



# SAFETY DATA SHEET

## THE DOW CHEMICAL COMPANY

**Product name:** BETASEAL™ 43521 Glass Primer

**Issue Date:** 01/13/2016

**Print Date:** 01/14/2016

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.

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## 1. IDENTIFICATION

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**Product name:** BETASEAL™ 43521 Glass Primer

**Recommended use of the chemical and restrictions on use**

**Identified uses:** A primer - For use in automotive applications.

### 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

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## 2. HAZARDS IDENTIFICATION

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### Hazard classification

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Flammable liquids - Category 2

Acute toxicity - Category 3 - Oral

Acute toxicity - Category 3 - Inhalation

Acute toxicity - Category 3 - Dermal

Skin irritation - Category 2

Eye irritation - Category 2A

Skin sensitisation - Category 1

Reproductive toxicity - Category 2

Specific target organ toxicity - single exposure - Category 1

Specific target organ toxicity - single exposure - Category 3

Specific target organ toxicity - repeated exposure - Category 2 - Inhalation

Aspiration hazard - Category 1

## Label elements

## Hazard pictograms



Signal word: **DANGER!**

**Hazards**

Highly flammable liquid and vapour.

Toxic if swallowed, in contact with skin or if inhaled

May be fatal if swallowed and enters airways.

Causes skin irritation.

May cause an allergic skin reaction.

Causes serious eye irritation.

May cause drowsiness or dizziness.

Suspected of damaging fertility or the unborn child.

Causes damage to organs.

May cause damage to organs (Central nervous system, Nervous system) through prolonged or repeated exposure if inhaled.

**Precautionary statements****Prevention**

Obtain special instructions before use.

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

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.

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

Wash skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

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

Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.

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

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician.

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

IF exposed: Call a POISON CENTER or doctor/ physician.

Do NOT induce vomiting.

If skin irritation or rash occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage**

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

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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This product is a mixture.

Component	CASRN	Concentration
Methanol	67-56-1	> 45.0 - < 55.0 %
Toluene	108-88-3	> 45.0 - < 55.0 %
N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine	1760-24-3	< 5.0 %
(3-Mercaptopropyl)trimethoxysilane	4420-74-0	< 5.0 %

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**4. FIRST AID MEASURES**

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**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:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Obtain medical attention without delay. Wash clothing before reuse. Properly dispose of contaminated leather items, such as shoes, belts, and watchbands. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Suitable emergency safety shower facility should be immediately available.

**Eye contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay,

preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do not induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child]. Never give anything by mouth to an unconscious person.

**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:** In cases where several ounces (60 - 100 ml) have been ingested, consider the use of ethanol and hemodialysis in the treatment. Consult standard literature for details of treatment. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Alcohol consumed before or after exposure may increase adverse effects. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Skin contact may aggravate preexisting dermatitis. Repeated excessive exposure may aggravate preexisting lung disease.

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## 5. FIREFIGHTING MEASURES

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**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 vent and/or rupture due to fire. 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. 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. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source.

**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.

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## **6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures:** Isolate area. 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. Refer to section 7, Handling, for additional precautionary measures. 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:** Contain spilled material if possible. Absorb with materials such as: Cat litter. Sand. Sawdust. Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

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## **7. HANDLING AND STORAGE**

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**Precautions for safe handling:** Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Ignition sources can include and are not limited to pilot lights, flames, smoking, sparks, heaters, electrical

equipment, and static discharges. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. 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. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Never use air pressure for transferring product unless a risk assessment has been conducted that includes consideration of the flammability of the product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Minimize sources of ignition, such as static build-up, heat, spark or flame. Keep container closed. Flammable mixtures may exist within the vapor space of containers at room temperature.

#### Storage stability

##### Storage temperature:

> 5 - < 35 °C (> 41 - < 95 °F)

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Methanol	ACGIH	TWA	200 ppm
	ACGIH	STEL	250 ppm
	OSHA Z-1	TWA	260 mg/m <sup>3</sup> 200 ppm
	ACGIH	TWA	SKIN, BEI
	ACGIH	STEL	SKIN, BEI
Toluene	ACGIH	TWA	20 ppm
	ACGIH	TWA	BEI
	OSHA Z-2	TWA	200 ppm
	OSHA Z-2	CEIL	300 ppm
	OSHA Z-2	Peak	500 ppm
(3-Mercaptopropyl)trimethoxysilane	Dow IHG	TWA	0.1 ppm
	Dow IHG	TWA	SKIN

### Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

### Individual protection measures

**Eye/face protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

#### Skin protection

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Viton. Polyethylene. Neoprene. Chlorinated polyethylene. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable

glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl alcohol ("PVA"). 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:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, 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, use an approved respirator. When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Appearance

Physical state	Liquid.
Color	Colorless to amber
Odor	Characteristic
Odor Threshold	No test data available
pH	No test data available
Melting point/range	No test data available
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	<b>closed cup</b> -3 °C ( 27 °F) <i>PMCC, ASTM D93</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	0.835 <i>Calculated.</i>
Water solubility	No test data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	No test data available
Kinematic Viscosity	No test data available
Explosive properties	No test data available

<b>Oxidizing properties</b>	No test data available
<b>Molecular weight</b>	No data available
<b>Volatile Organic Compounds</b>	6.89 lb/gln EPA Method No. 24 (typical value)

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

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** No dangerous reaction known under conditions of normal use.

**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. Avoid static discharge.

**Incompatible materials:** Avoid contact with: Acids. Bases. Oxidizers.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.

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## 11. TOXICOLOGICAL INFORMATION

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

### Acute toxicity

#### Acute oral toxicity

Swallowing a small amount may cause serious injury; swallowing larger amounts may be fatal. Methanol, a component in this mixture, is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart. Effects may be delayed.

As product: Single dose oral LD50 has not been determined.

#### Acute dermal toxicity

Prolonged or widespread skin contact may result in absorption of harmful amounts. Repeated skin contact may result in absorption of harmful amounts. Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death. The dermal LD50 has not been determined.

#### Acute inhalation toxicity

Easily attainable vapor concentrations may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). May cause central nervous system effects. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death. Effects may be delayed. Alcohol consumption and exertion may increase the adverse effects



of toluene. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Symptoms may include as tingling, numbness or pain in the extremities.

The LC50 has not been determined.

**Skin corrosion/irritation**

Prolonged contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause severe eye irritation.

May cause severe corneal injury.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Vapor may cause lacrimation (tears).

**Sensitization**

For skin sensitization:

A component in this mixture has been shown to be a skin sensitizer.

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)**

Contains component(s) which have been reported to cause effects on the following organs in animals:

Central nervous system.

Excessive exposure may cause neurologic signs and symptoms.

Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations.

Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

**Carcinogenicity**

Contains component(s) which did not cause cancer in laboratory animals.

**Teratogenicity**

Methanol has caused birth defects in mice at doses nontoxic to the mother as well as slight behavioral effects in offspring of rats. In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

**Reproductive toxicity**

Contains component(s) which did not interfere with reproduction in animal studies.

**Mutagenicity**

Contains a component(s) which were negative in in vitro genetic toxicity studies. The majority and most reliable of the many genetic toxicity studies on toluene, both in vitro and in animals, indicate that it is not genetically toxic.

**Aspiration Hazard**

Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**COMPONENTS INFLUENCING TOXICOLOGY:****Methanol****Acute oral toxicity**

Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart. Effects may be delayed. LD50, Rat, > 5,000 mg/kg

Lethal Dose, Humans, 340 mg/kg Estimated.

Lethal Dose, Humans, 29 - 237 ml Estimated.

**Acute dermal toxicity**

Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death. LD50, Rabbit, 15,800 mg/kg

**Acute inhalation toxicity**

LC50, Rat, 4 Hour, vapour, 3 mg/l

**Toluene****Acute oral toxicity**

LD50, Rat, 5,580 mg/kg

**Acute dermal toxicity**

LD50, Rabbit, 12,267 mg/kg

**Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, vapour, > 20 mg/l

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine****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. Contains a component(s) which hydrolyzes to methanol. Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

LD50, Rat, > 2,000 mg/kg

**Acute dermal toxicity**

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Contains a component(s) which hydrolyzes to methanol. Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death.

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

**Acute inhalation toxicity**

Prolonged excessive exposure may cause adverse effects. Contains a component(s) which hydrolyzes to methanol. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death.

LC50, Rat, 4 Hour, dust/mist, 1.49 - 2.44 mg/l OECD Test Guideline 403

**(3-Mercaptopropyl)trimethoxysilane****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. Swallowing may result in irritation of the mouth, throat, and gastrointestinal tract. Contains a component(s) which hydrolyzes to methanol. Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

LD50, Rat, 850 mg/kg

**Acute dermal toxicity**

Prolonged or widespread skin contact may result in absorption of potentially harmful amounts.

LD50, Rabbit, male, 2,991 mg/kg

LD50, Rabbit, female, 1,934 mg/kg

**Acute inhalation toxicity**

Vapor may cause irritation of the upper respiratory tract (nose and throat). Mist may cause irritation of upper respiratory tract (nose and throat). Contains a component(s) which hydrolyzes to methanol. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death.

The LC50 has not been determined.

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**12. ECOLOGICAL INFORMATION**

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

**Toxicity****Methanol****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, Oncorhynchus mykiss (rainbow trout), 96 Hour, 19,000 mg/l, Method Not Specified.

**Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 24 Hour, > 10,000 mg/l, Method Not Specified.

**Toxicity to bacteria**

IC50, activated sludge, 3 Hour, > 1,000 mg/l

### **Toluene**

#### **Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 5.8 mg/l

LC50, Fish, flow-through test, 96 Hour, 5.5 mg/l

#### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 24 Hour, 7 mg/l, OECD Test Guideline 202

LC50, water flea Ceriodaphnia dubia, semi-static test, 48 Hour, 3.78 mg/l

#### **Acute toxicity to algae/aquatic plants**

EcC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 12.5 mg/l, OECD Test Guideline 201

#### **Toxicity to bacteria**

IC50, Bacteria, 16 Hour, 29 mg/l

#### **Chronic toxicity to fish**

NOEC, Fish, flow-through test, 40 d, growth, 1.4 mg/l

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Ceriodaphnia dubia (water flea), 7 d, number of offspring, 0.74 mg/l

NOEC, Daphnia magna (Water flea), 21 day, number of offspring, 2 mg/l

#### **Toxicity to soil-dwelling organisms**

LC50, Eisenia fetida (earthworms), 150 - 280 mg/kg

### **N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

#### **Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

For the hydrolysis product(s)

LC50, zebra fish (Brachydanio rerio), 96 Hour, 597 mg/l

#### **Acute toxicity to aquatic invertebrates**

For the hydrolysis product(s)

EC50, Daphnia magna (Water flea), 48 Hour, 81 mg/l

#### **Acute toxicity to algae/aquatic plants**

For the hydrolysis product(s)

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 126 mg/l

For the hydrolysis product(s)

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 20 mg/l

#### **Toxicity to bacteria**

For the hydrolysis product(s)

EC10, Pseudomonas putida, 16 Hour, Growth rate, 25 mg/l

EC50, Pseudomonas putida, 16 Hour, Growth inhibition, 67 mg/l

#### **Chronic toxicity to aquatic invertebrates**

For the hydrolysis product(s)  
NOEC, Daphnia magna (Water flea), 21 d, number of offspring,  $\geq 1$  parts per million

**Toxicity to Above Ground Organisms**

Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

**Toxicity to soil-dwelling organisms**

NOEC, Eisenia fetida (earthworms), 14 d,  $\geq 1,000$  mg/kg

**(3-Mercaptopropyl)trimethoxysilane****Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Pimephales promelas (fathead minnow), 96 Hour, 253 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 4.0 mg/l

**Toxicity to bacteria**

IC50, Bacteria, 16 Hour, 850 mg/l

**Persistence and degradability****Methanol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 99 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D or Equivalent

**Theoretical Oxygen Demand:** 1.50 mg/mg

**Chemical Oxygen Demand:** 1.49 mg/mg Dichromate

**Biological oxygen demand (BOD)**

Incubation Time	BOD
5 d	72 %
20 d	79 %

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)

**Sensitizer:** OH radicals

**Atmospheric half-life:** 8 - 18 d

**Method:** Estimated.

**Toluene**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

**Biodegradation:** 100 %  
**Exposure time:** 14 d  
**Method:** OECD Test Guideline 301C or Equivalent

**Theoretical Oxygen Demand:** 3.13 mg/mg Calculated.

**Photodegradation**  
**Test Type:** Half-life (indirect photolysis)  
**Sensitizer:** OH radicals  
**Atmospheric half-life:** 2 d  
**Method:** Estimated.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

**Biodegradation:** 39 %  
**Exposure time:** 28 d  
**Method:** OECD Test Guideline 301A or Equivalent

**Theoretical Oxygen Demand:** 2.39 mg/mg Estimated.

**Chemical Oxygen Demand:** 1.76 mg/mg Estimated.

**Biological oxygen demand (BOD)**

Incubation Time	BOD
5 d	23 %
10 d	30 %
20 d	29 %

**Stability in Water (1/2-life)**  
Hydrolysis, half-life, 0.025 Hour, pH 7

**Photodegradation**  
**Test Type:** Half-life (indirect photolysis)  
**Sensitizer:** OH radicals  
**Atmospheric half-life:** 0.088 d  
**Method:** Estimated.

**(3-Mercaptopropyl)trimethoxysilane**

**Biodegradability:** Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

**Theoretical Oxygen Demand:** 1.71 mg/mg Estimated.

**Chemical Oxygen Demand:** 1.73 mg/mg Estimated.

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)  
**Sensitizer:** OH radicals  
**Atmospheric half-life:** 0.229 d  
**Method:** Estimated.

#### Bioaccumulative potential

##### Methanol

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).  
**Partition coefficient: n-octanol/water(log Pow):** -0.77 Measured  
**Bioconcentration factor (BCF):** < 10 Fish Measured

##### Toluene

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).  
**Partition coefficient: n-octanol/water(log Pow):** 2.73 Measured  
**Bioconcentration factor (BCF):** 13.2 - 90 Fish Measured

##### N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine

**Bioaccumulation:** No bioconcentration is expected because of the relatively high water solubility.  
**Partition coefficient: n-octanol/water(log Pow):** -1.67 Estimated.

##### (3-Mercaptopropyl)trimethoxysilane

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).  
**Partition coefficient: n-octanol/water(log Pow):** 0.25 Estimated.

#### Mobility in soil

##### Methanol

Potential for mobility in soil is very high (Koc between 0 and 50).  
**Partition coefficient(Koc):** 0.44 Estimated.

##### Toluene

Potential for mobility in soil is very high (Koc between 0 and 50).  
**Partition coefficient(Koc):** 37 - 178 Estimated.

##### N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine

Expected to be relatively immobile in soil (Koc > 5000).  
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.  
**Partition coefficient(Koc):** > 5000 Estimated.

##### (3-Mercaptopropyl)trimethoxysilane

Potential for mobility in soil is slight (Koc between 2000 and 5000).  
**Partition coefficient(Koc):** 2577 Estimated.

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### 13. DISPOSAL CONSIDERATIONS

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**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.

**Treatment and disposal methods of used packaging:** Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re-use containers for any purpose.

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## 14. TRANSPORT INFORMATION

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### DOT

<b>Proper shipping name</b>	Flammable liquids, toxic, n.o.s.(Methanol, Toluene)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II
<b>Reportable Quantity</b>	Methanol, Toluene

### Classification for SEA transport (IMO-IMDG):

<b>Proper shipping name</b>	FLAMMABLE LIQUID, TOXIC, N.O.S.(Methanol, Toluene)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II
<b>Marine pollutant</b>	No
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

### Classification for AIR transport (IATA/ICAO):

<b>Proper shipping name</b>	Flammable liquid, toxic, n.o.s.(Methanol, Toluene)
<b>UN number</b>	UN 1992
<b>Class</b>	3 (6.1)
<b>Packing group</b>	II

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.



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**15. REGULATORY INFORMATION**

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**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  
Chronic Health Hazard

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313****Components****CASRN**

Methanol

67-56-1

Toluene

108-88-3

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103****Components****CASRN****RQ**

Toluene

108-88-3

1000 lbs RQ

**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.

**Pennsylvania Worker and Community Right-To-Know Act:**

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

**Components****CASRN**

Methanol

67-56-1

Toluene

108-88-3

**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.

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**16. OTHER INFORMATION**

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**Hazard Rating System****NFPA**

Health	Fire	Reactivity
3	3	0

**Revision**

Identification Number: 101199043 / A001 / Issue Date: 01/13/2016 / Version: 10.0

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)
BEI	Biological Exposure Indices
CEIL	Acceptable ceiling concentration
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	USA. Occupational Exposure Limits (OSHA) - Table Z-2
Peak	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift
SKIN	Absorbed via skin
SKIN, BEI	Absorbed via Skin, Biological Exposure Indice
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.

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