Rev
3-11-05

FOSECO
Foseco Metallurgical Inc.
20200 Sheldon Road
Cleveland, Ohio 44142

Material Safety Data Sheet

FERRUX* CP5665 | **MSDS#: 10989** Revision: 6

Preparation Information:

Contact Trevor Hardy at (440) 826-4548 for further Product information or medical emergency during normal business hours.

Section 1: Product and Company Identification:

Product Name:	Chemical Name:	Formula:	CAS Number:
FERRUX* CP5665	N/A	MIXTURE	N/A

Product Use.
Exothermic/Insulating powder for molten metal.

Supplier Information:

Supplier Name: Foseco Metallurgical Inc.
Supplier Phone: 440-826-4548

Supplier Address:

20200 Sheldon Road
Cleveland, OH 44142

Manufacturer Information:

Manufacturer Name: Foseco Metallurgical Inc.
Manufacturer Phone: 440-826-4548

Manufacturer Address:

20200 Sheldon Road
Cleveland, OH 44142

Contact Information for Transport Emergencies and/or outside normal business hours:

CHEMTREC (800) 424-9300 (USA)
CANUTEC (613) 996-6666 (CANADA)

Section 2: Composition Information on Ingredients

Ingredient:	CAS No.	% Weight:
Silica (Quartz)	14808-60-7	40-70
Sodium Nitrate*	7631-99-4	7-13
Sodium Silicofluoride	16893-85-9	3-7
Aluminum	7429-90-5	15-40

*Oxidizer. This product generates high temperatures when ignited due to exothermic reaction of the aluminum.

Section 3: Hazards Overview

Emergency Overview:
N/A

Acute Health Effects:
Fluorides can cause skin and eye burns and irritation of mucous membranes. Excessive inhalation may cause nose bleeds.

Chronic Health Hazards:
Fluorides can cause loss of appetite, vomiting, increase in bone density. NIOSH lists eyes, respiratory system, CNS, skeleton, kidneys, skinas target organs for fluorides. Crystalline silica inhalation may cause silicosis of the lungs.

Medical Conditions Generally Aggravated by Exposure:
Pre-existing skin adn respiratory ailments.

Routes of Entry:

Eyes?	Skin?	Inhalation?	Ingestion?	Other?
Yes	Yes	Yes	No	N/A

Carcinogenicity:

NTP?	IARC?	OSHA?	WHMIS?	Other?
Yes	Yes	N/A	N/A	N/A

Details:
IARC has determined there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica and so is categorized as a class 1 carcinogen. NTP has classified respirable crystalline silica as a known human carcinogen and ACGIH has classified it as a suspected human carcinogen.

Section 4: First Aid Measures

Eye Contact:
Flush with water for at least 15 minutes. Contact physician if irritation persists.

Skin Contact:
Wash with cold water. Contact physician if irritation persists.

Inhalation:
Remove person to fresh air. Contact physician if problems persist.

Ingestion:
If swallowed - Administer neutralizer and diluent such as milk of magnesia. Drink plenty of water, then milk. Do not induce vomiting. Refer to physician immediately.

Section 5: Fire-fighting Measures:

Flash Point:	Auto-Ignition:	LEL:	UEL:
N/AV	N/AV	N/AV	N/AV

NFPA Hazard Classification:

Health:	Flammable:	Reactivity:
2	2	1

HMIS Hazard Classification:

Health:	Flammable:	Reactivity:	PPE:
2	2	1	B

Extinguishing Media:
Do not use water. Isolate fire with sand or other inert material.

Special Fire Fighting Procedures:
Water may be used to contain the fire, but direct impingement of the stream on the mass of exothermic should be avoided.

Unusual Fire and Explosion Hazards:

SENSITIVITY TO MECHANICAL IMPACT: N/A
SENSITIVITY TO STATIC DISCHARGE: N/A
OTHER: Avoid atmospheric dust clouds when handling especially in presence of open flames, sparks, heating apparatus.

Section 6: Accidental Release Measures

Remove all sources of open flames. Sweep into container using non sparking tools. Minimize dust levels.

Section 7: Handling and Storage

Store below 150 Deg. F in dry area. Keep containers closed when not in use. Avoid contact with acids or caustics which will react to produce flammable hydrogen gas.

Section 8: Exposure Controls/Personal Protection:

Exposure Limits Ingredient	PEL-OSHA	TLV-ACGIH	Other
Silica (Quartz)	0.1 mg/M3 (respirable)	0.05 mg/M3 (respirable)	N/A
Sodium Nitrate	15 mg/M3 (total)	10 mg/M3	N/A
Sodium Silicofluoride	2.5 mg/M3 as F	2.5 mg/M3 as F	N/A
Aluminum	15 mg/M3 (total)	10 mg/M3	N/A

Details:
N/A
Respiratory Protection:
If PEL/TLV is exceeded use NIOSH approved mask/respirator for above listed ingredients.
Ventilation
LOCAL: N/A
SPECIAL: N/A
MECHANICAL: Recommended sufficient to maintain below the listed PEL/TLVs.
ENGINEERING CONTROLS: N/A
Protective Equipment:
GLOVES: Insulating
EYE: Tinted safety glasses with side shields.
CLOTHING: N/A
Personnel Sampling Procedure:
N/A

Section 9: Physical and Chemical Properties

BOILING POINT (C): N/A
% VOLATILE BY VOL.: N/A
BULK DEN./SPEC. GRAV.: 1.5 G/CC
PH LEVEL: N/AV
COEF. H2O/OIL DIST.: N/A
MELTING POINT: N/AV
FREEZING POINT (C): N/AV
MOLECULAR WEIGHT: N/AV
ODOR THRESHOLD CONC.: N/A
VAPOR DENSITY (AIR=1): N/A
EVAPORATON RATE: N/A
SOLUBILITY IN WATER: Moderate
VAPOR PRESSURE: N/A
APPEARANCE: Gray powder
ODOR: No odor

Section 10: Stability and Reactivity

Stability:	Avoid:
Stable	N/A

Incompatibility:
Open flames, caustic, acid or acid fume

Hazardous Decomposition of By-products
Oxides of nitrogen, fluorides.

Polymerization:	Avoid:
Will not occur	N/A

Section 11: Toxicological Information

Chemical Name	% Wt.	LD50	LC50
Sodium Silicofluoride	3-7	125 mg/Kg - oral rat	N/A
Silica (Quartz)	40-70	LCLO: 300 ug/M3 - 10 years - inhalation human	
		LCLO: Lowest published lethal concentration	

Other Studies:
N/A

Section 12: Ecological Information

Ecotoxicity:
N/AV

Environmental Fate:
N/AV

Section 13: Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14: Transport Information

International

N/A
United States

Aluminum Powder, Uncoated (Mixture) , UN 1396, Div. 4.3 Dangerous when wet, PG III
Canada TDG
SHIPPING NAME: Aluminum Powder Uncoated (Mixture)
P.I.N/UN: UN 1396
PRIMARY CLASS: Div. 4.3, Dangerous when wet.
SUBSIDIARY CLASS: N/A
PACKING GROUP: Group III
European Community
N/A

Section 15: Regulatory Information

US Federal Regulations

TSCA
All components of this product are included on the EPA TSCA Chemical Substance Inventory.

SARA 311 and 312 Hazard Categories:

Immediate (Acute) Health Hazard:	Yes
Delayed (Chronic) Health Hazard:	Yes
Fire Hazard:	Yes
Reactivity:	Yes
Sudden Release of Pressure:	No

SARA Section 313 Notification:

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. The chemical(s) is/are listed below.

Chemical Name	CAS #	Standard Wt. %
Aluminum	7429-90-5	32.0

Ozone Depleting Substances:
N/A
Volatile Organic Compounds (VOC):
N/A
US State Regulation:
N/A
Canadian Regulation:

WHMIS CLASSIFICATION: D 1B: TOXIC MATERIAL
This Product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
European Regulation:
N/A
Other Regulation:
N/A
MITI:
N/A

Disclaimer
Please ensure that all persons coming into contact with this product are aware of the information contained in this MSDS Sheet. Information presented herein has been compiled from sources considered to be reliable and is accurate and reliable to the best of our knowledge and belief but is not guarenteed to be so. It is the user's responsibility to determine for himself the suitability of any material for a specific use and to adopt such safety precautions as may be necessary. If you need any further information from us to make the determinations which you must make to use this material safely, please contact the above named preparer.

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N/A is Not Applicable
N/K is Not Known
N/AV is Not Available

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Document Author:	Document Manager:
Trevor Hardy	Barb Csomok

MSDS Status
Revised Sections 3,4,8,10,13

Vopak USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

****
PRODUCT IDENTIFICATION
****

PRODUCT NAME: GEOWET C-50

MSDS#: P28082VS

DATE ISSUED: 3/17/99

SUPERSEDES: new

ISSUED BY: 005889

GEO Specialty Chemicals, Inc.
701 Wissahickon Avenue
Cedartown, GA 30125

PRODUCT NAME: GEOwet C-50
SYNONYMS: Sulfonated Alkyl Ester, GEOwet 50

NFPA Rating	HMIS Rating
HEALTH: 2	HEALTH: 2
FLAMMABILITY: 1	FLAMMABILITY: 1
REACTIVITY: 0	REACTIVITY: 0

EMERGENCY TELEPHONE NUMBER: CHEMTREC 1-800-424-9300

EMERGENCY OVERVIEW

Colorless liquid with mild odor. May cause skin, eye and respiratory irritation. Harmful if swallowed or inhaled. Possible central nervous system depression.

SECTION 2 -- COMPOSITION INFORMATION

INGREDIENT	CAS NO.	% WT/WT	PEL:	TLV:
Di-2-ethylhexylsulfosuciante sodium salt	577-11-7	41 %	None Established	None Established
Diethylene Glycol	111-46-6	2 %	None Established	None Established
Water	7732-18-5	57 %	None Established	None Established

LISTED AS CARCINOGEN BY:
IARC: NO NTP: NO
OSHA: NO ACGIH: NO

PEL: OSHA Permissible Exposure Limit
TWA: Time Weighted Average, 8-hr
STEL: Short Term Exposure Limit
TLV: ACGIH Threshold Limit
HI: Hazardous Ingredient
C.LIM: Ceiling Limit
OM: Oil mist
WF: Wax fume
TD: Total dust
RF: Respirable fraction
ND: Nuisance dust
ST: Skin TWA

SECTION 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION: Mist or vapor may cause irritation of respiratory tract and central nervous system depression.

SKIN CONTACT: Prolonged contact may cause drying and defatting of skin leading to irritation and dermatitis.

SKIN ABSORPTION: No Data

EYE CONTACT: Causes severe irritation and possible corneal injury.

INGESTION: May cause gastrointestinal irritation, diarrhea, nausea and central nervous system effects.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE: Skin, eye, and respiratory tract irritation, possible central nervous system depression.

CHRONIC OVEREXPOSURE: Dermatitis, central nervous system depression. May aggravate existing skin, eye, lung, and nervous system conditions.

SECTION 4 -- FIRST AID MEASURES

EYES: Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek medical attention.

SKIN: Wash thoroughly with soap and water, remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention if irritation should develop.

INHALATION: Remove to fresh air.

INGESTION: Do not induce vomiting. If vomiting should occur spontaneously, keep airway clear. Get medical attention. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: None

SECTION 5 -- FIRE FIGHTING MEASURES

FLASHPOINT: 222 deg F
AUTOIGNITION TEMPERATURE: Not Available
FLAMMABLE LIMITS IN AIR, % BY VOLUME:
LOWER FLAMMABILITY LIMIT: NAV

UPPER FLAMMABILITY LIMIT: NAV

EXTINGUISHING MEDIA: Water Spray, Carbon Dioxide, Foam, Dry Chemical.
FIRE OR EXPLOSION HAZARDS: None
FIRE FIGHTING PROCEDURES:
Cool exposed containers with water spray. Use self-contained breathing apparatus in confined areas.

SECTION 6 -- ACCIDENTAL RELEASE MEASURES

Stop leaks. Use absorbent material to clean up spills. Place in labeled waste container for disposal. Wear adequate personal protective clothing and equipment.

SECTION 7 -- HANDLING AND STORAGE

PRECAUTIONARY STATEMENTS:
WARNING!
CAUSES IRRITATION.
Harmful if swallowed or inhaled.
May cause nervous system effects.
Avoid contact with eyes, skin, and clothing.
Avoid breathing mist or vapor.
Wear chemical splash goggles, gloves, and protective clothing when handling.
Use with adequate ventilation and employ respiratory protection where mist or vapor may be generated.
Wash thoroughly after handling.
Do not take internally.
Keep away from heat and open flame.
Keep container closed when not in use.
FOR INDUSTRIAL USE ONLY.

HANDLING/STORAGE REQUIREMENTS:
Keep from freezing. Protect in storage and transit. Store in a warm, dry place away from direct heat. Do not store below 50 deg. F (10 deg. C). Mix well before using.

SECTION 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION REQUIREMENTS: Local exhaust ventilation recommended.
EYE PROTECTION: Chemical splash goggles and/or face shield.
SKIN PROTECTION: Rubber or plastic gloves.
RESPIRATORY PROTECTION: NIOSH/MSHA approved respirator if necessary. Follow manufacturer's recommendations.

OTHER REQUIRED EQUIPMENT:
Standard work clothing and work shoes. Safety shower and eyewash located in immediate area.

SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear water-white
SOLUBILITY IN WATER: Dispersible liquid
ODOR: Faint
pH: 1%: 7.4
SPECIFIC GRAVITY (WATER=1): 1.03
DENSITY @ 20C: 8.94 lb/gal
BOILING POINT: NAV
MELTING POINT: NAP
FREEZING POINT: NAV
EVAPORATION RATE: NAV
VAPOR PRESSURE: NAV
VAPOR DENSITY (AIR=1): NAV

VISCOSITY: 70 cps
VOLATILES BY WEIGHT: 11.06% AS VOC

SECTION 10 -- STABILITY AND REACTIVITY

STABLE: YES
CONDITIONS TO AVOID: Avoid sources of ignition such as open flames, sparks or hot surfaces.
INCOMPATIBLE MATERIALS: Strong oxidizing agents.
HAZARDOUS POLYMERIZATION: NO
DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide and oxides of sulfur.

SECTION 11 -- TOXICOLOGICAL INFORMATION

Sodium dioctylsulfosuccinate:
Acute Oral LD50 (rat): 1.9 g/kg

SECTION 12 -- ECOLOGICAL INFORMATION

BOD5: mg 02/mg: Not Available
ppm: Not Available
Biodegradable, %: Not Available
BOD28: mg 02/mg: Not Available
ppm: Not Available
Biodegradable, %: Not Available
COD: mg 02/mg: Not Available
ppm: Not Available
Biodegradable, %: Not Available

Aquatic Toxicity:
Not Available

SECTION 13 -- DISPOSAL CONSIDERATIONS

Dispose of product in an approved chemical waste landfill or incinerate in accordance with applicable Federal, State, and local regulations. Avoid landfilling liquids. Since emptied container retains product residue, all labeled hazard precautions must be observed.

SECTION 14 -- TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: NOT APPLICABLE, NOT RESTRICTED

Harmonized Tariff Schedule Number: 3402.11.50 50

SECTION 15 REGULATORY INFORMATION

NOTICE: This product does not contain any ingredients subject to the reporting requirements of SARA Title III, Section 313 (40 CFR Part 372).

SARA Section 311/312: Acute and Chronic Health Hazard.

TSCA: Components found in TSCA Inventory.

SECTION 16 -- OTHER INFORMATION

Legend: NAPL Not Applicable
NAV Not Available

For Additional Information:
Contact: MSDS Coordinator - Vopak USA

During business hours, Pacific Time - (425) 889-3400

NOTICE
Vopak USA, expressly disclaims all express or implied warranties of merchantibility and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Vopak USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Vopak USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Vopak USA's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

END OF MSDS

SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: DOWANOL™ PM GLYCOL ETHER STD Grade

Issue Date: 03/02/2015
Print Date: 03/03/2015

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DOWANOL™ PM GLYCOL ETHER STD Grade

Recommended use of the chemical and restrictions on use
Identified uses: Solvent for consumer and industrial applications. Chemical intermediate.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-424-9300
Local Emergency Contact: 989-636-4400

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Specific target organ toxicity - single exposure - Category 3

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Flammable liquid and vapour.
May cause drowsiness or dizziness.

Precautionary statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

Response
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

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

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 1-methoxy-2-propanol
This product is a substance.

Component	CASRN	Concentration
Propylene glycol monomethyl ether	107-98-2	>= 99.5 %
1-Propanol, 2 methoxy-	1589-47-5	< 0.5 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. When product is stored in closed containers, a flammable atmosphere can develop. Electrically ground and bond all equipment. Flammable mixtures of this product are readily ignited even by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Ground and bond all containers and handling equipment. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or supress. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid breathing vapor. Use with adequate ventilation. Keep container closed. Never use air pressure for transferring product. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage: Flammable mixtures may exist within the vapor space of containers at room temperature. Keep container closed. Minimize sources of ignition, such as static build-up, heat, spark or flame. Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel.

Storage stability

Shelf life: Use within
Metal drums.
24 Month
Bulk
6 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Propylene glycol monomethyl ether	Dow IHG	TWA	100 ppm
	Dow IHG	STEL	150 ppm
	ACGIH	TWA	50 ppm
	ACGIH	STEL	100 ppm

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures
Eye/face protection: Use safety glasses (with side shields).
Skin protection
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Other protection: Wear clean, body-covering clothing.
Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Ether
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	Not applicable
Freezing point	-97 °C (-143 °F) *Literature*
Boiling point (760 mmHg)	120 °C (248 °F) *Literature*
Flash point	**closed cup** 31 °C (88 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	1.5 % vol *Literature*
Upper explosion limit	13.74 % vol *Literature*
Vapor Pressure	11.829 mmHg at 25 °C (77 °F) *Literature*
Relative Vapor Density (air = 1)	3.12 *Literature*
Relative Density (water = 1)	0.919 at 25 °C (77 °F) / 25 °C *Literature*
Water solubility	*Literature* completely miscible with water
Partition coefficient: n-octanol/water	log Pow: 0.37 *Measured*
Auto-ignition temperature	287 °C (549 °F) *Literature*
Decomposition temperature	No test data available
Dynamic Viscosity	1.7 mPa.s at 25 °C (77 °F) *Literature*
Kinematic Viscosity	1.86 mm2/s at 25 °C (77 °F) *Literature*
Explosive properties	No
Oxidizing properties	no data available
Molecular weight	90.1 g/mol *Literature*
Percent volatility	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid static discharge.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50, Rat, 4,016 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
Brief exposure (minutes) is not likely to cause adverse effects. The odor is objectionable at 100 ppm; higher levels produce eye, nose, and throat irritation and are intolerable at 1000 ppm. Anesthetic effects are seen at or above 1000 ppm.

LC50, Rat, 6 Hour, vapour, > 25.8 mg/l

Skin corrosion/irritation
Prolonged contact may cause slight skin irritation with local redness.
Repeated contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.

Corneal injury is unlikely.

Sensitization
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
Did not cause cancer in laboratory animals.

Teratogenicity
Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity
In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Leuciscus idus (Golden orfe), static test, 96 Hour, 6,812 mg/l, DIN 38412

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, >= 1,000 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 20,800 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), static test, 48 Hour, 21,100 - 25,900 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 7 d, Growth rate inhibition, > 1,000 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria
IC50, activated sludge, static test, > 1,000 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 96 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent

Theoretical Oxygen Demand: 1.95 mg/mg

Chemical Oxygen Demand: 1.84 mg/g

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 7.8 Hour
Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.37 at 20 °C Measured
Bioconcentration factor (BCF): < 2

Mobility in soil

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 0.2 - 1.0 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR

UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	1-Methoxy-2-propanol
UN number	UN 3092
Class	3
Packing group	III

Classification for SEA transport (IMO-IMDG):

Proper shipping name	1-METHOXY-2-PROPANOL
UN number	UN 3092
Class	3
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	1-Methoxy-2-propanol
UN number	UN 3092
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 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.

Pennsylvania Worker and Community Right-To-Know Act:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances knownto the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

:

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	3	1

Revision
Identification Number: 101215037 / A001 / Issue Date: 03/02/2015 / Version: 4.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
STEL	Short term exposure limit
TWA	Time weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here

pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

SAFETY DATA SHEET
THE DOW CHEMICAL COMPANY

Product name: DOWANOL™ DPM Glycol Ether

Issue Date: 03/08/2016
Print Date: 03/09/2016

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DOWANOL™ DPM Glycol Ether

Recommended use of the chemical and restrictions on use
Identified uses: Industrial solvent for cleaner and coating formulations.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: CHEMTREC +1 703-527-3887
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 4

Label elements

Signal word: **WARNING!**

Hazards
Combustible liquid.

Precautionary statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Wear protective gloves/ eye protection/ face protection.

Response

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage
Store in a well-ventilated place. Keep cool.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: (2-methoxymethylethoxy)propanol
This product is a substance.

Component	CASRN	Concentration
Dipropylene glycol monomethyl ether	34590-94-8	> 99.0 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Avoid breathing vapor. Use with adequate ventilation. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage: Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage stability
Shelf life: Use within, Steel drums. 24 Month
Bulk 6 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Dipropylene glycol monomethyl ether	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	30 ppm
	Dow IHG	STEL	SKIN
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm
	ACGIH	TWA	SKIN
	OSHA Z-1	TWA	600 mg/m3 100 ppm
	ACGIH	STEL	SKIN
	OSHA Z-1	TWA	SKIN

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements

(cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Mild
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	Not available
Freezing point	-83 °C (-117 °F) *Literature*
Boiling point (760 mmHg)	189.6 °C (373.3 °F) at 760 mmHg *Literature*
Flash point	**closed cup** 75 °C (167 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	1.1 % vol *Setaflash Closed Cup ASTM D3828*
Upper explosion limit	14 % vol *Setaflash Closed Cup ASTM D3828*
Vapor Pressure	10 mmHg at 75.1 °C (167.2 °F) *Literature*
Relative Vapor Density (air = 1)	5.11 at 20 °C (68 °F) *Literature*
Relative Density (water = 1)	0.951 at 25 °C (77 °F) / 25 °C *Literature*
Water solubility	100 % at 25 °C (77 °F) *Literature*
Partition coefficient: n-octanol/water	log Pow: 1.01 *Measured*
Auto-ignition temperature	207 °C (405 °F) *Literature*
Decomposition temperature	No test data available
Dynamic Viscosity	3.7 mPa.s at 25 °C (77 °F) *Literature*
Kinematic Viscosity	4.55 mm2/s at 20 °C (68 °F) *Literature*
Explosive properties	Not explosive
Oxidizing properties	No
Molecular weight	148.2 g/mol *Literature*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts. Prolonged skin contact with very large amounts may cause dizziness or drowsiness.

LD50, Rabbit, 9,510 mg/kg

Acute inhalation toxicity
Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, Rat, 7 Hour, vapour, 3.35 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged exposure not likely to cause significant skin irritation.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Sensitization
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Carcinogenicity
For similar material(s): Did not cause cancer in laboratory animals.

Teratogenicity
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For similar material(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Poecilia reticulata (guppy), static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), static test, 48 Hour, 1,919 mg/l, OECD Test Guideline 202 or Equivalent

LC50, Crangon crangon (shrimp), semi-static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

LC50, copepod Acartia tonsa, static test, 48 Hour, 2,070 mg/l, ISO TC147/SC5/WG2

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), static test, 96 Hour, Biomass, > 969 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria
EC10, Pseudomonas putida, 18 Hour, 4,168 mg/l

Chronic aquatic toxicity
Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

LOEC, Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
10-day Window: Pass
Biodegradation: 75 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 2.06 mg/mg

Chemical Oxygen Demand: 2.02 mg/mg Dichromate

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0 %
10 d	0 %
20 d	31.6 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 3.4 - 10.4 Hour
Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1.01 Measured

Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 0.28 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Combustible liquid, n.o.s.(DIPROPYLENE GLYCOL METHYL ETHER ISOMERS)
UN number	NA 1993
Class	CBL
Packing group	III

Classification for SEA transport (IMO-IMDG):

	Not regulated for transport
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 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.

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	**CASRN**
Dipropylene glycol monomethyl ether	34590-94-8

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Product Literature
Additional information on this product may be obtained by calling your sales or customer service contact.

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	2	0

Revision
Identification Number: 101201613 / A001 / Issue Date: 03/08/2016 / Version: 8.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
STEL	Short term exposure limit
TWA	Time weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

0699

Material Safety Data Sheet

ITW DYKEM®

HMIS®			
HEALTH	2	REACTIVITY	0
FLAMMABILITY	2	PERSONAL PROTECTION	B

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Identity: Hi Temperature Blue **Item No.:** 44094 **Other Names:** 44 **Formula:** A094	*Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.*
Another Exclusive Product of: ITW Dykem	**Emergency Telephone Number** 1-800-535-5053 (Domestic), 1-352-323-3500 (International)
Address (Number, Street, City, State, and ZIP Code) 806 East Old 56 Highway	**Telephone Number for Information** 1-800-443-9536 or 1-913-397-9889
Olathe, KS 66061-4914	**Date Prepared** 9/15/09
Product Class: Solvent based marker.	**Signature of Preparer (Optional)** Regulatory Dept.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components (Specific Chemical Identity, Common Name(s))	CAS No.	OSHA PEL	ACGIH-TLV	Other Limits Recommended	%(Opt.)
Aromatic Hydrocarbon	64742-95-6	TWA 100 ppm	TWA 100 ppm	No data	50 - 60
Xylene	1330-20-7	TWA 100 ppm	TWA 100 ppm	No data	1 - 10
Ethyl Benzene	100-41-4	TWA 100 ppm	TWA 100 ppm	No data	1 - 10
1,2,4, Trimethyl Benzene	95-63-6	TWA 100 ppm	TWA 100 ppm	No data	1 - 10
C. I. Pigment Blue 28	1345-16-0	TWA 15 mg/m3	TWA 10 mg/m3	Nuisance dust*	1 - 10
Pigment Blue	147-14-8	TWA 15 mg/m3	TWA 10 mg/m3	Nuisance dust*	1 - 10

*Nuisance dust as free dust only, not as bound in paint or ink.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW – Blue opaque thin viscosity liquid with aromatic odor. Warning! Combustible liquid and vapor. Keep away from heat sparks and flames. May cause eye, skin and respiratory tract irritation. If swallowed do not induce vomiting. Get immediate medical attention.

POTENTIAL HEALTH EFFECTS

Eyes: Liquid is moderately irritating to the eyes.
Skin: Liquid is mildly irritating to the skin.
Ingestion: Ingestion of liquid may cause vomiting.
Inhalation: High concentration of vapors may produce irritation of the respiratory tract, headache, dizziness, and nausea.

CHRONIC HEALTH EFFECTS

Prolonged or repeated contact may cause skin sensitization or dermatitis. Reports have associated repeated and prolonged occupational overexposure to solvents with irreversible brain and nervous system damage. Intentional misuse by deliberately concentrating or inhaling this product may be harmful or fatal. IARC (International Agency for Research of Cancer) has classified Ethyl Benzene, Cobalt and Cobalt compound as a possible human carcinogen (2B).

SECTION 4 FIRST AID MEASURES

Eyes – Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Inhalation – Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Skin – Flush skin with plenty of water. Remove contaminated clothing and shoes.
Ingestion – If large quantities of this material are swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point (Method Used)	Flammable Limits	LEL	UEL
108°F		1.9	12.6

Extinguishing Media -
Use water fog, foam, dry chemical or CO2. Use water spray to cool fire-exposed containers and to protect personnel.

Special Fire Fighting Procedures -
Keep containers cool and vapors down with water spray. Prevent spill from entering drains, sewers, streams or other bodies of water. If run-off occurs, notify proper authorities. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards – Vapors are heavier than air and may travel along ground, or be moved by ventilation and be ignited by ignition source.

SECTION 6 ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Absorb liquid with non-combustible floor absorbent and place in non-leaking container; seal properly and dispose of properly in compliance with federal, state, and local regulations.

LARGE SPILL: Evacuate area of unprotected personnel. Eliminate all ignition sources. Stop spill at source if safe to do so. Handling equipment must be grounded to prevent sparking. Prevent spill from entering drains, sewers, streams or other bodies of water. If run-off occurs, notify proper authorities. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal. Dispose of properly in compliance with federal, state, and local regulations.

SECTION 7 HANDLING AND STORAGE

HANDLING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, sparks, flames, static electricity, or other sources of ignition. Many hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or ignition temperatures. Ignition temperatures decrease with increasing vapor volume and vapor volume and vapor/air contact time, and are influenced by pressure changes. Ignition of organic chemical vapors may occur at typical elevated-temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs. Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

STORAGE:
Keep away from heat, sparks and open flames. Keep out of reach of children. Keep container tightly sealed when not in use. Store in cool, well-ventilated place away from incompatible materials. Information on this Material Safety Data Sheets refers to ink used in pens and markers, however, it applies to these inks in bulk. The inks are contained in capillary or valve reservoirs and will not spill or leak under normal conditions.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection (Specify Type) –
Not usually necessary. Use with adequate ventilation. Use NIOSH/MSHA approved respirator if PELs or TLVs are exceeded.

Engineering	**Local Exhaust**	Not usually needed	**Special**	None
Controls	**Mechanical (General)**	Yes	**Other**	None

Protective Gloves – Chemical resistant gloves if skin contact is possible (consult your safety equipment supplier).	**Eye Protection** – Not normally required if used as intended. Wear chemical splash goggles in compliance with OSHA regulation if splashing is possible.

Other Protective Clothing or Equipment -
Not usually necessary. For bulk material, if direct contact is possible, wear apron, boots, face shield, etc. as needed.

Work/Hygienic Practices -
Follow label instructions. Wash hands after use and before eating, drinking, smoking, using restrooms, etc.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	318 to 338°F	**Specific Gravity (H_2O = 1)** @70° F	>1
Vapor Pressure (mm-Hg @ 70° F)	No Data	**Melting Point**	No Data
Vapor Density (AIR = 1)	Greater than one (1)	**Evaporation Rate (Butyl Acetate = 1)**	Less than one (1)
Solubility in Water	Negligible	**pH**	No Data

Appearance and Odor – Blue opaque thin viscosity liquid with aromatic odor.

VOC: This product contains 719 grams per liter or 67.72% by weight VOC's.

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability	**Unstable**		**Conditions to Avoid** – None known.
	Stable	X	

Incompatibility (Materials to Avoid) -
Strong oxidizing and reducing agents, strong alkalies and strong acids.

Hazardous Decomposition or Byproducts -
Carbon dioxide, carbon monoxide, smoke, soot and various organic oxidation by-products.

Hazardous Polymerization	**May Occur**		**Conditions to Avoid** - No data
	Will Not Occur	X	

SECTION 11 TOXICOLOGICAL INFORMATION

Please refer to Section 3 for available information on potential health effects.

SECTION 12 ECOLOGICAL INFORMATION

No specific ecological data are available for this product. Please refer to Section 6 for information regarding accidental releases and Section 15 for regulatory reporting information.

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable local, state and federal regulations.

SECTION 14 TRANSPORT INFORMATION (Not meant to be all inclusive)

Domestic Highway (Containers < 1 Quart are ORM-D)	**Domestic Air Shipments (Pens)**
Proper Shipping Name: Ink/Paint	**Proper Shipping Name:** Consumer Commodity
Hazard Class/Subsidiary Hazard: 3	**Hazard Class/Subsidiary Hazard:** 9
UN/NA No.: UN1263	**UN/NA No.:** I.D. 8000
Packing Group: III	**Packing Group:** None
Label Required: Combustible Liquid (2)	**Label Required:** Class 9

SECTION 15 REGULATORY INFORMATION (Not meant to be all inclusive - selected regulations represented)

U.S. FEDERAL REGULATIONS:

Carcinogenicity:	**NTP?**	**IARC Monographs?**	**OSHA Regulated?**
	No	2B	No

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

SECTION 313: This product contains Xylene (1330-20-7), Ethyl Benzene (100-41-4), C.I.Pigment blue 28 (1345-16-0), and 1,2,4,TriMethyl Benzene (95-63-6) which are listed and may require reporting under SARA Title III Sec. 313 if used over the threshold reporting quantity. This information must be included in all MSDSs that are copied and distributed for this material.

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: Not WHMIS controlled (pens) Bulk: Class B2, D2A

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

This product contains a chemical known to the State of California to cause cancer. Benzene, Ethyl benzene.
This product contains chemicals known to the State of California to cause birth defects or other reproductive harm. Toluene, Benzene.

SECTION 16 OTHER INFORMATION

MSDS Status: Revised Section(s): Section 15 has been updated.
9/15/09: Updated W/current date.

WARNING! The use of this product is beyond the control of the manufacturer and distributor; therefore, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice. The user must assume all responsibility, including injury or damage, resulting from its misuse as such, or in combination with other materials. The manufacturer and distributor warrant only that this product meets the specifications for such product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, PRODUCTIVENESS, OR ANY OTHER MATTER OF THIS PRODUCT. THE MANUFACTURER AND DISTRIBUTOR SHALL BE IN NO WAY RESPONSIBLE FOR THE IMPROPER USE OF THIS PRODUCT. The sole and exclusive remedy against the manufacturer and distributor for breach of warranty shall be reimbursement of the purchase price of the product in the event that a defective condition of the product shall be found to exist. NO OTHER REMEDY (INCLUDING BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR INJURY TO PERSON OR PROPERTY OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE.

SAFETY DATA SHEET

1. Identification

Product identifier **Silicon Mold Release**

Other means of identification

SDS number 02960

Part Number 811-271, 811-271-HAZ, 811-271-010

Recommended use Not available.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Supplier

Company name LECO Corporation

Address 3000 Lakeview Avenue
St. Joseph, MI 49085
United States

Telephone 269-983-5531

Website www.leco.com

E-mail info@leco.com

Emergency phone number Chemtrec: 800-424-9300
Chemtrec Int'l: 703-527-3887

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
Health hazards	Serious eye damage/eye irritation	Category 2B
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable aerosol. Causes eye irritation. May cause drowsiness or dizziness. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Pressurized container: Do not pierce or burn, even after use. Do not spray on an open flame or other ignition source. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors Keep out of reach of children. In case of inadequate ventilation wear respiratory protection.

Response If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Call a poison center/doctor if you feel unwell.

Storage Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place. Keep container tightly closed.

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

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information 95.65% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 95.65% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
DIMETHYL ETHER		115-10-6	55 - 65
1,1-Difluorethan		75-37-6	35 - 45
DIMETHYLPOLYSILOXAN		63148-62-9	1 - 5

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. If breathing is difficult, trained personnel should give oxygen. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Take off contaminated clothing and wash before reuse. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops and persists.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion In the unlikely event of swallowing contact a physician or poison control center. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Most important symptoms/effects, acute and delayed Not available.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Dry chemicals. Carbon dioxide (CO2). Foam. Water.

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Special protective equipment and precautions for firefighters Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire-fighting equipment/instructions Evacuate area and fight fire from a safe distance. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.

Specific methods Use water spray to cool unopened containers. In the event of fire and/or explosion do not breathe fumes.

General fire hazards Extremely flammable aerosol.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or mists.

Methods and materials for containment and cleaning up Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Use only non-sparking tools. Stop leak if you can do so without risk. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Ventilate the contaminated area.

Environmental precautions Avoid release to the environment. Avoid discharge into drains, water courses or onto the ground. Contact local authorities in case of spillage to drain/aquatic environment.

7. Handling and storage

Precautions for safe handling

Keep away from heat and sources of ignition. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Do not re-use empty containers. Avoid contact with skin and eyes. Avoid breathing mist or vapor. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Do not empty into drains. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Use care in handling/storage. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Keep containers tightly closed in a cool, well-ventilated place. Do not puncture, incinerate or crush.

8. Exposure controls/personal protection

Occupational exposure limits

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
1,1-Difluorethan (CAS 75-37-6)	TWA	2700 mg/m3
		1000 ppm
DIMETHYL ETHER (CAS 115-10-6)	TWA	1880 mg/m3
		1000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using, do not eat, drink or smoke. Do not get in eyes, on skin, on clothing. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state

Liquid.

Form

Aerosol.

Color

Colorless

Odor

Sweet ethereal.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

< -50.08 °F (< -45.6 °C) estimated

Initial boiling point and boiling range

Not available.

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)

Not available.

Explosive limit - upper (%)

Not available.

Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Specific gravity	0.75 estimated
VOC (Weight %)	97 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Contact with incompatible materials.
Incompatible materials	Alkaline metals. Acids. Bases.
Hazardous decomposition products	Irritating and/or toxic fumes and gases may be emitted upon the products decomposition. Hydrogen fluoride. Carbon oxides. Formaldehyde. Silicon oxides. Carbonyl fluoride.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Irritation of the gastrointestinal tract.
Inhalation	May cause irritation to the respiratory system.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics	In extremely high concentration, product may act as an asphyxiant that can cause increase in breathing and pulse rates, fatigue and unconsciousness, and possible cardiac arrhythmias. Symptoms of frostbite including numbness, prickling and itching are also as a result of direct contact/exposure.

Information on toxicological effects

Acute toxicity Narcotic effects.

Components	Species	Test Results
DIMETHYL ETHER (CAS 115-10-6)		
Acute		
Inhalation		
LC50	Mouse	494 ppm, 15 Minutes
		386 ppm, 30 Minutes
	Rat	308.5 mg/l, 4 Hours

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Not available.
Serious eye damage/eye irritation	Causes eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	Not available.
Germ cell mutagenicity	No data recorded.
Carcinogenicity	No data recorded.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Contains no ingredient listed as toxic to reproduction

Specific target organ toxicity - single exposure May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure Not available.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Components		Species	Test Results
DIMETHYLPOLYSILOXAN (CAS 63148-62-9)			
Aquatic			
Fish	LC50	Channel catfish (Ictalurus punctatus)	2.36 - 4.15 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

1,1-Difluorethan	0.75
DIMETHYL ETHER	0.1

Mobility in soil No data available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

14. Transport information

DOT

UN number UN1950
UN proper shipping name Aerosols, flammable, (each not exceeding 1 L capacity)
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Label(s) 2.1
Packing group Not applicable.
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions N82
Packaging exceptions 306
Packaging non bulk None
Packaging bulk None

IATA

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.1

Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Forbidden on Passenger Aircraft.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	
Class	2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No.
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	This substance/mixture is not intended to be transported in bulk.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA Hazardous Substance List (40 CFR 302.4)

DIMETHYL ETHER (CAS 115-10-6) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

1,1-Difluorethan (CAS 75-37-6)
DIMETHYL ETHER (CAS 115-10-6)

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

1,1-Difluorethan (CAS 75-37-6)
DIMETHYL ETHER (CAS 115-10-6)

US. New Jersey Worker and Community Right-to-Know Act

1,1-Difluorethan (CAS 75-37-6)
DIMETHYL ETHER (CAS 115-10-6)

US. Pennsylvania Worker and Community Right-to-Know Law

DIMETHYL ETHER (CAS 115-10-6)

US. Rhode Island RTK

1,1-Difluorethan (CAS 75-37-6)
DIMETHYL ETHER (CAS 115-10-6)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 08-22-2014

Version # 01

HMIS® ratings Health: 1
Flammability: 3
Physical hazard: 0

NFPA ratings Health: 2
Flammability: 4
Instability: 0

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MK-20 SAFETY DATA SHEET

Section 1: Identification

Product identifier used on the label;

Product name : MK-20(SOLVENT), MK-20(CLEANING FLUID)

Other means of identification;

Model codes : MK-S02, MK-S02C, MK-S04

Recommended use of the chemical and restrictions on use;

Recommended use : Solvent for ink-jet printer
Restrictions on use : For industrial use only

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;

Manufacturer Name : KEYENCE CORPORATION
Department in Charge : Marking Division
Address : 2-13 Akata-cho Takatsuki, Osaka 569-0806, Japan
Telephone number : +81-72-686-3211 (Japan)
Fax number : +81-72-686-3011 (Japan)
Supplier Name : Keyence Corporation of America
Address : 1100 North Arlington Heights Road, Suite 210, Itasca, IL 60143, USA
Telephone number : 1-888-539-3623 (USA)
Emergency phone number : CHEMTREC 1-800-424-9300 (USA)

Section 2: Hazard(s) identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

Physical Hazards

- FLAMMABLE LIQUID : Category2

Health Hazards

- SKIN CORROSION/IRRITATION : Category2
- SERIOUS EYE DAMAGE /EYE IRRITATION : Category2A
- TOXIC TO REPRODUCTION : Category2
- SPECIFIC TARGET ORGAN TOXICITY (Single Exposure) : Category1(central nervous system) Category2(kidney)
- SPECIFIC TARGET ORGAN TOXICITY (Single Exposure) : Category3(respiratory tract irritation)
- SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure) : Category1(central nervous system) Category2(blood)

Environmental Hazards

Not classified

Other Hazards

No information

Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200;

Symbol(s)

Signal word

- Danger

Hazard Statement(s)

- Highly flammable liquid and vapor
- Causes skin irritation
- Causes serious eye irritation
- Suspected of damaging fertility or the unborn child
- May cause respiratory irritation
- Causes damage to central nervous system
- May cause damage to kidney
- Causes damage to central nervous system through prolonged or repeated exposure
- May cause damage to blood through prolonged or repeated exposure

Precautionary Statement(s)

[Prevention]

- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Keep container tightly closed.
- Take precautionary measures against static discharge.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Wash hands thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Do not eat, drink or smoke when using this product.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.

[Response]

- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If on skin (or hair): Wash with plenty of water. Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Take off contaminated clothing and wash it before reuse.
- If exposed or concerned or if you feel unwell: Call a poison center/doctor. Get medical advice/attention.
- If skin irritation occurs or if eye irritation persists: Get medical advice/attention.
- In case of fire: Use dry chemical powder, fire foam or carbon dioxide to extinguish.

[Storage]

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

[Disposal]

- Dispose of contents/ container in accordance with related laws and local/ regional regulations.

Description of any hazards not otherwise classified

No information

Individual protection measures, such as personal protective equipment;

- Respiratory protection: Wear appropriate organic gas protective mask or air aspirator as necessary.
- Hand protection: Wear protective gloves.
- Eye protection: Wear safety glasses or goggles.
- Skin and body protection: Wear protective clothing and apron as necessary.

Section 9: Physical and chemical properties

Appearance (physical state, color, etc.)	Colorless liquid
Odor	Solvent odor
Odor threshold	No information
pH	No information
Melting point/freezing point	No information
Initial boiling point and boiling range	57-80°C (57°C: aceton, 87°C: methyl ethyl ketone)
Flash point	-9.0°C
Evaporation rate	No information
Flammability (solid, gas)	No information
Upper/lower flammability or explosive limits	1.7-13.0 vol% (as acetone and methyl ethyl ketone)
Vapor pressure	23,998 Pa (20°C as acetone)
Vapor density	2.41 (as methyl ethyl ketone)
Relative density	0.80±0.05 g/cm^3 (15°C)
Solubility (ies)	water: Insoluble
Partition coefficient: *n*-octanol/water	No information
Auto-ignition temperature	465°C
Decomposition temperature	No information
Viscosity	0.41 ± 0.05 mPa·s (20°C)

Other information

No information

Section 10: Stability and reactivity

Reactivity

Stable under normal handling conditions.

Chemical stability

Stable under normal handling conditions.

Possibility of hazardous reactions

No hazardous reaction expected under normal handling.

Conditions to avoid

Explosive shock, friction, fire or other sources of ignition.

Incompatible materials

Oxidizing agents, base substances, reducing agents and high-pressure gases.

Hazardous decomposition products

In case of fire, toxic decomposition products (CO, CO_2, NOx, etc.) may be generated.

Section 11: Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics;

Information on product : No information

Information on ingredients:

Methyl ethyl ketone

- Acute toxicity (oral) : Rats LD_{50} = 5,520 mg/kg
- Acute toxicity (dermal) : Rabbits LD_{50}>5,000 mg/kg
- Acute toxicity (inhalation: vapors) : Rats LC_{50} = 11,700 ppm/4h
- Skin corrosion/irritation : Mild irritation in studies using rabbits has been reported.
- Serious eye damage/irritation : Eye irritation in vapor exposure studies in humans has been described.
- Specific target organ toxicity single exposure: In animal studies, effect on central nervous system has been reported. Effect on kidneys has been reported by oral administration studies. Respiratory tract irritation with human inhalation exposure has been reported.
- Specific target organ toxicity repeated exposure: Effects on central nerve and peripheral nervous systems have been reported in occupation exposure.

Acetone

- Acute toxicity (oral) : Rats LD_{50} > 5,000 mg/kg
- Acute toxicity (dermal) : Rabbits LD_{50} > 5,000 mg/kg
- Acute toxicity (inhalation: vapors) : Rats LC_{50} = 32,000 ppm
- Serious eye damage/irritation : Severe irritation in studies using rabbits has been reported.
- Reproductive toxicity : In high concentration exposure of rats observed slight developmental toxicity (fetal weight loss) (11,000 ppm (20 mg / L)).
- Specific target organ toxicity single exposure: If inhaled, may cause lethargy.
- Specific target organ toxicity repeated exposure: A significant increase in eosinophils and white blood cells was observed in tests with volunteer.

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

- Causes skin irritation
- Causes serious eye irritation
- May cause respiratory irritation
- Suspected of damaging fertility or the unborn child
- Causes damage to organs
- Causes damage to organs through prolonged or repeated exposure

Numerical measures of toxicity (such as acute toxicity estimates);

Not applicable

Whether the chemical is listed in the NTP Report on Carcinogens or has been found to be a potential carcinogen in the IARC Monographs, or by OSHA;

- IARC : Not listed
- NTP Report : Not listed
- OSHA : Not listed

Section 12: Ecological information

Ecotoxicity:

Information on product : No information

Information on ingredients:

Methyl ethyl ketone

Aquatic acute toxicity : Fish (*Oryzias latipes*) 96h-LC_{50}>100 mg/L
Aquatic chronic toxicity : No information

Acetone

Aquatic acute toxicity : Fish (*Pimephales promelas*) 96h-LC_{50} > 100 mg/L
Aquatic chronic toxicity : No information

Persistence and degradability:

Information on product : No information
Information on ingredients : No information

Bioaccumulative potential:

Information on product : No information
Information on ingredients : No information

Mobility in soil:

Information on product : No information
Information on ingredients : No information

Other adverse effects:

No information

Section 13: Disposal considerations

Waste treatment methods

- Dispose of waste in accordance with applicable local, regional and international regulations and standards.
- When disposing, consult a licensed waste disposal contractor.
- Used container should be recycled after cleaning or dispose of in compliance with related laws and local regulations.
- Contents should be removed completely when disposing of empty containers.

Section 14: Transport information

- UN number : 1210
- UN proper shipping name : PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable
- Transport hazard class(es) : 3
- Symbol :

- Packing group : II
- Environmental hazards : Not applicable
- Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not applicable
- Special precautions for user : When transporting, avoid direct sunlight. Confirm containers have no leakage. When loading, prevent containers from falling, dropping off or becoming damaged. Take preventive measures against containers tipping over.

Section 15: Regulatory information

- OSHA : Hazardous chemical (Methyl ethyl ketone, Acetone)
- TSCA inventory : All of the components are listed on the TSCA inventory.
- TSCA SNUR : Not regulated
- SARA Title III: Section 313 (TRI Chemicals) : Not regulated
- New Jersey Right To Know Components : Hazardous Substance (METHYL ETHYL KETONE, ACETONE)
- California Proposition 65 Components : Not regulated

Section 16: Other information, including date of preparation or last revision

References:

Information of KEYENCE CORPORATION.
NITE GHS classification results (2013).
ACGIH, American Conference of Governmental Industrial Hygienists (2013) TLVs and BEIs.

[Disclaimer]

This SDS has been prepared based on the best available information however, it may not be sufficient in some cases. It is user's responsibility to modify or update any contents in this SDS regarding information on hazardous properties and/or instruction for safe handling of the product when they become available. Precautionary measures in this SDS are only applicable for normal handling conditions and it is necessary to take appropriate additional measures to ensure safe handling which depend on your specific use conditions or situations

Section 3: Composition/information on ingredients

Compositions (contents of the product)

Chemical name	CAS No.	Concentration/ concentration ranges (wt %)
Methyl ethyl ketone	78-93-3	>90
Acetone	67-64-1	5-10

Section 4: First-aid measures

Necessary first-aid measures by relevant routes of exposure;

Inhalation

- If you feel unwell, get medical advice/ attention immediately and remain at rest.
- If symptoms continue, call a doctor/physician.

Skin Contact

- Quickly wipe the liquid off with a cloth.
- Remove/ take off contaminated clothing.
- Wash with plenty of soap and water.
- Do not use solvents or thinner.
- If necessary, call a doctor/physician.

Eye Contact

- Immediately flush eyes with water. Remove contact lenses, if present and easy to do. Continue rinsing for 15 - 20 minutes. If symptoms continue, call a doctor/physician.

Ingestion

- If accidentally swallowed, get medical advice/ attention immediately and remain at rest.
- Do not swallow vomit.
- Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms/effects, acute and delayed;

- Causes skin irritation
- Causes serious eye irritation
- Suspected of damaging fertility or the unborn child
- May cause respiratory irritation
- Causes damage to central nervous system
- May cause damage to kidney
- Causes damage to central nervous system through prolonged or repeated exposure
- May cause damage to blood through prolonged or repeated exposure

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

No information

Section 5: Fire-fighting measures

Suitable (and unsuitable) extinguishing media;

Suitable extinguishing media

- Use water spray, dry sand, dry chemical powder, fire foam or carbon dioxide.

Unsuitable extinguishing media

- Using water jet may be dangerous because fire may expand to surroundings.

Specific hazards arising from the chemical

- In case of fire, toxic decomposition products (CO, CO_2, NOx, etc.) may be generated.

Special protective equipment and precautions for fire-fighters

- Shut off any ignition sources and extinguish with an appropriate agent.
- Cool the surrounding storage tanks and buildings with direct water jet to avoid the risk of fire spreading
- Be cautious of blowing wind.
- Evacuate unnecessary personnel.
- Move containers to a safe area if it can be done without risk.

Section 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures;

- Evacuate unnecessary personnel.
- Wear suitable protective equipment described in section "Section 8 EXPOSURE CONTROLS/ PERSONAL PROTECTION"
- Avoid release into the environment because product may cause pollution.

Methods and materials for containment and cleaning up;

- Stop leaks if you can do it without risk.
- In case of small amounts, absorb spilled material with waste or wiping cloth and collect it in an adequate waste container.
- In case of large amounts stop the leak if without risk and contain the spillage.
- Do not eat or drink near handling and storage locations.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in the immediate area).
- Prevent entry into drains, sewers, basements or confined areas.

Section 7: Handling and storage

Precautions for safe handling

Protective measures:

- Install appropriate equipment and wear suitable protective apparatus described in section "8. EXPOSURE CONTROLS/ PERSONAL PROTECTION".
- Use only with adequate ventilation.
- Wash hands thoroughly after handling.
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Ground/Bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against electrostatic discharges.
- Do not eat, drink or smoke when using this product.
- Do not mix with other solutions.

Advice on general occupational hygiene

- Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Technical measures

- Install appropriate equipment and wear suitable protective apparatus described in section "8. EXPOSURE CONTROLS/ PERSONAL PROTECTION".

Incompatible materials

- Avoid contact with oxidizing agents and strong oxidizing materials.

Conditions for safe storage

- Avoid rain and sunlight. Store in a cool and well ventilated area.
- Avoid all ignition sources.
- Seal the container after handling this product.
- Store locked up for theft prevention.

Packing material

- Use products original container

Section 8: Exposure controls/personal protection

Occupational Exposure Limits;

• US OSHA PEL-TWA (2013)	200 ppm (Methyl ethyl ketone) 1,000 ppm (Acetone)
• ACGIH TLV-TWA (2013)	200 ppm (Methyl ethyl ketone) 500 ppm (Acetone)
• ACGIH TLV-STEL (2013)	300 ppm (Methyl ethyl ketone) 750 ppm (Acetone)

Appropriate engineering controls;

- Use explosion-proof electrical/ventilating/lighting equipment.
- Take precautionary measures against electrostatic discharges.
- Install adequate ventilation system is handling area.

MK-10 SAFETY DATA SHEET

Section 1: Identification

Product identifier used on the label;

Product name : MK-10 (BLACK INK)

Other means of identification;

Model codes : MK-K01, MK-K02, MK-K02H

Recommended use of the chemical and restrictions on use;

Recommended use : Ink for ink-jet printer
Restrictions on use : For industrial use only

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;

Manufacturer Name : KEYENCE CORPORATION
Department in Charge : Marking Division
Address : 1-3-14, Higashinakajima, Higashiyodogawa-ku, Osaka, 533-8555, Japan
Telephone number : +81-6-6379-1111
Fax number : +81-6-6379-2222
Supplier Name : Keyence Corporation of America
Address : 500 Park Boulevard, Suite 200, Itasca, IL 60143, U.S.A.
Telephone number : 1-888-539-3623 (USA)
Emergency phone number : CHEMTREC 1-800-424-9300 (USA)

Section 2: Hazard(s) identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

Physical Hazards

- FLAMMABLE LIQUID :Category2

Health Hazards

- ACUTE TOXICITY (inhalation - vapors) :Category4
- SKIN CORROSION/IRRITATION :Category2
- SERIOUS EYE DAMAGE /EYE IRRITATION :Category2A
- SPECIFIC TARGET ORGAN TOXICITY (Single Exposure) :Category2(kidney), Category 3 (respiratory tract irritation, narcotic effects)
- SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure) :Category1 (nervous system)

Environmental Hazards

Not classified

Other Hazards

No information

Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200;

Symbol(s)

Signal word

- Danger

Hazard Statement(s)

- Highly flammable liquid and vapor
- Causes skin irritation
- Causes serious eye irritation
- Harmful if inhaled
- May cause damage to kidney
- May cause respiratory irritation
- May cause drowsiness or dizziness
- Causes damage to nervous system through prolonged or repeated exposure

Precautionary Statement(s)

[Prevention]

- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Keep container tightly closed.
- Take precautionary measures against static discharge.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Wash hands thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Do not eat, drink or smoke when using this product.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.

[Response]

- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If on skin (or hair): Wash with plenty of water. Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Take off contaminated clothing and wash it before reuse.
- If exposed or concerned or if you feel unwell: Call a poison center/doctor. Get medical advice/attention.
- If skin irritation occurs or if eye irritation persists: Get medical advice/ attention.
- In case of fire: Use dry chemical powder, fire foam or carbon dioxide to extinguish.

[Storage]

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

[Disposal]

- Dispose of contents/ container in accordance with related laws and local/ regional regulations.

Description of any hazards not otherwise classified

No information

Section 3: Composition/information on ingredients

Compositions (contents of the product)

Chemical name	CAS No.	Concentration/ concentration ranges (wt %)
Methyl ethyl ketone	78-93-3	80-90
Chrome complex dye (III)	-TSCA Registered (Non-disclosed)	10-20

Section 4: First-aid measures

Necessary first-aid measures by relevant routes of exposure;

Inhalation

- If you feel unwell, get medical advice/ attention immediately and remain at rest.
- If symptoms continue, call a doctor/physician.

Skin Contact

- Quickly wipe the liquid off with a cloth.
- Remove/ take off contaminated clothing.
- Wash with plenty of soap and water.
- Do not use solvents or thinner.
- If necessary, call a doctor/physician.

Eye Contact

- Immediately flush eyes with water. Remove contact lenses, if present and easy to do. Continue rinsing for 15 - 20 minutes. If symptoms continue, call a doctor/physician.

Ingestion

- If accidentally swallowed, get medical advice/ attention immediately and remain at rest.
- Do not swallow vomit.
- Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms/effects, acute and delayed;

- Causes skin irritation
- Causes serious eye irritation
- Harmful if inhaled
- May cause damage to kidney
- May cause respiratory irritation
- May cause drowsiness or dizziness
- Causes damage to nervous system through prolonged or repeated exposure

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

No information

Section 5: Fire-fighting measures

Suitable (and unsuitable) extinguishing media;

Suitable extinguishing media

- Use water spray, dry sand, dry chemical powder, fire foam or carbon dioxide.

Unsuitable extinguishing media

- Using water jet may be dangerous because fire may expand to surroundings.

Specific hazards arising from the chemical

- In case of fire, toxic decomposition products (CO, CO_2, NOx, etc.) may be generated.

Special protective equipment and precautions for fire-fighters

- Shut off any ignition sources and extinguish with an appropriate agent.
- Cool the surrounding storage tanks and buildings with direct water jet to avoid the risk of fire spreading
- Be cautious of blowing wind.
- Evacuate unnecessary personnel.
- Move containers to a safe area if it can be done without risk.

Section 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures;

- Evacuate unnecessary personnel.
- Wear suitable protective equipment described in section "Section 8 EXPOSURE CONTROLS/ PERSONAL PROTECTION"
- Avoid release into the environment because product may cause pollution.

Methods and materials for containment and cleaning up;

- Stop leaks if you can do it without risk.
- In case of small amounts, absorb spilled material with waste or wiping cloth and collect it in an adequate waste container.
- In case of large amounts stop the leak if without risk and contain the spillage.
- Do not eat or drink near handling and storage locations.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in the immediate area).
- Prevent entry into drains, sewers, basements or confined areas.

Section 7: Handling and storage

Precautions for safe handling

Protective measures:

- Install appropriate equipment and wear suitable protective apparatus described in section "8. EXPOSURE CONTROLS/ PERSONAL PROTECTION".
- Use only with adequate ventilation.
- Wash hands thoroughly after handling.
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Ground/Bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against electrostatic discharges.
- Do not eat, drink or smoke when using this product.
- Do not mix with other solutions.

Advice on general occupational hygiene

- Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Technical measures

- Install appropriate equipment and wear suitable protective apparatus described in section "8. EXPOSURE CONTROLS/ PERSONAL PROTECTION".

Incompatible materials

- Avoid contact with oxidizing agents and strong oxidizing materials.

Conditions for safe storage

- Avoid rain and sunlight. Store in a cool and well ventilated area.
- Avoid all ignition sources.
- Seal the container after handling this product.
- Store locked up for theft prevention.

Packing material

- Use original container

Section 8: Exposure controls/personal protection

Occupational Exposure Limits;

- US OSHA PEL-TWA (2013) 200 ppm (Methyl ethyl ketone)
- ACGIH TLV-TWA (2013) 200 ppm (Methyl ethyl ketone)
- ACGIH TLV-STEL (2013) 300 ppm (Methyl ethyl ketone)

Appropriate engineering controls;

- Use explosion-proof electrical/ventilating/lighting equipment.
- Take precautionary measures against electrostatic discharges.
- Install adequate ventilation system in handling area.

Individual protection measures, such as personal protective equipment;

- Respiratory protection: Wear appropriate organic gas protective mask or air aspirator as necessary.
- Hand protection: Wear protective gloves.
- Eye protection: Wear safety glasses or goggles.
- Skin and body protection: Wear protective clothing and apron as necessary.

Section 9: Physical and chemical properties

Appearance (physical state, color, etc.)	Black liquid
Odor	Solvent odor
Odor threshold	No information
pH	No information
Melting point/freezing point	No information
Initial boiling point and boiling range	80°C (as methyl ethyl ketone)
Flash point	-4.1°C
Evaporation rate	No information
Flammability (solid, gas)	No information
Upper/lower flammability or explosive limits	1.8-11.5 vol% (as methyl ethyl ketone)
Vapor pressure	10500 Pa (20°C as methyl ethyl ketone)
Vapor density	2.41 (as methyl ethyl ketone)
Relative density	0.85±0.05 g/cm^3 (20°C)
Solubility (water)	water: insoluble
Partition coefficient: n-octanol/water	0.29 (as methyl ethyl ketone)
Auto-ignition temperature	505°C (as methyl ethyl ketone)
Decomposition temperature	No information
Viscosity	2.95 ± 0.15 mPa·s (20°C)

Other information

No information

Section 10: Stability and reactivity

Reactivity

Stable under normal handling conditions.

Chemical stability

Stable under normal handling conditions.

Possibility of hazardous reactions

No hazardous reaction expected under normal handling.

Conditions to avoid

Explosive shock, friction, fire or other sources of ignition.

Incompatible materials

Oxidizing agents, base substances, reducing agents and high-pressure gases.

Hazardous decomposition products

In case of fire, toxic decomposition products (CO, CO_2, NOx, etc.) may be generated.

Section 11: Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics;

Information on product : No information

Information on ingredients:

Methyl ethyl ketone

- Acute toxicity (oral) : Rats LD_{50} = 5,520 mg/kg
- Acute toxicity (dermal) : Rabbits LD_{50}>5,000 mg/kg
- Acute toxicity (inhalation: vapors) : Rats LC_{50} = 11,700 ppm/4h
- Skin corrosion/irritation : Mild irritation in studies using rabbits has been reported.
- Serious eye damage/irritation : Eye irritation in vapor exposure studies in humans has been described.
- Specific target organ toxicity single exposure: Effect on kidneys has been reported by oral administration studies. Respiratory tract irritation with human inhalation exposure has been reported.
- Specific target organ toxicity repeated exposure: Effects on central nerve and peripheral nervous systems have been reported in occupation exposure.

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

- Causes skin irritation
- Causes serious eye irritation
- Harmful if inhaled
- May cause damage to kidney
- May cause respiratory irritation
- May cause drowsiness or dizziness
- Causes damage to nervous system through prolonged or repeated exposure

Numerical measures of toxicity (such as acute toxicity estimates);

Not applicable

Whether the chemical is listed in the NTP Report on Carcinogens or has been found to be a potential carcinogen in the IARC Monographs, or by OSHA;

- IARC : Not listed
- NTP Report : Not listed
- OSHA : Not listed

Section 12: Ecological information

Ecotoxicity:

Information on product : No information

Information on ingredients:

Methyl ethyl ketone

Aquatic acute toxicity : Fish (Oryzias latipes) 96h-LC_{50}>100 mg/L
Aquatic chronic toxicity : No information

Persistence and degradability:

Information on product : No information
Information on ingredients : No information

Bioaccumulative potential:

Information on product : No information
Information on ingredients : No information

Mobility in soil:

Information on product : No information
Information on ingredients : No information

Other adverse effects:

No information

Section 13: Disposal considerations

Waste treatment methods

- Dispose of waste in accordance with applicable local, regional and international regulations and standards.
- When disposing, consult a licensed waste disposal contractor.
- Used container should be recycled after cleaning or disposed of in compliance with related laws and local regulations.
- Contents should be removed completely when disposing of empty containers.

Section 14: Transport information

- UN number : 1210
- UN proper shipping name : PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable
- Transport hazard class(es) : 3
- Symbol :

- Packing group : II
- Environmental hazards : Not applicable
- Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not applicable
- Special precautions for user : When transporting, avoid direct sunlight. Confirm containers have no leakage. When loading, prevent containers from falling, dropping off or becoming damaged. Take preventive measures against containers tipping over.

Section 15: Regulatory information

- OSHA : Hazardous chemical (Methyl ethyl ketone)
- TSCA inventory : All of the components are listed on the TSCA inventory.
- TSCA SNUR : Not regulated
- SARA Title III: Section 313 (TRI Chemicals) : Not regulated
- New Jersey Right To Know Components : Hazardous Substance (METHYL ETHYL KETONE)
- California Proposition 65 Components : Not regulated

Section 16: Other information, including date of preparation or last revision

References:

Information of KEYENCE CORPORATION.
NITE GHS classification results (2013).
ACGIH, American Conference of Governmental Industrial Hygienists (2013) TLVs and BEIs.

[Disclaimer]

This SDS has been prepared based on the best available information however, it may not be sufficient in some cases. It is user's responsibility to modify or update any contents in this SDS regarding information on hazardous properties and/or instruction for safe handling of the product when they become available. Precautionary measures in this SDS are only applicable for normal handling conditions and it is necessary to take appropriate additional measures to ensure safe handling which depend on your specific use conditions or situations.

SAFETY DATA SHEET

1. Product and Company Identification

Product identifier **Marsh Spray Stencil Ink**

Other means of identification
30394 – Tan Markover
30395 – Black
30396 – Blue
30397 – Green
30398 – Orange
30399 – Red
30400 – White
30401 – Yellow
5XT12 – Tan Markover
5XT13 – Black
5XT14 – White

Recommended use Spray Ink

Recommended restrictions None known.

Manufacturer
MSSC, LLC
926 McDonough Lake Road, Unit E
Collinsville, IL 62234 US
Phone: (618) 343-1006
Fax: (618) 343-1016
Emergency Phone: 1-800-535-5053 (Infotrac)
Emergency Phone: 352-323-3500 (Int'l Collect)

2. Hazards Identification

Physical hazards	Flammable aerosols	Category 1
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable aerosol. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

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

Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	64.09% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 64.09% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/Information on Ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Acetone		67-64-1	28 - 38
Propane		74-98-6	15 - 18
Solvent naptha (petroleum), light aliphatic		64742-89-8	9 -11
Hydrous magnesium silicate		14807-96-6	2 - 6
Limestone		1317-65-3	2 - 4
2-Pentanone, 4-hydroxy-4-methyl-		123-42-2	0.2 - 5
Titanium oxide		13463-67-7	0 - 4
Solvent naphtha (petroleum), light aromatic		64742-95-6	0.8 - 3
2-Propanol, 1-methoxy-, acetate		108-65-6	1.4 - 1.9
Quaternary ammonium compounds, bis(hydrogenated tallow alkyl) dimethyl, salts with bentonite		68953-58-2	0.8 - 1.2
Carbon black		1333-86-4	0 - .91

4. First Aid Measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Skin contact	Take off contaminated clothing and wash before reuse. Wash with plenty of soap and water. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
Most important symptoms/effects, acute and delayed	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention. Do not store at temperatures above 49°C. Do not puncture or incinerate container.

5. Fire Fighting Measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. In the event of fire and/or explosion do not breathe fumes.
General fire hazards	Extremely flammable aerosol.

Hazardous combustion products	May include and are not limited to: Oxides of carbon.
Explosion data	
Sensitivity to mechanical impact	Not available.
Sensitivity to static discharge	Not available.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep out of low areas. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of vapors or mists. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Large Spills: Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Scoop up used absorbent into drums or other appropriate container. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

Precautions for safe handling	Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Avoid breathing mist or vapor. Use only in well-ventilated areas. Avoid contact with eyes, skin and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Use care in handling/storage. Avoid release to the environment. Do not empty into drains.
Conditions for safe storage, including any incompatibilities	Store locked up. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Keep away from heat, sparks and open flame. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store away from incompatible materials (see Section 10 of the SDS). Keep out of the reach of children.

8. Exposure Controls/Personal Protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	PEL	240 mg/m3 50 ppm	
Acetone (CAS 67-64-1)	PEL	2400 mg/m3 1000 ppm	
Carbon black (CAS 1333-86-4)	PEL	3.5 mg/m3	
Limestone (CAS 1317-65-3)	PEL	5 mg/m3 15 mg/m3	Respirable fraction. Total dust.
Propane (CAS 74-98-6)	PEL	1800 mg/m3 1000 ppm	

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Titanium oxide (CAS 13463-67-7)	PEL	15 mg/m3	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Hydrous magnesium silicate (CAS 14807-96-6)	TWA	0.3 mg/m3	Total dust.
		0.1 mg/m3	Respirable.
		20 mppcf	
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	TWA	50 ppm	
Acetone (CAS 67-64-1)	STEL	750 ppm	
	TWA	500 ppm	
Carbon black (CAS 1333-86-4)	TWA	3 mg/m3	Inhalable fraction.
Hydrous magnesium silicate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable fraction.
Titanium oxide (CAS 13463-67-7)	TWA	10 mg/m3	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	TWA	240 mg/m3	
		50 ppm	
Acetone (CAS 67-64-1)	TWA	590 mg/m3	
		250 ppm	
Carbon black (CAS 1333-86-4)	TWA	0.1 mg/m3	
Hydrous magnesium silicate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable.
Limestone (CAS 1317-65-3)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total
Propane (CAS 74-98-6)	TWA	1800 mg/m3	
		1000 ppm	

US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
2-Propanol, 1-methoxy-, acetate (CAS 108-65-6)	TWA	50 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	50 mg/l	Acetone	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Safety goggles or glasses.

Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	Not normally required if good ventilation is maintained and exposure guidelines are not exceeded. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties

Appearance	Aerosol.
Physical state	Liquid.
Form	Liquid.
Color	Various
Odor	Acetone
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	-44 - 410 °F (-42.22 - 210 °C)
Pour point	Not available.
Specific gravity	0.72
Partition coefficient (n-octanol/water)	Not available.
Flash point	-248.8 °F (-156.0 °C) Pensky-Martens Closed Cup
Evaporation rate	> 1 (BuAc=1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	> 1
Flammability limit - upper (%)	< 12.8
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	Partial
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and Reactivity

Reactivity	Aerosol containers are unstable at temperatures above 49°C (120.2°F).
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids, alkalies and oxidizing agents.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.

11. Toxicological Information

Routes of exposure	Eye, Skin contact, Skin absorption, Inhalation, Ingestion.
Information on likely routes of exposure	
Ingestion	Expected to be a low ingestion hazard.

Inhalation	Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity Narcotic effects.

Components	Species	Test Results
2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)		
Acute		
Dermal		
LD50	Rabbit	> 1875 mg/kg
		13500 mg/kg
		14.5 ml/kg
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	3002 mg/kg
2-Propanol, 1-methoxy-, acetate (CAS 108-65-6)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	8532 mg/kg
Acetone (CAS 67-64-1)		
Acute		
Dermal		
LD50	Rabbit	15800 mg/kg
		20 ml/kg
Inhalation		
LC50	Mouse	44000 mg/m3/4H
	Rat	76 mg/l, 4 Hours
		50.1 mg/l, 8 Hours
		39 mg/l/4h
Oral		
LD50	Human	2857 mg/kg
	Mouse	3000 mg/kg
	Rabbit	5340 mg/kg
	Rat	5800 mg/kg
Carbon black (CAS 1333-86-4)		
Acute		
Dermal		
LD50	Rabbit	> 3000 mg/kg
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	> 8000 mg/kg

Components	Species	Test Results
Hydrous magnesium silicate (CAS 14807-96-6)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	
Oral		
LD50	Not available	
Limestone (CAS 1317-65-3)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	6450 mg/kg
Propane (CAS 74-98-6)		
Acute		
Inhalation		
LC50	Rat	> 1442.8 mg/l, 15 Minutes
Oral		
LD50	Not available	
Quaternary ammonium compounds, bis(hydrogenated tallow alkyl) dimethyl, salts with bentonite (CAS 68953-58-2)		
Acute		
Dermal		
LD50		
Inhalation		
LC50		
	Rat	12.6 mg/l/4h
Oral		
LD50	Rat	5000 mg/kg
Solvent naphtha (petroleum), light aromatic (CAS 64742-95-6)		
Acute		
Dermal		
LD50	Rabbit	3000 mg/kg
Inhalation		
LC50	Rat	5.2 mg/l/4h
Oral		
LD50	Rat	4700 mg/kg
Solvent naptha (petroleum), light aliphatic (CAS 64742-89-8)		
Acute		
Dermal		
LD50	Rabbit	3000 mg/kg
Inhalation		
LC50	Rat	1400 mg/l/4h
Oral		
LD50	Rat	5000 mg/kg
Titanium oxide (CAS 13463-67-7)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	

Components	Species	Test Results
Oral		
LD50	Rat	24000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Exposure minutes	Not available.
Erythema value	Not available.
Oedema value	Not available.
Serious eye damage/eye irritation	Causes serious eye irritation.
Corneal opacity value	Not available.
Iris lesion value	Not available.
Conjunctival reddening value	Not available.
Conjunctival oedema value	Not available.
Recover days	Not available.
Respiratory or skin sensitization	
Respiratory sensitization	Not classified.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Non-hazardous by WHMIS/OSHA criteria. Contains carbon black in a non respirable form. Contains titanium dioxide in a non respirable form.

ACGIH Carcinogens

Acetone (CAS 67-64-1)	A4 Not classifiable as a human carcinogen.
Carbon black (CAS 1333-86-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Hydrous magnesium silicate (CAS 14807-96-6)	A4 Not classifiable as a human carcinogen.
Titanium oxide (CAS 13463-67-7)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	Volume 65, Volume 93 - 2B Possibly carcinogenic to humans.
Hydrous magnesium silicate (CAS 14807-96-6)	Volume 42, Supplement 7, Volume 93 - 3 Not classifiable as to carcinogenicity to humans. Volume 93 - 2B Possibly carcinogenic to humans.
Titanium oxide (CAS 13463-67-7)	Volume 47, Volume 93 - 2B Possibly carcinogenic to humans.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Teratogenicity	Not classified.
Specific target organ toxicity - single exposure	Narcotic effects.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not classified.
Chronic effects	Prolonged inhalation may be harmful.
Further information	Not available.
Name of Toxicologically Synergistic Products	Not available.

12. Ecological Information

Ecotoxicity Harmful to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected. See below

Components		Species	Test Results
2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)			
Aquatic			
Fish	LC50	Bluegill (Lepomis macrochirus)	420 mg/l, 96 hours
2-Propanol, 1-methoxy-, acetate (CAS 108-65-6)			
Crustacea	EC50	Daphnia	500 mg/L, 48 Hours

Components		Species	Test Results
Acetone (CAS 67-64-1)			
Crustacea	EC50	Daphnia	13999 mg/L, 48 Hours
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	21.6 - 23.9 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4740 - 6330 mg/l, 96 hours
Solvent naphtha (petroleum), light aromatic (CAS 64742-95-6)			
Crustacea	EC50	Daphnia	6.14 mg/L, 48 Hours
Solvent naptha (petroleum), light aliphatic (CAS 64742-89-8)			
Algae	IC50	Algae	4700 mg/L, 72 Hours
Titanium oxide (CAS 13463-67-7)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	> 1000 mg/l, 48 hours
Fish	LC50	Mummichog (Fundulus heteroclitus)	> 1000 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Mobility in general Not available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

Acetone (CAS 67-64-1)	U002

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

UN number UN1950
Proper shipping name Aerosols, flammable
Hazard class Limited Quantity - US

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

UN number UN1950
Proper shipping name AEROSOLS, flammable
Hazard class Limited Quantity - Canada

IATA/ICAO (Air)

Basic shipping requirements:

UN number UN1950
Proper shipping name Aerosols, flammable
Hazard class Limited Quantity - IATA

IMDG (Marine Transport)

Basic shipping requirements:

UN number UN1950
Proper shipping name AEROSOLS, flammable

Hazard class Limited Quantity - US

DOT; IMDG; TDG

IATA

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Canada DSL Challenge Substances: Listed substance

Carbon black (CAS 1333-86-4)	Listed.

Canada NPRI VOCs with Additional Reporting Requirements: Mass reporting threshold/Identification Number

2-Propanol, 1-methoxy-, acetate (CAS 108-65-6)	1 TONNES
Propane (CAS 74-98-6)	1 TONNES
Solvent naphtha (petroleum), light aromatic (CAS 64742-95-6)	1 TONNES
Solvent naptha (petroleum), light aliphatic (CAS 64742-89-8)	1 TONNES

Canada WHMIS Ingredient Disclosure: Threshold limits

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	1 %
Acetone (CAS 67-64-1)	1 %
Carbon black (CAS 1333-86-4)	1 %

WHMIS status Controlled

WHMIS classification Class A - Compressed Gas, Class B - Division 5 - Flammable Aerosol, Class D - Division 2B

WHMIS labeling

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)	Listed.
Propane (CAS 74-98-6)	Listed.

US CAA Section 111 Volatile Organic Compounds: Listed substance

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.

US CAA Section 112(r) Accidental Release Prevention - Regulated Flammable Substance: Listed substance

Propane (CAS 74-98-6)	Regulated flammable substance.

US CAA Section 112(r) Accidental Release Prevention: Threshold quantity

Propane (CAS 74-98-6)	10000 LBS

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Propane (CAS 74-98-6)	Listed.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

US CAA Section 612 SNAP Program: Listed substance

Acetone (CAS 67-64-1)	Listed.
Propane (CAS 74-98-6)	Listed.

US CAA VOCs with Negligible Photochemical Activity: Listed substance

Acetone (CAS 67-64-1)	Listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No
SARA 302 Extremely hazardous substance	No
SARA 311/312 Hazardous chemical	No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Safe Drinking Water Act (SDWA)	Not regulated.
Food and Drug Administration (FDA)	Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Hazardous Substances (Director's): Listed substance

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Hydrous magnesium silicate (CAS 14807-96-6)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

US - Illinois Chemical Safety Act: Listed substance

Acetone (CAS 67-64-1)	Listed.
Propane (CAS 74-98-6)	Listed.

US - Louisiana Spill Reporting: Listed substance

Acetone (CAS 67-64-1)	Listed.
Propane (CAS 74-98-6)	Listed.

US - Minnesota Haz Subs: Listed substance

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Hydrous magnesium silicate (CAS 14807-96-6)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Propane (CAS 74-98-6)	Listed.
Titanium oxide (CAS 13463-67-7)	Listed.

US - New Jersey RTK - Substances: Listed substance

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Hydrous magnesium silicate (CAS 14807-96-6)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Propane (CAS 74-98-6)	Listed.
Titanium oxide (CAS 13463-67-7)	Listed.

US - New York Release Reporting: Hazardous Substances: Listed substance

Acetone (CAS 67-64-1)	Listed.

US - Texas Effects Screening Levels: Listed substance

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
2-Propanol, 1-methoxy-, acetate (CAS 108-65-6)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.

Hydrous magnesium silicate (CAS 14807-96-6)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Propane (CAS 74-98-6)	Listed.
Quaternary ammonium compounds, bis(hydrogenated tallow alkyl) dimethyl, salts with bentonite (CAS 68953-58-2)	Listed.
Solvent naphtha (petroleum), light aromatic (CAS 64742-95-6)	Listed.
Solvent naptha (petroleum), light aliphatic (CAS 64742-89-8)	Listed.
Titanium oxide (CAS 13463-67-7)	Listed.

US. Massachusetts RTK - Substance List

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Hydrous magnesium silicate (CAS 14807-96-6)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Propane (CAS 74-98-6)	Listed.
Titanium oxide (CAS 13463-67-7)	Listed.

US. Pennsylvania RTK - Hazardous Substances

2-Pentanone, 4-hydroxy-4-methyl- (CAS 123-42-2)	Listed.
Acetone (CAS 67-64-1)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Hydrous magnesium silicate (CAS 14807-96-6)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Propane (CAS 74-98-6)	Listed.
Titanium oxide (CAS 13463-67-7)	Listed.

US. Rhode Island RTK

Acetone (CAS 67-64-1)	Listed.
Propane (CAS 74-98-6)	Listed.

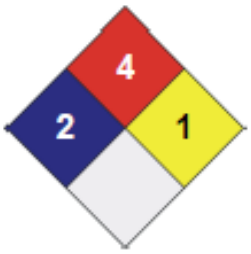
Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0



Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

Issue date 07-November-2014

Effective date 01-October-2014

Expiry date 01-October-2017

Further information For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.

Prepared by Dell Tech Laboratories Ltd. Phone: (519) 858-5021

Other information This Safety Data Sheet was prepared to comply with the current OSHA Hazard Communication Standard (HCS) adoption of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).
This SDS conforms to the ANSI Z400.1/Z129.1-2010 Standard.

Safety Data Sheet

RUST-OLEUM CORPORATION
* Trusted Quality Since 1921 *
www.rustoleum.com

1. Identification

Product Name: IC +SSPR 6PK FLUORESCENT PINK

Revision Date: 8/7/2018

Product Identifier: 1659830

Supercedes Date: 6/28/2018

Recommended Use: Topcoat/Aerosols

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Rust-Oleum Canada (ROCA)
200 Confederation Parkway
Concord, ON L4K 4T8
Canada
Emergency Phone: 800-387-3625

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

Emergency Telephone: 24 Hour Hotline: 847-367-7700

2. Hazard Identification

Classification

Symbol(s) of Product

Signal Word
Danger

Possible Hazards
53% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Compressed Gas	H280	Contains gas under pressure; may explode if heated.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
STOT, repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.
Skin Irritation, category 2	H315	Causes skin irritation.

Eye Irritation, category 2	H319	Causes serious eye irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C / 122°F.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local, regional and national regulations.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P314	Get medical advice/attention if you feel unwell.
P264	Wash hands thoroughly after handling.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P321	For specific treatment see label
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P272	Contaminated work clothing should not be allowed out of the workplace.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

GHS SDS PRECAUTIONARY STATEMENTS

P363 Wash contaminated clothing before reuse.

3. Composition / Information On Ingredients

HAZARDOUS SUBSTANCES

Chemical Name	CAS-No.	Wt.%	GHS Symbols	GHS Statements
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	26	GHS08	H304
Propane	74-98-6	17	GHS04	H280
n-Butane	106-97-8	8.0	GHS04	H280
Xylenes (o-, m-, p- isomers)	1330-20-7	7.5	GHS02-GHS07	H226-315-319-332
Acetone	67-64-1	7.1	GHS02-GHS07	H225-319-332-336
Hydrous Magnesium Silicate	14807-96-6	3.9	Not Available	Not Available
Hydrotreated Light Distillate	64742-47-8	3.4	GHS08	H304
Ethylbenzene	100-41-4	1.8	GHS02-GHS07-GHS08	H225-304-332-351-373
Octane	111-65-9	1.3	GHS02-GHS07-GHS08	H225-304-315-336
n-Heptane	142-82-5	1.3	GHS02-GHS07-GHS08	H225-304-315-336
Stoddard Solvent	8052-41-3	0.3	GHS08	H304-372
Methyl ethyl ketoxime	96-29-7	0.2	GHS05-GHS06-GHS08	H302-312-317-318-331-351

4. First-Aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-Fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR!Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. Closed containers may explode when exposed to extreme heat due to buildup of steam. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance. Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Special Fire and Explosion Hazard (Combustible Dust): No Information

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all SDS and label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of flammable aerosols. Contents under pressure. Do not expose to heat or store above 120 ° F. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat.

Advice on Safe Handling of Combustible Dust: No Information

8. Exposure Controls / Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	30.0	N.E.	N.E.	N.E.	N.E.
Propane	74-98-6	20.0	N.E.	N.E.	1000 ppm	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
Xylenes (o-, m-, p- isomers)	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.
Acetone	67-64-1	10.0	250 ppm	500 ppm	1000 ppm	N.E.
Hydrous Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	N.E.	N.E.
Hydrotreated Light Distillate	64742-47-8	5.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	5.0	20 ppm	N.E.	100 ppm	N.E.
Octane	111-65-9	5.0	300 ppm	N.E.	500 ppm	N.E.
n-Heptane	142-82-5	5.0	400 ppm	500 ppm	500 ppm	N.E.
Stoddard Solvent	8052-41-3	1.0	100 ppm	N.E.	500 ppm	N.E.
Methyl ethyl ketoxime	96-29-7	1.0	10 ppm	N.E.	N.E.	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection. Use gloves to prevent prolonged skin contact.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application. Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

Engineering Measures for Combustible Dust: No Information

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	**Physical State:**	Liquid
Odor:	Solvent Like	**Odor Threshold:**	N.E.
Relative Density:	0.789	**pH:**	N.A.
Freeze Point, °C:	N.D.	**Viscosity:**	N.D.
Solubility in Water:	Slight	**Partition Coefficient, n-octanol/water:**	N.D.
Decompostion Temp., °C:	N.D.		
Boiling Range, °C:	-37 - 537	**Explosive Limits, vol%:**	0.9 - 13.0
Flammability:	Supports Combustion	**Flash Point, °C:**	-96
Evaporation Rate:	Faster than Ether	**Auto-ignition Temp., °C:**	N.D.
Vapor Density:	Heavier than Air	**Vapor Pressure:**	N.D.

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation. May cause skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Aspiration hazard if swallowed; can enter lungs and cause damage. Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

CAS-No.	Chemical Name	Oral LD50	Dermal LD50	Vapor LC50
64742-49-0	Naphtha, Petroleum, Hydrotreated Light	>5000 mg/kg Rat	>3160 mg/kg Rabbit	>4951 mg/L Rat
106-97-8	n-Butane	N.E.	N.E.	658 mg/L Rat
1330-20-7	Xylenes (o-, m-, p- isomers)	3500 mg/kg Rat	>4350 mg/kg Rabbit	29.08 mg/L Rat
67-64-1	Acetone	5800 mg/kg Rat	>15700 mg/kg Rabbit	50.1 mg/L Rat
14807-96-6	Hydrous Magnesium Silicate	6000	N.E.	30
64742-47-8	Hydrotreated Light Distillate	>5000 mg/kg Rat	>2000 mg/kg Rabbit	>5000 mg/L Rat
100-41-4	Ethylbenzene	3500 mg/kg Rat	15400 mg/kg Rabbit	17.4 mg/L Rat

111-65-9	Octane	N.E.	N.E.	>23.36 mg/L Rat
142-82-5	n-Heptane	N.E.	3000 mg/kg Rabbit	103 mg/L Rat
96-29-7	Methyl ethyl ketoxime	930 mg/kg Rat	1100 mg/kg Rabbit	>4.8 mg/L Rat

N.E. - Not Established

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components. Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems. Do not incinerate closed containers. This product as supplied is a USEPA defined ignitable hazardous waste. Dispose of unusable product as a hazardous waste (D001) in accordance with local, state, and federal regulation.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)	TDG (Canada)
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Gas under pressure, Carcinogenicity, Skin Corrosion or Irritation, Respiratory or Skin Sensitization, Serious eye damage or eye irritation, Specific target organ toxicity (single or repeated exposure)

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
Xylenes (o-, m-, p- isomers)	1330-20-7
Ethylbenzene	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

Chemical Name	CAS-No.
Castor oil, sulfated, sodium salt	68187-76-8

16. Other Information

HMIS RATINGS

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA RATINGS

Health:	2	**Flammability:**	4	**Instability**	0

Maximum Incremental Reactivity 1.30

SDS REVISION DATE: 8/7/2018

REASON FOR REVISION: Revision Statement(s) Changed

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The manufacturer believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. The manufacturer makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.