

Material Safety Data Sheet

Version 5.0

Revision Date 07/13/2012

Print Date 08/20/2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Aluminum sulfate hexadecahydrate

Product Number : 06421

Brand : Fluka

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Target Organ Effect, Irritant

Target Organs

Lungs, Bone

GHS Classification

Serious eye damage (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H318

Causes serious eye damage.

Precautionary statement(s)

P280

Wear protective gloves/ eye protection/ face protection.

P305 + P351 + P338

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

HMIS Classification

Health hazard: 2

Chronic Health Hazard: *

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 2

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $\text{Al}_2\text{O}_{12}\text{S}_3 \cdot 16\text{H}_2\text{O}$
Molecular Weight : 630.40 g/mol

Component		Concentration
Aluminium sulphate hexadecahydrate		
CAS-No.	16828-11-8	-
EC-No.	233-135-0	

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Aluminum oxide

Further information

The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Aluminium sulphate hexadecahydrate	16828-11-8	TWA	2 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	2 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		TWA	2 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Personal protective equipment**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form	solid
Colour	white

Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	not applicable
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available

Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Aluminum oxide

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 Oral - rat - > 5,000 mg/kg

Inhalation LC50

no data available

Dermal LD50

no data available

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - rabbit - No skin irritation

Serious eye damage/eye irritation

Eyes - rabbit - Severe eye irritation

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

no data available

Additional Information

RTECS: WS5696000

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Aluminium sulphate hexadecahydrate)
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards

Target Organ Effect, Irritant

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Aluminium sulphate hexadecahydrate

CAS-No.	Revision Date
16828-11-8	1993-04-24

Pennsylvania Right To Know Components

Aluminium sulphate hexadecahydrate

CAS-No.	Revision Date
16828-11-8	1993-04-24

New Jersey Right To Know Components

Aluminium sulphate hexadecahydrate

CAS-No.	Revision Date
16828-11-8	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

HMIS: H=2*, F=3, R=0, PPE=J
* = Chronic health effects
may occur

MATERIAL SAFETY DATA SHEET
for
COATINGS, RESINS, and RELATED MATERIALS

SECTION I - PRODUCT IDENTIFICATION

Trade Name & Synonyms:

Formula:

MEDIUM BLUE HIGH RELEASE

P.C. Number:

Telex:

Date of Preparation: 19 April 2007

Supersedes: 14 February 2003

**IMPORTANT: BEFORE USING MEDIUM BLUE HIGH RELEASE,
HAVE ALL PROCESSING PERSONNEL READ THIS DOCUMENT!**

SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
FLUORINATED ETHYLENE PROPYLENE 25067-11-2 FEP	TWA = 15 mg/m3	TWA = 10 mg/m3	No recommendation
TITANIUM DIOXIDE 13463-67-7	TWA = 10 mg/m3	TWA = 10 mg/m3	No recommendation
N-METHYLPYRROLIDONE (NMP) 872-50-4 0.3 mm Hg at 20 C	Not established	Not established	No recommendation
METHYL ETHYL KETONE (MEK) 78-93-3 91 mm Hg at 25 C	TWA = 200 ppm	TWA = 200 ppm STEL = 300 ppm	No recommendation
XYLENE 1330-20-7 9.0 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 150 ppm	No recommendation
ETHYL BENZENE 100-41-4 7.1 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 125 ppm	No recommendation

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SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS (continued)

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
C.I. PIGMENT BLUE 28 1345-16-0	TWA = 0.1 mg/m3	TWA = 0.02 mg/m3	No recommendation
C.I. PIGMENT BLUE 29 57455-37-5	TWA = 15 mg/m3	TWA = 10 mg/m3	No recommendation
GAMMA-BUTYROLACTONE (BLO) 96-48-0 1.0 mm Hg at 20 C	Not established	Not established	No recommendation
SOLVENT NAPHTHA HEAVY AROMATIC 64742-94-5 3.0 mm Hg at 25 C	Not established	Not established	No recommendation
NAPHTHALENE 91-20-3	TWA = 10 ppm, 50 mg/m3.	(skin) TWA = 10 ppm STEL = 15 ppm	No recommendation

SECTION III - PHYSICAL DATA

Appearance : Viscous, blue, liquid dispersion.
 Boiling point (range) . . . : 79.6 TO 210 degrees C
 Vapor density : Heavier than air
 Evaporation rate : Slower than ether
 Specific gravity (H2O = 1): 1.13
 Percent volatile by volume: 80.2 %

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Lower Explosive Limit (%): 1.00
Flash point (Method Used): -6 degrees C (Setaflash)

Extinguishing Media:

Use carbon dioxide (CO2), alcohol foam, dry chemical, or water spray/water fog extinguishing systems.

Special Fire Fighting Procedures:

Firemen and emergency responders: wear full turnout gear or Level A equipment including positive-pressure, self-contained breathing apparatus (SCBA). If evacuation of personnel is necessary, evacuate to an upwind area. Decontaminate personnel and equipment with a water wash-down after fire and smoke exposure.

Unusual Fire and Explosion Hazards:

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The product vapor is heavier than air and may travel a considerable distance to a source of ignition and flashback.

SECTION V - HEALTH HAZARD DATAPrimary Route(s) of Entry and Exposure:

Inhalation: Yes Skin absorption: Yes Ingestion: Yes Skin or eye contact: Yes

Carcinogenicity: The following chemicals comprise 0.1% or more of this mixture and are listed and/or classified as carcinogens or potential carcinogens by NTP, IARC, OSHA or ACGIH.

<u>Chemical</u>	<u>Reference</u>	<u>Category</u>
TITANIUM DIOXIDE	IARC	Group 2B Possible human carcinogen
C.I. PIGMENT BLUE 28	IARC	POSSIBLE HUMAN CARCINOGEN (GROUP 2B)
NAPTHALENE	NTP	Anticipated human carcinogen
	IARC	Group 2B Possible human carcinogen
	OSHA	OSHA Carcinogen

Effects of Overexposure, FLUORINATED ETHYLENE PROPYLENE:

Inhalation - Inhalation of high concentrations of fluorinated ethylene propylene (FEP) dust may cause irritation of the lungs.

Skin contact - FEP is neither a skin irritant nor a sensitizer.

Skin absorption - Skin permeation following contact with FEP is unlikely.

Eye contact - FEP may cause mechanical irritation of the eyes.

Ingestion - FEP is not known to be hazardous by ingestion.

Systemic &
other effects - No data found.

Supplemental
health
information - Exposure to fumes and ultra-fine particulate matter which are generated during high-temperature processing of FEP may cause a flu-like condition known as "polymer fume fever" (PFF). The symptoms of PFF are chills, fever, chest pains, coughing, and shortness of breath. These symptoms do not necessarily occur at the time of exposure, but may require several hours to develop. The symptoms usually pass within 24 hours.

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There are some reports in literature of persistent pulmonary effects in individuals, especially smokers, who have repeated episodes of PFF. Because of complicating factors such as mixed exposures and smoking history, these findings are uncertain.

The inhalation of smoke from tobacco which is contaminated with FEP may also cause PFF, therefore, smokers should avoid contamination of tobacco products and wash their hands before smoking.

To prevent the evolution of fumes, do not expose FEP to open flames or extreme heat (welding; temperatures >360C/>680F). Avoid mechanical abrasion of coatings which contain FEP (grinding, machining). Mechanical abrasion may release and disperse small particles of dust and metal into the air. These particles may be harmful if inhaled.

Small amounts of carbonyl fluoride, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP is overheated or burned.

The OSHA PEL is for "Particulates Not Otherwise Regulated" (PNOR), total dust. The ACGIH TLV is for "Particulates (Insoluble) Not Otherwise Specified" (PNOS), Inhalable fraction.

Effects of Overexposure, TITANIUM DIOXIDE:

Inhalation -	Overexposure by inhalation of titanium dioxide dust may cause mild and temporary upper respiratory irritation with cough and shortness of breath.
Skin contact -	No data found.
Skin absorption -	No data found.
Eye contact -	No data found.
Ingestion -	No data found.
Systemic & other effects -	Long-term exposure to TiO ₂ dust may cause impaired lung function.
Supplemental health information -	TiO ₂ has been classified by IARC as an Group 2B Carcinogen "possible carcinogen to humans." It is a WHMIS Class D2A carcinogen.

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Effects of Overexposure, N-METHYLPYRROLIDONE (NMP):

Inhalation - May cause irritation of the respiratory tract.

Skin contact - NMP is a moderate skin irritant and may cause delayed skin irritation. Human experience has demonstrated redness, cracking and blistering of skin through repeated or prolonged contact.

Skin absorption - No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure.

Eye contact - Eye contact with NMP may cause moderate eye irritation including burning sensation, tearing, redness or swelling. May cause temporary corneal clouding.

Ingestion - NMP may be a health hazard if ingested in large quantities. Symptoms include nausea, dizziness, and vomiting.

Systemic & other effects - No relevant human data found.

Supplemental health information - NMP was reported to effect pregnancy and/or fetal development in laboratory animals. Recently completed studies and an independent, expert review of previous studies confirm that NMP is not a mutagen, teratogen, carcinogen, or reproductive toxin.

Effects of Overexposure, METHYL ETHYL KETONE (MEK):

Inhalation - Breathing high vapor concentrations or prolonged breathing of lower concentrations may cause irritation of the nose and throat, coughing, shortness of breath, dizziness, headache, intoxication, loss of consciousness and collapse.

Skin contact - Liquid is moderately irritating to the skin. Symptoms of exposure include: drying, cracking, a rash or a burning feeling on contact.

Skin absorption - Absorption of liquid through skin may cause a health hazard.

Eye contact - Vapors are irritating. Liquid is highly irritating and may cause a burning sensation, tearing, redness, and swelling of the eyes.

Ingestion - Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea. Also CNS depression with headache and mental sluggishness.

Systemic & other effects - No data found.

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Supplemental
health
information -

MEK is not neurotoxic. It has been shown to potentiate the neurotoxic effects of hexane, 2,5-hexanedione and methyl-n-ketone. MEK has also potentiated the liver toxicity of halogenated solvents (e.g. chloroform and carbon tetrachloride) in animal studies.

Effects of Overexposure, XYLENE:

Inhalation -

Inhalation of excessive concentrations of vapors or mists may cause irritation of the nose and throat, and signs of central nervous system depression (dizziness, drowsiness, fatigue and loss of coordination).

Skin contact -

is moderately irritating to the skin. Prolonged or repeated exposure may dry and defat skin leading to redness, cracking, burning and blistering of skin.

Skin absorption -

Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

Eye contact -

Vapors and mists may cause burning, tearing, and redness. Direct contact with liquid may cause severe irritation.

Ingestion -

Liquid is moderately toxic and may be harmful if swallowed. May cause irritation of the digestive tract, nausea, diarrhea, and signs of central nervous system depression (headache, dizziness, drowsiness, fatigue and loss of coordination).

Systemic &
other effects -

Prolonged or repeated exposure to vapor or mists may cause liver and kidney damage.

Supplemental
information -

If vomiting occurs, breathing of vomitus into the lungs poses a pulmonary aspiration hazard.

Effects of Overexposure, ETHYL BENZENE:

Inhalation -

May cause irritation to the respiratory tract.

Skin contact -

May cause irritation of the skin. Prolonged exposure may cause drying, scaling and even blistering of the skin.

Skin absorption -

No data found.

Eye contact -

May cause irritation of the eyes.

Systemic &

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other effects - Prolonged overexposure may damage the liver.

Supplemental health information - There is limited evidence that ethyl benzene causes cancer in animals. It may cause cancer of the kidneys.

Effects of Overexposure, C.I. PIGMENT BLUE 28:

Inhalation - Repeated overexposure may cause respiratory tract irritation.

Skin contact - Repeated overexposure may cause skin irritation.

Skin absorption - No data found.

Eye contact - Repeated overexposure may cause eye irritation.

Ingestion - No data found.

Systemic & other effects - No data found.

Supplemental health information - Some compounds of the metal contained in this pigment, cobalt, have demonstrated various toxic properties; however, there is no evidence that this pigment has these toxic characteristics. The OSHA PEL for cobalt metal, dust and fume (as Co) is 0.1 mg/m3.

Effects of Overexposure, C.I. PIGMENT BLUE 29:

Inhalation - Dust from product may cause irritation of respiratory system or a metallic taste in the mouth.

Skin contact - Non-irritant and non-sensitizing, but may cause discomfort.

Skin absorption - No data found.

Eye contact - May cause discomfort. Acts as a nuisance dust.

Ingestion - Ingesting small amounts is unlikely to produce any health risks.

Systemic & other effects - Prolonged exposure to dust may lead to pulmonary problems.

Supplemental health information - This pigment is formed by high temperature calcination. Therefore, it does not necessarily have any of the properties of its component oxides or metals.

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Effects of Overexposure, GAMMA-BUTYROLACTONE (BLO):

Inhalation - Inhalation of mists or vapors may cause respiratory irritation.

Skin contact - No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.

Skin absorption - Extensive, prolonged or repeated exposure can result in significant absorption.

Eye contact - Causes moderate eye irritation.

Ingestion - Harmful if ingested. May cause burns or irritation of the linings of the mouth, throat and gastrointestinal tract.

Systemic & other effects - In humans, oral ingestion of solutions containing high concentrations of GBL has caused respiratory depression, hypotension, agitation, and coma.

Supplemental health information - Gamma-butyrolactone was not carcinogenic in rats or mice by oral, subcutaneous injection, or dermal administration, nor was this material teratogenic in limited tests in rats.

Effects of Overexposure, SOLVENT NAPHTHA HEAVY AROMATIC:

Inhalation - Excessive inhalation of vapors may cause nasal and respiratory irritation, CNS effects including dizziness, weakness, nausea, headache, and possible unconsciousness, and even asphyxiation.

Skin contact - Prolonged or repeated contact may cause moderate irritation, defatting, and dermatitis.

Skin absorption - No data found.

Eye contact - May cause severe irritation, tearing, and blurred vision.

Ingestion - May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Systemic & other effects - Aspiration of material into the lungs, due to vomiting, may cause chemical pneumonitis, which can be fatal.

Supplemental information - No data found.

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Effects of Overexposure, NAPHTHALENE:

Inhalation - Inhalation of vapors can cause headache, nausea, vomiting, extensive sweating and confusion. The predominant reaction is delayed intravascular hemolysis with symptoms of anemia, fever, jaundice and kidney or liver damage.

Skin contact - May irritate the skin and, on prolonged contact, may cause rashes and allergy. Sensitized individuals may suffer severe dermatitis.

Skin absorption - No data found.

Eye contact - Vapors may cause irritation, redness and pain.

Ingestion - Toxic. May cause headache, profuse sweating, listlessness, dark urine, nausea, vomiting and disorientation. Intravascular hemolysis may also occur with symptoms similar to those noted for inhalation. Severe overexposure may produce coma with or without convulsions.

Systemic & other effects - Chronic exposure has led to cataract formation in the eyes. May cause skin allergy.

Supplemental health information - Repeated and/or prolonged exposure may cause damage to the blood, kidneys, liver, reproductive system and central nervous system.

Emergency & First Aid Procedures:

Inhalation: If overcome by product vapors, mists or processing fumes, remove the person from exposure immediately; call a physician. If breathing is irregular or stopped, start resuscitation.

Skin contact: In case of skin contact, remove contaminated clothing. Flush the skin with large amounts of water, then wash the skin with soap and water.

Eye contact: In case of eye contact, flush the eyes with water for 15 minutes. If contact lenses are worn, quickly remove them, then flush the eyes with water. Have a physician examine the eyes.

Ingestion: If material is ingested, seek immediate medical attention. If vomiting occurs, keep the head below the hips to prevent aspiration of liquid into the lungs.

SECTION VI - REACTIVITY DATAStability:

- stable

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Incompatibility (Materials to Avoid):

- strong oxidizing agents, acids, and alkali/base/caustic solutions
- nitrating agents
- finely-divided metals like aluminum and magnesium.

Hazardous Decomposition Products:

- hydrogen fluoride
- ultra-fine, low-molecular-weight fluoropolymer particles
- carbonyl fluoride
- fluorine compounds (HF, COF₂, PFIB, TFE)
- oxides of carbon
- oxides of sulphur
- oxides of nitrogen

Hazardous Polymerization:

- will not occur

SECTION VII - SPILL OR LEAK PROCEDURESSteps to be Taken in Case Material is Released or Spilled:

Spill Supervisor: Ensure cleanup personnel wear all appropriate Personal Protective Equipment, including respiratory protection. If this product has a numerical flashpoint, remove all ignition sources; if the flashpoint is none, this precaution is unnecessary. Keep nonessential personnel away from the contaminated area.

Prevent this material from entering sewers and watercourses by diking or impounding the spilled material. Advise authorities if the product has entered or may enter, sewers, watercourses, or extensive land areas.

Ventilate the contaminated area. If this product has a numerical flashpoint, use nonsparking (bronze, aluminum, plastic, wood) tools to clean up the spill. If the flashpoint is none, use conventional steel tools (or those just described) to clean up the spill. EXCEPTIONS: If this product is Ultralon DCO Acid or a Xylar coating, (except Xylar 500), use plastic shovels/scoops/rubber squeegees to clean up the spill because of the products' acid content. Use the recommended tool type to mix the appropriate sorbent into the spilled material. Use an absorbent like sawdust for aqueous, waterborne and solvent-borne coatings. Use an absorbent like sand, earth or clay for Ultralon DCO Acid and Xylar coatings (except Xylar 500). Collect the saturated sorbent and transfer it into a covered container. Steel containers are acceptable for all wastes except wastes which contain acid. Use suitable plastic containers for acid-bearing wastes.

Label the waste container. Dispose of waste in compliance with all Federal, state, regional, and local regulations.

Waste Disposal Method:

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As the US EPA, state, regional and other regulatory agencies may have jurisdiction over the disposal of your facility's hazardous waste, it is incumbent upon you, the waste generator, to learn of and satisfy all the requirements which affect you. Dispose of hazardous waste at a properly permitted disposal facility. Ensure conformity to all applicable waste disposal regulations.

The US EPA Hazardous Waste Numbers which follow are applicable to the unadulterated product if it enters the "waste stream." Refer to Title 40 of the Code of Federal Regulations, Part 261 (40 CFR 261). This part of the Code identifies wastes which are subject to regulation under various sections of the Code and which are subject to the notification requirements of Section 3010 of the Resource Conservation and Recovery Act (RCRA).

- D001
- D035

SECTION VIII - SAFE HANDLING & USE INFORMATION**Respiratory Protection:**

Respiratory protection may not be needed if local exhaust is sufficient to maintain levels of hazardous ingredients below occupational exposure limits. If needed, use a NIOSH/MSHA approved respirator equipped with organic vapor cartridges and high-efficiency, particulate air (HEPA) filters.

Do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use supplied-air respiratory protection or a positive-pressure, self-contained, breathing apparatus (SCBA).

Ventilation:

Use only with adequate ventilation, i.e., ventilation in compliance with occupational exposure limits.

Local Exhaust:

Local exhaust is recommended to ensure adequate ventilation.

Mechanical (General):

Use explosion-proof equipment and good manufacturing practice.

Special:

Safety showers and eyewash fountains should be readily available to personnel who handle this material. Enforce "No Smoking" rules. If this product has a numerical flashpoint, do not handle it in close proximity to unshielded light fixtures.

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Protective Gloves:

Wear chemical-resistant gloves (butyl rubber or neoprene). Protective gloves should be inspected frequently and discarded when they exhibit cuts, pinholes, or signs of excessive wear.

Eye Protection:

Wear splash goggles. If extra protection is needed, wear a face shield over the splash goggles. Face shields are effective only if worn in addition to splash goggles.

Other Protective Equipment:

Wear a chemical-resistant, butyl-rubber apron and other protective clothing, as deemed appropriate, to avoid skin contact with material.

SECTION IX - SPECIAL PRECAUTIONSPrecautions to be Taken When Handling and Storing:

Wear all appropriate Personal Protective Equipment (PPE). Wear respiratory protection or ensure adequate ventilation at all times as vapors can accumulate in confined or poorly ventilated areas. Use the product in a manner which minimizes splashes and/or the creation of dust.

Keep containers closed when not in use. Do not handle or store material near heat, sparks, open flames, or other sources of ignition. Store at room temperatures, i.e., 40 to 95 F (4 to 35 C).

Other Precautions:

Good personal hygiene and good housekeeping are important. Wear fresh clothing daily. Contaminated clothes and shoes must not be worn home. Launder contaminated clothing before reuse. Remove contaminated shoes; clean and dry before reuse.

Do not smoke or eat in the work area. Thoroughly wash hands and face before eating. Take every precaution to avoid inhalation and ingestion of product residue.

Do not use compressed air to clean contaminated floors or equipment. Surfaces should be cleaned by vacuuming or wet scrubbing. Vacuum cleaners should be suitable for use in an industrial environment (explosion proof, if necessary) and equipped with high-efficiency, particulate air (HEPA) filters.

Avoid breathing product vapors, spray mist, and residue. Avoid breathing processing fumes. Avoid skin contact. Avoid eye contact. Avoid ingestion.

Spilled material may cause the floor or contaminated area to become slippery.

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SECTION X - REGULATORY INFORMATION

Canada's Hazardous Products Act, Controlled Products Regulations, Workplace Hazardous Materials Information System (WHMIS): The chemicals listed below appear on the Ingredient Disclosure List and are contained in this product at regulated levels.

CHEMICAL	CAS NUMBER	PERCENTAGE
METHYL ETHYL KETONE	78-93-3	17.459200
ETHYLBENZENE	100-41-4	2.445414

FEDERAL REGULATIONS:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains the following chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

CHEMICAL	CAS NUMBER	PERCENTAGE
N-METHYL-2-PYRROLIDONE	872-50-4	29.357300
XYLENE (MIXED ISOMERS)	1330-20-7	10.296480
ETHYLBENZENE	100-41-4	2.445414
COBALT COMPOUND	1345-16-0	1.982900
NAPHTHALENE	91-20-3	0.245876

FEDERAL REGULATIONS:

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs), under the reporting requirements of 40 CFR 61. This product contains the following HAPs:

CHEMICAL	CAS NUMBER	PERCENTAGE
Xylenes	1330-20-7	10.296480
Ethylbenzene	100-41-4	2.445414
Toluene	108-88-3	0.128706
Cobalt Compound	1345-16-0	1.982900
Naphthalene	91-20-3	0.245876

TOXIC SUBSTANCES CONTROL ACT (TSCA): All chemicals in this product appear in the Toxic Substance Control Act Chemical Substance Inventory.

14 January 2008

STATE REGULATIONS:

State of California Safe Drinking Water and Toxic Enforcement Act of 1986
(Proposition 65): WARNING! This product contains the following chemicals which
are known to the State of California to cause cancer or reproductive toxicity:

CHEMICAL	CAS NUMBER	CLASSIFICATION	PERCENTAGE
CARBON BLACK	1333-86-4	CAUSES CANCER	0.028636
n-METHYLPYRROLIDONE	872-50-4	REPRODUCTIVE TOXIN	29.357300
Ethylbenzene	100-41-4	CAUSES CANCER	2.445414
TOLUENE	108-88-3	REPRODUCTIVE TOXIN	0.128706
Naphthalene	91-20-3	CAUSES CANCER	0.245876

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assumes no responsibility for the selection of products suitable to the particular purposes of any particular buyer. shall in no event be liable for any special, incidental, or consequential damages.

HMIS: H=2*, F=3, R=0, PPE=J

* = Chronic health effects
may occur

MATERIAL SAFETY DATA SHEET
for
COATINGS, RESINS, and RELATED MATERIALS

SECTION I - PRODUCT IDENTIFICATION

Trade Name & Synonyms:

Formula:
GREEN HI RELEASE

P.C. Number:

Date of Preparation: 02 February 2009

Supersedes: 02 February 2009

IMPORTANT: BEFORE USING GREEN HI RELEASE
HAVE ALL PROCESSING PERSONNEL READ THIS DOCUMENT!

SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS

Chemical(s) with CAS RN and vapor pressure (if applicable)	OSHA PEL	ACGIH TLV	Manufacturer's Recommendation
FLUORINATED ETHYLENE PROPYLENE 25067-11-2	TWA = 15 mg/m3	TWA = 10 mg/m3	No recommendation
TITANIUM DIOXIDE 13463-67-7	TWA = 10 mg/m3	TWA = 10 mg/m3	No recommendation
N-METHYLPYRROLIDONE (NMP) 872-50-4 0.3 mm Hg at 20 C	Not established	Not established	No recommendation
METHYL ETHYL KETONE (MEK) 78-93-3 91 mm Hg at 25 C	TWA = 200 ppm	TWA = 200 ppm STEL = 300 ppm	No recommendation
XYLENE 1330-20-7 9.0 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 150 ppm	No recommendation
ETHYL BENZENE 100-41-4 7.1 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 125 ppm	No recommendation

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SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS (continued)

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
GAMMA-BUTYROLACTONE (BLO) 96-48-0 1.0 mm Hg at 20 C	Not established	Not established	No recommendation
SOLVENT NAPHTHA HEAVY AROMATIC 64742-94-5 3.0 mm Hg at 25 C	TWA = 10 ppm, 50 mg/m3.	(skin) TWA = 10 ppm	TWA = 15 ppm
NICKEL OXIDE 1313-99-1	TWA = 1 mg/m3	TWA = 0.2 mg/m3	No recommendation

SECTION III - PHYSICAL DATA

Appearance : Viscous, green, liquid dispersion.
 Boiling point (range) . . . : 79.6 TO 278 degrees C
 Vapor density : Heavier than air
 Evaporation rate : Slower than ether
 Specific gravity (H2O = 1): 1.09
 Percent volatile by volume: 83.0 %

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Lower Explosive Limit (%): 1.00
Flash point (Method Used): -4 degrees C (Setaflash)

Extinguishing Media:

Use carbon dioxide (CO2), alcohol foam, dry chemical, or water spray/water fog extinguishing systems.

Special Fire Fighting Procedures:

Firemen and emergency responders: wear full turnout gear or Level A equipment including positive-pressure, self-contained breathing apparatus (SCBA). If evacuation of personnel is necessary, evacuate to an upwind area. Decontaminate personnel and equipment with a water wash-down after fire and smoke exposure.

Unusual Fire and Explosion Hazards:

Toxic fumes will be emitted during combustion or thermal decomposition of this product. Product vapor is heavier than air and may travel a considerable distance to a source of ignition and flashback.

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SECTION V - HEALTH HAZARD DATAPrimary Route(s) of Entry and Exposure:

Inhalation: Yes Skin absorption: Yes Ingestion: Yes Skin or eye contact: Yes

Carcinogenicity: The following chemicals comprise 0.1% or more of this mixture and are listed and/or classified as carcinogens or potential carcinogens by NTP, IARC, OSHA or ACGIH.

<u>Chemical</u>	<u>Reference</u>	<u>Category</u>
TITANIUM DIOXIDE	IARC	Group 2B Possible human carcinogen
NICKEL OXIDE	NTP	ANTICIPATED CARCINOGEN
	ACGIH	CONFIRMED HUMAN CARCINOGEN

Effects of Overexposure; FLUORINATED ETHYLENE PROPYLENE:

Inhalation - Inhalation of high concentrations of fluorinated ethylene propylene (FEP) dust may cause irritation of the lungs.

Skin contact - FEP is neither a skin irritant nor a sensitizer.

Skin absorption - Skin permeation following contact with FEP is unlikely.

Eye contact - FEP may cause mechanical irritation of the eyes.

Ingestion - FEP is not known to be hazardous by ingestion.

Systemic &
other effects - No data found.

Supplemental
health
information - Exposure to fumes and ultra-fine particulate matter which are generated during high-temperature processing of FEP may cause a flu-like condition known as "polymer fume fever" (PFF). The symptoms of PFF are chills, fever, chest pains, coughing, and shortness of breath. These symptoms do not necessarily occur at the time of exposure, but may require several hours to develop. The symptoms usually pass within 24 hours.

There are some reports in literature of persistent pulmonary effects in individuals, especially smokers, who have repeated episodes of PFF. Because of complicating factors such as mixed exposures and smoking history, these findings are uncertain.

The inhalation of smoke from tobacco which is contaminated with FEP may also cause PFF, therefore, smokers should avoid

MATERIAL SAFETY DATA SHEET

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contamination of tobacco products and wash their hands before smoking.

To prevent the evolution of fumes, do not expose FEP to open flames or extreme heat (welding; temperatures $>360^{\circ}\text{C}/>680^{\circ}\text{F}$). Avoid mechanical abrasion of coatings which contain FEP (grinding, machining). Mechanical abrasion may release and disperse small particles of dust and metal into the air. These particles may be harmful if inhaled.

Small amounts of carbonyl fluoride, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP is overheated or burned.

The OSHA PEL is for "Particulates Not Otherwise Regulated" (PNOR), total dust. The ACGIH TLV is for "Particulates (Insoluble) Not Otherwise Specified" (PNOS), Inhalable fraction.

Effects of Overexposure, TITANIUM DIOXIDE:

Inhalation -	Overexposure by inhalation of titanium dioxide dust may cause mild and temporary upper respiratory irritation with cough and shortness of breath.
Skin contact -	No data found.
Skin absorption -	No data found.
Eye contact -	No data found.
Ingestion -	No data found.
Systemic & other effects -	Long-term exposure to TiO_2 dust may cause impaired lung function.
Supplemental health information -	TiO_2 has been classified by IARC as an Group 2B Carcinogen "possible carcinogen to humans." It is a WHMIS Class D2A carcinogen.

Effects of Overexposure, N-METHYLPYRROLIDONE (NMP):

Inhalation -	May cause irritation of the respiratory tract.
Skin contact -	NMP is a moderate skin irritant and may cause delayed skin irritation. Human experience has demonstrated redness, cracking and blistering of skin through repeated or prolonged contact.
Skin absorption -	No significant signs or symptoms indicative of any health hazard

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are expected to occur as a result of skin absorption exposure.

Eye contact - Eye contact with NMP may cause moderate eye irritation including burning sensation, tearing, redness or swelling. May cause temporary corneal clouding.

Ingestion - NMP may be a health hazard if ingested in large quantities. Symptoms include nausea, dizziness, and vomiting.

Systemic & other effects - No relevant human data found.

Supplemental health information - NMP was reported to effect pregnancy and/or fetal development in laboratory animals. Recently completed studies and an independent, expert review of previous studies confirm that NMP is not a mutagen, teratogen, carcinogen, or reproductive toxin.

Effects of Overexposure, METHYL ETHYL KETONE (MEK):

Inhalation - Breathing high vapor concentrations or prolonged breathing of lower concentrations may cause irritation of the nose and throat, coughing, shortness of breath, dizziness, headache, intoxication, loss of consciousness and collapse.

Skin contact - Liquid is moderately irritating to the skin. Symptoms of exposure include: drying, cracking, a rash or a burning feeling on contact.

Skin absorption - Absorption of liquid through skin may cause a health hazard.

Eye contact - Vapors are irritating. Liquid is highly irritating and may cause a burning sensation, tearing, redness and swelling of the eyes.

Ingestion - Symptoms of exposure may include nausea, vomiting, loss of appetite, gastrointestinal irritation and diarrhea. May also cause CNS depression with headache and mental sluggishness.

Systemic & other effects - No data found.

Supplemental health information - MEK is not neurotoxic. It has been shown to potentiate the neurotoxic effects of hexane, 2,5-hexanedione and methyl-n-ketone. MEK has also potentiated the liver toxicity of halogenated solvents (e.g. chloroform and carbon tetrachloride) in animal studies.

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Effects of Overexposure, XYLENE:

- Inhalation - Inhalation of excessive concentrations of vapors or mists may cause irritation of the nose and throat, and signs of central nervous system depression (dizziness, drowsiness, fatigue and loss of coordination).
- Skin contact - ~~XXXX~~ is moderately irritating to the skin. Prolonged or repeated exposure may dry and defat skin leading to redness, cracking, burning and blistering of skin.
- Skin absorption - Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.
- Eye contact - Vapors and mists may cause burning, tearing, and redness. Direct contact with liquid may cause severe irritation.
- Ingestion - Liquid is moderately toxic and may be harmful if swallowed. May cause irritation of the digestive tract, nausea, diarrhea, and signs of central nervous system depression (headache, dizziness, drowsiness, fatigue and loss of coordination).
- Systemic & other effects - Prolonged or repeated exposure to vapor or mists may cause liver and kidney damage.
- Supplemental information - If vomiting occurs, breathing of vomitus into the lungs poses a pulmonary aspiration hazard.

Effects of Overexposure, ETHYL BENZENE:

- Inhalation - May cause irritation to the respiratory tract.
- Skin contact - May cause irritation of the skin. Prolonged exposure may cause drying, scaling and even blistering of the skin.
- Skin absorption - No data found.
- Eye contact - May cause irritation of the eyes.
- Systemic & other effects - Prolonged overexposure may damage the liver.
- Supplemental health information - There is limited evidence that ethyl benzene causes cancer in animals. It may cause cancer of the kidneys.

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Effects of Overexposure, GAMMA-BUTYROLACTONE (BLO):

Inhalation - Inhalation of mists or vapors may cause respiratory irritation.

Skin contact - No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.

Skin absorption - Extensive, prolonged or repeated exposure can result in significant absorption.

Eye contact - Causes moderate eye irritation.

Ingestion - Harmful if ingested. May cause burns or irritation of the linings of the mouth, throat and gastrointestinal tract.

Systemic & other effects - In humans, oral ingestion of solutions containing high concentrations of GBL has caused respiratory depression, hypotension, agitation, and coma.

Supplemental health information - Gamma-butyrolactone was not carcinogenic in rats or mice by oral, subcutaneous injection, or dermal administration, nor was this material teratogenic in limited tests in rats.

Effects of Overexposure, SOLVENT NAPHTHA HEAVY AROMATIC:

Inhalation - Excessive inhalation of vapors may cause nasal and respiratory irritation.

Skin contact - Prolonged or repeated contact may cause moderate irritation, defatting, and dermatitis.

Skin absorption - May be absorbed through intact skin.

Eye contact - May cause severe irritation, tearing, and blurred vision.

Ingestion - May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Systemic & other effects - Aspiration of material into the lungs, due to vomiting, may cause chemical pneumonitis, which can be fatal.

Supplemental information - Possible human cancer hazard.

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Effects of Overexposure, NICKEL OXIDE:

Inhalation - Temporary irritation of the respiratory tract may result from excessive overexposure.

Skin contact - No data found.

Skin absorption - No data found.

Eye contact - This material is an inert dust hazard and may cause mechanical irritation to the eyes.

Ingestion - No data found.

Systemic & other effects - No data found.

Supplemental health information - Both the NTP Third Annual Report on Carcinogens and IARC Monographs cite limited evidence for carcinogenicity to humans of certain nickel compounds and sufficient evidence for carcinogenicity to animals. However, both state it is not possible to identify which specific nickel compounds might be carcinogenic to humans. Nickel, as found in this pigment, is not listed in the groups of compounds thought to be carcinogenic to either humans or animals.

Emergency & First Aid Procedures:

Inhalation: If overcome by product vapors, mists or processing fumes, remove the person from exposure immediately; call a physician. If breathing is irregular or stopped, start resuscitation.

Skin contact: In case of skin contact, remove contaminated clothing. Flush the skin with large amounts of water, then wash the skin with soap and water.

Eye contact: In case of eye contact, flush the eyes with water for 15 minutes. If contact lenses are worn, quickly remove them, then flush the eyes with water. Have a physician examine the eyes.

Ingestion: If material is ingested, seek immediate medical attention. If vomiting occurs, keep the head below the hips to prevent aspiration of liquid into the lungs.

SECTION VI - REACTIVITY DATAStability:

- stable

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Incompatibility (Materials to Avoid):

- strong oxidizing agents, acids, and alkali/base/caustic solutions
- nitrating agents
- finely-divided metals like aluminum and magnesium.

Hazardous Decomposition Products:

- fluorine compounds (HF, COF₂, PFIB, TFE)
- ultra-fine, low-molecular-weight fluoropolymer particles
- oxides of nitrogen
- oxides of sulphur
- oxides of carbon

Hazardous Polymerization:

- will not occur

SECTION VII - SPILL OR LEAK PROCEDURESSteps to be Taken in Case Material is Released or Spilled:

Spill Supervisor: Ensure cleanup personnel wear all appropriate Personal Protective Equipment, including respiratory protection. If this product has a numerical flashpoint, remove all ignition sources; if the flashpoint is none, this precaution is unnecessary. Keep nonessential personnel away from the contaminated area.

Prevent this material from entering sewers and watercourses by diking or impounding the spilled material. Advise authorities if the product has entered or may enter, sewers, watercourses, or extensive land areas.

Ventilate the contaminated area. If this product has a numerical flashpoint, use nonsparking (bronze, aluminum, plastic, wood) tools to clean up the spill. If the flashpoint is none, use conventional steel tools (or those just described) to clean up the spill. EXCEPTIONS: If this product is Ultralon DCO Acid or a Xylar coating, use plastic shovels/scoops/rubber squeegees to clean up the spill because of the products' acid content. Use the recommended tool type to mix the appropriate sorbent into the spilled material. Use an absorbent like sawdust for aqueous, waterborne and solvent-borne coatings. Use an absorbent like sand, earth or clay for Ultralon DCO Acid and Xylar coatings. Collect the saturated sorbent and transfer it into a covered container. Steel containers are acceptable for all wastes except wastes which contain acid. Use suitable plastic containers for acid-bearing wastes.

Label the waste container. Dispose of waste in compliance with all Federal, state, regional, and local regulations.

Waste Disposal Method:

As the US EPA, state, regional and other regulatory agencies may have jurisdiction over the disposal of your facility's hazardous waste, it is incumbent upon you, the waste generator, to learn of and satisfy all the requirements which affect you. Dispose of hazardous waste at a properly permitted disposal facility. Ensure

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conformity to all applicable waste disposal regulations.

The US EPA Hazardous Waste Numbers which follow are applicable to the unadulterated product if it enters the "waste stream." Refer to Title 40 of the Code of Federal Regulations, Part 261 (40 CFR 261). This part of the Code identifies wastes which are subject to regulation under various sections of the Code and which are subject to the notification requirements of Section 3010 of the Resource Conservation and Recovery Act (RCRA).

- D001
- D035

SECTION VIII - SAFE HANDLING & USE INFORMATIONRespiratory Protection:

Respiratory protection may not be needed if local exhaust is sufficient to maintain levels of hazardous ingredients below occupational exposure limits. If needed, use a NIOSH/MSHA approved respirator equipped with organic vapor cartridges and high-efficiency, particulate air (HEPA) filters.

Do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use supplied-air respiratory protection or a positive-pressure, self-contained, breathing apparatus (SCBA).

Ventilation:

Use only with adequate ventilation, i.e., ventilation in compliance with occupational exposure limits.

Local Exhaust:

Local exhaust is recommended to ensure adequate ventilation.

Mechanical (General):

Use good manufacturing practice.

Special:

Safety showers and eyewash fountains should be readily available to personnel who handle this material. Enforce "No Smoking" rules. If this product has a numerical flashpoint, do not handle it in close proximity to unshielded light fixtures.

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Protective Gloves:

Wear chemical-resistant gloves (butyl rubber or neoprene).

Eye Protection:

Wear splash goggles or safety glasses with side shields, as appropriate.

Other Protective Equipment:

Wear a chemical-resistant, butyl-rubber apron and other protective clothing, as deemed appropriate, to avoid skin contact with material.

SECTION IX - SPECIAL PRECAUTIONSPrecautions to be Taken When Handling and Storing:

Wear all appropriate Personal Protective Equipment (PPE). Wear respiratory protection or ensure adequate ventilation at all times as vapors can accumulate in confined or poorly ventilated areas. Use the product in a manner which minimizes splashes and/or the creation of dust.

Keep containers closed when not in use. Do not handle or store material near heat, sparks, open flames, or other sources of ignition. Store at room temperatures, i.e., 40 to 95 F (4 to 35 C).

Other Precautions:

Good personal hygiene and good housekeeping are important. Wear fresh clothing daily. Contaminated clothes and shoes must not be worn home. Launder contaminated clothing before reuse. Remove contaminated shoes; clean and dry before reuse.

Do not smoke or eat in the work area. Thoroughly wash hands and face before eating. Take every precaution to avoid inhalation and ingestion of product residue.

Do not use compressed air to clean contaminated floors or equipment. Surfaces should be cleaned by vacuuming or wet scrubbing. Vacuum cleaners should be suitable for use in an industrial environment (explosion proof, if necessary) and equipped with high-efficiency, particulate air (HEPA) filters.

Avoid breathing product vapors, spray mist, and residue. Avoid breathing processing fumes. Avoid skin contact. Avoid eye contact. Avoid ingestion.

Spilled material may cause the floor or contaminated area to become slippery.

MATERIAL SAFETY DATA SHEET

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SECTION X - REGULATORY INFORMATION

FEDERAL REGULATIONS:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains the following chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

CHEMICAL	CAS NUMBER	PERCENTAGE
N-METHYL-2-PYRROLIDONE	872-50-4	31.015600
XYLENE (MIXED ISOMERS)	1330-20-7	12.077086
ETHYLBENZENE	100-41-4	2.868278
ANTIMONY COMPOUND	1314-60-9	0.525000
NICKEL COMPOUND	1313-99-1	0.280000

FEDERAL REGULATIONS:

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs), under the reporting requirements of 40 CFR 61. This product contains the following HAPs:

CHEMICAL	CAS NUMBER	PERCENTAGE
Xylenes	1330-20-7	12.077086
Ethylbenzene	100-41-4	2.868278
Toluene	108-88-3	0.151088
Antimony Compound	1314-60-9	0.525000
Nickel Compound	1313-99-1	0.280000

TOXIC SUBSTANCES CONTROL ACT (TSCA): All chemicals in this product appear in the Toxic Substance Control Act Chemical Substance Inventory.

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assumes no responsibility for the selection of products suitable to the particular purposes of any particular buyer. shall in no event be liable for any special, incidental, or consequential damages.

HMIS: H=2*, F=3, R=0, PPE=J

* = Chronic health effects
may occur

MATERIAL SAFETY DATA SHEET
for
COATINGS, RESINS, and RELATED MATERIALS

SECTION I - PRODUCT IDENTIFICATION

Trade Name & Synonyms:

Formula:

GREY HIGH RELEASE

P.C. Number:

Date of Preparation: 05 January 2009

Supersedes: 05 March 2002

**IMPORTANT: BEFORE USING GREY HIGH RELEASE
HAVE ALL PROCESSING PERSONNEL READ THIS DOCUMENT!**

SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
FLUORINATED ETHYLENE PROPYLENE 25067-11-2	TWA = 15 mg/m3	TWA = 10 mg/m3	No recommendation
TITANIUM DIOXIDE 13463-67-7	TWA = 10 mg/m3	TWA = 10 mg/m3	No recommendation
N-METHYLPYRROLIDONE (NMP) 872-50-4 0.3 mm Hg at 20 C	Not established	Not established	No recommendation
METHYL ETHYL KETONE (MEK) 78-93-3 91 mm Hg at 25 C	TWA = 200 ppm	TWA = 200 ppm STEL = 300 ppm	No recommendation
XYLENE 1330-20-7 9.0 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 150 ppm	No recommendation
ETHYL BENZENE 100-41-4 7.1 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 125 ppm	No recommendation

MATERIAL SAFETY DATA SHEET

05 January 2009

SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS (continued)

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
C.I. PIGMENT BLUE 28 1345-16-0	TWA = 0.1 mg/m3	TWA = 0.02 mg/m3	No recommendation

SECTION III - PHYSICAL DATA

Appearance	Viscous, grey, liquid dispersion.
Boiling point (range) . . .	79.6 TO 202 degrees C
Vapor density	Heavier than air
Evaporation rate	Slower than ether
Specific gravity (H2O = 1):	1.11
Percent volatile by volume:	80.5 %

SECTION IV - FIRE AND EXPLOSION HAZARD DATALower Explosive Limit (%): 1.00Flash point (Method Used): -9 degrees C (Setaflash)Extinguishing Media:

Use carbon dioxide (CO2), alcohol foam, dry chemical, or water spray/water fog extinguishing systems.

Special Fire Fighting Procedures:

Firemen and emergency responders: wear full turnout gear or Level A equipment including positive-pressure, self-contained breathing apparatus (SCBA). If evacuation of personnel is necessary, evacuate to an upwind area. Decontaminate personnel and equipment with a water wash-down after fire and smoke exposure.

Unusual Fire and Explosion Hazards:

Toxic fumes will be emitted during combustion or thermal decomposition of this product. Product vapor is heavier than air and may travel a considerable distance to a source of ignition and flashback.

SECTION V - HEALTH HAZARD DATAPrimary Route(s) of Entry and Exposure:

Inhalation: Yes Skin absorption: Yes Ingestion: Yes Skin or eye contact: Yes

MATERIAL SAFETY DATA SHEET

05 January 2009

Carcinogenicity: The following chemicals comprise 0.1% or more of this mixture and are listed and/or classified as carcinogens or potential carcinogens by NTP, IARC, OSHA or ACGIH.

<u>Chemical</u>	<u>Reference</u>	<u>Category</u>
TITANIUM DIOXIDE	IARC	Group 2B Possible human carcinogen
C.I. PIGMENT BLUE 28	IARC	POSSIBLE HUMAN CARCINOGEN (GROUP 2B)

Effects of Overexposure, FLUORINATED ETHYLENE PROPYLENE:

Inhalation - Inhalation of high concentrations of fluorinated ethylene propylene (FEP) dust may cause irritation of the lungs.

Skin contact - FEP is neither a skin irritant nor a sensitizer.

Skin absorption - Skin permeation following contact with FEP is unlikely.

Eye contact - FEP may cause mechanical irritation of the eyes.

Ingestion - FEP is not known to be hazardous by ingestion.

Systemic &
other effects - No data found.

Supplemental
health
information - Exposure to fumes and ultra-fine particulate matter which are generated during high-temperature processing of FEP may cause a flu-like condition known as "polymer fume fever" (PFF). The symptoms of PFF are chills, fever, chest pains, coughing, and shortness of breath. These symptoms do not necessarily occur at the time of exposure, but may require several hours to develop. The symptoms usually pass within 24 hours.

There are some reports in literature of persistent pulmonary effects in individuals, especially smokers, who have repeated episodes of PFF. Because of complicating factors such as mixed exposures and smoking history, these findings are uncertain.

The inhalation of smoke from tobacco which is contaminated with FEP may also cause PFF, therefore, smokers should avoid contamination of tobacco products and wash their hands before smoking.

To prevent the evolution of fumes, do not expose FEP to open flames or extreme heat (welding; temperatures >360C/>680F). Avoid mechanical abrasion of coatings which contain FEP (grinding, machining). Mechanical abrasion may release and

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disperse small particles of dust and metal into the air. These particles may be harmful if inhaled.

Small amounts of carbonyl fluoride, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP is overheated or burned.

The OSHA PEL is for "Particulates Not Otherwise Regulated" (PNOR), total dust. The ACGIH TLV is for "Particulates (Insoluble) Not Otherwise Specified" (PNOS), Inhalable fraction.

Effects of Overexposure, TITANIUM DIOXIDE:

Inhalation -	Overexposure by inhalation of titanium dioxide dust may cause mild and temporary upper respiratory irritation with cough and shortness of breath.
Skin contact -	No data found.
Skin absorption -	No data found.
Eye contact -	No data found.
Ingestion -	No data found.
Systemic & other effects -	Long-term exposure to TiO ₂ dust may cause impaired lung function.
Supplemental health information -	TiO ₂ has been classified by IARC as an Group 2B Carcinogen "possible carcinogen to humans." It is a WHMIS Class D2A carcinogen.

Effects of Overexposure, N-METHYLPYRROLIDONE (NMP):

Inhalation -	May cause irritation of the respiratory tract.
Skin contact -	NMP is a moderate skin irritant and may cause delayed skin irritation. Human experience has demonstrated redness, cracking and blistering of skin through repeated or prolonged contact.
Skin absorption -	No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure.
Eye contact -	Eye contact with NMP may cause moderate eye irritation including burning sensation, tearing, redness or swelling. May cause temporary corneal clouding.
Ingestion -	NMP may be a health hazard if ingested in large quantities.

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Symptoms include nausea, dizziness, and vomiting.

Systemic & other effects - No relevant human data found.

Supplemental health information - NMP was reported to effect pregnancy and/or fetal development in laboratory animals. Recently completed studies and an independent, expert review of previous studies confirm that NMP is not a mutagen, teratogen, carcinogen, or reproductive toxin.

Effects of Overexposure, METHYL ETHYL KETONE (MEK):

Inhalation - Breathing high vapor concentrations or prolonged breathing of lower concentrations may cause irritation of the nose and throat, coughing, shortness of breath, dizziness, headache, intoxication, loss of consciousness and collapse.

Skin contact - Liquid is moderately irritating to the skin. Symptoms of exposure include: drying, cracking, a rash or a burning feeling on contact.

Skin absorption - Absorption of liquid through skin may cause a health hazard.

Eye contact - Vapors are irritating. Liquid is highly irritating and may cause a burning sensation, tearing, redness and swelling of the eyes.

Ingestion - Symptoms of exposure may include nausea, vomiting, loss of appetite, gastrointestinal irritation and diarrhea. May also cause CNS depression with headache and mental sluggishness.

Systemic & other effects - No data found.

Supplemental health information - MEK is not neurotoxic. It has been shown to potentiate the neurotoxic effects of hexane, 2,5-hexanedione and methyl-n-ketone. MEK has also potentiated the liver toxicity of halogenated solvents (e.g. chloroform and carbon tetrachloride) in animal studies.

Effects of Overexposure, XYLENE:

Inhalation - Inhalation of excessive concentrations of vapors or mists may cause irritation of the nose and throat, and signs of central nervous system depression (dizziness, drowsiness, fatigue and loss of coordination).

Skin contact - is moderately irritating to the skin. Prolonged or repeated exposure may dry and defat skin leading to redness,

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cracking, burning and blistering of skin.

Skin absorption - Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

Eye contact - Vapors and mists may cause burning, tearing, and redness. Direct contact with liquid may cause severe irritation.

Ingestion - Liquid is moderately toxic and may be harmful if swallowed. May cause irritation of the digestive tract, nausea, diarrhea, and signs of central nervous system depression (headache, dizziness, drowsiness, fatigue and loss of coordination).

Systemic & other effects - Prolonged or repeated exposure to vapor or mists may cause liver and kidney damage.

Supplemental information - If vomiting occurs, breathing of vomitus into the lungs poses a pulmonary aspiration hazard.

Effects of Overexposure, ETHYL BENZENE:

Inhalation - May cause irritation to the respiratory tract.

Skin contact - May cause irritation of the skin. Prolonged exposure may cause drying, scaling and even blistering of the skin.

Skin absorption - No data found.

Eye contact - May cause irritation of the eyes.

Systemic & other effects - Prolonged overexposure may damage the liver.

Supplemental health information - There is limited evidence that ethyl benzene causes cancer in animals. It may cause cancer of the kidneys.

Effects of Overexposure, C.I. PIGMENT BLUE 28:

Inhalation - Repeated overexposure may cause respiratory tract irritation.

Skin contact - Repeated overexposure may cause skin irritation.

Skin absorption - No data found.

Eye contact - Repeated overexposure may cause eye irritation.

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Ingestion - No data found.

Systemic & other effects - No data found.

Supplemental health information - Some compounds of the metal contained in this pigment, cobalt, have demonstrated various toxic properties; however, there is no evidence that this pigment has these toxic characteristics. The OSHA PEL for cobalt metal, dust and fume (as Co) is 0.1 mg/m³.

Emergency & First Aid Procedures:

Inhalation: If overcome by product vapors, mists or processing fumes, remove the person from exposure immediately; call a physician. If breathing is irregular or stopped, start resuscitation.

Skin contact: In case of skin contact, remove contaminated clothing. Flush the skin with large amounts of water, then wash the skin with soap and water.

Eye contact: In case of eye contact, flush the eyes with water for 15 minutes. If contact lenses are worn, quickly remove them, then flush the eyes with water. Have a physician examine the eyes.

Ingestion: If material is ingested, seek immediate medical attention. If vomiting occurs, keep the head below the hips to prevent aspiration of liquid into the lungs.

SECTION VI - REACTIVITY DATA**Stability:**

- stable

Incompatibility (Materials to Avoid):

- nitrating agents
- strong oxidizing agents, acids, and alkali/base/caustic solutions
- finely-divided metals like aluminum and magnesium.

Hazardous Decomposition Products:

- oxides of nitrogen
- ultra-fine, low-molecular-weight fluoropolymer particles
- oxides of sulphur
- fluorine compounds (HF, COF₂, PFIB, TFE)
- oxides of carbon

Hazardous Polymerization:

- will not occur

SECTION VII - SPILL OR LEAK PROCEDURES**Steps to be Taken in Case Material is Released or Spilled:**

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Spill Supervisor: Ensure cleanup personnel wear all appropriate Personal Protective Equipment, including respiratory protection. If this product has a numerical flashpoint, remove all ignition sources; if the flashpoint is none, this precaution is unnecessary. Keep nonessential personnel away from the contaminated area.

Prevent this material from entering sewers and watercourses by diking or impounding the spilled material. Advise authorities if the product has entered or may enter, sewers, watercourses, or extensive land areas.

Ventilate the contaminated area. If this product has a numerical flashpoint, use nonsparking (bronze, aluminum, plastic, wood) tools to clean up the spill. If the flashpoint is none, use conventional steel tools (or those just described) to clean up the spill. EXCEPTIONS: If this product is Ultralon DCO Acid or a Xylar coating, use plastic shovels/scoops/rubber squeegees to clean up the spill because of the products' acid content. Use the recommended tool type to mix the appropriate sorbent into the spilled material. Use an absorbent like sawdust for aqueous, waterborne and solvent-borne coatings. Use an absorbent like sand, earth or clay for Ultralon DCO Acid and Xylar coatings. Collect the saturated sorbent and transfer it into a covered container. Steel containers are acceptable for all wastes except wastes which contain acid. Use suitable plastic containers for acid-bearing wastes.

Label the waste container. Dispose of waste in compliance with all Federal, state, regional, and local regulations.

Waste Disposal Method:

As the US EPA, state, regional and other regulatory agencies may have jurisdiction over the disposal of your facility's hazardous waste, it is incumbent upon you, the waste generator, to learn of and satisfy all the requirements which affect you. Dispose of hazardous waste at a properly permitted disposal facility. Ensure conformity to all applicable waste disposal regulations.

The US EPA Hazardous Waste Numbers which follow are applicable to the unadulterated product if it enters the "waste stream." Refer to Title 40 of the Code of Federal Regulations, Part 261 (40 CFR 261). This part of the Code identifies wastes which are subject to regulation under various sections of the Code and which are subject to the notification requirements of Section 3010 of the Resource Conservation and Recovery Act (RCRA).

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SECTION VIII - SAFE HANDLING & USE INFORMATION

Respiratory Protection:

Respiratory protection may not be needed if local exhaust is sufficient to maintain levels of hazardous ingredients below occupational exposure limits. If needed, use a NIOSH/MSHA approved respirator equipped with organic vapor cartridges and high-efficiency, particulate air (HEPA) filters.

Do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use supplied-air respiratory protection or a positive-pressure, self-contained, breathing apparatus (SCBA).

Ventilation:

Use only with adequate ventilation, i.e., ventilation in compliance with occupational exposure limits.

Local Exhaust:

Local exhaust is recommended to ensure adequate ventilation.

Mechanical (General):

Use good manufacturing practice.

Special:

Safety showers and eyewash fountains should be readily available to personnel who handle this material. Enforce "No Smoking" rules. If this product has a numerical flashpoint, do not handle it in close proximity to unshielded light fixtures.

Protective Gloves:

Wear chemical-resistant gloves (butyl rubber or neoprene).

Eye Protection:

Wear splash goggles or safety glasses with side shields, as appropriate.

Other Protective Equipment:

Wear a chemical-resistant, butyl-rubber apron and other protective clothing, as deemed appropriate, to avoid skin contact with material.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

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Wear all appropriate Personal Protective Equipment (PPE). Wear respiratory protection or ensure adequate ventilation at all times as vapors can accumulate in confined or poorly ventilated areas. Use the product in a manner which minimizes splashes and/or the creation of dust.

Keep containers closed when not in use. Do not handle or store material near heat, sparks, open flames, or other sources of ignition. Store at room temperatures, i.e., 40 to 95 F (4 to 35 C).

Other Precautions:

Good personal hygiene and good housekeeping are important. Wear fresh clothing daily. Contaminated clothes and shoes must not be worn home. Launder contaminated clothing before reuse. Remove contaminated shoes; clean and dry before reuse.

Do not smoke or eat in the work area. Thoroughly wash hands and face before eating. Take every precaution to avoid inhalation and ingestion of product residue.

Do not use compressed air to clean contaminated floors or equipment. Surfaces should be cleaned by vacuuming or wet scrubbing. Vacuum cleaners should be suitable for use in an industrial environment (explosion proof, if necessary) and equipped with high-efficiency, particulate air (HEPA) filters.

Avoid breathing product vapors, spray mist, and residue. Avoid breathing processing fumes. Avoid skin contact. Avoid eye contact. Avoid ingestion.

Spilled material may cause the floor or contaminated area to become slippery.

SECTION X - REGULATORY INFORMATION

Canada's Hazardous Products Act, Controlled Products Regulations, Workplace Hazardous Materials Information System (WHMIS): The chemicals listed below appear on the Ingredient Disclosure List and are contained in this product at regulated levels.

CHEMICAL	CAS NUMBER	PERCENTAGE
METHYL ETHYL KETONE	78-93-3	20.181100
ETHYLBENZENE	100-41-4	2.231565

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Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains the following chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

CHEMICAL	CAS NUMBER	PERCENTAGE
N-METHYL-2-PYRROLIDONE	872-50-4	30.291300
XYLENE (MIXED ISOMERS)	1330-20-7	12.645535
ETHYLBENZENE	100-41-4	2.231565

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs), under the reporting requirements of 40 CFR 61. This product contains the following HAPs:

CHEMICAL	CAS NUMBER	PERCENTAGE
Xylenes	1330-20-7	12.645535
Ethylbenzene	100-41-4	2.231565
Cobalt Compound	1345-16-0	0.171100

TOXIC SUBSTANCES CONTROL ACT (TSCA): All chemicals in this product appear in the Toxic Substance Control Act Chemical Substance Inventory.

NON-WARRANTY. The information presented in this publication is based upon the research and experience of representation or warranty is made concerning the accuracy or completeness of the information presented in this publication. makes no warranty or representation of any kind, expressed or implied, including without limitation any warranty of merchantability or fitness for any particular purpose, and no warranty or representation shall be implied by law or otherwise. Any products sold by are not warranted as suitable for any particular purpose to the buyer. The suitability of any product for any purpose particular to the buyer is for the buyer to determine.

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HMIS: H=2*, F=3, R=0, PPE=J
* = Chronic health effects
may occur

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for
COATINGS, RESINS, and RELATED MATERIALS.

SECTION I - PRODUCT IDENTIFICATION

Trade Name & Synonyms:

Formula:

LIGHT PURPLE

P.C. Number:

Date of Preparation: 07 March 2007

Supercedes: None

IMPORTANT: BEFORE USING LIGHT PURPLE,
HAVE ALL PROCESSING PERSONNEL READ THIS DOCUMENT!

SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
FLUORINATED ETHYLENE PROPYLENE 25067-11-2	TWA = 15 mg/m3	TWA = 10 mg/m3	No recommendation
TITANIUM DIOXIDE 13463-67-7	TWA = 10 mg/m3	TWA = 10 mg/m3	No recommendation
N-METHYLPYRROLIDONE (NMP) 872-50-4 0.3 mm Hg at 20 C	Not established	Not established	No recommendation
METHYL ETHYL KETONE (MEK) 78-93-3 91 mm Hg at 25 C	TWA = 200 ppm	TWA = 200 ppm STEL = 300 ppm	No recommendation
XYLENE 1330-20-7 9.0 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 150 ppm	No recommendation
ETHYL BENZENE 100-41-4 7.1 mm Hg at 20 C	TWA = 100 ppm	TWA = 100 ppm STEL = 125 ppm	No recommendation

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SECTION II - HAZARDOUS INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS (continued)

<u>Chemical(s) with CAS RN and vapor pressure (if applicable)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Manufacturer's Recommendation</u>
C.I. PIGMENT BLUE 28 1345-16-0	TWA = 0.1 mg/m3	TWA = 0.02 mg/m3	No recommendation
GAMMA-BUTYROLACTONE (BLO) 96-48-0 1.0 mm Hg at 20 C	Not established	Not established	No recommendation

SECTION III - PHYSICAL DATA

Appearance : Viscous, light-purple, liquid dispersion.
Boiling point (range) . . . : 79.6 TO 204 degrees C
Vapor density : Heavier than air
Evaporation rate : Slower than ether
Specific gravity (H2O = 1): 1.10
Percent volatile by volume: 79.7 %

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Lower Explosive Limit (%): 1.00

Flash point (Method Used): -9 degrees C (Setaflash)

Extinguishing Media:

Use carbon dioxide (CO2), alcohol foam, dry chemical, or water spray/water fog extinguishing systems.

Special Fire Fighting Procedures:

Firemen and emergency responders: wear full turnout gear or Level A equipment including positive-pressure, self-contained breathing apparatus (SCBA). If evacuation of personnel is necessary, evacuate to an upwind area. Decontaminate personnel and equipment with a water wash-down after fire and smoke exposure.

Unusual Fire and Explosion Hazards:

Toxic fumes will be emitted during combustion or thermal decomposition of this product. Product vapor is heavier than air and may travel a considerable distance to a source of ignition and flashback.

SECTION V - HEALTH HAZARD DATAPrimary Route(s) of Entry and Exposure:

Inhalation: Yes Skin absorption: Yes Ingestion: Yes Skin or eye contact: Yes

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Carcinogenicity: The following chemicals comprise 0.1% or more of this mixture and are listed and/or classified as carcinogens or potential carcinogens by NTP, IARC, OSHA or ACGIH.

<u>Chemical</u>	<u>Reference</u>	<u>Category</u>
TITANIUM DIOXIDE	IARC	Group 2B Possible human carcinogen
C.I. PIGMENT BLUE 28	IARC	POSSIBLE HUMAN CARCINOGEN (GROUP 2B)

Effects of Overexposure, FLUORINATED ETHYLENE PROPYLENE:

Inhalation - Inhalation of high concentrations of fluorinated ethylene propylene (FEP) dust may cause irritation of the lungs.

Skin contact - FEP is neither a skin irritant nor a sensitizer.

Skin absorption - Skin permeation following contact with FEP is unlikely.

Eye contact - FEP may cause mechanical irritation of the eyes.

Ingestion - FEP is not known to be hazardous by ingestion.

Systemic &
other effects - No data found.

Supplemental
health
information - Exposure to fumes and ultra-fine particulate matter which are generated during high-temperature processing of FEP may cause a flu-like condition known as "polymer fume fever" (PFF). The symptoms of PFF are chills, fever, chest pains, coughing, and shortness of breath. These symptoms do not necessarily occur at the time of exposure, but may require several hours to develop. The symptoms usually pass within 24 hours.

There are some reports in literature of persistent pulmonary effects in individuals, especially smokers, who have repeated episodes of PFF. Because of complicating factors such as mixed exposures and smoking history, these findings are uncertain.

The inhalation of smoke from tobacco which is contaminated with FEP may also cause PFF, therefore, smokers should avoid contamination of tobacco products and wash their hands before smoking.

To prevent the evolution of fumes, do not expose FEP to open flames or extreme heat (welding; temperatures >360C/>680F). Avoid mechanical abrasion of coatings which contain FEP (grinding, machining). Mechanical abrasion may release and

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disperse small particles of dust and metal into the air. These particles may be harmful if inhaled.

Small amounts of carbonyl fluoride, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP is overheated or burned.

The OSHA PEL is for "Particulates Not Otherwise Regulated" (PNOR), total dust. The ACGIH TLV is for "Particulates (Insoluble) Not Otherwise Specified" (PNOS), Inhalable fraction.

Effects of Overexposure, TITANIUM DIOXIDE:

Inhalation -	Overexposure by inhalation of titanium dioxide dust may cause mild and temporary upper respiratory irritation with cough and shortness of breath.
Skin contact -	No data found.
Skin absorption -	No data found.
Eye contact -	No data found.
Ingestion -	No data found.
Systemic & other effects -	Long-term exposure to TiO ₂ dust may cause impaired lung function.
Supplemental health information -	TiO ₂ has been classified by IARC as an Group 2B Carcinogen "possible carcinogen to humans." It is a WHMIS Class D2A carcinogen.

Effects of Overexposure, N-METHYLPYRROLIDONE (NMP):

Inhalation -	May cause irritation of the respiratory tract.
Skin contact -	NMP is a moderate skin irritant and may cause delayed skin irritation. Human experience has demonstrated redness, cracking and blistering of skin through repeated or prolonged contact.
Skin absorption -	No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure.
Eye contact -	Eye contact with NMP may cause moderate eye irritation including burning sensation, tearing, redness or swelling. May cause temporary corneal clouding.
Ingestion -	NMP may be a health hazard if ingested in large quantities.

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Symptoms include nausea, dizziness, and vomiting.

Systemic &
other effects -

No relevant human data found.

Supplemental
health
information -

NMP was reported to effect pregnancy and/or fetal development in laboratory animals. Recently completed studies and an independent, expert review of previous studies confirm that NMP is not a mutagen, teratogen, carcinogen, or reproductive toxin.

Effects of Overexposure, METHYL ETHYL KETONE (MEK):

Inhalation -

Breathing high vapor concentrations or prolonged breathing of lower concentrations may cause irritation of the nose and throat, coughing, shortness of breath, dizziness, headache, intoxication, loss of consciousness and collapse.

Skin contact -

Liquid is moderately irritating to the skin. Symptoms of exposure include: drying, cracking, a rash or a burning feeling on contact.

Skin absorption -

Absorption of liquid through skin may cause a health hazard.

Eye contact -

Vapors are irritating. Liquid is highly irritating and may cause a burning sensation, tearing, redness and swelling of the eyes.

Ingestion -

Symptoms of exposure may include nausea, vomiting, loss of appetite, gastrointestinal irritation and diarrhea. May also cause CNS depression with headache and mental sluggishness.

Systemic &
other effects -

No data found.

Supplemental
health
information -

MEK is not neurotoxic. It has been shown to potentiate the neurotoxic effects of hexane, 2,5-hexanedione and methyl-n-ketone. MEK has also potentiated the liver toxicity of halogenated solvents (e.g. chloroform and carbon tetrachloride) in animal studies.

Effects of Overexposure, XYLENE:

Inhalation -

Inhalation of excessive concentrations of vapors or mists may cause irritation of the nose and throat, and signs of central nervous system depression (dizziness, drowsiness, fatigue and loss of coordination).

Skin contact -

is moderately irritating to the skin. Prolonged or repeated exposure may dry and defat skin leading to redness,

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cracking, burning and blistering of skin.

- Skin absorption - Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.
- Eye contact - Vapors and mists may cause burning, tearing, and redness. Direct contact with liquid may cause severe irritation.
- Ingestion - Liquid is moderately toxic and may be harmful if swallowed. May cause irritation of the digestive tract, nausea, diarrhea, and signs of central nervous system depression (headache, dizziness, drowsiness, fatigue and loss of coordination).
- Systemic & other effects - Prolonged or repeated exposure to vapor or mists may cause liver and kidney damage.
- Supplemental information - If vomiting occurs, breathing of vomitus into the lungs poses a pulmonary aspiration hazard.

Effects of Overexposure, ETHYL BENZENE:

- Inhalation - May cause irritation to the respiratory tract.
- Skin contact - May cause irritation of the skin. Prolonged exposure may cause drying, scaling and even blistering of the skin.
- Skin absorption - No data found.
- Eye contact - May cause irritation of the eyes.
- Systemic & other effects - Prolonged overexposure may damage the liver.
- Supplemental health information - There is limited evidence that ethyl benzene causes cancer in animals. It may cause cancer of the kidneys.

Effects of Overexposure, C.I. PIGMENT BLUE 28:

- Inhalation - Repeated overexposure may cause respiratory tract irritation.
- Skin contact - Repeated overexposure may cause skin irritation.
- Skin absorption - No data found.
- Eye contact - Repeated overexposure may cause eye irritation.

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Ingestion - No data found.

Systemic & other effects - No data found.

Supplemental health information - Some compounds of the metal contained in this pigment, cobalt, have demonstrated various toxic properties; however, there is no evidence that this pigment has these toxic characteristics. The OSHA PEL for cobalt metal, dust and fume (as Co) is 0.1 mg/m3.

Effects of Overexposure, GAMMA-BUTYROLACTONE (BLO):

Inhalation - Inhalation of mists or vapors may cause respiratory irritation.

Skin contact - No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.

Skin absorption - Extensive, prolonged or repeated exposure can result in significant absorption.

Eye contact - Causes moderate eye irritation.

Ingestion - Harmful if ingested. May cause burns or irritation of the linings of the mouth, throat and gastrointestinal tract.

Systemic & other effects - In humans, oral ingestion of solutions containing high concentrations of GBL has caused respiratory depression, hypotension, agitation, and coma.

Supplemental health information - Gamma-butyrolactone was not carcinogenic in rats or mice by oral, subcutaneous injection, or dermal administration, nor was this material teratogenic in limited tests in rats.

Emergency & First Aid Procedures:

Inhalation: If overcome by product vapors, mists or processing fumes, remove the person from exposure immediately; call a physician. If breathing is irregular or stopped, start resuscitation.

Skin contact: In case of skin contact, remove contaminated clothing. Flush the skin with large amounts of water, then wash the skin with soap and water.

Eye contact: In case of eye contact, flush the eyes with water for 15 minutes. If contact lenses are worn, quickly remove them, then flush the eyes with water. Have a physician examine the eyes.

Ingestion: If material is ingested, seek immediate medical attention. If vomiting occurs, keep the head below the hips to prevent aspiration of liquid into the lungs.

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SECTION VI - REACTIVITY DATAStability:

- stable

Incompatibility (Materials to Avoid):

- strong oxidizing agents, acids, and alkali/base/caustic solutions
- nitrating agents
- finely-divided metals like aluminum and magnesium.

Hazardous Decomposition Products:

- oxides of nitrogen
- ultra-fine, low-molecular-weight fluoropolymer particles
- oxides of sulphur
- fluorine compounds (HF, COF₂, PFIB, TFE)
- oxides of carbon

Hazardous Polymerization:

- will not occur

SECTION VII - SPILL OR LEAK PROCEDURESSteps to be Taken in Case Material is Released or Spilled:

Spill Supervisor: Ensure cleanup personnel wear all appropriate Personal Protective Equipment, including respiratory protection. If this product has a numerical flashpoint, remove all ignition sources; if the flashpoint is none, this precaution is unnecessary. Keep nonessential personnel away from the contaminated area.

Prevent this material from entering sewers and watercourses by diking or impounding the spilled material. Advise authorities if the product has entered or may enter, sewers, watercourses, or extensive land areas.

Ventilate the contaminated area. If this product has a numerical flashpoint, use nonsparking (bronze, aluminum, plastic, wood) tools to clean up the spill. If the flashpoint is none, use conventional steel tools (or those just described) to clean up the spill. EXCEPTIONS: If this product is Ultralon DCO Acid or a Xylar coating, use plastic shovels/scoops/rubber squeegees to clean up the spill because of the products' acid content. Use the recommended tool type to mix the appropriate sorbent into the spilled material. Use an absorbent like sawdust for aqueous, waterborne and solvent-borne coatings. Use an absorbent like sand, earth or clay for Ultralon DCO Acid and Xylar coatings. Collect the saturated sorbent and transfer it into a covered container. Steel containers are acceptable for all wastes except wastes which contain acid. Use suitable plastic containers for acid-bearing wastes.

Label the waste container. Dispose of waste in compliance with all Federal, state, regional, and local regulations.

Waste Disposal Method:

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As the US EPA, state, regional and other regulatory agencies may have jurisdiction over the disposal of your facility's hazardous waste, it is incumbent upon you, the waste generator, to learn of and satisfy all the requirements which affect you. Dispose of hazardous waste at a properly permitted disposal facility. Ensure conformity to all applicable waste disposal regulations.

The US EPA Hazardous Waste Numbers which follow are applicable to the unadulterated product if it enters the "waste stream." Refer to Title 40 of the Code of Federal Regulations, Part 261 (40 CFR 261). This part of the Code identifies wastes which are subject to regulation under various sections of the Code and which are subject to the notification requirements of Section 3010 of the Resource Conservation and Recovery Act (RCRA).

- D001
- D035

SECTION VIII - SAFE HANDLING & USE INFORMATION

Respiratory Protection:

Respiratory protection may not be needed if local exhaust is sufficient to maintain levels of hazardous ingredients below occupational exposure limits. If needed, use a NIOSH/MSHA approved respirator equipped with organic vapor cartridges and high-efficiency, particulate air (HEPA) filters.

Do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use supplied-air respiratory protection or a positive-pressure, self-contained, breathing apparatus (SCBA).

Ventilation:

Use only with adequate ventilation, i.e., ventilation in compliance with occupational exposure limits.

Local Exhaust:

Local exhaust is recommended to ensure adequate ventilation.

Mechanical (General):

Use good manufacturing practice.

Special:

Safety showers and eyewash fountains should be readily available to personnel who handle this material. Enforce "No Smoking" rules. If this product has a numerical flashpoint, do not handle it in close proximity to unshielded light fixtures.

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Protective Gloves:

Wear chemical-resistant gloves (butyl rubber or neoprene).

Eye Protection:

Wear splash goggles or safety glasses with side shields, as appropriate.

Other Protective Equipment:

Wear a chemical-resistant, butyl-rubber apron and other protective clothing, as deemed appropriate, to avoid skin contact with material.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Wear all appropriate Personal Protective Equipment (PPE). Wear respiratory protection or ensure adequate ventilation at all times as vapors can accumulate in confined or poorly ventilated areas. Use the product in a manner which minimizes splashes and/or the creation of dust.

Keep containers closed when not in use. Do not handle or store material near heat, sparks, open flames, or other sources of ignition. Store at room temperatures, i.e., 40 to 95 F (4 to 35 C).

Other Precautions:

Good personal hygiene and good housekeeping are important. Wear fresh clothing daily. Contaminated clothes and shoes must not be worn home. Launder contaminated clothing before reuse. Remove contaminated shoes; clean and dry before reuse.

Do not smoke or eat in the work area. Thoroughly wash hands and face before eating. Take every precaution to avoid inhalation and ingestion of product residue.

Do not use compressed air to clean contaminated floors or equipment. Surfaces should be cleaned by vacuuming or wet scrubbing. Vacuum cleaners should be suitable for use in an industrial environment (explosion proof, if necessary) and equipped with high-efficiency, particulate air (HEPA) filters.

Avoid breathing product vapors, spray mist, and residue. Avoid breathing processing fumes. Avoid skin contact. Avoid eye contact. Avoid ingestion.

Spilled material may cause the floor or contaminated area to become slippery.

SAFETY DATA SHEET



Date of issue/Date of revision 19 January 2021

Version 4

Section 1. Identification

Product name : 8840/D11764 RED
Product code : D11764
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Industrial applications.
Use of the substance/mixture : Coating. Paints. Painting-related materials.
Uses advised against : Not applicable.

Manufacturer : PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

Emergency telephone number : (412) 434-4515 (U.S.)
(514) 645-1320 (Canada)
SETIQ Interior de la República: 800-00-214-00 (México)
SETIQ Ciudad de México: (55) 5559-1588 (México)

Technical Phone Number : (414) 764-6000 (OAK CREEK, WI) 8:00 a.m. - 5:00 p.m. Central

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : **F** LAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
SERIOUS EYE DAMAGE - Category 1
CARCINOGENICITY - Category 1B
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 21.4% (oral), 41% (dermal), 28.8% (inhalation)

GHS label elements

Section 2. Hazards identification

Hazard pictograms

:

**Signal word**

: Danger

Hazard statements

: Flammable liquid and vapor.
Causes skin irritation.
Causes serious eye damage.
May cause drowsiness or dizziness.
May cause cancer.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements**Prevention**

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling.

Response

: IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
Apply generous quantities of fresh calcium gluconate gel to all areas. Get immediate medical attention.

Storage

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

Disposal

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

: Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. Avoid contact with skin and clothing. Wash thoroughly after handling. Emits toxic fumes when heated.

Hazards not otherwise classified

: Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture

: Mixture

Product name

: 8840/D11764 RED

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
γ-butyrolactone	≥20 - ≤42	96-48-0
Solvent naphtha (petroleum), heavy arom.	≥10 - ≤20	64742-94-5
N-methyl-2-pyrrolidone	≥10 - <20	872-50-4
1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene	≥5.0 - ≤10	25067-11-2
naphthalene	≥0.10 - ≤2.9	91-20-3

SUB codes represent substances without registered CAS Numbers.

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person.

Description of necessary first aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners. Apply generous quantities of fresh calcium gluconate gel to all areas. Get immediate medical attention.
- Ingestion** : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do NOT induce vomiting.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact** : Causes skin irritation. Defatting to the skin.
- Ingestion** : Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness

Section 4. First aid measures

- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
dryness
cracking
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products

: Decomposition products may include the following materials:

carbon oxides
nitrogen oxides
sulfur oxides
halogenated compounds

The fluoropolymer resins used in this coating begin to decompose, very slowly, at temperatures above 625°F (330°C). Thermal decomposition is more rapid at temperatures above 750°F (400°C). Above 800°F (425°C) fluoropolymer resins give off small amounts of tetrafluoroethylene / hexafluoropropylene / perisofluorobutylene / carbonyl fluoride / hydrogen fluoride. These are toxic and if inhaled, in sufficient quantities, may be harmful. The actual decomposition products depend on temperature and the amount of oxygen.

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 6. Accidental release measures

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Special precautions

: If this material is part of a multiple component system, read the Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts.

Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

: Do not store below the following temperature: 5°C (41°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
γ-butyrolactone	None.
Solvent naphtha (petroleum), heavy arom.	None.
N-methyl-2-pyrrolidone	IPEL (PPG). Absorbed through skin. TWA: 10 ppm STEL: 20 ppm OSHA PEL (United States).
1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene	TWA: 15 mg/m ³ Form: Total dust ACGIH TLV (United States). TWA: 10 mg/m ³ Form: inhalable dust ACGIH TLV (United States, 3/2019).
naphthalene	

Section 8. Exposure controls/personal protection

Absorbed through skin.

TWA: 52 mg/m³ 8 hours.

TWA: 10 ppm 8 hours.

OSHA PEL (United States, 5/2018).

TWA: 50 mg/m³ 8 hours.

TWA: 10 ppm 8 hours.

Key to abbreviations

A	= Acceptable Maximum Peak
ACGIH	= American Conference of Governmental Industrial Hygienists.
C	= Ceiling Limit
F	= Fume
IPEL	= Internal Permissible Exposure Limit
OSHA	= Occupational Safety and Health Administration.
R	= Respirable
Z	= OSHA 29 CFR 1910.1200 Subpart Z - Toxic and Hazardous Substances

S	= Potential skin absorption
SR	= Respiratory sensitization
SS	= Skin sensitization
STEL	= Short term Exposure limit values
TD	= Total dust
TLV	= Threshold Limit Value
TWA	= Time Weighted Average

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Chemical splash goggles and face shield.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Gloves	: For prolonged or repeated handling, use the following type of gloves: Not recommended: nitrile rubber, Chloroprene Recommended: butyl rubber, polyvinyl alcohol (PVA), Viton®
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Not available.
Odor	: Not available.
Odor threshold	: Not available.
pH	: Not applicable.
Melting point	: Not available.
Boiling point	: >37.78°C (>100°F)
Flash point	: Closed cup: 26°C (78.8°F)
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Evaporation rate	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.13
Density (lbs / gal)	: 9.43
Solubility	: Insoluble in the following materials: cold water.
Partition coefficient: n-octanol/water	: Not available.
Viscosity	: Kinematic (40°C (104°F)): >0.21 cm ² /s (>21 cSt)
Volatility	: 81% (v/v), 73.38% (w/w)
% Solid. (w/w)	: 26.62

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : When exposed to high temperatures may produce hazardous decomposition products. Refer to protective measures listed in sections 7 and 8.
- Incompatible materials** : Keep away from the following materials to prevent strong exothermic reactions: oxidizing agents, strong alkalis, strong acids.
- Hazardous decomposition products** : Depending on conditions, decomposition products may include the following materials: carbon oxides nitrogen oxides sulfur oxides halogenated compounds
The fluoropolymer resins used in this coating begin to decompose, very slowly, at temperatures above 625°F (330°C). Thermal decomposition is more rapid at temperatures above 750°F (400°C). Above 800°F (425°C) fluoropolymer resins give off small amounts of tetrafluoroethylene / hexafluoropropylene / perisofluorobutylene / carbonyl fluoride / hydrogen fluoride. These are toxic and if inhaled, in sufficient quantities, may be harmful. The actual decomposition products depend on temperature and the amount of oxygen. Proper ventilation should be used at all curing temperatures.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
γ-butyrolactone	LC50 Inhalation Dusts and mists	Rat	>5.1 mg/l	4 hours
	LD50 Dermal	Rabbit	>5.6 g/kg	-
	LD50 Oral	Rat	1580 mg/kg	-
Solvent naphtha (petroleum), heavy arom.	LC50 Inhalation Dusts and mists	Rat	>5.2 mg/l	4 hours
	LD50 Oral	Rat	>5 g/kg	-
N-methyl-2-pyrrolidone	LC50 Inhalation Dusts and mists	Rat	>5100 mg/m ³	4 hours
	LD50 Dermal	Rabbit	8 g/kg	-
	LD50 Oral	Rat	3.914 g/kg	-
naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	490 mg/kg	-

Conclusion/Summary : There are no data available on the mixture itself.

Irritation/Corrosion

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Eyes : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Sensitization

Section 11. Toxicological information

Conclusion/Summary

Skin : There are no data available on the mixture itself.

Respiratory : There are no data available on the mixture itself.

Mutagenicity

Conclusion/Summary : There are no data available on the mixture itself.

Carcinogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Classification

Product/ingredient name	OSHA	IARC	NTP
γ-butyrolactone	-	3	-
naphthalene	-	2B	Reasonably anticipated to be a human carcinogen.

Carcinogen Classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: Known to be a human carcinogen; Reasonably anticipated to be a human carcinogen

OSHA: +

Not listed/not regulated: -

Reproductive toxicity

Conclusion/Summary : There are no data available on the mixture itself.

Teratogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
γ-butyrolactone	Category 3	-	Narcotic effects
Solvent naphtha (petroleum), heavy arom.	Category 3	-	Narcotic effects
N-methyl-2-pyrrolidone	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
N-methyl-2-pyrrolidone	Category 2	-	-
naphthalene	Category 2	-	-

Target organs

: Contains material which causes damage to the following organs: brain, skin.
Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, the reproductive system, liver, heart, upper respiratory tract, bone marrow, central nervous system (CNS), eye, lens or cornea.

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), heavy arom.	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure

Potential acute health effects

Section 11. Toxicological information

- Eye contact** : Causes serious eye damage.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact** : Causes skin irritation. Defatting to the skin.
- Ingestion** : Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
dryness
cracking
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

- Conclusion/Summary** : There are no data available on the mixture itself. Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. Solvents may cause some of the above effects by absorption through the skin. There is some evidence that repeated exposure to organic solvent vapors in combination with constant loud noise can cause greater hearing loss than expected from exposure to noise alone. If splashed in the eyes, the liquid may cause irritation and reversible damage. Ingestion may cause nausea, diarrhea and vomiting. This takes into account, where known, delayed and immediate effects and also chronic effects of components from short-term and long-term exposure by oral, inhalation and dermal routes of exposure and eye contact.

Short term exposure

- Potential immediate effects** : There are no data available on the mixture itself.
- Potential delayed effects** : There are no data available on the mixture itself.

Section 11. Toxicological information

Long term exposure

Potential immediate effects : There are no data available on the mixture itself.

Potential delayed effects : There are no data available on the mixture itself.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
8840/D11764 RED	2652.3	28081.6	N/A	N/A	N/A
γ-butyrolactone	1580	N/A	N/A	N/A	N/A
N-methyl-2-pyrrolidone	3914	8000	N/A	N/A	N/A
naphthalene	490	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
γ-butyrolactone	Acute EC50 >500 mg/l	Daphnia	48 hours
Solvent naphtha (petroleum), heavy arom.	NOEL 0.48 mg/l Fresh water	Daphnia	21 days

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
γ-butyrolactone	-	-	Readily
N-methyl-2-pyrrolidone	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
γ-butyrolactone	-0.64	-	low
N-methyl-2-pyrrolidone	-0.38	3.16	low
naphthalene	3.3	85.11	low

Mobility in soil

Section 12. Ecological information

Soil/water partition coefficient (K_{oc}) : Not available.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

14. Transport information

	DOT	IMDG	IATA
UN number	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT
Transport hazard class(es)	3	3	3
Packing group	III	III	III
Environmental hazards	No.	Yes.	Yes. The environmentally hazardous substance mark is not required.
Marine pollutant substances	Not applicable.	(Solvent naphtha (petroleum), heavy aromatic, naphthalene)	Not applicable.
Product RQ (lbs)	4542	Not applicable.	Not applicable.
RQ substances	(naphthalene)	Not applicable.	Not applicable.

Additional information

- DOT** : Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
- IMDG** : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
- IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.

14. Transport information

Special precautions for user : **Transport within user's premises**: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

United States

United States inventory (TSCA 8b) : All components are active or exempted.

United States - TSCA 12(b) - Chemical export notification:

N-methyl-2-pyrrolidone

One time notification

United States - TSCA 5(a)2 - Proposed significant new use rules:

N-methyl-2-pyrrolidone

Listed

SARA 302/304

SARA 304 RQ : Not applicable.

Composition/information on ingredients

No products were found.

SARA 311/312

Classification

: **FLAMMABLE LIQUIDS** - Category 3
SKIN IRRITATION - Category 2
SERIOUS EYE DAMAGE - Category 1
CARCINOGENICITY - Category 1B
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
HNOC - Defatting irritant

Composition/information on ingredients

Name	%	Classification
N-butylolactone	≥20 - ≤42	ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
Solvent naphtha (petroleum), heavy arom.	≥10 - ≤20	FLAMMABLE LIQUIDS - Category 4 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 HNOC - Defatting irritant
N-methyl-2-pyrrolidone	≥10 - <20	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 1B SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED

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Section 15. Regulatory information

naphthalene	≥0.10 - ≤2.9	EXPOSURE) - Category 2 HNOC - Defatting irritant FLAMMABLE SOLIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 CARCINOGENICITY - Category 1B SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
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SARA 313

Supplier notification	Chemical name	CAS number	Concentration
	N-methyl-2-pyrrolidone	872-50-4	10 - 30
	naphthalene	91-20-3	1 - 5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

Additional environmental information is contained on the Environmental Data Sheet for this product, which can be obtained from your PPG representative.

California Prop. 65

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 3 * Flammability : 3 Physical hazards : 1

(*) - Chronic effects

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on MSDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Health : 3 Flammability : 3 Instability : 1

Date of previous issue : 10/23/2020

Organization that prepared the MSDS : EHS

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

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Section 16. Other information

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.