray coating operations shall not exceed the emission rate limits in Table 2.2. Operations include spray- or hand-application of adhesive and coating materials.

Table 2.2 Cleaning, Gluing, And Spray Coating Operation Daily Emission Limits ^(a)

Source Description	PM ₁₀ /PM _{2.5} ^(b)	VOC ^(c)	H12MDI ^(d)
	lb/day ^(e)	lb/day ^(e)	lb/day ^(e)
Cleaning, Gluing, And Spray Coating Operation emissions	26.62	608.23	1.91

- In absence of any other credible evidence, compliance is assumed by complying with permit operating, monitoring, and record keeping requirements.
- Particulate matter (PM) including condensable PM as defined in IDAPA 58.01.01.006, with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers for PM_{2.5}, and less than or equal to a nominal 10 micrometers for PM₁₀. These PM limits apply to the Spray Booth stack (i.e., spray-application).
- Volatile organic compounds (VOC).
- Dicyclohexylmethane 4,4'-Diisocyanate (H12MDI), regulated as methylene bis (4-cyclohexyl isocyanate) by IDAPA 58.01.01.585.
- Worst-case pounds of emissions from all spray coating operations per calendar day (combined) as calculated using procedures in this permit to estimate these emissions, or as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference method, or DEQ-approved alternative.

2.4 Annual Emission Limits

Emissions from cleaning, gluing, and spray coating operations shall not exceed the emission rate limits in Table 2.3. Operations include spray- or hand-application of adhesive and coating materials.

Table 2.3 Cleaning, Gluing, And Spray Coating Operation Annual Emission Limits ^(a)

Source Description	PM ₁₀ /PM _{2.5} ^(b)	VOC ^(c)	H12MDI ^(d)	Total HAP ^(e)
	T/yr ^(f)	T/yr ^(f)	T/yr ^(f)	T/yr ^(f)
Cleaning, Gluing, And Spray Coating Operation emissions	0.54	18.70	0.31	3.20

- In absence of any other credible evidence, compliance is assumed by complying with permit operating, monitoring, and recordkeeping requirements.
- Particulate matter (PM) including condensable PM as defined in IDAPA 58.01.01.006, with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers for PM_{2.5}, and less than or equal to a nominal 10 micrometers for PM₁₀.
- Volatile organic compounds (VOC).
- Dicyclohexylmethane 4,4'-Diisocyanate (H12MDI), regulated as methylene bis (4-cyclohexyl isocyanate) by IDAPA 58.01.01.585.
- Emission limit for the combined total of all hazardous air pollutants (combined).
- Tons of emissions per any consecutive 12-month period.

Should this value be 0.05 tons/yr? However, Maravia does not object to the DEQ-proposed limit.

1479 gals./yr. * 8.5 lbs./gal * 5% H12MDI = 628.8 lbs./yr = 0.31 tons/yr
emissions assume 85% reaction and up to 15% unreacted emission
0.31 tons/yr * 0.15 = 0.05 tons/yr

Respectfully, Maravia disagrees that requiring all building doors remain closed is a reasonable requirement. Maravia operations and equipment rely on the ability to open doors for irregular periods to moderate temperatures and ease work-flow of materials in and out. This is very important to Maravia, particularly since the PTC application already conservatively assumes that TAPs, HAPs, and PM from all operations, including cleaning, hot-knife cutting and gluing, are emitted to outdoor ambient air and comply with regulatory requirements. The additional closed-building requirement is not necessary to assure compliance.

While a safety inspector did monitor nuisance dust and recommended use of respirators, the dust levels were near minimum thresholds requiring respirator use. In addition, the recommendation did not extend to workers at other nearby and more distant areas, suggesting that air away from the operation near open doors is not likely to contain and emit significant PM. In addition, the paragraph confirms that PM "is not expected to exceed regulatory concern thresholds." Standard fugitive dust prohibitions can address this concern without a specific doors-closed 24/7 requirement.

2.6 Fuel-Burning Equipment Emission Limit

The permittee shall not discharge to the atmosphere from any natural gas-fired heater (Heater 1, Heater 2, Heater 3, Heater 4, and Heater 5) particulate matter (PM) in excess of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume for gas, in accordance with IDAPA 58.01.01.675-681.

2.7 Opacity Limit

Emissions from the spray booth stack, each heater stack (Heater 1, Heater 2, Heater 3, Heater 4, and Heater 5), and any other stack, vent, or functionally equivalent opening associated with these units shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

Operating Requirements

2.8 Spray Guns and Spray Booth Filter System

The permittee shall maintain and operate the spray guns, spray booth, and spray booth filter system and in accordance with manufacturer's specifications. The spray booth filter system shall be operated at all times when the spray booth is operating. Any period of time that the spray booth is in operation while the spray booth filter system is not in operation shall be treated as an excess emission event, and the permittee shall comply with excess emission procedures and requirements included in the General Provisions of this permit.

- The permittee shall install, maintain, and operate according to the manufacturer's specifications and recommendations, a spray booth filter system with a minimum control efficiency of 90% for particulate emissions as documented by the filter manufacturer.
- Spray application of all adhesive and coating materials shall be conducted inside the spray booth with filters in place, exhaust fan operating, and doors and curtains closed.
- Spray application of all adhesive and coating materials shall be conducted with reduced pressure or equivalent spray guns (Table 2.1), with a minimum 40% transfer efficiency as documented by the spray gun manufacturer.

2.9 Reasonable Control of Fugitive Emissions

All reasonable precautions shall be taken to prevent particulate matter (PM) from becoming airborne, in accordance with IDAPA 58.01.01.650-651. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of PM. Some of the reasonable precautions include, but are not limited to, the following:

- All solvent cleaning, hot-knife cutting, and gluing operations shall be conducted inside the building, and doors to the building shall remain closed during such operations.
- Hoods, fans, and fabric filters or equivalent systems shall be installed and used to enclose and vent materials, where practical.

2.10 Approved Daily Adhesive and Coating Material Usage Scenario

Unless the permittee is complying with an Alternate Daily Adhesive and Coating Material Usage Scenario which demonstrates compliance with Daily Emission Limits and Screening Emission Rates, the permittee shall comply with the Daily Adhesive and Coating Material Usage Limits in Table 2.4.

Table 2.4 Approved Daily Adhesive and Coating Material Usage Scenario

Adhesive and Coating Materials	Daily Adhesive and Coating Material Usage Limit (gal/day)^(a)
Catur Catalyst	0.09
LA4009	8.70
Techthane 90SS-MB Part A	30.0
Techthane 90SS-MB Part B	30.0
Methyl Ethyl Ketone (MEK)	43.2

a) Gallons per calendar day

2.11 Approved Annual Adhesive and Coating Material Usage Limits

The permittee shall not exceed the annual Adhesive and Coating Material Usage limits in Table 2.5.

Table 2.5 Annual Adhesive and Coating Material Usage Limits

Adhesive and Coating Materials	Annual Adhesive and Coating Material Usage Limit (gal/yr)^(a)
Catur Catalyst	29.0
LA4009	1,755
Techthane 90SS-MB Part A	1,479
Techthane 90SS-MB Part B	1,479
Methyl Ethyl Ketone (MEK)	2,074
Pigments ^(b)	86.0

a) Gallons per rolling consecutive 12-month period

b) For this permit condition, pigments include Black, Emerald/Job Green, Forest Green, Golden, Gray N1, Kivi (Green LMG-04), Light Blue Mar 1, Lime Green, Magenta, Medium Blue, Olive Drab, Orange, Purple, Red C-13, Royal Blue Mar Blue 12, Teal, White C-08, and Yellow.

Alternate Daily Adhesive and Coating Material Usage Scenarios (If Applicable)

Unless using an Approved Daily Adhesive and Coating Material Usage Scenario for which compliance has previously been determined (Permit Conditions 2.10 and 2.11), such as when new or reformulated adhesives or coating materials are introduced, each day before adhesive or coating materials are used the permittee shall follow the procedures of this section. The permittee shall not use any new Daily Adhesive and Coating Material Usage Scenario until Adhesive and Coating Material TAP compliance and Daily Emission Limits compliance have been demonstrated for that Scenario according to the following permit conditions.

2.12 Propose a Daily Adhesive and Coating Material Usage Scenario

Prior to using or implementing a new Daily Adhesive and Coating Material Usage Scenario:

- The permittee shall propose and record maximum daily adhesive and coating material usage limits for each adhesive and coating material that will be used in the Scenario, in gallons per day (gal/day). The permittee shall not use or implement any Scenario that does not have recorded maximum daily adhesive and coating material usage limits.
- The permittee shall estimate emissions of PM₁₀/PM_{2.5}, VOC, total HAP, and all TAP listed in Table 2.6 for the Scenario (lb/day for each pollutant), using the procedures described below for estimating emissions.
- The permittee shall demonstrate adhesive and coating material TAP compliance for the Scenario, using the procedures described below for demonstrating adhesive and coating material TAP compliance. The permittee shall not use or implement any Scenario that does not demonstrate adhesive and coating material TAP compliance.
- The permittee shall demonstrate Daily Emission Limits compliance for the Scenario, using the procedures described below for demonstrating Daily Emission Limits compliance. The permittee shall not use or implement any Scenario that does not demonstrate Daily Emission Limits compliance.
- The daily adhesive and coating material usage limits and emission estimates used in determining TAP compliance and Daily Emission Limits compliance shall be based on estimated emissions from all adhesive and coating materials to be used from all operations at the facility (i.e., facility-wide).

2.13 Estimate Adhesive and Coating Material TAP Emissions

TAP emissions shall be estimated for all TAP listed in Table 2.6:

- Emissions shall be estimated by multiplying each maximum daily adhesive and coating material usage rate (gal/day) by the TAP content (lb/gal) of that material, and summing the total emissions from all adhesive and coating materials (lb/day). TAP emissions which are designated as a particulate in Table 2.6 may also be multiplied by one minus the documented spray gun transfer efficiency and by one minus the documented filtration system control efficiency when control equipment will be applied to such emissions. (Alternatively, for MDI-based "iso" materials such as those used in 2-part urethane systems, MDI-based TAP emissions may instead be multiplied by one minus the documented spray gun transfer efficiency and by 15% to account for the isocyanate reaction.)
- TAP content (lb/gal) of a coating is specified on the Safety Data Sheet (SDS) for that coating, or shall be calculated by multiplying the weight percentage of TAP (%) by the density (lb/gal) of the coating from the SDS.

- For TAP content, if a range is presented on the SDS for a coating, the highest value of the range shall be used when estimating emissions.
- When the TAP content is listed as below detection on SDS or other documentation, the TAP content shall be assumed equal to the coating density divided by 100 (i.e., 1% of density in lb/gal) when estimating emissions.
- When the TAP content cannot be determined from SDS or other documentation, the TAP content shall be assumed equal to the density of the coating (lb/gal) when estimating emissions.

2.14 Demonstrate Adhesive and Coating Material TAP Compliance

For each Daily Adhesive and Coating Material Usage Scenario, the permittee shall estimate TAP emissions and compare against the TAP Screening Emission Rates in Table 2.6:

- The permittee shall compare estimated TAP emissions for all coatings against the Screening Emission Rates in Table 2.6.

Table 2.6 TAP Screening Emission Rates

TAP	CAS	Particulate?	Screening Emission Rate (lb/day) ^(a)
Acetone	67-64-1	No	2856
Acrylamide	79-06-1	No	0.0001234
Aluminum - Metal and Oxide	7429-90-5	Yes	16.008
Aluminum - Soluble Salts	7429-90-5	Yes	3.192
n-Amyl Acetate	628-63-7	No	847.2
Antimony & Compounds, as Sb	7440-36-0	Yes	0.792
Barium (Soluble Compounds), as Ba	7440-39-3	Yes	0.792
Benzene	71-43-2	No	0.0192
Benzoyl peroxide	94-36-0	No	7.992
Bis (2-Ethylhexyl) Phthalate (DEHP)	117-81-7	No	0.672
2-Butoxyethanol	111-76-2	No	192
2-Butoxyethyl Acetate	112-07-2	No	199.92
n-Butyl Acetate	123-86-4	No	1135.2
n-Butyl Alcohol	71-36-3	No	240
Calcium Carbonate	1317-65-3	Yes	16.008
Carbon Black	1333-86-4	Yes	5.52
Carbon Tetrachloride	56-23-5	No	0.01056
Chromium Metal, Chromium (III) Compounds as Cr	7440-47-3, 16065-83-1	Yes	0.792
Cumene	98-82-8	No	391.2
Cyclohexane	110-82-7	No	1680
Cyclohexanone	108-94-1	No	160.08
Diacetone Alcohol	123-42-2	No	384
Dibutyl Phthalate	84-74-2	No	7.992
1,4-Dichlorobenzene	106-46-7	No	720
o-Dichlorobenzene	95-50-1	No	480
Diethyl Phthalate	84-66-2	No	7.992
Diisobutyl Ketene	108-83-8	No	232.08
Dimethylphthalate	131-11-3	No	7.992
Dipropylene Glycol Methyl Ether	34590-94-8	No	960
2,6-Di-tert-butyl-p-cresol (butylated hydroxytoluene)	128-37-0	No	16.008
Ethyl Acetate	141-78-6	No	2239.2
Ethyl Alcohol	64-17-5	No	3000

Table 2.6 TAP Screening Emission Rates

TAP	CAS	Particulate?	Screening Emission Rate (lb/day) ^(a)
Ethyl Benzene	100-41-4	No	696
Ethylene Glycol Vapor	107-21-1	No	20,304
Formaldehyde	50-00-0	No	0.01234
HLMDI ^(b)	5124-30-1	No	1.9
Heptane (n-Heptane)	142-82-5	No	2616
Hexamethylene Diisocyanate	822-06-0	No	0.048
Hexane (n-Hexane)	110-54-3	No	288
Hydroquinone	123-31-9	No	3,192
Iron Oxide Fume (Fe ₂ O ₃) as Fe	1309-37-1	Yes	7,992
Isobutyl Acetate	110-19-0	No	1120.8
Isobutyl Alcohol	78-83-1	No	240
Isophorone Diisocyanate	4098-71-9	No	0.144
Isopropyl Alcohol	67-63-0	No	1567.2
Isopropyl Acetate	108-21-4	No	1663.2
Kaolin	1333-59-7	Yes	3,192
Manganese as Mn, Dust & Compounds	7439-96-3	Yes	7,992
Magnesite	546-93-0	Yes	16,008
Methacrylic Acid	79-41-4	No	113.08
Methanol	67-56-1	No	415.2
1-Methoxy-2-Propanol Acetate	108-65-6	No	576
2-Methoxyethyl Acetate	110-49-6	No	38.4
Methyl Acetate	79-20-9	No	976.8
Methyl n-Amyl Ketone	110-43-0	No	376.8
Methyl Chloroform	71-55-6	No	3048
Methyl Ethyl Ketone (MEK)	78-93-3	No	943.2
Methyl Isoamyl Ketone	110-12-3	No	384
Methyl Isobutyl Carbimol	108-11-2	No	166.32
Methyl Isobutyl Ketone (MIBK)	108-10-1	No	328.8
Methyl Methacrylate	80-62-6	No	655.2
Methylene Chloride	75-09-2	No	0.0384
Methylene Diphenyl Diisocyanate (MDI) ^(b) (4,4'-Diphenylmethane Diisocyanate)	101-68-8	No	0.072
Methyl Propyl Ketone	107-87-9	No	1120.8
Mica (Respirable Dust)	12001-26-2	Yes	4.8
Molybdenum as Mo	7439-98-7	Yes	7,992
Naphthalene	91-20-3	No	79.92
Nickel	7440-02-0	Yes	0.000648
Nonane	111-84-2	No	1680
Pentane	109-66-0	No	2832
Phenol	108-95-2	No	30.48
Phosphoric Acid	7664-38-2	No	1,608
Propionic Acid	79-09-4	No	48
n-Propyl Acetate	109-60-4	No	1344
Propyl Alcohol	71-23-8	No	799.2
Selenium	7782-49-2	Yes	0.312
Silica - Amorphous, including: • Diatomaceous Earth (uncalcined) • Precipitated Silica • Silica Gel	61790-53-2 112926-00-8	Yes	16,008
Silica - Crystalline - Cristobalite	14464-46-1	Yes	0.0792
Silica - Crystalline Quartz & Fused Silica	14808-60-7	Yes	0.1608
Stoddard Solvent	8052-41-3	No	840

Table 2.6 TAP Screening Emission Rates

TAP	CAS	Particulate?	Screening Emission Rate (lb/day) ^{a)}
Styrene	100-42-5	No	160.08
Tetrahydrofuran	109-99-9	No	943.2
Toluene	108-88-3	No	600
Triethylamine	121-44-8	No	6.48
Trimethyl Benzene (Mixed and Individual Isomers)	25551-13-7	No	196.8
Vinyl Acetate	108-05-4	No	55.2
VM&P Naphtha	8032-32-4	No	2191.2
Xylene (o-, m-, p-isomers)	1330-20-7	No	696
Zinc	7440-66-6	Yes	16.008
Zinc Oxide Dust	1314-13-2	Yes	16.008

- a) Worst-case pounds of emissions from all coating operations (combined) per day, as calculated using procedures in this permit to estimate TAP emissions, or as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference method, or DEQ-approved alternative.
- b) Dicyclohexylmethane 4,4'-Diisocyanate (H12MDI), regulated as methylene bis (4-cyclohexyl isocyanate). The screening emission rate was developed based upon the results of modeling analyses.
- c) MDI-based TAP for the purposes of Permit Condition 2.13.

2.15 Demonstrate Daily Emission Limits Compliance

For each Daily Adhesive and Coating Material Usage Scenario, emissions from adhesive and coating materials shall be estimated, summed, and compared against the Daily Emission Limits in Table 2.2:

- PM₁₀/PM_{2.5} emissions shall be estimated by multiplying each coating maximum daily coating usage rate (gal/day) by the solids content (lb/gal) of that coating, and summing the total emissions from all coatings (lb/day). Emissions may also be multiplied by one minus the transfer efficiency and by one minus the filter control efficiency when control equipment will be applied to such emissions. Emissions from isocyanate-based "iso" coating materials (Table 2.6) used in 2-part urethane systems may be multiplied by 15% to account for material applied, consumed in the reaction, and captured by filtration.
- VOC emissions shall be estimated by multiplying each coating maximum daily coating usage rate (gal/day) by the VOC content (lb/gal) for that coating material, and summing the total emissions from all coating materials (lb/day).
- HAP emissions shall be estimated by multiplying each coating maximum daily coating usage rate (gal/day) by the HAP content (lb/gal) for each coating material, and summing the total emissions from all coating materials (lb/day).
- For solids content, VOC content, and HAP content, if a range is presented on the SDS for a coating, the highest value of the range shall be used when estimating emissions.
- When the solids content, VOC content, or HAP content is listed as below detection on SDS or other documentation, the HAP content shall be assumed equal to the coating density divided by 100 (i.e., 1% of density in lb/gal) when estimating emissions.
- When the solids content, VOC content, or HAP content cannot be determined from SDS or other documentation, the content shall be assumed equal to the density of the coating (lb/gal) when estimating emissions.

Daily limit for HAPs seems overly restrictive given the tons/yr. applicable limit and estimated <5 tons emissions/yr. When using an Alternate Daily Coating Scenario the HAPs limit should be a rolling 12-month limit rather than a daily limit. See comment below and 2.19 below.

When using an Alternate Daily Coating Scenario the HAPs limit should be a rolling 12-month limit rather than a daily limit. See comment above and 2.19 below.

- The permittee shall compare estimated emissions for all coating materials against the Daily Emission Limits in Table 2.2. The permittee shall not use or implement any Scenario that exceeds any Daily Emission Limits.

Monitoring, Recordkeeping, and Reporting Requirements

2.16 Odor Complaints

The permittee shall maintain records of all odor complaints received to demonstrate compliance with the Odors limit. The permittee shall take appropriate corrective action as expeditiously as practicable. The records shall include, at a minimum, the date each complaint was received and a description of the following: the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.

2.17 Adhesive and Coating Material Purchases and Safety Data Sheets

For each adhesive and coating material used at the facility, including but not limited to thinners, solvents, and adhesives, the permittee shall record and maintain the following records:

- Material purchase records
- Safety Data Sheets (SDS)

2.18 Daily Adhesive and Coating Material Usage

Each calendar day on which adhesive and coating materials are used, the permittee shall collect and maintain records of the quantity of each material used, including but not limited to thinners, solvents, and adhesives to demonstrate compliance with Approved and Alternate Daily Coating Usage Limits.

2.19 Monthly Adhesive and Coating Material Usage

Each calendar month in which adhesive and coating materials are used, the permittee shall record the monthly and rolling 12-month quantity of each material used, including but not limited to thinners, solvents, and adhesives.

- If no Alternate Daily Adhesive and Coating Material Usage Scenarios were used in the 12-month period, the 12-month usage rates shall be compared against the Approved Annual Adhesive and Coating Material Usage Limits.
- If Alternate Daily Adhesive and Coating Material Usage Scenarios were used in the 12-month period, emissions from all adhesive and coating materials shall be estimated on a rolling 12-month basis, summed, and compared against Annual Emission Limits using estimation procedures described in the Propose a Daily Adhesive and Coating Material Usage Scenario permit condition.
- Exceedances of Approved Annual Adhesive and Coating Material Usage Limits, Daily Emission Limits, or Annual Emission Limits shall be treated as an excess emission event, and the permittee shall report these in accordance with the excess emission procedures and requirements provided in the General Provisions of this permit.

TAP emissions need not be estimated on monthly or annual basis to assure compliance. We request that TAPs not be included in this requirement. PM, VOC and HAP are appropriate. Given this permit condition estimating and recording PM, VOCs, and HAPs monthly emissions and compared against an annual standard, we request that the daily emission PM, VOCs, and HAPs calculations required in 2.15 be deleted.

2.20 Alternate Daily Adhesive and Coating Material Usage Scenarios

Each calendar day on which an alternate adhesive and coating material usage scenario will be used, the permittee shall select and record the Daily Adhesive and Coating Material Usage Scenario that will be used for that day, and comply with the maximum daily coating usage limits specified for the selected Scenario.

- Only one Scenario may be used each calendar day.
- The permittee shall not exceed any daily coating usage limit for the Scenario chosen for that calendar day.
- The permittee shall maintain documentation such as coating material SDS, manufacturer's specification sheets that support filter control efficiencies, transfer efficiencies, capture efficiencies, and other engineering assumptions relied upon in emission calculations.

2.21 Alternate Adhesive and Coating Material Usage Scenario Reporting

Each year, for Scenarios that have not already been approved, the permittee shall submit a report by May 1st on all unapproved Adhesive and Coating Material Usage Scenarios used each calendar day during the previous 365-day period. The report shall include documentation supporting the TAP compliance demonstrations and the Daily Emission Limits compliance demonstrations relied upon for each Adhesive and Coating Material Usage Scenario.

Documentation should be in sufficient detail, including documentation of all calculations, such that DEQ can verify the analysis. The report shall be titled "Permit-Required TAP Compliance Report" and shall be sent to:

DEQ State Office
Air Quality Division
1410 N. Hilton
Boise, ID 83706

3 General Provisions

General Compliance

- 3.1 The permittee has a continuing duty to comply with all terms and conditions of this permit. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the "Rules for the Control of Air Pollution in Idaho." The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit, the "Rules for the Control of Air Pollution in Idaho," and the Environmental Protection and Health Act (Idaho Code §39-101, et seq).
[Idaho Code §39-101, et seq.]
- 3.2 The permittee shall at all times (except as provided in the "Rules for the Control of Air Pollution in Idaho") maintain in good working order and operate as efficiently as practicable all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.
[IDAPA 58.01.01.211, 5/1/94]
- 3.3 Nothing in this permit is intended to relieve or exempt the permittee from the responsibility to comply with all applicable local, state, or federal statutes, rules, and regulations.
[IDAPA 58.01.01.212.01, 5/1/94]

Inspection and Entry

- 3.4 Upon presentation of credentials, the permittee shall allow DEQ or an authorized representative of DEQ to do the following:
- Enter upon the permittee's premises where an emissions source is located, emissions-related activity is conducted, or where records are kept under conditions of this permit;
 - Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
 - Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
 - As authorized by the Idaho Environmental Protection and Health Act, sample or monitor, at reasonable times, substances or parameters for the purpose of determining or ensuring compliance with this permit or applicable requirements.
- [Idaho Code §39-108]

Construction and Operation Notification

- 3.5 This permit shall expire if construction has not begun within two years of its issue date, or if construction is suspended for one year.
[IDAPA 58.01.01.211.02, 5/1/94]
- 3.6 The permittee shall furnish DEQ written notifications as follows:
- A notification of the date of initiation of construction, within five working days after occurrence; except in the case where pre-permit construction approval has been granted then notification shall be made within five working days after occurrence or within five working days after permit issuance whichever is later;
 - A notification of the date of any suspension of construction, if such suspension lasts for one year or more; and

- A notification of the initial date of achieving the maximum production rate, within five working days after occurrence - production rate and date. [IDAPA 58.01.01.211.01, 5/1/94]
- A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date; and
- A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date. [IDAPA 58.01.01.211.03, 5/1/94]

Performance Testing

- 3.7 If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.
- 3.8 All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.
- 3.9 Within 60 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol. [IDAPA 58.01.01.157, 4/5/00 and 4/11/15]

Monitoring and Recordkeeping

- 3.10 The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Monitoring records shall include, but not be limited to, the following: (a) the date, place, and times of sampling or measurements; (b) the date analyses were performed; (c) the company or entity that performed the analyses; (d) the analytical techniques or methods used; (e) the results of such analyses; and (f) the operating conditions existing at the time of sampling or measurement. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes, but is not limited to, all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. All records required to be maintained by this permit shall be made available in either hard copy or electronic format to DEQ representatives upon request. [IDAPA 58.01.01.211, 5/1/94]

Excess Emissions

- 3.11 The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130–136 for excess emissions due to start-up, shut-down, scheduled maintenance, safety measures, upsets, and breakdowns.

[IDAPA 58.01.01.130–136, 4/5/00]

Certification

- 3.12 All documents submitted to DEQ—including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certification—shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

[IDAPA 58.01.01.123, 5/1/94]

False Statements

- 3.13 No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under this permit or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.125, 3/23/98]

Tampering

- 3.14 No person shall knowingly render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.126, 3/23/98]

Transferability

- 3.15 This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.209.06.

[IDAPA 58.01.01.209.06, 4/11/06]

Severability

- 3.16 The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[IDAPA 58.01.01.211, 5/1/94]

Statement of Basis

**Permit to Construct No. P-2019.0009
Project ID 62183**

**Maravia Corporation of Idaho
Boise, Idaho**

Facility ID 001-00361

Draft for Facility Review

DRAFT XX, 2019

**Morrie Lewis
Permit Writer**

**The purpose of this Statement of Basis is to satisfy the requirements of
IDAPA 58.01.01, et seq, Rules for the Control of Air Pollution in Idaho,
for issuing air permits.**

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
BRC	below regulatory concern for criteria pollutants as provided in IDAPA 58.01.01.221.01 or for TAP as provided in IDAPA 58.01.01.223.01
Btu/hr	British thermal units per hour
CAA	Clean Air Act
CAS No.	Chemical Abstracts Service registry number
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gr/dscf	grains (1 lb = 7,000 grains) per dry standard cubic feet
H12MDI	Dicyclohexylmethane-4,4' Diisocyanate, or Methylene Bis (4-Cyclohexyl Isocyanate)
HAP	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
Maravia	Maravia Corporation of Idaho
MDI	4,4'-Diphenylmethane Diisocyanate, or Methylene Diphenyl Diisocyanate
MDI-based	MDI- or H12MDI-containing material
mg/m ³	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O ₂	oxygen
PAH	polycyclic aromatic hydrocarbons
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	<i>Rules for the Control of Air Pollution in Idaho</i>
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
T/yr	tons per consecutive 12-calendar-month period
TAP	toxic air pollutants
VOC	volatile organic compounds
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Maravia Corporation of Idaho (Maravia) operates an existing inflatable boat manufacturing facility at 602 E. 45th Street in Boise, Idaho. At this facility cleaning, cutting, gluing, and spray coating operations are conducted on polyvinyl chloride (PVC) boat fabrics in the manufacture and repair of inflatable boats. Particulate matter (PM) emissions are controlled by the use of spray booth filtration systems. Five natural gas-fired heaters provide indirect heating.

Permitting History

This is the initial PTC for an existing facility that was constructed in December, 1994 thus there is no permitting history.

Application Scope

This permit is the initial PTC for this facility.

The applicant has proposed to increase cleaning, cutting, gluing, and spray coating operations to accommodate growth.

Application Chronology

February 13, 2019	DEQ received an application and an application fee.
February 19 – March 6, 2019	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
March 15, 2019	DEQ determined that the application was incomplete.
April 10, 2019	DEQ received supplemental information from the applicant.
April 18, 2019	DEQ received supplemental information from the applicant, including updates to the process weight rate PM compliance demonstration.
April 22, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 22, 2019	DEQ determined that the application was complete.
June 18, 2019	DEQ made available the draft permit and statement of basis for applicant review.
June XX, 2019	DEQ received the permit processing fee.
June XX, 2019	DEQ issued the final permit and statement of basis.

Request deleting word "enclosed" since it could imply that operations can only be conducted with doors always closed. Since volatile TAP emission analyses from these operations assumed 100% emission, since PM emissions are very low relative to BRC and have not been historically observed emitting from the building, this "enclosed" basis is not required.

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source	Control Equipment
Hot-knife cutting operations	<u>Reasonable control of fugitive emissions</u> Cutting operations are conducted within an enclosed building.
Cleaning operations	<u>Reasonable control of fugitive emissions</u> Cleaning solvents are hand-applied within an enclosed building.
Gluing operations	<u>Reasonable control of fugitive emissions</u> Glue adhesives are hand-applied within an enclosed building.
<u>Spray booth and Heater 1</u> Manufacturer: Dayton or equivalent ^(a) Model: unknown ^(a) Burner manufacturer: Mestek Intertek or equivalent ^(a) Burner model: TF/BTU150 or equivalent ^(a) Maximum capacity: 150,000 Btu/hr Fuel: natural gas Date of installation: 1998 Maximum operation: as limited by Emission Limits and Operating Requirements	Coatings are spray-applied within the spray booth enclosure. The booth heater is used for seasonal heating of inlet air. <u>Spray booth filter system</u> Particulate filtration method: dry filters Manufacturer: Paint Arrestors ^(a) Model: RP or equivalent ^(a) PM Control Efficiency: 90% or greater
<u>Spray guns</u> Manufacturer: Graco or equivalent ^(a) Model: 288420 or Silver Tip Plus airless, or equivalent ^(a) Maximum operation: as limited by Emission Limits and Operating Requirements	<u>Spray guns</u> Type: reduced pressure (RP) or equivalent ^(a) Transfer Efficiency: 40% or greater
<u>Heater 2</u> Manufacturer: Evaporator or equivalent ^(a) Model: BVR23 ^(a) Maximum capacity: 24,000 Btu/hr Fuel: natural gas Date of installation: (unknown)	Heaters are used for seasonal indirect heating needs. None
<u>Heater 3</u> Manufacturer: Evaporator or equivalent ^(a) Model: BVR22 36-CYN18 NTF ^(a) Maximum capacity: 36,000 Btu/hr Fuel: natural gas Date of installation: (unknown)	None
<u>Heater 4 and Heater 5</u> Manufacturer: Lennox or equivalent ^(a) Model: LF24-250A-5 ^(a) Maximum capacity: 150,000 Btu/hr each (500,000 Btu/hr combined) Fuel: natural gas Date of installation: April 2013	None

a) "or equivalent" equipment is equipment which has equivalent or less maximum capacity and equivalent or lower pollutant emission rates, whether calculated based on maximum design capacity or based on established permit limits. Use of replacement equipment shall not result in the emission of any regulated air pollutant not previously emitted, and shall not result in an emission increase as defined in IDAPA 58.01.01.007.

Respectfully, Maravia disagrees that requiring all building doors remain closed is a reasonable requirement. Maravia operations and equipment rely on the ability to open doors for irregular periods to moderate temperatures and ease work-flow of materials in and out. This is very important to Maravia.

Emission Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit (PTE) as the maximum amount of a pollutant that can be emitted from the facility or source under any combination of circumstances, including normal operation or on the type or amount of production, or the design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

While a safety inspector did monitor nuisance dust and recommended use of respirators, the dust levels were near minimum thresholds requiring respirator use. In addition, the recommendation did not extend to workers at other nearby and more distant areas, suggesting that air away from the operation near open doors is not likely to contain and emit significant PM. In addition, the paragraph confirms that PM "is not expected to exceed regulatory concern thresholds." Standard fugitive dust prohibitions can address this concern without a specific doors-closed 24/7 requirement.

Using this definition of Potential to Emit, emission inventories were developed for cutting, cleaning, gluing, and spray coating operations and indirect heating at the boat manufacturing facility (see Appendix A). Estimates of criteria pollutant, hazardous air pollutant (HAP), and toxic air pollutant (TAP) potential to emit (PTE) were based on natural gas combustion emission factors from AP-42,¹ adhesive and coating material formulation data from safety data sheets (SDS), manufacturer specification sheets for spray booth filtration, and daily and annual usage limits and formulation requirements (Permit Conditions 2.10 and 2.11) for this proposed project.

Reliable emission factors could not be obtained for manual hot-knife cutting operations, but based on the nature and frequency of such operations, the contribution of emissions is not expected to cause PM emissions to exceed regulatory concern thresholds. However, because respiratory protection is recommended for such operations, a reasonable requirement was established to keep building doors closed during such operations (Permit Condition 2.9).

Post-Project Potential to Emit

Post-project PTE is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post-project PTE includes all permit limits resulting from this project.

The following table presents the post-project PTE for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 POST-PROJECT PTE FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Heaters 1-5	0.005	0.033	0.0005	0.003	0.07	0.30	0.06	0.26	0.004	0.02
Cutting, cleaning, gluing, and spray coating	1.33	< 0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.0
Post-Project Totals	1.34	< 0.68	0.001	0.002	0.07	0.30	0.06	0.26	0.004	19.02
BRC thresholds ^(c)		1.0		4.0		4.0		10.0		4.0

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
 b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

With the exception of volatile organic compounds (VOC), facility-wide emission rates of criteria pollutants (PM_{2.5}, PM₁₀, SO₂, NO_x, CO, and Pb) were below the "below regulatory concern" (BRC) threshold levels of less than 10% of "significant" emission rates for criteria pollutants defined in IDAPA 58.01.01.006.

TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic and carcinogenic toxic air pollutants (TAP) is provided in the following table.

¹ Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Fifth Edition (AP-42), Tables 1.4-1, 1.4-2, 1.4-3 and 1.4-4 in Section 1.4 - Natural Gas Combustion, Office of Air Quality Planning and Standards Office of Air and Radiation (OAQPS), EPA, July 1998.

Table 3 POST-PROJECT POTENTIAL TO EMIT TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutant (24-hr Average)	Emission Increase (lb/hr)	Screening Emission Level (lb/hr)	Exceeds TAP EL? (Yes/No)
Acetone	1.30E+00	1.19E+02	No
Barium	3.06E-06	3.30E-02	No
Butyl Acetate	1.91E+00	4.73E+01	No
Carbon Black	6.93E-03	2.30E-01	No
Chromium	9.75E-07	3.30E-02	No
Cobalt	5.85E-08	3.30E-03	No
Copper	5.92E-07	6.70E-02	No
Dichlorobenzene	8.35E-07	2.00E+01	No
Ethyl Acetate	8.78E+00	9.33E+01	No
Manganese	2.65E-07	6.70E-02	No
4,4'-Diphenylmethane Diisocyanate (MDI) [Methylene Diphenyl Diisocyanate]	2.93E-03	3.00E-03	No
Dicyclohexylmethane-4-4' Diisocyanate (H12MDI) [Methylene bis(4-cyclohexyl isocyanate)]	7.97E-02	7.00E-03	Yes
Mercury	1.81E-07	3.00E-03	No
Methyl ethyl ketone	1.34E+01	1.93E+01	No
Molybdenum	7.66E-07	3.33E-01	No
Naphthalene	4.25E-07	3.33E+00	No
Selenium	1.67E-08	1.30E-02	No
Toluene	1.30E+00	2.50E+01	No
Vanadium, as V ₂ O ₅	1.60E-06	3.00E-03	No
Zinc	2.02E-05	6.67E-01	No
Carcinogenic Toxic Air Pollutant (Annual Average)	Emission Increase (lb/hr)	Screening Emission Level (lb/hr)	Exceeds TAP EL? (Yes/No)
Arsenic	1.4E-07	1.5E-06	No
Benzene	1.5E-06	8.0E-04	No
Beryllium	8.4E-09	2.8E-05	No
Cadmium	7.7E-07	3.7E-06	No
Formaldehyde	5.2E-05	5.1E-04	No
3-Methylchloranthene	1.3E-09	2.5E-06	No
Nickel	1.40E-06	2.7E-05	No
Polycyclic Aromatic Hydrocarbon (PAH) ^(a)	4.7E-07	9.1E-05	No
Polycyclic Organic Matter (7-PAH Group) ^(a,b)	7.9E-09	2.0E-06	No

a) Polycyclic aromatic hydrocarbons (PAH). Value represents the maximum individual emission rate of all PAH emitted.
 b) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

With the exception of dicyclohexylmethane-4-4' diisocyanate (H12MDI), all TAP emission increases rates were below screening emission levels (EL) as a result of this project. Therefore, modeling was required for H12MDI because the annual average carcinogenic screening EL identified in IDAPA 58.01.01.586 was exceeded. Modeling was not required for any non-carcinogenic TAP because none of the 24-hour average non-carcinogenic screening EL identified in IDAPA 58.01.01.585 were exceeded.

Post-Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutant	PTE (T/yr)
Arsenic	6.1E-07
Benzene	6.4E-06
Beryllium	3.7E-08
Cadmium	3.4E-06
Chromium	4.3E-06
Cobalt	2.6E-07
Dichlorobenzene	3.7E-06
Formaldehyde	2.3E-04
Hexane	5.5E-03
4,4'-Diphenylmethane Diisocyanate (MDI) [Methylene Diphenyl Diisocyanate]	7.5E-02
Lead	1.5E-06
Manganese	1.2E-06
Mercury	7.9E-07
Naphthalene	1.9E-06
Nickel	6.4E-06
PAH ^{a)}	2.1E-06
Selenium	7.3E-08
Toluene	3.1E-06
TOTAL	3.2

a) Total of all PAH.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM₁₀, PM_{2.5}, SO₂, NO_x, CO, VOC, and TAP with the exception of HDMI from this project were below applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline.²

Facility-wide emission rates of criteria pollutants (PM_{2.5}, PM₁₀, SO₂, NO_x, CO, and Pb) were below the “below regulatory concern” (BRC) threshold levels of less than 10% of “significant” emission rates for criteria pollutants defined in IDAPA 58.01.01.006, and therefore modeling was not required.²

The estimated emission rates of HI2MDI were above applicable EL and required modeling to demonstrate compliance with the corresponding acceptable ambient concentration for carcinogen (AACC). Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ’s satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ’s satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or AACC for TAP.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

² Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011 (September 2013), criteria pollutant BRC thresholds as provided in IDAPA 58.01.01.221.01, and DEQ guidance pertaining to BRC (2009ACF12).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Ada County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 5 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	< 0.68	100	B
PM ₁₀ /PM _{2.5}	< 0.68	100	B
SO ₂	0.002	100	B
NO ₂	0.30	100	B
CO	0.26	100	B
VOC	19.02	100	B
HAP (single)	3.1E+00	10	B
HAP (Total)	3.2	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to this existing facility to account for proposed modifications to operations. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400-410 were not applicable to this permitting action.

Particulate Matter – Fuel-Burning Equipment (IDAPA 58.01.01.675-681)

In accordance with IDAPA 58.01.01.677, PM shall be limited to 0.015 gr/dscf corrected to 3% oxygen concentration for natural gas-fired fuel-burning equipment with a maximum rated input of less than 10 million Btu/hr.

This requirement was incorporated in Permit Condition 2.6. This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The heaters (Heaters 1-5) are used for the primary purpose of producing heat by indirect heat transfer.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post-project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for criteria pollutants (i.e., PM_{2.5}, PM₁₀, SO₂, NO_x, CO, VOC, and Pb) or 10 tons per year for any one HAP or 25 tons per year for all HAP combined, as demonstrated previously in the Emission Inventories section. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

As presented in the preceding tables (Table 4 and Table 5) the PTE for each criteria pollutant is less than 100 T/yr, the PTE for each HAP is less than 10 T/yr, and the PTE for all HAP combined is less than 25 T/yr. Therefore, this facility is not a Tier I source subject to Tier I requirements.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

The facility is not subject to any New Source Performance Standard (NSPS) requirements 40 CFR Part 60. See Appendix C for additional information regarding NSPS regulatory analyses.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements in 40 CFR 61. See Appendix C for additional information regarding NESHAP regulatory analyses.

MACT/GACT Applicability (40 CFR 63)

The facility is not subject to any Maximum Achievable Control Technology (MACT) standards in 40 CFR Part 63. See Appendix C for additional information regarding NESHAP regulatory analyses.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Permit Conditions 1.1 and 1.2

These permit conditions describe the scope of this permitting action, and the emission sources and control equipment regulated by this permit.

Permit Conditions 2.1 and 2.2

These permit conditions describe the cutting, cleaning, and gluing operations and associated control equipment used in the manufacturing and repair of inflatable boats.

Permit Conditions 2.3 and 2.4

These permit conditions establish daily and annual emission limits corresponding to the usage rates for adhesive and coating materials as proposed by the applicant. These emission rates were relied upon in estimating PM_{2.5}, PM₁₀, VOC, and dicyclohexylmethane-4,4'-diisocyanate (H12MDI) emissions, and were relied upon to limit criteria pollutant emissions below regulatory concern and TAP emissions below screening emission levels, with the exception of H12MDI. The H12MDI emission limit was established based on modeling analyses as described in the Ambient Air Quality Impact Analyses section, in accordance with IDAPA 58.01.01.210.08.

Compliance is assured by complying with operating requirements (Permit Conditions 2.8-2.15), including use of control equipment (Permit Condition 2.8), and compliance with either approved or alternate daily adhesive and coating material usage scenarios (Permit Conditions 2.10 and 2.11, or 2.12 through 2.15).

Permit Conditions 2.5 and 2.16

These permit conditions incorporate odor emission limits in accordance with IDAPA 58.01.01.775-776.

Compliance is assured by monitoring and responding to all odor complaints received. This was required because adhesives and coatings are expected to have odors that might be offensive to immediate neighbors.

Permit Condition 2.6

This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The heaters (Heaters 1-5) are used for the primary purpose of producing heat by indirect heat transfer.

Permit Condition 2.7

This permit condition incorporates opacity limits for spray booth and heating unit stacks in accordance with IDAPA 58.01.01.625.

Permit Condition 2.8

This permit condition establishes control equipment requirements for spray application of adhesive and coating materials as specified by the applicant.

Any period of time that spray application of adhesives or coating materials is conducted outside of the spray booth or while the filtration system is not running shall be reported as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

This paragraph is not applicable to Permit Condition 2.8. Closed-building conditions are not necessary to assure compliance for spray booth emissions. ¹

~~Any period of time that cutting, cleaning, or gluing operations are conducted and building doors are open should be treated as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.~~

Particulate matter emissions, including emissions of particulate TAP, rely upon filtration control equipment to ensure that facility-wide emissions remain below regulatory concern and particulate TAP increments, as described in the Emission Inventories and Ambient Air Quality Impact Analyses sections.

Permit Condition 2.9

This permit condition incorporates fugitive emission requirements in accordance with IDAPA 58.01.01.650-651.

Any period of time that spray application of adhesives or coating materials is conducted outside of the spray booth or while the filtration system is not running shall be reported as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

~~Any period of time that cutting, cleaning, or gluing operations are conducted and building doors are open should be treated as if it were an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.~~

Permit Conditions 2.10 and 2.11, 2.12 through 2.15, and 2.17 through 2.21

These permit conditions establish approved daily and annual usage limits for adhesives and coatings as proposed by the applicant and to ensure compliance with emission limits. To allow for the introduction of new or reformulated adhesives and coatings, alternate daily usage limits were also established as a compliance option available to be used in lieu of previously-approved limits. Alternate scenarios should only be used after already determining they will comply with all daily and annual emission limits in the permit.

Compliance is assured by monitoring, recordkeeping, and reporting (MRR) requirements, including:

- Recordkeeping of all adhesive and coating material purchases and SDS.
- Daily and monthly monitoring and recordkeeping of usage rates of all adhesive and coating materials.
- Daily monitoring and recordkeeping, and annual reporting of all alternate daily adhesive and coating material usage scenarios used.
- Reporting of any excess emissions.

These operating limits were used in developing TAP, HAP, and criteria pollutant emission inventories resulting from cleaning, cutting, gluing, and spray coating operations; were relied upon to limit criteria pollutant emissions to BRC; were relied upon to demonstrate compliance with TAP EL; and were relied upon in evaluating ambient impacts of H12MDI emissions. Refer to the Emission Inventories and Ambient Air Quality Impact Analyses sections for additional information.

General Provision 3.1

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

General Provision 3.2

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

General Provision 3.3

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Maravia operations and equipment rely on the ability to open doors for irregular periods to moderate temperatures and ease work-flow of materials in and out. This is very important to Maravia, particularly since the PTC application already conservatively assumes that TAPs, HAPs, and PM from all operations, including cleaning, hot-knife cutting and gluing, are emitted to outdoor ambient air and comply with regulatory requirements. The additional closed-building requirement is not necessary to assure compliance. ⁵

General Provision 3.4

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

General Provision 3.5

The permit expiration construction and operation provision specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

General Provision 3.6

The notification of construction and operation provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

General Provision 3.7

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

General Provision 3.8

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

General Provision 3.9

The performance test report provision requires that the permittee report any performance test results to DEQ within 60 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

General Provision 3.10

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

General Provision 3.11

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

General Provision 3.12

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

General Provision 3.13

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

General Provision 3.14

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

General Provision 3.15

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

General Provision 3.16

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Morrie Lewis

From: Mark Torf <mtorf@torf.us>
Sent: Wednesday, July 03, 2019 11:59 AM
To: Morrie Lewis
Cc: Angela Sherman
Subject: Additional Comments Re: Maravia Corporation of Idaho, Project No. PP-2019.0009 PROJ 62183.FD.PMT2 facility draft
Attachments: Comment_P-2019.0009 PROJ 62183.FD.PMT2.pdf

Hi Morrie,

Thank you for your consideration and revisions based on our comments. In accordance with our telephone conversation today, we request an additional revision—removing PM and VOCs from *Section 2.15 Demonstrate Daily Limits Compliance* and clarifying these changes in the record keeping requirements of *Section 2.19 Daily Adhesive and Coating Material Use*.

Similar to HAPs removed from *Section 2.15 Demonstrate Daily Limits Compliance* and added to the new *Section 2.16 Demonstrate Annual Limits Compliance*, the applicable standards for PM are Below Regulatory Concern (BRC) annual limits—PM-2.5 t/yr, PM10-1.5 t/yr, and PM2.5-1 t/yr. The PTC Application demonstrates that PM/PM10/PM2.5 are well below BRC and, consequently, were neither modeled nor subject to an hourly or daily limit. Since there are no applicable hourly or daily PM/PM10/PM2.5 limits to use in Section 2.15, Section 2.16 is appropriate and sufficient to assure compliance.

In addition, since VOCs are not modeled the applicable limit would be 100 tons/yr. The PTC Application demonstrates that VOCs are well below this threshold. Similar to HAPs and PM, VOCs were neither modeled nor subject to an hourly or daily limit. Since there are no applicable hourly or daily VOC limits to use in Section 2.15, Section 2.16 is appropriate and sufficient to assure compliance.

In order to reflect the revisions described above, we request that *Section 2.19 Daily Adhesive and Coating Material Use* be modified to clarify that TAPs are to be recorded daily and compared with Daily TAP screening emission rates; and that other emissions (PM, VOCs, HAPs) be recorded daily and compared to Annual Emission Limits.

The comments described above are shown in the attached document. Since a revised Draft SOB was not provided, no specific comments are submitted today. We assume that any revisions in the Draft Permit will be reflected in the SOB.

Again, thank you for your consideration of these comments. Please feel free to contact me to discuss.

Mark

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APPENDIX D – NSPS & NESHAP REGULATORY APPLICABILITIES

7. FEDERAL REGULATION APPLICABILITY – FORM FRA DOCUMENTATION

7.1 New Source Performance Standards (40 CFR 60)

EPA has established New Source Performance Standards (NSPS) for new, modified, or reconstructed facilities and source categories. No Maravia facility equipment or processes have potentially applicable NSPS subparts.

7.2 National Emission Standards for Hazardous Air Pollutants (40 CFR 63)

EPA has established National Emission Standards for Hazardous Air Pollutants (NESHAP) for new, modified, or reconstructed facilities and source categories. The following NESHAP Subparts were evaluated for applicability to this project.

7.2.1 NESHAP Subpart MMMM Regulatory Review

The manufacturing of inflatable boats at Maravia is not covered under NESHAP Subpart MMMM.

40 CFR Part 63, Subpart MMMM NESHAP: Surface Coating of Miscellaneous Metal Parts and Products

A miscellaneous metal parts and products surface coating facility is any facility engaged in the surface coating of any miscellaneous metal part or product and affects a facility that is a major source, or is located at a major source, or is part of a major source of HAP emissions. Since Maravia does not coat metal parts or products, is not a major source, and is not a major source of HAP emissions, this subpart does not apply to Maravia.

7.2.2 NESHAP Subpart HHHHHH Regulatory Review

The manufacturing of inflatable boats at Maravia is not covered under NESHAP Subpart HHHHHH.

40 CFR Part 63, Subpart HHHHHH NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

Subpart HHHHHH establishes national emission standards for hazardous air pollutants (HAP) for area sources involved in auto body refinishing operations that encompass motor vehicle and mobile equipment spray-applied surface coating operations. Since Maravia does not coat motor vehicles or mobile equipment, this subpart does not apply to Maravia.

7.2.3 NESHAP Subpart XXXXXX Regulatory Review

The manufacturing of inflatable boats at Maravia is not covered under NESHAP Subpart XXXXXX.

40 CFR Part 63, Subpart XXXXXX NESHAP: National Emission Standards For Hazardous Air
Pollutants Area Source Standards for Nine Metal
Fabrication and Finishing Source Categories

Subpart XXXXXX establishes national emission standards for HAP for area sources involved in one of the nine source categories listed in paragraphs (a)(1) through (9) of this section.

- (1) Electrical and Electronic Equipment Finishing Operations;
- (2) Fabricated Metal Products;
- (3) Fabricated Plate Work (Boiler Shops);
- (4) Fabricated Structural Metal Manufacturing;
- (5) Heating Equipment, except Electric;
- (6) Industrial Machinery and Equipment Finishing Operations;
- (7) Iron and Steel Forging;
- (8) Primary Metal Products Manufacturing; and
- (9) Valves and Pipe Fittings.

Maravia operations, manufacturing of inflatable boats, is not included in the 9 manufacturing subcategories. Since Maravia operations do not include manufacturing these types of products, Maravia is not engaged in primary metal products manufacturing subject to Subpart XXXXXX.

APPENDIX E – ADHESIVE AND COATING MATERIAL SAFETY DATA SHEETS

Safety Data Sheet
acc. to OSHA HCS

Printing Date 04/29/2015

Revision Number 1

Revision Date 04/29/2015

1 Identification

- **Product identifier**
- **Trade name:** *CATUR*
- **Relevant identified uses of the substance or mixture.** *Adhesive*
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Royal Adhesives & Sealants, LLC
Aerospace & Marine Inflatable Adhesives & Coatings Division
48 Burgess Place
Wayne, NJ 07470
Information Phone Number: 973-694-0845
Emergency Phone Number: 973-694-0845
- **Information department:** *Environment protection department.*
- **Emergency telephone number:**
ChemTrec: Day or Night within USA and Canada: 1-800-424-9300.
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

- **Label elements**

• **GHS label elements** *The product is classified and labeled according to the Globally Harmonized System (GHS).*

- **Hazard pictograms**



GHS07



GHS08

- **Signal word** *Danger*

- **Hazard statements**

Harmful if inhaled.

Causes skin irritation.

Causes serious eye irritation.

(Contd. on page 2)

USA

Safety Data Sheet

acc. to OSHA HCS

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Trade name: **CATUR**

(Contd. of page 1)

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

May cause respiratory irritation.

• **Precautionary statements**

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Wear respiratory protection.

Avoid breathing dust/fume/gas/mist/vapors/spray

Wear protective gloves.

Wear eye protection / face protection.

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Specific treatment (see on this label).

If experiencing respiratory symptoms: Call a poison center/doctor.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Call a poison center/doctor if you feel unwell.

Wash contaminated clothing before reuse.

If skin irritation or rash occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

If on skin: Wash with plenty of water.

Take off contaminated clothing and wash it before reuse.

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local/regional/national/international regulations.

• **Classification system:**

• **NFPA ratings (scale 0 - 4)**



Health = 2

Fire = 1

Reactivity = 1

• **HMIS-ratings (scale 0 - 4)**



Health = *2

Fire = 1

Physical Hazard = 1

• **Other hazards**

• **Results of PBT and vPvB assessment**

• **PBT:** Not applicable.

• **vPvB:** Not applicable.

3 Composition/information on ingredients

• **Chemical characterization: Mixtures**

• **Description: Adhesive**

• **Hazardous components:**

9016-87-9	diphenylmethanediisocyanate, isomeres and homologues	50-100%
101-68-8	4,4'-methylenediphenyl diisocyanate	25-50%

(Contd. on page 3)

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acc. to OSHA HCS

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Trade name: CATUR

(Contd. of page 2)

• **Additional information:**

All concentrations are in percent by weight unless the ingredient is a gas. Gas concentrations are in percent by volume. Any pigments or fillers in this product which may be considered "Hazardous" are potentially hazardous only if inhaled as an airborne dust. Exposure by these ingredients as used in sealants, putties, bedding compounds and non-sprayable products is highly unlikely. For the wording of the listed risk phrases refer to section 15.

* **4 First-aid measures**

• **Description of first aid measures**

• **After inhalation:**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably in side position for transportation.

• **After skin contact:**

Wipe excess from skin.

Immediately wash with water and soap and rinse thoroughly.

• **After eye contact:** Rinse opened eye for 20 minutes under running water. Call a Doctor immediately.

• **After swallowing:**

Rinse out mouth with water. Drink 1 - 2 glasses of water but DO NOT induce vomiting. Do not give liquids to a drowsy, convulsing or unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Seek medical treatment.

• **Information for doctor:**

• **Most important symptoms and effects, both acute and delayed** No further relevant information available.

• **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

* **5 Fire-fighting measures**

• **Extinguishing media**

• **Suitable extinguishing agents:**

CO₂, extinguishing powder or water spray. Fight larger fires with water spray.

Use fire fighting measures that suit the environment.

• **Special hazards arising from the substance or mixture** No further relevant information available.

• **Advice for firefighters** Use water spray to cool fire exposed containers.

• **Protective equipment:** Protective clothing and respiratory protective device.

* **6 Accidental release measures**

• **Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

• **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.

• **Methods and material for containment and cleaning up:**

Use neutralizing agent.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose of contaminated material as waste in accordance with federal state and local regulations.

Ensure adequate ventilation.

(Contd. on page 4)

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acc. to OSHA HCS

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Trade name: **CATUR**

(Contd. of page 3)

- **Reference to other sections**

Neutralization solutions:

1. A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

2. A mixture of 80% water, 20% non-ionic surfactant.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

- **Handling:**

- **Precautions for safe handling**

Avoid prolonged or repeated contact with skin.

Avoid contact with eyes.

Wash thoroughly after handling.

Open containers in a well ventilated area and avoid breathing headspace vapors.

Prevent formation of aerosols.

- **Information about protection against explosions and fires:** No special measures required.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**

- **Requirements to be met by storerooms and receptacles:** Store in a cool location away from direct heat.

- **Information about storage in one common storage facility:**

Store away from oxidizing agents.

Store away from water.

- **Further information about storage conditions:**

Store between 10C [50F] and 32C [90F].

Protect from humidity and water.

Protect product from freezing.

Protect from contamination.

Keep receptacle tightly sealed.

- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

101-68-8 4,4'-methylenediphenyl diisocyanate	
PEL	Ceiling limit value: 0.2 mg/m ³ , 0.02 ppm
REL	Long-term value: 0.05 mg/m ³ , 0.005 ppm
	Ceiling limit value: 0.2* mg/m ³ , 0.02* ppm *10-min
TLV	Long-term value: 0.051 mg/m ³ , 0.005 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**

- **Personal protective equipment (see listings below)**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

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Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• **Breathing equipment:**

Use approved respiratory protection equipment when airborne exposure is excessive. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer.

• **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

• **Material of gloves**

Chloroprene rubber, CR

Nitrile rubber, NBR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

• **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

• **Eye protection:**

Safety glasses with side shields.



Tightly sealed goggles

• **Body protection:**

Apron

Protective work clothing

9 Physical and chemical properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance:**

• Form:	<i>Liquid</i>
• Color:	<i>Not determined.</i>
• Odor:	<i>Characteristic</i>
• Odour threshold:	<i>Not determined.</i>

• **pH-value:** *Not determined.*

• **Change in condition**

• **Melting point:** *Undetermined.*

• **Boiling point:** *> 204 °C (> 399 °F)*

• **Flash point:** *Not applicable.*

• **Flammability (solid, gaseous):** *400 °C (752 °F)*

• **Ignition temperature:** *Not determined.*

• **Decomposition temperature:** *Product is not selfigniting.*

• **Auto igniting:**

Product is not selfigniting.

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· Danger of explosion:	Product does not present an explosion hazard.
· Flammable limits:	
Lower:	0.4 Vol %
Upper:	% by volume = 6.7
· Vapor pressure:	Not determined.
· Specific gravity at 20 °C (68 °F):	1.24 g/cm ³ (10.348 lbs/gal)
· Relative density	Not determined.
· Vapour density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	0.0 %
VOC (Per EPA 24)	not available GMS/L
· Other information	Weight Per Gallon 10.35 Lbs VOC/Gallon [less water, less exempts] 0 Grams VOC/Liter [less water, less exempts] 0

10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions**
Violent reaction with water at high temperatures.
MDI reacts slowly with water to form Carbon Dioxide gas. Reaction with water at high temperatures may be more severe. Avoid contact with bases, alcohols and amines.
- **Conditions to avoid Moisture**
- **Incompatible materials:**
May produce violent reactions with bases and numerous organic substances including alcohols and amines.
Reacts with oxidizing agents.
- **Hazardous decomposition products:**
Oxides of carbon and nitrogen.
Isocyanate

11 Toxicological information

- **Information on toxicological effects**
 - **Acute toxicity:**
 - **LD/LC50 values that are relevant for classification:**
- | | | |
|--|------|--------------------|
| 101-68-8 4,4'-methylenediphenyl diisocyanate | | |
| Oral | LD50 | 2200 mg/kg (mouse) |

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- **Primary irritant effect:**
- **on the skin:** Skin irritant.
- **on the eye:** May be severely irritating to the eyes.
- **Sensitization:**
Inhalation - Sensitization possible through inhalation.
Skin Contact - Sensitization possible through skin contact.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant
- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

9016-87-9	diphenylmethanediisocyanate, isomeres and homologues	3
101-68-8	4,4'-methylenediphenyl diisocyanate	3

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** At present there are no ecotoxicological assessments.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:** Must be specially treated adhering to official regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
- **DOT, ADR, ADN, IMDG, IATA** *not regulated*

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- | | |
|---|-----------------|
| · UN proper shipping name | |
| · DOT, ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · DOT, ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · DOT, ADR, IMDG, IATA | not regulated |
| · Environmental hazards: | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation": | - |

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity:**

None of the ingredients is listed.

· **(DSL) Canada Domestic Substance List**

All components of this product are on the DSL (Canada Domestic Substance list) or are exempt from DSL requirements.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

9016-87-9	diphenylmethanediisocyanate, isomeres and homologues	CBD
101-68-8	4,4'-methylenediphenyl diisocyanate	CBD

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients listed.

· **MAK (German Maximum Workplace Concentration)**

9016-87-9	diphenylmethanediisocyanate, isomeres and homologues	4
101-68-8	4,4'-methylenediphenyl diisocyanate	4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

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- **National regulations:**
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Although the information and recommendations set forth in this SDS are presented in good faith and are believed to be correct as of the date of this SDS, Royal Adhesives & Sealants makes no representations as to the completeness or accuracy thereof. Information is supplied on the condition that the persons receiving and using it will make their own determination as to the suitability for their purpose prior to use. In no event will Royal Adhesives & Sealants or any affiliate thereof be responsible for damages of any nature whatsoever resulting from the use or reliance on the information set forth in the SDS.

- **Department issuing SDS:** Environment protection department.
- **Creation Date:** 05/15/2014
- **Date of preparation / last revision** 04/29/2015 / -

- **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A

Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1

Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

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1 Identification

- **Product identifier**
- **Trade name:** LA4009
- **Relevant identified uses of the substance or mixture:** Adhesive
- **Application of the substance / the mixture:** Adhesive
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Royal Adhesives & Sealants, LLC
Aerospace & Marine Inflatable Adhesives & Coatings Division
48 Burgess Place
Wayne, NJ 07470
Information Phone Number: 973-694-0845
Emergency Phone Number: 973-694-0845
- **Information department:** Environment protection department.
- **Emergency telephone number:**
ChemTrec: Day or Night within USA and Canada: 1-800-424-9300.
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H336 May cause drowsiness or dizziness.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

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• **Hazard pictograms**



GHS02 GHS07 GHS08

• **Signal word** *Danger*

• **Hazard statements**

Highly flammable liquid and vapor.

Causes skin irritation.

Causes serious eye irritation.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

May cause damage to organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

• **Precautionary statements**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Use explosion-proof electrical/ventilating/lighting/equipment.

Do not breathe dust/fume/gas/mist/vapors/spray.

Wear protective gloves / eye protection / face protection.

Ground/bond container and receiving equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

If swallowed: Immediately call a poison center/doctor.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Specific treatment (see on this label).

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Call a poison center/doctor if you feel unwell.

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Do NOT induce vomiting.

In case of fire: Use for extinction: CO2, powder or water spray.

Take off contaminated clothing and wash it before reuse.

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with local/regional/national/international regulations.

• **Classification system:**

• **NFPA ratings (scale 0 - 4)**



Health = 1

Fire = 3

Reactivity = 0

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· HMIS-ratings (scale 0 - 4)

HEALTH	1	Health = *1
FIRE	3	Fire = 3
PHYSICAL HAZARD	0	Physical Hazard = 0

- Other hazards
- Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.

* 3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture

· Hazardous components:

108-88-3	toluene	25-50%
67-64-1	acetone	25-50%
78-93-3	methyl ethyl ketone	25-50%

* 4 First-aid measures

- Description of first aid measures
- After inhalation:
In case of unconsciousness place patient stably in side position for transportation.
Call a doctor immediately.
- After skin contact: Immediately wash with water and soap and rinse thoroughly.
- After eye contact:
Rinse opened eye for 20 minutes under running water. If eye becomes irritated, obtain medical treatment.
- After swallowing: Seek medical treatment.
- Information for doctor:
- Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate medical attention and special treatment needed
No further relevant information available.

* 5 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents: CO₂, extinguishing powder or water spray.
- For safety reasons unsuitable extinguishing agents: Water
- Special hazards arising from the substance or mixture No further relevant information available.
- Advice for firefighters
Use water spray to cool fire exposed containers.
Use water spray in a fire condition.

* 6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation

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- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste in accordance with federal state and local regulations.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Avoid prolonged or repeated contact with skin.
Avoid contact with eyes.
Wash thoroughly after handling.
Ensure good ventilation/exhaustion at the workplace.
Open containers in a well ventilated area and avoid breathing headspace vapors.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep container closed when not in use.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location away from direct heat.
- **Information about storage in one common storage facility:** Store away from oxidizing agents.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

Components with limit values that require monitoring at the workplace:

108-88-3 toluene

PEL	Long-term value: 200 ppm Ceiling limit value: 300; 500* ppm *10-min peak per 8-hr shift
REL	Short-term value: 560 mg/m ³ , 150 ppm Long-term value: 375 mg/m ³ , 100 ppm
TLV	Long-term value: 75 mg/m ³ , 20 ppm BEI

67-64-1 acetone

PEL	Long-term value: 2400 mg/m ³ , 1000 ppm
-----	--

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REL	Long-term value: 590 mg/m ³ , 250 ppm
TLV	Short-term value: 1187 mg/m ³ , 500 ppm
	Long-term value: 594 mg/m ³ , 250 ppm
	BEI
78-93-3 methyl ethyl ketone	
PEL	Long-term value: 590 mg/m ³ , 200 ppm
REL	Short-term value: 885 mg/m ³ , 300 ppm
	Long-term value: 590 mg/m ³ , 200 ppm
TLV	Short-term value: 885 mg/m ³ , 300 ppm
	Long-term value: 590 mg/m ³ , 200 ppm
	BEI
Ingredients with biological limit values:	
108-88-3 toluene	
BEI	0.02 mg/L Medium: blood Time: prior to last shift of workweek Parameter: Toluene
	0.03 mg/L Medium: urine Time: end of shift Parameter: Toluene
	0.3 mg/g creatinine Medium: urine Time: end of shift Parameter: o-Cresol with hydrolysis (background)
67-64-1 acetone	
BEI	50 mg/L Medium: urine Time: end of shift Parameter: Acetone (nonspecific)
78-93-3 methyl ethyl ketone	
BEI	2 mg/L Medium: urine Time: end of shift Parameter: MEK

• **Additional information:** The lists that were valid during the creation were used as basis.

• **Exposure controls**

• **Personal protective equipment (see listings below)**

• **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• **Breathing equipment:**

Use approved respiratory protection equipment when airborne exposure is excessive. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer.

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· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Safety glasses with side shields.



Tightly sealed goggles

· **Body protection:** Protective work clothing

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· Form:	Liquid
· Color:	Not determined.
· Odor:	Characteristic
· Odour threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· Melting point:	Undetermined.
· Boiling point:	55 °C (131 °F)

· **Flash point:** -20 °C (-4 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 465 °C (869 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Flammable limits:**

· Lower:	1.2 Vol %
· Upper:	13.0 Vol %

· **Vapor pressure at 20 °C (68 °F):** 233 hPa (175 mm Hg)

· **Specific gravity at 20 °C (68 °F):** 0.858 g/cm³ (7.16 lbs/gal)

· **Relative density** Not determined.

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· Vapour density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Solids content:	not available
· Other information	Pounds / Gallon 7.16 Grams VOC/Liter (less water, less exempts) 728.05 Pounds VOC/Liter (less water, less exempts) 6.07

10 Stability and reactivity

- Reactivity not reactive as supplied
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions No dangerous reactions known.
- Conditions to avoid Heat, flames, sparks, hot surfaces, ignition sources.
- Incompatible materials:
 - Reacts with reducing agents.
 - Reacts with acids.
 - Reacts with strong oxidizing agents.
 - Reacts with alkali (lyes).
 - copper and copper alloys.
- Hazardous decomposition products:
 - Carbon monoxide and carbon dioxide
 - Nitrogen oxides

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:

- LD/LC50 values that are relevant for classification:

108-88-3 toluene

Oral	LD50	5000 mg/kg (rat)
Dermal	LD50	12124 mg/kg (rabbit)
Inhalative	LC50/4 h	5320 mg/l (mouse)

- Primary irritant effect:
 - on the skin: Irritant to skin and mucous membranes.
 - on the eye: Irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
 - The product shows the following dangers according to internally approved calculation methods for preparations: Irritant

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- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

108-88-3 | toluene

3

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

* 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability:** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** No further relevant information available.
- **Mobility in soil:** No further relevant information available.
- **Additional ecological information:**
- **General notes:** At present there are no ecotoxicological assessments.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects:** No further relevant information available.

* 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:** Must be specially treated adhering to official regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

* 14 Transport information

- **UN-Number**
- **DOT, ADR, IMDG, IATA** UNI 133
- **UN proper shipping name**
- **DOT, IMDG, IATA** ADHESIVES
- **ADR** 1133 ADHESIVES

- **Transport hazard class(es)**

- **DOT**



- **Class** 3 Flammable liquids

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· Label	3
· ADR, IMDG, IATA	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, ADR, IMDG, IATA	II
· Environmental hazards:	Not applicable.
· Special precautions for user	Warning: Flammable liquids
· Danger code (Kemler):	33
· EMS Number:	F-E,S-E
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
	Not applicable.
· UN "Model Regulation":	UN1133, ADHESIVES, 3, II

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- *Sara*

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

108-88-3 toluene

· **TSCA (Toxic Substances Control Act):**

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity:**

108-88-3 toluene

· **(DSL) Canada Domestic Substance List**

All components of this product are on the DSL (Canada Domestic Substance list) or are exempt from DSL requirements.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

108-88-3 toluene

II

67-64-1 acetone

I

78-93-3 methyl ethyl ketone

I

· **TLV (Threshold Limit Value established by ACGIH)**

108-88-3 toluene

A4

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67-64-1	acetone	A4
· MAK (German Maximum Workplace Concentration)		
None of the ingredients is listed.		
· NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients is listed.		

· National regulations:

- **Water hazard class:** Water hazard class 2 (Self-assessment); hazardous for water.
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Although the information and recommendations set forth in this SDS are presented in good faith and are believed to be correct as of the date of this SDS, Royal Adhesives & Sealants makes no representations as to the completeness or accuracy thereof. Information is supplied on the condition that the persons receiving and using it will make their own determination as to the suitability for their purpose prior to use. In no event will Royal Adhesives & Sealants or any affiliate thereof be responsible for damages of any nature whatsoever resulting from the use or reliance on the information set forth in the SDS.

- **Department issuing SDS:** Environment protection department.
- **Creation Date:** 02/28/2014
- **Date of preparation / last revision** 07/17/2015 / -

· Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 vPvB: very Persistent and very Bioaccumulative
 Flam. Liq. 2: Flammable liquids, Hazard Category 2
 Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
 Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
 Repr. 2: Reproductive toxicity, Hazard Category 2
 STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
 STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
 Asp. Tox. 1: Aspiration hazard, Hazard Category 1

USA

Printed 10/16/11

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **TECHTHANE® 90SS-FF, 90SS-1/3, 90SS-MB, 90SS-HB, 98SS-FF, 98SS-MB PART 'A'**
PRODUCT TYPE: Solvented polyurethane resin solution, Part 'A' of product applied only as 'A' + 'B' mixture

Virginia Harbor Services, Inc. (Trelleborg)
3470 Martinsburg Pike
Clearbrook, VA 22624 USA

Emergency (CHEMTREC): (800) 424-9300
Customer Service: (888) 832-4842
(540) 667-1770

EFFECTIVE: 25 February 2011 (change to section 14)
SUPERCEDES: 28 December 2008

SECTION 2 - HAZARDOUS INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	8hr-TWA	STEL	CEILING	IDLH	UNITS
Synthetic Urethane Polymer	Proprietary	82-92	N.E.	N.E.	N.E.	N.E.	N/A
n-Butyl Acetate	123-86-4	8-18	150	200	N.E.	N.E.	ppm
Dicyclohexylmethane-4-4'-diisocyanate (H ₁₂ MDI)	5124-30-1	2-5	0.005	N.E.	0.01	N.E.	ppm

SECTION 3 - HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW ***:** Flammable. Skin, eye, and respiratory tract irritant. May cause allergic skin reaction and/or sensitization. May cause allergic respiratory tract reaction and/or sensitization. Avoid direct contact with liquid and inhalation of product vapor. Vapor harmful - may affect the brain and nervous system causing dizziness, headache, or nausea. Possibility of inhalation exposure increased with heated product. Flammable / explosive vapor.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Liquid, aerosols, or vapors are severely irritating and can cause pain, tearing, reddening, swelling, and blurred vision. If left untreated, corneal damage can occur, and injury is slow to heal. However, damage is usually reversible (See First Aid for treatment).

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Can cause irritation which may include the symptoms of reddening, swelling, rash, scaling, or blistering. May cause allergic skin reaction and/or sensitization. Solvent component can also cause moderate defatting and dermatitis.

EFFECTS OF OVEREXPOSURE - INHALATION: Isocyanate material vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm, and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure. The solvent component can also cause central nervous system effects including dizziness, weakness, fatigue, nausea, headache, and possible unconsciousness, and even death.

EFFECTS OF OVEREXPOSURE - INGESTION: Can result in irritation and corrosive action in the mouth, stomach tissue, and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting, and diarrhea. Aspiration of solvent materials into the lungs can cause chemical pneumonitis, which can be fatal.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: As a result of previous repeated overexposures, or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate materials at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized, an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks, and in severe cases, for several years. Chronic overexposure to isocyanate materials has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can be either temporary or permanent. Chronic overexposure to solvents can cause liver abnormalities, kidney, lung, and spleen damage.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT, INHALATION, SKIN ABSORPTION, EYE CONTACT, INGESTION

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.

SKIN CONTACT: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. For severe exposures, get under a safety shower after removing clothing, get medical attention, and consult a physician.

INHALATION: Remove affected persons to fresh air. If breathing is difficult, administer oxygen. Seek medical attention. Asthmatic-type symptoms may develop, and may be immediate or delayed up to several hours.

INGESTION: Immediately drink two glasses of water or milk. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

* **NOTE TO PHYSICIAN:** **EYES:** Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. **SKIN:** This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. **INGESTION:** Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound. **RESPIRATORY:** This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate material.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 76°F (24°C) T.C.C. (n-Butyl Acetate vapors)

LOWER EXPLOSIVE LIMIT: 1.70%

UPPER EXPLOSIVE LIMIT: 7.60%

AUTOIGNITION TEMPERATURE: 797°F (425°C) (n-Butyl Acetate)

WARNING!!! Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

OSHA FLAMMABILITY CLASSIFICATION: Flammable liquid - Class 1B

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: VA are heavier than air, and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from the material handling point. All containers with this material should be electrically grounded.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Eliminate all ignition sources. Safely stop spill at its source if possible. Contain spill with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Collect large spills with pump and vacuum, and conclude with dry chemical absorbent. Neutralize material with a mixture of water, ammonia, and detergent soap (typical ratio 60/35/5) or Sodium Carbonate. If runoff occurs, notify proper authorities that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. Use proper handling precautions designated for a very flammable substance. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with a mixture of water, ammonia, and detergent soap. Do not smoke or use ignition sources where this product is stored or used.

STORAGE: Keep away from heat, sparks, and open flame. Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100° F (38°C). This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Sufficient ventilation in pattern and volume should be provided in order to maintain air contaminant levels below recommended exposure limits. Caution: Solvent vapors are heavier than air and collect in lower levels of the work area. Sufficient ventilation (using explosion-proof equipment) should be provided to prevent flammable vapor/air mixtures from accumulating.

RESPIRATORY PROTECTION: If working in conditions where PEL is exceeded, use a chemical cartridge mask, or air supply hood as required and/or approved by ANSI and OSHA. A NIOSH/MSHA approved supplied-air respirator is preferable. A cartridge respirator may be appropriate in certain circumstances where airborne monitoring demonstrates vapor levels below ten times the applicable exposure limits, and where organic solvents are present in the product to provide adequate warning properties. Isocyanate materials have poor warning (odor threshold) properties, therefore, cartridge respirators are NOT recommended. For emergencies, confined spaces, or other conditions where exposure limits may be greatly exceeded, an approved air-supplied respirator is required. Observe OSHA regulations (29CFR 1910.134) for respirator use.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT :	232° F (111° C)	VAPOR DENSITY :	Heavier than air (approx. 3.75)
APPEARANCE :	Viscous liquid	ODOR THRESHOLD :	Not determined
PHYSICAL STATE :	Liquid (with flammable vapors)	EVAPORATION RATE :	1.00 (n-Butyl Acetate component)
ODOR :	Sweet, sharp	DENSITY, LB/GAL :	Approximately 8.50
SOLUBILITY IN H₂O :	Reacts with water	SPECIFIC GRAVITY :	1.01 - 1.04
FREEZE POINT :	Not determined	pH :	Not determined
VOLATILE BY WEIGHT :	7-19 %	VOLATILE BY VOLUME :	7-19 %
VAPOR PRESSURE :	Approximately 20mm @ 65° F (18°C)		

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Contact with incompatible materials, temperatures above recommended maximum storage temperature. Sources of ignition.

INCOMPATIBILITY: Water, amines, strong acids, strong bases, alcohols, ignition sources. Will cause some corrosion to copper alloys and aluminum.

HAZARDOUS DECOMPOSITION PRODUCTS: By high heat and fire: carbon monoxide, carbon dioxide, oxides of nitrogen, traces of HCN, TDI vapors and mist, and solvent vapors. Reacts with water to form heat, CO₂, and insoluble ureas.

HAZARDOUS POLYMERIZATION: May occur if in contact with moisture or other materials which react with isocyanate materials. Self-reaction may occur at temperatures over 350°F (176°C), or at lower temperatures, if sufficient time is involved.

STABILITY: Stable under normal conditions.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information for pure Dicyclohexylmethane-4-4' - diisocyanate (H₁₂MDI) 2-5%:

ACUTE TOXICITY:

LD ₅₀	1,065 mg/kg (rat)
Dermal LD ₅₀	10,000 mg/kg (rabbit)
Inhalation LC ₅₀	434 mg/kg - 4 hr. (rat)
	295 mg/m ³ (28 ppm) - 4 hr. (male rat)
	307 mg/m ³ (29 ppm) - 4 hr. (female rat)
Inhalation LC ₅₀	200 mg/m ³ (19 ppm) (rat)

MUTAGENICITY: Ames test negative for mutagenicity with and without liver enzyme activation.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with federal, state, and local environmental control regulations. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

SHIPPING NAME: Coating Solution

DOT HAZARD CLASS: 3

DOT UN/NA NUMBER: UN1139

EMERGENCY RESPONSE GUIDE NUMBER: 127

PACKING GROUP: III

SECTION 15 - REGULATORY INFORMATION

U.S.:

OSHA: Hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: Contains no substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TSCA: This material is on the TSCA inventory.

CA PROP. 65: Contains no known substances subject to the reporting requirements of California Proposition 65.

CANADA:

Canada WHMIS: Contains the following substance(s) subject to the reporting requirements of the Canada WHMIS system:

<u>SUBSTANCE</u>	<u>CAS#</u>	<u>QTY.</u>
Dicyclohexylmethane-4 -4'-diisocyanate	5124-30-1	2-5%

KOREA TCCL:

All ingredients are on the the Korea Existing Chemicals List (ECL). Specific formula is proprietary. Contains no Observational Chemical(s), no Restricted Toxic Chemical(s), and no Prohibited Chemical(s). Contains the following substance(s) listed as a Toxic Chemical:

<u>SUBSTANCE</u>	<u>CAS#</u>	<u>TCCL</u>	<u>ECL</u>	<u>QTY.</u>
Dicyclohexylmethane-4				

SECTION 16 - OTHER INFORMATION

HMIS RATINGS: HEALTH 2* (*chronic) FLAMMABILITY 3 REACTIVITY 1

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-END OF MSDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCTS NAMES: **TECHTHANE® 90SS-FF, 90SS-1/3, 90SS-MB, 90SS-HB, 98SS-FF, 98SS-MB PART 'B'**
 PRODUCT TYPE: Amine curative solution, Part 'B' of product applied as 'A' + 'B' mixture

Virginia Harbor Services, Inc. (Trelleborg)
 3470 Martinsburg Pike
 Clearbrook, VA 22624 USA

Emergency (800) 424-9300 (CHEMTREC)

Customer Service: (888) 832-4842
 (540) 667-1770

EFFECTIVE: 28 December 2008 (change to section 1)
 SUPERCEDES: 13 Dec. 2007

MSDS online: polyurethane.com/msds

SECTION 2 - HAZARDOUS INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT % less than	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL	UNITS
Ethyl Acetate	141-78-6	90	400	N.E.	400	N.E.	ppm
Diethyltoluenediamine	68479-98-1	10	N.E.	N.E.	N.E.	N.E.	

SECTION 3 - HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW ***:** Thin amber liquid, with a fruity odor. Flammable liquid and vapor. Harmful if absorbed through the skin. May cause allergic skin or respiratory reaction. Vapor harmful; may affect the brain and nervous system causing dizziness, headache, or nausea. Causes skin, eye, and respiratory irritation with shortness of breath and chest tightness.

EFFECTS OF ACUTE OVEREXPOSURE - EYE CONTACT: Liquid, aerosols, or vapors are severely irritating and can cause pain, tearing, reddening, swelling, and blurred vision. If left untreated, corneal damage can occur, and injury is slow to heal. However, damage is usually reversible. (See First Aid for treatment)

EFFECTS OF ACUTE OVEREXPOSURE - SKIN CONTACT: Skin irritant and possible skin sensitizer. Direct skin contact is likely route of entry to body. Solvent component can also cause moderate defatting and dermatitis.

EFFECTS OF ACUTE OVEREXPOSURE - INHALATION: May cause irritation to the respiratory tract. Exposure to ethyl acetate may cause nausea, headaches, dizziness or other central nervous system effects.

EFFECTS OF ACUTE OVEREXPOSURE - INGESTION: Can result in irritation and corrosive action in the mouth, stomach tissue, and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting, and diarrhea. Aspiration of solvent materials into the lungs can cause chemical pneumonitis, which can be fatal.

EFFECTS OF CHRONIC OVEREXPOSURE - HAZARDS: Chronic overexposure to solvents can cause liver abnormalities, kidney, lung, and spleen damage. Chronic overexposure to aromatic diamine component may cause liver and other target organ effects based on information on animal feeding studies.

PRIMARY ROUTE(S) OF ENTRY: INHALATION, SKIN CONTACT, SKIN ABSORPTION, EYE CONTACT, INGESTION

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open the entire time. Seek medical attention.

SKIN CONTACT: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. For severe exposures, get under a safety shower after removing clothing, get medical attention, and consult a physician.

INHALATION: Removed affected persons to fresh air. If breathing is difficult, administer oxygen. Seek medical attention. Asthmatic-type symptoms may develop, and may be immediate or delayed up to several hours.

INGESTION: Immediately drink two glasses of water or milk. Induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: > 24 °F (-4 °C) TCC

LOWER EXPLOSIVE LIMIT: 2.0%
UPPER EXPLOSIVE LIMIT: 11.0%

AUTOIGNITION TEMPERATURE: 896° F (480° C)

* **WARNING!!!** Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

OSHA FLAMMABILITY CLASSIFICATION: Flammable liquid - Class 1B

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors from included solvent are heavier than air, and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from the material handling point. All containers with this material should be electrically grounded.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. Use proper handling precautions designated for a very flammable substance. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material. Do not smoke or use ignition sources where this product is stored or used.

STORAGE: Keep away from heat, sparks, and open flame. Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100 °F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Sufficient ventilation in pattern and volume should be provided in order to maintain air contaminant levels below recommended exposure limits. Caution: Solvent vapors are heavier than air and collect in lower levels of the work area. Sufficient ventilation (using explosion-proof equipment) should be provided to prevent flammable vapor/air mixtures from accumulating.

RESPIRATORY PROTECTION: If working in conditions where PEL is exceeded, use a chemical cartridge mask, or air supply hood as required and/or approved by ANSI and OSHA. A NIOSH/MSHA approved supplied-air respirator is preferable. Observe OSHA regulations (29CFR 1910.134) for respirator use.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

All ingredients are on the the Korea Existing Chemicals List (ECL). Specific formula is proprietary. Contains no Toxic Chemicals, no Observational Chemicals, no Restricted Toxic Chemicals, and no Prohibited Chemicals.

SECTION 16 - OTHER INFORMATION

HMIS RATINGS: HEALTH: 2* (*chronic) FLAMMABILITY: 3 REACTIVITY: 1

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or Implied, and assume no liability in connection with any use of this material.

-END OF MSDS-



SAFETY DATA SHEET

LA2161
Methyl Ethyl Ketone

Preparation Date: 16/May/2017

Version: 1

1. IDENTIFICATION

Product identifier

Product Name Methyl Ethyl Ketone

Other means of identification

Product Code(s) LA2161

Synonyms 2-Butanone, 3-Butanone, Butanone, Ethyl Methyl Ketone, MEK, Methyl acetone, Methyl-2-propanone.

Recommended use of the chemical and restrictions on use

Recommended Use Solvent, diluent, chemical feedstock, or fuel.

Restricted Uses No information available

Initial Supplier Identifier

Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC V6X 1W5
Telephone: 1-866-686-4827

Emergency telephone number

24 Hour Emergency Phone Number (CANUTEC): 1-888-226-8832 (1-888-CAN-UTEC)

2. HAZARD IDENTIFICATION

Hazardous Classification of the substance or mixture

Flammable liquids	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3

Label elements

Hazard pictograms**Signal Word: Danger****Hazard statements**

Highly flammable liquid and vapor

Precautionary Statements**Prevention**

Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Ground and bond container and receiving equipment
Use non-sparking tools
Take action to prevent static discharges
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep container tightly closed
Use explosion-proof electrical/ ventilating / lighting/ equipment
Keep cool

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage

Store in a well-ventilated place. Keep container tightly closed
Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Other Information

May be harmful if swallowed May be harmful in contact with skin

Unknown acute toxicity

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Chemical Name	CAS No	Weight-%	Synonyms
Methyl Ethyl Ketone	78-93-3	90 - 100%	Methyl Ethyl Ketone

4. FIRST AID

Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

Remove to fresh air. IF exposed or concerned: Get medical advice/attention.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Ingestion

Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

Self-protection of the first aider

Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed:

May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression. May cause moderate skin irritation. Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision. Aspiration hazard! Small amounts aspirated into the lungs during ingestion or vomiting may cause lung injury, possibly leading to death. Symptoms of aspiration into the lungs include coughing, gasping, choking, shortness of breath, bluish discolored skin, rapid breathing and heart rate. Chemical pneumonitis from aspiration may result in fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs. Causes eye irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing and difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and fever. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death. Burning sensation may result.

Indication of any immediate medical attention and special treatment needed:

Note to physicians

Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical. Carbon dioxide (CO₂). Water spray. Alcohol resistant foam.

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the substance or mixture

Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Do not allow runoff to enter waterways or sewer. Isolate and restrict area access. Use fine water spray or fog to control fire spread and cool adjacent structures or containers. Move containers from fire area if you can do it without risk. Stop leak only if safe to do so. Fight fire from a safe distance and from a protected location. Flammable liquid. This material may produce a floating fire hazard in extreme fire conditions.

Hazardous combustion products

Peroxides.

Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

Environmental precautions

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE**Precautions for safe handling**

For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Flammable. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep containers tightly closed. Store out of direct sunlight and on an impermeable floor.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical Name	Alberta OEL	British Columbia OEL	Ontario	Quebec OEL	Exposure Limit - ACGIH	Immediately Dangerous to Life or Health - IDLH
Methyl Ethyl Ketone 78-93-3	TWA: 200 ppm TWA: 590 mg/m ³ STEL: 300 ppm STEL: 885 mg/m ³	TWA: 50 ppm STEL: 100 ppm	TWA: 200 ppm STEL: 300 ppm	TWA: 50 ppm TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³	300 ppm STEL 200 ppm TLV-TWA	3000 ppm

Consult local authorities for recommended exposure limits

Appropriate engineering controls

Engineering controls

Use explosion proof equipment. Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Hand protection

Butyl rubber gloves. Impervious gloves. 4H(R). Silver Shield (R).

Skin and body protection

Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Respiratory protection

If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.

General hygiene considerations

Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Physical state	Liquid
Color	Clear
Odor	Sweet KETONE
Odor threshold	No information available

PROPERTIES

pH	No data available
Melting point / freezing point	-86 °C / -123 °F

Remarks • Method

none known

Initial boiling point/boiling range	79 °C / 174 °F	
Flash point	-9 °C / 16 °F	Closed cup.
Evaporation rate	2.7 (ether =1)	
Flammability (solid, gas)	No data available	none known
Flammability Limit in Air		none known
Upper flammability limit:	11.5	
Lower flammability limit:	1.8	
Vapor pressure	10.33 kPa (77.5 mmHg) @ 20°C	
Relative vapor density	2.41	
Relative density	0.804-0.806	
Water solubility	Completely miscible	
Solubility in other solvents	No data available	
Partition coefficient	No data available	none known
Autoignition temperature	404-515 °C / 759-959 °F	
Decomposition temperature	No data available	none known
Kinematic viscosity	0.52 cS	
Dynamic viscosity	No data available	none known
Explosive properties	No information available.	
Oxidizing properties	No information available.	
Molecular weight	72.11	
VOC Percentage Volatility	No information available	
Liquid Density	No information available	
Bulk density	No information available	

10. STABILITY AND REACTIVITY

Reactivity/Chemical Stability

Stable

Possibility of hazardous reactions

No additional remark.

Hazardous polymerization

Will not occur.

Conditions to avoid

Avoid excessive heat, open flames and all ignition sources.

Incompatible materials

Strong bases. Oxidizing agents. Reducing agents. Strong alkalis. Aldehydes. Halogens. Hydrogen peroxide. Amines. Ammonia.

Hazardous decomposition products

Peroxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation

Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing and difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and fever. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Eye contact

Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision. Causes eye irritation.

Skin contact

May cause moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis. Burning sensation may result.

Ingestion

May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression. Aspiration hazard! Small amounts aspirated into the lungs during ingestion or vomiting may cause lung injury, possibly leading to death. Symptoms of aspiration into the lungs include coughing, gasping, choking, shortness of breath, bluish discolored skin, rapid breathing and heart rate. Chemical pneumonitis from aspiration may result in fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs.

Information on toxicological effects**Symptoms**

Methyl Ethyl Ketone (MEK) is expected to cause no or mild skin irritation. Repeated or prolonged contact can produce dermatitis (red, dry, itchy skin) and whitening of the skin. Animal evidence suggests that MEK is a moderate to severe eye irritant. Brief exposures to MEK vapors produced slight nose and throat irritation. Higher exposures are expected to cause central nervous system depression with symptoms such as headache, nausea, dizziness, drowsiness, and confusion. Extremely high concentrations may cause loss of consciousness and possibly death. Ingestion of MEK is expected to cause central nervous system depression with symptoms such as headache, nausea, dizziness, drowsiness, and confusion. Animal evidence suggests that MEK can be aspirated (inhaled) into the lungs during ingestion or vomiting. Aspiration of even a small amount of liquid could result in a life threatening accumulation of fluid in the lungs. Severe lung damage (edema), respiratory failure, cardiac arrest and death may result. Animal studies have confirmed synergism between MEK and ethyl n-butyl ketone, methyl n-butyl ketone, n-hexane, carbon tetrachloride, 2,5-hexanedione and chloroform. Principal target organs involved in toxicological interactions are the nervous system and liver, although the lung has also been implicated.

Numerical measures of toxicity**Acute toxicity**

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	2,483.00 mg/kg
ATEmix (dermal)	5,000.00 mg/kg

Unknown acute toxicity No information available

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Methyl Ethyl Ketone 78-93-3	= 2483 mg/kg (Rat)	= 5000 mg/kg (Rabbit)	= 11700 ppm (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Skin corrosion/irritation**

May cause moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis. Burning sensation may result.

Serious eye damage/eye irritation

Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision. Causes eye irritation.

Respiratory or skin sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Methyl Ethyl Ketone 78-93-3	Not available	Not available	Not available	Not available

Reproductive toxicity

Methyl ethyl ketone - three animal studies have shown fetotoxicity (skeletal anomalies) at doses which did not produce any or only very slight maternal toxicity.

Specific target organ systemic toxicity - single exposure

May cause drowsiness or dizziness.

Specific target organ systemic toxicity - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Ecotoxicity - Freshwater Algae Data	Ecotoxicity - Fish Species Data	Toxicity to microorganisms	Crustacea
Methyl Ethyl Ketone 78-93-3	Not available	3130 - 3320 mg/L LC50 (Pimephales promelas) 96 h flow-through	Not available	EC50: 4025 - 6440mg/L (48h, Daphnia magna) EC50: =5091mg/L (48h, Daphnia magna) EC50: >520mg/L (48h, Daphnia magna)

Persistence and degradability No information available.**Bioaccumulation** No information available.**Component Information**

Chemical Name	Partition coefficient
Methyl Ethyl Ketone 78-93-3	0.3

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

14. TRANSPORT INFORMATION

TDG (Canada):

UN Number UN1193
 Shipping name METHYL ETHYL KETONE
 Class 3
 Packing Group II
 Marine pollutant Not available.

DOT (U.S.)

UN Number UN1193
 Shipping name METHYL ETHYL KETONE
 Class 3
 Packing Group II
 Reportable Quantity (RQ) No information available
 Marine pollutant Not available

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Regulatory Rules

Chemical Name	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Methyl Ethyl Ketone - 78-93-3	Not Listed	Listed	Not Listed

International Inventories

TSCA Complies
 DSL/NDSL Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

NFPA: Health hazards 2 Flammability 3 Instability 0 Physical and chemical properties -
HMIS Health Rating: Health hazards 2 Flammability 3 Physical hazards 0 Personal protection X

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)
 Ceiling Maximum limit value * Skin designation

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.

Preparation Date: 16/May/2017

Revision Date: 16/May/2017

Disclaimer

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End of Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – BLACK

Description: Pigment concentrate

Usage: Colorant for polyurethane elastomers

Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
3070C Shawnee Dr.
Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

1-800-424-9300 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

703-527-3887 (CHEMTREC) (USA & Canada)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.

Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.

IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Dipropylene glycol dibenzoate	27138-31-4	60-90%

4. FIRST AID MEASURES
Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Black
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.00-1.30
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:

Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Dipropylene glycol dibenzoate	LC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **PIGMENT - EMERALD / RIB GREEN (MAR EMERALD 9)**
 PRODUCT TYPE: Pigment solution for polyurethane elastomers

Technical Urethanes
 Div. of Trelleborg Engineered Products, Inc.
 3470 Martinsburg Pike
 Clearbrook, VA 22824

Emergency (CHEMTREC): (800) 424-9300
 Customer Service: (888) 832-4842
 (540) 667-1770

EFFECTIVE: 21 Mar 2006 (Change to section 1)
 SUPERCEDES: 06/17/2003

MSDS via internet:

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	ACGIH/TLV	OSHA/PEL	CEILING	IDLH	UNITS
Copper	147-14-8	<4.00	1.00	1.00	N.E.	N.E.	mg/m ³
Carbon Black	1333-86-4	<1.00	3.50	3.50	N.E.	N.E.	mg/m ³

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF ACUTE OVEREXPOSURE:

EYE CONTACT: May cause minor irritation without corneal injury.

SKIN CONTACT: May cause mild irritation.

INHALATION: No known effects.

INGESTION: May cause gastrointestinal irritation including nausea, vomiting, and diarrhea.

EFFECTS OF CHRONIC OVEREXPOSURE: No known effects.

PRIMARY ROUTES OF ENTRY: skin contact, eye contact, ingestion

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.

SKIN CONTACT: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention. Wash clothing thoroughly before reuse.

INHALATION: Remove person to fresh air. Seek medical aid.

INGESTION: Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 380°F (193°C) PMCC

LOWER EXPLOSIVE LIMIT: Not determined
UPPER EXPLOSIVE LIMIT: Not determined

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

STORAGE: Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100°F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Design use areas to minimize risk of exceeding occupational limits for contact.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved chemical or air-supplied respirator if air monitoring exhibits chemical concentrations above occupational limits.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT :	Not determined	VAPOR DENSITY :	Not determined
APPEARANCE :	Dark green liquid or paste	ODOR THRESHOLD :	Not determined
ODOR :	Negligible	EVAPORATION RATE :	Slower than ether
SOLUBILITY IN H₂O :	Appreciable (10-20%)	DENSITY, LB/GAL :	9.60 - 10.00
FREEZE POINT :	Not determined	SPECIFIC GRAVITY :	1.15 - 1.20
VAPOR PRESSURE :	Not determined	VOLATILE BY WEIGHT :	0
pH :	Not Applicable	VOLATILE BY VOLUME :	0

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Contact with strong oxidizers. Carrier resin heated in the presence of oxygen to temperatures above 212°F (100°C) may form aldehydes.

INCOMPATIBILITY: Isocyanates and other materials that react with hydroxyl groups, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic acids, low molecular weight hydrocarbons, organic acids, oxides of nitrogen, HCl, Cl₂.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

DOT UN/NA NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL:

OSHA: NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA inventory.

SECTION 16 - OTHER INFORMATION

HMS RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

KEY: N.D.: Not Determined N.A.: Not Applicable N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

END OF MSDS-

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

DOT UN/NA NUMBER: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

J.S. FEDERAL:

OSHA: NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA inventory.

SECTION 16 - OTHER INFORMATION

HMS RATINGS: HEALTH: 1

FLAMMABILITY: 1

REACTIVITY: 0

KEY: N.D.: Not Determined

N.A.: Not Applicable

N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-END OF MSDS-

1. PRODUCT AND COMPANY IDENTIFICATION

Product: PIGMENT – FOREST GREEN

Description: Pigment concentrate
 Usage: Colorant for polyurethane elastomers
 Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

1-800-424-9300 (CHEMTREC) (USA & Canada)

Telefax: 540-678-1729

703-527-3887 (CHEMTREC) (International)

2. HAZARDS IDENTIFICATION

GHS Classification:

None

GHS Label Elements:

Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	1-10%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

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Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Green
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.05-1.20
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions to Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

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HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **PIGMENT - GOLDEN**
 PRODUCT TYPE: Urethane Pigment Solution

Technical Urethanes
 Div. of Trelleborg Engineered Products, Inc.
 3470 Martinsburg Pike
 Clearbrook, VA 22624

Emergency (CHEMTREC): (800) 424-9300
 Customer Service: (888) 832-4842
 (540) 667-1770

EFFECTIVE: 21 Mar 2006 (Change to section 1)
 SUPERCEDES: 06/17/2003

MSDS via internet:

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	ACGIH/TLV	OSHA/PEL	CEILING	IDLH	UNITS
Titanium Dioxide	13463-67-7	50-60	10.00	6.00	N.E.	N.E.	mg/m ³

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF ACUTE OVEREXPOSURE:

- EYE CONTACT:** May cause minor irritation without corneal injury.
SKIN CONTACT: May cause mild irritation.
INHALATION: No known effects.
INGESTION: May cause gastrointestinal irritation including nausea, vomiting, and diarrhea.

EFFECTS OF CHRONIC OVEREXPOSURE: No known effects.

PRIMARY ROUTES OF ENTRY: skin contact, eye contact, ingestion

SECTION 4 - FIRST AID MEASURES

- EYE CONTACT:** Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.
SKIN CONTACT: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention. Wash clothing thoroughly before reuse.
INHALATION: Remove person to fresh air. Seek medical aid.
INGESTION: Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 380°F (193°C) PMCC

LOWER EXPLOSIVE LIMIT: Not determined
UPPER EXPLOSIVE LIMIT: Not determined

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and

vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

STORAGE: Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100°F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Design use areas to minimize risk of exceeding occupational limits for contact.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved chemical or air-supplied respirator if air monitoring exhibits chemical concentrations above occupational limits.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT :	Not determined	VAPOR DENSITY :	Not determined
APPEARANCE :	Yellow liquid or paste	ODOR THRESHOLD :	Not determined
ODOR :	Negligible	EVAPORATION RATE :	Slower than ether
SOLUBILITY IN H₂O :	Appreciable (10-20%)	DENSITY, LB/GAL :	13.35 - 14.20
FREEZE POINT :	Not determined	SPECIFIC GRAVITY :	1.60 - 1.70
VAPOR PRESSURE :	Not determined	VOLATILE BY WEIGHT :	0
pH :	Not Applicable	VOLATILE BY VOLUME :	0

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Contact with strong oxidizers. Carrier resin heated in the presence of oxygen to temperatures above 212°F (100°C) may form aldehydes.

INCOMPATIBILITY: Isocyanates and other materials that react with hydroxyl groups, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic acids, low molecular weight hydrocarbons, organic acids, oxides of nitrogen, HCl, Cl₂.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

DOT UN&NA NUMBER: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL:

OSHA NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA inventory.

SECTION 16 - OTHER INFORMATION

HMIS RATINGS: HEALTH: 1

FLAMMABILITY: 1

REACTIVITY: 0

KEY: N.D.: Not Determined

N.A.: Not Applicable

N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

END OF MSDS

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT - GRAY N1

Description: Pigment concentrate

Usage: Colorant for polyurethane elastomers

Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
3070C Shawnee Dr.
Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

1-800-424-9300 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

703-527-3887 (CHEMTREC) (USA & Canada)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.

Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.

IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Dipropylene glycol dibenzoate	27138-31-4	10-40%

4. FIRST AID MEASURES
Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: .

Respiratory Protection:

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Gray
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.60-1.90
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:

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Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Dipropylene glycol dibenzoate	LC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – GREEN LMG-04

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180
 1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC) (USA & Canada)

Telefax: 540-678-1729

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	5-10%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Green
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.10-1.25
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

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The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Safety Data Sheet

PIGMENT – GREEN LMG-04

Version: 2.06

Revision Date: 1 October 2018

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Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **PIGMENT - LIGHT BLUE (MAR LIGHT BLUE 1)**
 PRODUCT TYPE: Pigment solution for polyurethane elastomers

Technical Urethanes
 Div. of Trelleborg Engineered Products, Inc.
 3470 Martinsburg Pike
 Clearbrook, VA 22624

Emergency (CHEMTREC): (800) 424-9300
 Customer Service: (888) 832-4842
 (540) 667-1770

EFFECTIVE: 21 Mar 2006 (Change to section 1)
 SUPERCEDES: 06/17/2003

MSDS via internet:

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	ACGIH/TLV	OSHA/PEL	CEILING	IDLH	UNITS
Titanium Dioxide	13463-67-7	60 - 70	10.00	5.00	N.E.	N.E.	mg/m ³
Copper	147-14-8	<1.00	1.00	1.00	N.E.	N.E.	mg/m ³

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF ACUTE OVEREXPOSURE:

EYE CONTACT: May cause minor irritation without corneal injury.

SKIN CONTACT: May cause mild irritation.

INHALATION: No known effects.

INGESTION: May cause gastrointestinal irritation including nausea, vomiting, and diarrhea.

EFFECTS OF CHRONIC OVEREXPOSURE: No known effects.

PRIMARY ROUTES OF ENTRY: skin contact, eye contact, ingestion

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.

SKIN CONTACT: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention. Wash clothing thoroughly before reuse.

INHALATION: Remove person to fresh air. Seek medical aid.

INGESTION: Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 380°F (193°C) PMCC

LOWER EXPLOSIVE LIMIT: Not determined
UPPER EXPLOSIVE LIMIT: Not determined

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safety stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

STORAGE: Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100°F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Design use areas to minimize risk of exceeding occupational limits for contact.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved chemical or air-supplied respirator if air monitoring exhibits chemical concentrations above occupational limits.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	Not determined	VAPOR DENSITY:	Not determined
APPEARANCE:	Light blue liquid or paste	ODOR THRESHOLD:	Not determined
ODOR:	Negligible	EVAPORATION RATE:	Slower than ether
SOLUBILITY IN H₂O:	Appreciable (10-20%)	DENSITY, LB/GAL:	15.45 - 16.27
FREEZE POINT:	Not determined	SPECIFIC GRAVITY:	1.85 - 1.95
VAPOR PRESSURE:	Not determined	VOLATILE BY WEIGHT:	0
pH:	Not Applicable	VOLATILE BY VOLUME:	0

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Contact with strong oxidizers. Carrier resin heated in the presence of oxygen to temperatures above 212°F (100°C) may form aldehydes.

INCOMPATIBILITY: Isocyanates and other materials that react with hydroxyl groups, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic acids, low molecular weight hydrocarbons, organic acids, oxides of nitrogen, HCl, Cl₂

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

DOT UN/NA NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL:

OSHA: NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA Inventory.

SECTION 16 - OTHER INFORMATION

HMSIS RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

KEY: N.D.: Not Determined N.A.: Not Applicable N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

END OF MSDS.

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – LIME GREEN

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180
 1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	10-50%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Yellow
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.10-1.50
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – MAGENTA

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180
 1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC)

Telefax: 540-678-1729

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Dipropylene glycol dibenzoate	27138-31-4	70-90%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Red
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.00-1.20
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:

Safety Data Sheet

PIGMENT – MAGENTA

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Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Dipropylene glycol dibenzoate	LC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECL, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – BLUE

Description: Pigment concentrate

Usage: Colorant for polyurethane elastomers

Restriction: Limited to use by manufacturer-authorized industrial applicators

 Company: Technical Urethanes, Inc.
3070C Shawnee Dr.
Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

1-800-424-9300 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

703-527-3887 (CHEMTREC) (USA & Canada)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:

Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.

Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.

IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	10-40%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Blue
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.20-1.50
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION**Product: PIGMENT – OLIVE DRAB**

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
3070C Shawnee Dr.
Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180
1-800-424-9300 (CHEMTREC) (USA & Canada)
703-527-3887 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

2. HAZARDS IDENTIFICATION**GHS Classification:**

None

GHS Label Elements:

Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	10-50%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Yellow
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.10-1.50
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G
HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – ORANGE

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

Telefax: +1 540 678-1729

 1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC) (USA & Canada)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Orange
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.10-1.30
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:

Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Dipropylene glycol dibenzoate	LC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – PURPLE

Description: Pigment concentrate
Usage: Colorant for polyurethane elastomers
Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone:	540-533-4180	Emergency Telephone Numbers	540-533-4180 1-800-424-9300 (CHEMTREC) (USA & Canada) 703-527-3887 (CHEMTREC)
Telefax:	+1 540 678-1729		

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	10-30%
Dipropylene glycol dibenzoate	27138-31-4	50-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Blue
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.20-1.50
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G
HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – RED C-13

Description: Pigment concentrate

Usage: Colorant for polyurethane elastomers

Restriction: Limited to use by manufacturer-authorized industrial applicators

 Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

1-800-424-9300 (CHEMTREC) (USA & Canada)

Telefax: +1 540 678-1729

703-527-3887 (CHEMTREC) (International)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:

Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.

Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.

IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Dipropylene glycol dibenzoate	27138-31-4	40-90%

4. FIRST AID MEASURES
Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Red
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.00-1.20
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:

Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Dipropylene glycol dibenzoate	LC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION

Land –US DOT

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G

HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **PIGMENT - ROYAL BLUE (MAR BLUE 12)**
 PRODUCT TYPE: Pigment solution for polyurethane elastomers

Technical Urethanes
 Div. of Trelleborg Engineered Products, Inc.
 3470 Martinsburg Pike
 Clearbrook, VA 22624

Emergency (CHEMTREC): (800) 424-9300
 Customer Service: (888) 832-4842
 (540) 667-1770

MSDS via internet:

EFFECTIVE: 21 Mar 2006 (Change to section 1)
 SUPERCEDES: 06/17/2003

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	ACGIH/TLV	OSHA/PEL	CEILING	IDLH	UNITS
Titanium Dioxide	13463-67-7	35 - 45	10.00	5.00	N.E.	N.E.	mg/m ³
Copper	147-14-8	<2.00	1.00	1.00	N.E.	N.E.	mg/m ³

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF ACUTE OVEREXPOSURE:

EYE CONTACT: May cause minor irritation without corneal injury.

SKIN CONTACT: May cause mild irritation.

INHALATION: No known effects.

INGESTION: May cause gastrointestinal irritation including nausea, vomiting, and diarrhea.

EFFECTS OF CHRONIC OVEREXPOSURE: No known effects.

PRIMARY ROUTES OF ENTRY: skin contact, eye contact, ingestion

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.

SKIN CONTACT: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention. Wash clothing thoroughly before reuse.

INHALATION: Remove person to fresh air. Seek medical aid.

INGESTION: Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 380°F (193°C) PMCC

LOWER EXPLOSIVE LIMIT: Not determined
UPPER EXPLOSIVE LIMIT: Not determined

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

STORAGE: Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100°F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Design use areas to minimize risk of exceeding occupational limits for contact.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved chemical or air-supplied respirator if air monitoring exhibits chemical concentrations above occupational limits.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT :	Not determined	VAPOR DENSITY :	Not determined
APPEARANCE :	Blue liquid or paste	ODOR THRESHOLD :	Not determined
ODOR :	Negligible	EVAPORATION RATE :	Slower than ether
SOLUBILITY IN H₂O :	Appreciable (10-20%)	DENSITY, LB/GAL :	12.10 - 12.90
FREEZE POINT :	Not determined	SPECIFIC GRAVITY :	1.45 - 1.55
VAPOR PRESSURE :	Not determined	VOLATILE BY WEIGHT :	0
pH :	Not Applicable	VOLATILE BY VOLUME :	0

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Contact with strong oxidizers. Carrier resin heated in the presence of oxygen to temperatures above:212°F (100°C) may form aldehydes.

INCOMPATIBILITY: Isocyanates and other materials that react with hydroxyl groups, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic acids, low molecular weight hydrocarbons, organic acids, oxides of nitrogen, HCl, Cl₂.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

DOT UN/NA NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL:

OSHA: NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA inventory.

SECTION 16 - OTHER INFORMATION

HMIS RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

KEY: N.D.: Not Determined N.A.: Not Applicable N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-END OF MSDS-

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **PIGMENT - TEAL**
 PRODUCT TYPE: Pigment solution for polyurethane elastomers

Technical Urethanes
 Div. of Trelleborg Engineered Products, Inc.
 3470 Martinsburg Pike
 Clearbrook, VA 22624

Emergency (CHEMTREC): (800) 424-9300
 Customer Service: (888) 832-4842
 (540) 687-1770

MSDS via internet:

EFFECTIVE: 21 Mar 2006 (Change to section 1)
 SUPERCEDES: 06/17/2003

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	ACGIH/TLV	OSHA/PEL	CEILING	IDLH	UNITS
Titanium Dioxide	13463-67-7	10 - 20	10.00	5.00	N.E.	N.E.	mg/m ³
Copper	147-14-8	<2.00	1.00	1.00	N.E.	N.E.	mg/m ³
Carbon Black	1333-86-4	<2.00	3.50	3.50	N.E.	N.E.	mg/m ³

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF ACUTE OVEREXPOSURE:

EYE CONTACT: May cause minor irritation without corneal injury.

SKIN CONTACT: May cause mild irritation.

INHALATION: No known effects.

INGESTION: May cause gastrointestinal irritation including nausea, vomiting, and diarrhea.

EFFECTS OF CHRONIC OVEREXPOSURE: No known effects.

PRIMARY ROUTES OF ENTRY: skin contact, eye contact, ingestion

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of fresh water for at least 15 minutes. Hold the eyelids open all of the time. Seek medical attention.

SKIN CONTACT: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention. Wash clothing thoroughly before reuse.

INHALATION: Remove person to fresh air. Seek medical aid.

INGESTION: Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 380°F (193°C) PMOC

LOWER EXPLOSIVE LIMIT: Not determined
UPPER EXPLOSIVE LIMIT: Not determined

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Alcohol foam, Carbon dioxide, Dry chemical, or Water spray (fog)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Keep containers closed when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

STORAGE: Store in tightly sealed containers away from moisture and direct sunlight. Store at temperatures less than 100°F. This material has a shelf life of one year minimum.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Design use areas to minimize risk of exceeding occupational limits for contact.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved chemical or air-supplied respirator if air monitoring exhibits chemical concentrations above occupational limits.

SKIN PROTECTION: Wear resistant material equipment (consult your safety equipment supplier).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; However, OSHA regulations also permit other type safety glasses (consult your safety equipment supplier).

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT :	Not determined	VAPOR DENSITY :	Not determined
APPEARANCE :	Teal liquid or paste	ODOR THRESHOLD :	Not determined
ODOR :	Negligible	EVAPORATION RATE :	Slower than ether
SOLUBILITY IN H₂O :	Appreciable (10-20%)	DENSITY, LB/GAL :	9.60 - 10.45
FREEZE POINT :	Not determined	SPECIFIC GRAVITY :	1.15 - 1.25
VAPOR PRESSURE :	Not determined	VOLATILE BY WEIGHT :	0
pH :	Not Applicable	VOLATILE BY VOLUME :	0

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Contact with strong oxidizers. Carrier resin heated in the presence of oxygen to temperatures above 212°F (100°C) may form aldehydes.

INCOMPATIBILITY: Isocyanates and other materials that react with hydroxyl groups, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic acids, low molecular weight hydrocarbons, organic acids, oxides of nitrogen, HCl, Cl₂.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

No data available.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state, and local environmental control regulations. As shipped, this product is not a hazardous waste in accordance with 40CFR Part 261. If waste containing this product is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

SECTION 14 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Not regulated by US DOT or IATA

DOT HAZARD CLASS: Not Applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not Applicable

DOT UN/NA NUMBER: Not Applicable

PACKING GROUP: Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL:

OSHA: NOT hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 313: This product contains NO substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

INVENTORY STATUS: All components of this material are on the TSCA inventory.

SECTION 16 - OTHER INFORMATION

HMIS RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

KEY: N.D.: Not Determined N.A.: Not Applicable N.E.: Not Established

NOTE: The data in this Material Safety Data Sheet relates only to the material designated herein, and does not relate to use in combination with any other material, or in any process. The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-END OF MSDS-

1. PRODUCT AND COMPANY IDENTIFICATION

Product: PIGMENT – WHITE C-08

Description: Pigment concentrate
 Usage: Colorant for polyurethane elastomers
 Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

Telefax: +1 540 678-1729

1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC) (USA & Canada)

2. HAZARDS IDENTIFICATION

GHS Classification:

None

GHS Label Elements:

Hazard Symbols:

None

Signal Word: N/A

Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	40-80%
Dipropylene glycol dibenzoate	27138-31-4	20-60%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	White
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.70-2.20
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian: negative +/- activation Chromosomal aberration: negative +/- activation Mutagenicity - Bacterial: negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96h
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G
HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

1. PRODUCT AND COMPANY IDENTIFICATION
Product: PIGMENT – YELLOW

Description: Pigment concentrate
 Usage: Colorant for polyurethane elastomers
 Restriction: Limited to use by manufacturer-authorized industrial applicators

Company: Technical Urethanes, Inc.
 3070C Shawnee Dr.
 Winchester, VA 22601 USA

Telephone: 540-533-4180

Emergency Telephone Numbers 540-533-4180

Telefax: +1 540 678-1729

Telephone Numbers 1-800-424-9300 (CHEMTREC) (USA & Canada)
 703-527-3887 (CHEMTREC) (International)

2. HAZARDS IDENTIFICATION
GHS Classification:

None

GHS Label Elements:
Hazard Symbols:

None

Signal Word: N/A
Hazard Statements:

N/A - does not meet criteria for classification

Prevention:

Wear permeation resistant protective gloves and clothing.
 Wear eye and face protection.

Response:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Get medical attention if symptoms develop.
 IF SPILLED: Collect spillage and dispose of properly.

Storage:

Store away from incompatible materials

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Weight
Titanium Dioxide	13463-67-7	10-50%
Dipropylene glycol dibenzoate	27138-31-4	40-80%

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of fresh water for at least 15 minutes, holding eyelids open the entire time. Seek medical attention.

Skin Contact: Remove contaminated clothing immediately, and wash affected areas thoroughly with soap, or tincture of green soap, and water for at least 15 minutes. Wash clothing thoroughly before reuse. Seek medical attention. For severe exposures, get under a safety shower after removing clothing, get medical attention.

Inhalation: Move affected persons to fresh air. If breathing is difficult, administer assisted respiration or oxygen. Prevent aspiration of vomit. Turn person's head to the side. Seek medical attention.

Ingestion: Immediately drink two glasses of water or milk and call a physician. Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, Foam, Carbon dioxide, or Dry chemical.

Unusual Fire and Explosion Hazards: Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

Special Firefighting Procedures: Wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires. Water spray may be ineffective. If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Contain any spills with dikes or absorbents to prevent migration into sewers, soil, or streams. Collect small spills with dry chemical absorbent. Large spills may be collected with pump and vacuum, and concluded with dry chemical absorbent. Contaminated soil may require excavation removal. Eliminate all ignition sources. Persons not wearing the proper protective equipment should be excluded from the area of the spill until cleanup has been completed. Safely stop spill at their source if possible.

Environmental: Avoid contamination of bodies of water, waterways, or ditches, with chemical or used container. If runoff occurs, notify proper authorities, as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Keep containers tightly-closed and upright when not in use. All label precautions must be observed when handling or transporting empty containers due to product residues. Neutralize residues with the appropriate substances for this material.

Storage: Protect from moisture and heat. Store in tightly sealed containers away from moisture and direct sunlight. Applying dry nitrogen or argon to containers prior to resealing is preferable. Optimum storage temperature is below 77° F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Controls: Contains no ingredients with workplace controls applicable to their form in this product.

General Overview: Avoid inhalation and skin contact with this material.

Engineering Controls: Ventilation matched to conditions to ensure airborne concentrations are below any specified levels. Prevent means to extract and dry the solid powders from this liquid.

Respiratory Protection: Without ventilation, wear appropriate respirator to maintain inhalation exposures below any specified levels.

Skin Protection: Wear product-resistant, impermeable protective clothing (consult your safety equipment supplier).

Eye Protection: Chemical splash goggles are recommended, although standard safety glasses are acceptable for non-spray application or in areas where splashing can not occur.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing.

Hygienic Practices: Wash hands after use, regardless of perceived contact with the product. Do not smoke in any chemical handling or storage area. Food or beverages should not be consumed anywhere this product is handled or stored.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Viscous liquid to paste
Color:	Yellow
Odor:	Slight
Boiling Point:	Not determined
Flash Point:	<212°F (100°C) S.C.C.
Lower Explosive Limit:	Not determined
Upper Explosive Limit:	Not determined
Autoignition Temperature:	Not determined
Specific Gravity:	1.10-1.50
Volatile by Weight:	<5% (EPA Method 24)
VOC	<0.50 lbs./gal. (EPA Method 24)
Vapor pressure	Not determined
Vapor density	Not determined
Evaporation rate	Not determined
Solubility in water	Negligible / reacts with water

10. STABILITY AND REACTIVITY

Conditions To Avoid: Temperatures above 212°F (100°C).

Incompatibility: Strong oxidizers.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: None known.

Stability: Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

The product as a whole is not tested. Known information on individual components relevant in their current form:

Acute toxicity, dermal:	
Dipropylene glycol dibenzoate	LD ₅₀ : >2000 mg/kg (rabbit)
Acute toxicity, inhalation:	
Dipropylene glycol dibenzoate	LC ₅₀ : >200 mg/l (rat) 4h
Repeated Dose Toxicity:	
Dipropylene glycol dibenzoate	NOAL: 1000mg/kg (rat, in food) 90d
Skin irritation:	
Dipropylene glycol dibenzoate	non-irritating (rabbit) 4h
Eye irritation:	
Dipropylene glycol dibenzoate	slight (rabbit)
Sensitization:	
Dipropylene glycol dibenzoate	non-sensitizing (guinea pig)
Mutagenicity:	
Dipropylene glycol dibenzoate	Mutagenicity - Mammalian, : negative +/- activation Chromosomal aberration, : negative +/- activation Mutagenicity - Bacterial, : negative +/- activation
Carcinogenicity:	
Titanium Dioxide	IARC 2B Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

The product itself is not tested. Known information on individual components:

Toxicity to Fish:	
Titanium Dioxide	LC ₅₀ : >1000 mg/l (Fundulus heteroclitus) 96hh
Dipropylene glycol dibenzoate	LC ₅₀ : 3.7 mg/l (fish) 96h
Toxicity to Aquatic Invertebrates:	
Titanium Dioxide	EC ₅₀ : >1000 mg/l (daphnia magna)
Dipropylene glycol dibenzoate	EC ₅₀ : 19.3 mg/l (daphnia magna)
Toxicity to Algae / Plants:	
Dipropylene glycol dibenzoate	LC ₅₀ : 4.9 mg/l (algae), 72h
Biodegradation:	
Dipropylene glycol dibenzoate	Readily biodegradable

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be done in accordance national, regional, and local regulations. If waste containing this product is determined to be hazardous, use a licensed hazardous waste transporter and disposal facility.

14. TRANSPORTATION INFORMATION**Land –US DOT**

Not regulated

Air - IATA-DGR

Not regulated

Maritime - IMDG

Not regulated

15. REGULATORY INFORMATION

OSHA: Not hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200).

SARA SECTION 302 (Extremely Hazardous Materials):

None

SARA SECTION 312:

None

SARA SECTION 313 (Toxic Chemicals):

None

CERCLA Hazardous Substance List (40 CFR 302.4)

None

TSCA Section 8 (d) (Data Reporting Rule):

None

INVENTORY STATUS: All components are on the US TSCA, Canada DSL, Korea KECI, Japan ENCS, and Australia AICS inventories.

16. OTHER INFORMATION

HMIS II RATINGS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0 PROTECTIVE EQUIPMENT: G
HMIS III RATINGS: HEALTH: 1 FLAMMABILITY: 1 PHYSICAL HAZARD: 0 PERSONAL PROTECTION: G

Note: The information herein is furnished free of charge, and is based upon technical data that Technical Urethanes, Inc. believes to be reliable, and to the best of our knowledge, accurately reflects the properties and effects of the hazardous components. This product is intended for use by persons having technical skills, and at their own discretion and risks. Because conditions of use of this material are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this material.

-End of SDS-

APPENDIX F – SPRAY BOOTH FILTRATION EFFICIENCY SPECIFICATIONS

RP Paint Arrestors: an improved and expanded total product line, nationwide *distribution* and *on-site* design consultants create the most effective, least expensive overspray collection system for *your* operation.

RP Paint Arrestors are disposable paint overspray collectors that efficiently trap paint solids before they reach the exhaust stack. These were the first dry filters specifically designed to control paint overspray. Through the years, the RP family of standard, high efficiency and high capacity Paint Arrestors has proven to be a cost effective, efficient way to handle virtually every overspray requirement. Fabricated of slit and expanded paper, or slit and expanded paper with polyester, the multiple layers of RP Paint Arrestors are assembled so the intake side has larger openings than the exhaust side. This provides depth loading for maximum service life.



PRODUCT

Now, our total product line has again been expanded and improved: new designs in every RP Paint Arrestor require less storage space and less material to dispose of, while providing the same outstanding performance as always.

Our newest product, the Prefilter 3500 Series RP Paint Arrestor, can extend product usage even more - for greater service and less frequent change-outs. The RP Prefilter, made of three layers of slit and expanded paper, becomes a life extender regardless of the type of primary overspray collector used behind it.

Every RP Paint Arrestor including the prefilter series has a new, patented face sheet design. It produces a unique airflow pattern which traps more overspray using less material than previously.

You save by:

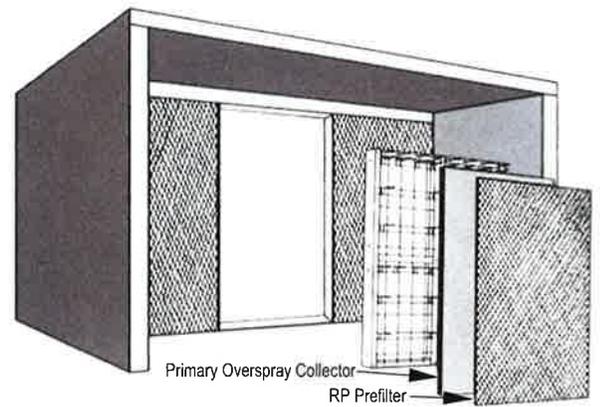
- reducing the volume of stored material,
- reducing the number of change-outs,
- reducing down time, and
- reducing the amount of material to dispose of.

RP Booth Paper is also available to help maintain a clean working environment in the paint booth. The 300' Kraft rolls are available in various widths to accommodate virtually any size booth.

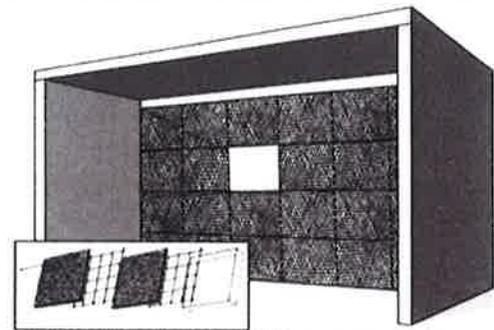
As an additional product improvement RP Paint Arrestors and booth paper have followed the recommendations of the industry consensus N.F.P.A. Standard No.33, and the currently practiced policies of the Occupational Safety & Health Administration (OSHA) by removing so-called flame-retardant salts. This was done because it is the paint overspray rather than the collector that is flammable. This eliminates toxic gases during incineration as well as phosphates and sulfates leaching out of the landfill. It also helps you meet state and municipal government codes and requirements.

DISTRIBUTION

To reduce your need for onsite storage, a nationwide network of high quality distributors assures that RP Paint Arrestors and accessories are always available. Distributor inventory also includes the practical hardware needed to make the *simple conversion* to the RP Paint Arrestor system using either pad or roll applications, or to convert from pads to the more economical rolls.



ROLL BOOTH DESIGN: The industry trend is toward roll booth design, especially for high volume operations. This is due to the reduced labor involved in changing the wide strips of roll material rather than smaller, modular pads. Rolls are available in standard 45" widths and a number of standard lengths. The booth is easily assembled using sections of $\frac{3}{16}$ " steel gridwork, each supported by a steel frame. Perpendicular support rods hold the rolls, and any bypass space is covered with sheet metal. Changeover is quickly accomplished by merely replacing each roll.



MODULAR BOOTH DESIGN FOR PADS: An RP Paint Arrestor bank is easily assembled by riveting together the number of holding frames required for a specific installation. Any bypass space is blanked off with sheet metal. A downstream Snap-In Grid is placed in each holding frame. An RP Point Arrestor pad is then placed against the installed grid. Another grid is positioned and a second pad is installed to complete the installation.

ON-SITE ASSISTANCE

You will *save* by converting to the RP Paint Arrestor system from whatever you may be using now - fiberglass, cardboard, pleated, polyester, styrofoam, or water wash. Your distributor along with a qualified representative from Research Products, the makers of RP Paint Arrestors, will work with you at your location to test, evaluate, and provide the field engineering needed to help you convert to the RP system. This process will create the most effective, least expensive system of paint overspray collection for your operation.

Any paint spray booth in use today can be easily converted to incorporate RP Paint Arrestors. The two major components (booth shell and exhaust fan) are already there and a like-new booth can be created with a minimum investment. If there are baffles or no collection system in the booth, hardware for rolls or a bank of modules can be easily erected and positioned ahead of the exhaust fan.

Product Evaluation

Any overspray collection system should be evaluated and selected based on three performance criteria:

- Optimum *efficiency* necessary to reduce booth maintenance to the lowest practical level while minimizing contamination of air, soil, water, and structures from overspray exhaust.
- Minimum airflow *resistance* necessary to meet operational and environmental requirements while reducing the health and product quality concerns caused by booth "blow back" or "fogging".
- Maximum *service life* necessary to provide adequate overspray holding capacity while reducing the labor and materials involved with more frequent change-outs.

The RP Paint Arrestor product line delivers all three as shown in the Product Overview below.

PRODUCT OVERVIEW

3000 Series Standard RP Paint Arrestors

This series provides good all-around performance for general applications and can be used for most coatings applied by the various spray coating methods. The 3000 Series provides a degradable, economical solution to your overspray needs. Available in roll or modular pad form, its recommended usage consists of two pad or roll layers in tandem.

3100 Series Standard High Efficiency RP Paint Arrestors

This product has all the characteristics of the 3000 Series, but is designed to hold up to twice the overspray before changing is required. This double service life makes this series ideal for high production applications and wherever a large volume of coating is applied in a relatively small booth space. This longer service life results in less down time, fewer changeovers and greater economy. Rolls or pads are used in tandem. The product is ideal for heavy, tacky coatings or slower drying finishes, but it is not recommended for quick dry lacquer type coatings.

3200 Series Spra-Gard® High Efficiency RP Paint Arrestors

This overspray product is also similar to the 3000 Series, but has an added polyester backing which increases the overall efficiency needed for very finely atomized overspray particles. Producing excellent efficiencies, the 3200 Series results in a 50% reduction of overspray up the stack, and the

poly backing makes it ideal for coating at any rate of production. It is available in pad or roll form and its recommended use is two in tandem.

3300 Series Spra-Gard® High Efficiency RP Paint Arrestors

The finest efficiencies possible can be achieved with this series of Paint Arrestors. This performance is achieved through the use of a high-density polyester backing which is structurally very strong. Due to the high efficiency, only one roll or pad layer is necessary.

3400 Series Spra-Gard® High Capacity High Efficiency RP Paint Arrestors

This series has all the features and advantages of the 3300 Series, plus a longer service life. It is ideal for extremely high production applications because both peak efficiency and service life can be achieved, thereby reducing downtime and increasing the time interval between changes.

3500 Series Prefilter RP Paint Arrestors

Designed as a life extender for any primary overspray collector, this Prefilter Arrestor reduces the amount of paint overspray reaching the more expensive collector. It will reduce costs, increase the service life of the primary collector and increase the flexibility of your spraying operation. It can be used in any type of sprayed coating application.

PAINT ARRESTOR EFFICIENCY/OVERSPRAY PENETRATION

To assure clean exhaust air, Paint Arrestor selection should be influenced by the volume of paint to be sprayed. Larger volumes require a Paint Arrestor of higher efficiency (see chart at right). The chart below shows Paint Arrestor efficiency/overspray penetration based on 1,000 lbs. of overspray solids at the Paint Arrestor.

Paint Arrestor Efficiency	Overspray Penetration	Overspray Released To The Exhaust Air
90%	10%	100 lbs.
92%	8%	80 lbs.
94%	6%	60 lbs.
96%	4%	40 lbs.
98%	2%	20 lbs.
99%	1%	10 lbs.
99.5%	0.5%	5 lbs.
99.9%	0.1%	1 lb.

Example: Booth maintenance would be required ten times more often if the efficiency is 99% versus 99.9%. Both higher efficiency and cleaner exhaust air reduce costs.

NOTE: There are minimum efficiency levels required for many situations that we can help determine in a site evaluation at your specific operation. Maximum efficiency is very important when a volatile organic compound (VOC) abatement system such as a thermal oxidizer is used. For best performance, the abatement system must remain clean.

PAINT ARRESTOR PRODUCT SPECIFICATIONS

PADS, ROLLS, HARDWARE, ACCESSORIES, AND BOOTH PAPER

Stock No.	Description	Qty./Pkg.	Stock No.	Description	Qty./Pkg.	Stock No.	Description	Qty./Pkg.
3031	20" x 25" Paint Arrestor	70/ Carton	3252	7' x 45" Spra-Gard Paint Arrestor	4/ Bag	942	20" x 20" x 2-7/8" Holding Frame	8/ Carton
3032	20" x 20" Paint Arrestor	70/ Carton	3253	8' x 45" Spra-Gard Paint Arrestor	4/ Bag	1010	20" Single Wire Rod	25/ Tube
3020	40' x 22½" Paint Arrestor	2/ Bag	3266	30' x 45" Spra-Gard Paint Arrestor	1/ Bag	1025	25" Single Wire Rod	10/ Tube
3039	40' x 45" Paint Arrestor	1/ Bag	3331	20" x 25" Spra-Gard Paint Arrestor	60/ Carton	1011	20" x 25" Snap-in Grid	40/ Carton
3051	6' x 45" Paint Arrestor	6/ Bag	3332	20" x 20" Spra-Gard Paint Arrestor	60/ Carton	1012	20" x 20" Snap-in Grid	40/ Carton
3052	7' x 45" Paint Arrestor	5/ Bag	3351	6' x 45" Spra-Gard Paint Arrestor	5/ Bag	1017	20" x 20" Conversion Grid	10/ Carton
3053	8' x 45" Paint Arrestor	4/ Bag	3352	7' x 45" Spra-Gard Paint Arrestor	4/ Bag	1018	20" x 25" Conversion Grid	10/ Carton
3131	20" x 25" High Capacity Paint Arrestor	30/ Carton	3353	8' x 45" Spra-Gard Paint Arrestor	4/ Bag	1019	20" x 36" Conversion Grid	10/ Carton
3132	20" x 20" High Capacity Paint Arrestor	30/ Carton	3366	30' x 45" Spra-Gard Paint Arrestor	1/ Bag	1030	Spra-Pak® 20" W x 72" H (including grids)	1/ Carton
3135	20" x 45" High Capacity Paint Arrestor	1/ Bag	3451	6' x 45" High Capacity / High Efficiency	4/ Bag	1015	Spra-Pak® Grid	
3151	6' x 45" High Capacity Paint Arrestor	4/ Bag	3453	8' x 45" High Capacity / High Efficiency	3/ Bag	1016	Spra-Pak® Upper Support Grid	
3152	7' x 45" High Capacity Paint Arrestor	3/ Bag	3466	30' x 45" High Capacity / High Efficiency	1/ Bag	3041	36" x 300' Booth Floor Paper (Kraft)	
3153	8' x 45" High Capacity Paint Arrestor	3/ Bag	3551	6' x 45" Prefilter Paint Arrestor	8/ Bag	3042	42" x 300' Booth Floor Paper (Kraft)	
3231	20" x 25" Spra-Gard Paint Arrestor	60/ Carton	3553	8' x 45" Prefilter Paint Arrestor	6/ Bag	3043	60" x 300' Booth Floor Paper (Kraft)	
3232	20" x 20" Spra-Gard Paint Arrestor	60/ Carton	3599	100' x 45" Prefilter Paint Arrestor	1/ Bag	3044	72" x 300' Booth Floor Paper (Kraft)	
3251	6' x 45" Spra-Gard Paint Arrestor	5/ Bag	941	90" x 25" x 2-7/8" Holding Frame	6/ Carton			

45" product is designed for overlap and positive seal at vertical seams. Custom sizes are available. Contact manufacturer for details.

PAINT ARRESTOR PERFORMANCE

Product	Velocity (fpm)	Resistance (in. w.g.)	Average Efficiency Range
3000 Series Standard RP Paint Arrestors	100	0.020	96.5 to 97.5% high solids bake enamel 93.0 to 94.0% waterborne bake enamel Tested using two pads in tandem
	200	0.060	
	300	0.120	
3100 Series Standard High Capacity RP Paint Arrestors	100	0.020	94.0 to 96.0% high solids bake enamel 91.5 to 92.5% waterborne bake enamel Tested using two pads in tandem
	200	0.050	
	300	0.100	
3200 Series Spra-Gard High Efficiency RP Paint Arrestors	100	0.055	98.5 to 99.5% high solids bake enamel 97.0 to 98.0% waterborne bake enamel 94.0 to 95.0% lacquer Tested using two pads in tandem
	200	0.125	
	300	0.225	
3300 Series Spra-Gard High Efficiency RP Paint Arrestors	100	0.055	99.5 to 99.9% high solids bake enamel 98.5 to 99.2% waterborne bake enamel 95.0 to 96.0% lacquer Tested using single pad
	200	0.136	
	300	0.256	
3400 Series Spra-Gard High Capacity High Efficiency RP Paint Arrestors	100	0.065	99.5 to 99.9% high solids bake enamel Tested using single pad
	200	0.153	
	300	0.283	

Performance information shown was obtained using equipment similar to that incorporated by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) in evaluating performance of air cleaning media. Details regarding equipment testing procedure and test results are available by writing for Reprint No. 4259.

APPENDIX G – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Maravia Corp of Idaho
Address: 602 E. 45th St.
City: Boise
State: Idaho
Zip Code: 83714
Facility Contact: Angela Sherman
Title: COO
AIRS No.: 001-00361

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.3	0	0.3
SO ₂	0.002	0	0.0
CO	0.3	0	0.3
PM10	0.6	0	0.6
VOC	18.7	0	18.7
Total:	19.8	0	19.8
Fee Due	\$ 5,000.00		

Comments: