

SAFETY DATA SHEET

ANGUS CHEMICAL COMPANY

Product name : ZOLDINE® XL-29SE Crosslinker

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ANGUS 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. PRODUCT AND COMPANY IDENTIFICATION

Product name ZOLDINE® XL-29SE Crosslinker

Manufacturer or supplier's details

Company name of supplier ANGUS CHEMICAL COMPANY

Address 1500 E. LAKE COOK ROAD
Buffalo Grove IL 60089-6553

Customer Information Number +1-847-808-3711

E-mail address NAR_CC@ANGUS.COM

Emergency telephone number 800-424-9300

Recommended use of the chemical and restrictions on use

Recommended use For industrial use.
Crosslinker.
The ANGUS Chemical Company recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact the Customer Information Group (see Section 1 of this data sheet).

2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids Category 3

Acute toxicity (Inhalation) Category 4

Eye irritation Category 2B

Skin sensitisation Category 1

GHS Label elements, including precautionary statements

Hazard pictograms



Signal word Warning

Hazard statements
Flammable liquid and vapour.
May cause an allergic skin reaction.
Causes eye irritation.
Harmful if inhaled.

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.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.

Response:

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 you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Wash contaminated clothing 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 cool.

Disposal:

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

Other hazards

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Components

| Chemical Name | CAS-No. | Concentration (% w/w) |
|---|-------------|-----------------------|
| Multifunctional carbodiimide | 667905-24-0 | >= 48.0 - <= 52.0 % |
| Propylene glycol monomethyl ether acetate | 108-65-6 | >= 46.0 - <= 50.0 % |
| Xylene | 1330-20-7 | >= 1.0 - <= 2.0 % |
| Ethylbenzene | 100-41-4 | <= 0.5 % |
| 2-Methoxy-1-propyl acetate | 70657-70-4 | < 0.3 % |

4. FIRST AID MEASURES

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| If inhaled | Move person to fresh air; if effects occur, consult a physician. |
| In case of skin contact | Items which cannot be decontaminated, including leather articles such as shoes, belts, and watchbands should be disposed of properly. Wash skin with soap and plenty of water for 15-20 minutes. Take off contaminated clothing and wash before reuse. Items which cannot be decontaminated such as leather articles, shoes, belts and watchbands, should be disposed of properly. |
| In case of 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. Suitable emergency eye wash facility should be available in work area. |
| If swallowed | 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. |
| Protection of first-aiders | 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. |
| Notes to physician | Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. No specific antidote. Skin contact may aggravate preexisting dermatitis. |

5. FIREFIGHTING MEASURES

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| Suitable extinguishing media | Water fog or fine spray. Carbon dioxide fire extinguishers. Dry chemical 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. |
| Specific hazards during firefighting | Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Container may rupture from gas generation in a fire situation. When product is stored in closed containers, a flammable atmosphere can develop. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. |
| 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: Nitrogen oxides. Carbon dioxide. Carbon monoxide. |
| Further information | Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. |
| 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

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| Personal precautions, | Eliminate all sources of ignition in vicinity of spill or released |
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| protective equipment and emergency procedures | <p>vapor to avoid fire or explosion. Ground and bond all containers and handling equipment.</p> <p>Isolate area.</p> <p>Keep unnecessary and unprotected personnel from entering the area.</p> <p>Keep personnel out of low areas.</p> <p>No smoking in area.</p> <p>Vapor explosion hazard. Keep out of sewers.</p> <p>Refer to section 7, Handling, for additional precautionary measures.</p> <p>Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.</p> |
| Environmental precautions | <p>Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.</p> |
| Methods and materials for containment and cleaning up | <p>Pump with explosion-proof equipment. If available, use foam to smother or suppress.</p> <p>Contain spilled material if possible.</p> <p>Collect in suitable and properly labeled containers.</p> <p>See Section 13, Disposal Considerations, for additional information.</p> |

7. HANDLING AND STORAGE

| | |
|-------------------------|--|
| Advice on safe handling | <p>Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.</p> <p>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.</p> <p>Keep away from heat, sparks and flame.</p> <p>No smoking, open flames or sources of ignition in handling and storage area.</p> <p>Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.</p> <p>Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation.</p> <p>Electrically ground and bond all equipment.</p> <p>This product is a poor conductor of electricity and can become electrostatically charged, even in bonded or grounded equipment. If sufficient charge is accumulated, ignition of flammable mixtures can occur.</p> <p>Handling operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations.</p> <p>Avoid contact with eyes.</p> <p>Wash thoroughly after handling.</p> <p>Avoid prolonged or repeated contact with skin.</p> <p>See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.</p> |
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Conditions for safe storage

Minimize sources of ignition, such as static build-up, heat, spark or flame.

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

| CAS-No. | Components | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|-----------|---|----------------------------------|---|-----------|
| 108-65-6 | Propylene glycol monomethyl ether acetate | TWA | 50 ppm | US WEEL |
| 1330-20-7 | Xylene | TWA | 100 ppm 435 mg/m ³ | OSHA Z-1 |
| 1330-20-7 | Xylene | TWA | 100 ppm | ACGIH |
| 1330-20-7 | Xylene | STEL | 150 ppm | ACGIH |
| 1330-20-7 | Xylene | STEL | 150 ppm 655 mg/m ³ | OSHA P0 |
| 1330-20-7 | Xylene | TWA | 100 ppm 435 mg/m ³ | OSHA P0 |
| 100-41-4 | Ethylbenzene | TWA | 20 ppm | ACGIH |
| 100-41-4 | Ethylbenzene | TWA | 100 ppm 435 mg/m ³ | NIOSH REL |
| 100-41-4 | Ethylbenzene | ST | 125 ppm 545 mg/m ³ | NIOSH REL |
| 100-41-4 | Ethylbenzene | TWA | 100 ppm 435 mg/m ³ | OSHA Z-1 |
| 100-41-4 | Ethylbenzene | TWA | 100 ppm 435 mg/m ³ | OSHA P0 |
| 100-41-4 | Ethylbenzene | STEL | 125 ppm 545 mg/m ³ | OSHA P0 |

Biological occupational exposure limits

| CAS-No. Components | CAS-No. | Control parameters | Biological specimen | Sampling time | Permissible concentration | Basis |
|--------------------|--------------|--|---------------------|--|---------------------------|-----------|
| 1330-20-7 | Xylene | Methylhippuric acids | Urine | End of shift (As soon as possible after exposure ceases) | 1.5 g/g creatinine | ACGIH BEI |
| 100-41-4 | Ethylbenzene | Sum of mandelic acid and phenyl glyoxylic acid | Urine | End of shift (As soon as possible after exposure ceases) | 0.15 g/g creatinine | ACGIH BEI |

Engineering measures

Local exhaust ventilation may be necessary for some operations.
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.

Personal protective equipment

Respiratory protection

For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
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.
The following should be effective types of air-purifying respirators:
Organic vapor cartridge.

Hand protection

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

Eye protection

Use chemical goggles.

Skin and body 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

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|----------------|------------------------|
| Appearance | Liquid. |
| Color | Yellow to brown |
| Odor | Ether |
| Odor Threshold | No test data available |

| | |
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| Melting point/range | Not applicable |
| Freezing point | See Pour Point |
| pour point | -42 °C (-44 °F) |
| Boiling point/boiling range | 154 °C (309 °F) |
| Flash point | 45 °C (113 °F) Method: Tag Closed Cup ASTM D56 Test Type: closed cup |
| Evaporation rate | 0.4 |
| Flammability (solid, gas) | No data available. |
| Upper explosion limit | No test data available |
| Lower explosion limit | No test data available |
| Vapor Pressure | 3.10 mmHg (20 °C) |
| Relative Vapor Density (air = 1) | 4.5 |
| Relative density | 1.028 (20 °C) |
| Water solubility | 100 % (20 °C) With haze |
| Partition coefficient: n-octanol/water | No bioconcentration is expected because of the relatively high water solubility. |
| Auto-ignition temperature | No test data available |
| Decomposition temperature | No test data available |
| Viscosity Viscosity, kinematic | No test data available |
| Explosive properties | No data available. |
| Oxidizing properties | No data available. |
| Percent volatility | 52 |
| Molecular weight | 2,000 g/mol minimum |

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

10. STABILITY AND REACTIVITY

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|------------------------------------|---|
| Reactivity | No dangerous reaction known under conditions of normal use. |
| Chemical stability | Thermally stable at typical use temperatures. |
| 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. |
| Incompatible materials | Avoid contact with: Strong acids. Strong bases. Strong oxidizers. Mineral acids. |
| Hazardous decomposition products | Decomposition products depend upon temperature, air supply and the presence of other materials. |

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Product:

| | |
|---------------------------|--|
| Acute oral toxicity | Remarks: Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Low toxicity if swallowed. LD50 (Rat): > 16,000 mg/kg |
| Acute inhalation toxicity | LC50 (Rat): > 0.32 mg/l Exposure time: 4 h Test atmosphere: dust/mist Symptoms: No deaths occurred at this concentration. Remarks: For similar material(s): |
| Acute dermal toxicity | Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts. LD50 (Rabbit): > 16,000 mg/kg |

Components:

Multifunctional carbodiimide

Acute oral toxicity Remarks: Single dose oral LD50 has not been determined.

Acute inhalation toxicity Remarks: The LC50 has not been determined.

Acute dermal toxicity Remarks: The dermal LD50 has not been determined.

Propylene glycol monomethyl ether acetate

Acute oral toxicity LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity LC50 (Rat): > 10.8 mg/l
Exposure time: 6 h
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity LD50 (Rabbit): > 5,000 mg/kg

Xylene

Acute oral toxicity LD50 (Rat): 4,300 mg/kg

Acute inhalation toxicity LC50 (Rat): 27.5 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity LD50 (Rabbit): > 2,000 mg/kg

Ethylbenzene

Acute oral toxicity LD50 (Rat): 3,500 mg/kg

Acute inhalation toxicity LC50 (Rat): 17.2 mg/l, 4000 ppm
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity LD50 (Rabbit): 15,500 mg/kg

2-Methoxy-1-propyl acetate

Acute oral toxicity LD50 (Rat): > 5,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity LC50 (Rabbit): > 2.46 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity LD50 (Rabbit): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation**Product:**

Remarks: Prolonged contact may cause slight skin irritation with local redness.
May cause drying and flaking of the skin.

Components:**Multifunctional carbodiimide**

Remarks: No relevant data found.

Propylene glycol monomethyl ether acetate

Result: No skin irritation
Remarks: Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause skin irritation with local redness.

Xylene

Result: Skin irritation
Remarks: Prolonged contact may cause skin irritation with local redness.
May cause drying and flaking of the skin.
Vapor may cause skin irritation.
Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

Ethylbenzene

Result: Mild skin irritation
Remarks: Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
May cause drying and flaking of the skin.

2-Methoxy-1-propyl acetate

Remarks: Essentially nonirritating to skin.

Serious eye damage/eye irritation**Product:**

Result: Mild eye irritation
Remarks: May cause moderate eye irritation.
May cause slight corneal injury.

Components:**Multifunctional carbodiimide**

Remarks: No relevant data found.

Propylene glycol monomethyl ether acetate

Result: No eye irritation
Remarks: May cause pain disproportionate to the level of irritation to eye tissues.
May cause slight eye irritation.
May cause slight corneal injury.

Xylene

Result: Eye irritation

Remarks: May cause moderate eye irritation.

May cause slight temporary corneal injury.

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

Ethylbenzene

Result: No eye irritation

Remarks: May cause moderate eye irritation.

Vapor may cause lacrimation (tears).

2-Methoxy-1-propyl acetate

Remarks: May cause slight eye irritation.

Respiratory or skin sensitization**Product:**

Assessment: May cause sensitisation by skin contact.

Remarks: For similar material(s):

Individuals who have had an allergic skin reaction to similar materials may have an allergic skin reaction to this product.

Has caused allergic skin reactions when tested in guinea pigs.

Remarks: For respiratory sensitization:

No relevant information found.

Components:**Multifunctional carbodiimide**

Assessment: May cause sensitisation by skin contact.

Remarks: Skin contact may cause an allergic skin reaction.

Remarks: For respiratory sensitization:

No relevant data found.

Propylene glycol monomethyl ether acetate

Assessment: Does not cause skin sensitization.

Remarks: For skin sensitization:

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

Remarks: For respiratory sensitization:

No relevant data found.

Xylene

Remarks: For skin sensitization:

No relevant data found.

Remarks: For respiratory sensitization:

No relevant data found.

Ethylbenzene

Remarks: Did not cause allergic skin reactions when tested in humans.

Remarks: For respiratory sensitization:
No relevant data found.

2-Methoxy-1-propyl acetate

Remarks: For skin sensitization:
No relevant data found.

Remarks: For respiratory sensitization:
No relevant data found.

Carcinogenicity

Product:

Ethylbenzene has been shown to cause cancer in laboratory animals.

Components:

Propylene glycol monomethyl ether acetate

Similar material(s) did not cause cancer in laboratory animals.

Xylene

Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice.

Ethylbenzene

Ethylbenzene has been shown to cause cancer in laboratory animals.
There is no evidence that these findings are relevant to humans.

Ethylbenzene has been shown to cause cancer in laboratory animals.
There is no evidence that these findings are relevant to humans.

2-Methoxy-1-propyl acetate

No relevant data found.

| | | |
|-------------|---|----------|
| IARC | Group 2B: Possibly carcinogenic to humans | |
| | Ethylbenzene | 100-41-4 |
| OSHA | No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. | |
| NTP | No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. | |

Teratogenicity

Product

The data presented are for the following material:

Ethylbenzene.

Has caused birth defects in laboratory animals only at doses toxic to the mother.

Has been toxic to the fetus in lab animals at doses nontoxic to the mother.

Contains component(s) which caused birth defects in lab animals at doses nontoxic to the mother.

Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects.

Components:

Propylene glycol monomethyl ether acetate

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Xylene

Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects.

Available data are inadequate for evaluation of maternal toxicity.

Ethylbenzene

Has caused birth defects in laboratory animals only at doses toxic to the mother.

Has been toxic to the fetus in lab animals at doses nontoxic to the mother.

2-Methoxy-1-propyl acetate

Has caused birth defects in laboratory animals at doses nontoxic to the mother.

Mutagenicity

Product

Animal genetic toxicity studies were negative.

In vitro genetic toxicity studies were negative.

Components:

Propylene glycol monomethyl ether acetate

In vitro genetic toxicity studies were negative.

Xylene

Animal genetic toxicity studies were negative.

In vitro genetic toxicity studies were negative.

Ethylbenzene

Animal genetic toxicity studies were negative.

In vitro genetic toxicity studies were negative.

2-Methoxy-1-propyl acetate

No relevant data found.

Reproductive toxicity

Product:

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

Reproductive toxicity - No toxicity to reproduction

Assessment

Components:

Propylene glycol monomethyl ether acetate

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Xylene

In animal studies, did not interfere with reproduction.

Ethylbenzene

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

2-Methoxy-1-propyl acetate

No relevant data found.

Reproductive toxicity -
Assessment

Some evidence of adverse effects on development, based on
animal experiments.

STOT - single exposure

Product:

Assessment: Available data are inadequate to determine single exposure specific target organ toxicity.

Components:

Propylene glycol monomethyl ether acetate

Assessment: Available data are inadequate to determine single exposure specific target organ toxicity.

Xylene

Exposure routes: Inhalation
Target Organs: Respiratory system
Assessment: May cause respiratory irritation.

2-Methoxy-1-propyl acetate

Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

STOT - repeated exposure

Components:

Ethylbenzene

Exposure routes: Inhalation
Target Organs: Auditory system
Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity**Product:**

Remarks: Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

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

Liver.

Kidney.

Blood.

Nasal tissue.

Components:**Xylene**

Remarks: Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

In animals, effects have been reported on the following organs:

Blood.

Kidney.

Liver.

Ethylbenzene

Remarks: Although one early inhalation study on ethylbenzene reported an adverse effect on the testes, recent, more comprehensive studies have not shown this effect.

May cause hearing loss based on animal data.

In animals, effects have been reported on the following organs:

Liver.

Kidney.

Lung.

2-Methoxy-1-propyl acetate

Remarks: Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Aspiration toxicity**Product:**

Aspiration Hazard

Product test data not available.

Components:**Propylene glycol monomethyl ether acetate**

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

Xylene

May be fatal if swallowed and enters airways.

Ethylbenzene

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

2-Methoxy-1-propyl acetate

Based on available information, aspiration hazard could not be determined.

12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish

Remarks: Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

LC50 (Pimephales promelas (fathead minnow)): 32 mg/l
Exposure time: 96.0 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 330.00 mg/l
Exposure time: 48.0 h
Test Type: static test

Toxicity to bacteria

IC50 (Bacteria): 16,000 mg/l
End point: Respiration rates.
Exposure time: 16 h

Components:**Multifunctional carbodiimide**

Toxicity to fish

Remarks: No relevant data found.

Propylene glycol monomethyl ether acetate

Toxicity to fish

Remarks: 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)): 134 mg/l
Exposure time: 96.0 h
Method: Method Not Specified.

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 408.00 mg/l
Exposure time: 48.0 h
Method: Method Not Specified.

Toxicity to algae

ErC50 (Pseudokirchneriella subcapitata (microalgae)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201 or Equivalent

Xylene

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|---|--|
| Toxicity to fish | Remarks: 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)): 2.6 mg/l Exposure time: 96.0 h Test Type: semi-static test Method: OECD Test Guideline 203 or Equivalent |
| Toxicity to daphnia and other aquatic invertebrates | IC50 (Daphnia magna (Water flea)): 1 - 4.7 mg/l Exposure time: 24.0 h Method: OECD Test Guideline 202 or Equivalent |
| Toxicity to algae | ErC50 (Pseudokirchneriella subcapitata (algae)): 4.36 mg/l End point: Growth rate Exposure time: 73 h Test Type: Static Method: OECD Test Guideline 201 or Equivalent NOEC (Pseudokirchneriella subcapitata (green algae)): 0.44 mg/l End point: Growth rate Exposure time: 73 h Method: OECD Test Guideline 201 or Equivalent |

Ethylbenzene

| | |
|---|---|
| Toxicity to fish | Remarks: 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)): 4.2 mg/l Exposure time: 96.0 h Test Type: semi-static test Method: OECD Test Guideline 203 or Equivalent |
| Toxicity to daphnia and other aquatic invertebrates | EC50 (Daphnia magna (Water flea)): 2.20 mg/l Exposure time: 24.0 d Test Type: Static |
| Toxicity to algae | EC50 (Pseudokirchneriella subcapitata (green algae)): 3.6 - 4.5999999 mg/l End point: Growth inhibition (cell density reduction) Exposure time: 72 h Method: OECD Test Guideline 201 or Equivalent |
| Toxicity to bacteria | EC50 (Bacteria): > 12 mg/l Exposure time: 16 h |
| Toxicity to soil dwelling organisms | LC50 (Eisenia fetida (earthworms)): 0.047 mg/cm2 Exposure time: 2 d End point: survival |

2-Methoxy-1-propyl acetate

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|------------------|----------------------------------|
| Toxicity to fish | Remarks: No relevant data found. |
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Persistence and degradability

Product:

Biodegradability Result: Not biodegradable
 Remarks: 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.

Biodegradation: 41 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301D or Equivalent
 Remarks: 10-day Window: Fail

Components:

Multifunctional carbodiimide

Biodegradability Remarks: No relevant data found.

Propylene glycol monomethyl ether acetate

Biodegradability Result: Readily biodegradable
 Remarks: 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).

Biodegradation: 83 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301F or Equivalent
 Remarks: 10-day Window: Pass

Biodegradation: 100 %
 Exposure time: 28 d
 Method: OECD Test Guideline 302B or Equivalent
 Remarks: 10-day Window: Not applicable

ThOD 1.820 mg/mg

Xylene

Biodegradability Result: Readily biodegradable
 Remarks: Material is expected to be readily biodegradable.

aerobic
 Biodegradation: > 60 %
 Exposure time: 10 d
 Method: OECD Test Guideline 301F or Equivalent
 Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) 37.00%
 Incubation time: 5 d
 Method: DOW Test

58.00%
 Incubation time: 10 d
 Method: DOW Test

| | |
|--|---|
| | 72.00% |
| | Incubation time: 20 d |
| | Method: DOW Test |
| ThOD | 3.170 mg/mg |
| Photodegradation | Test Type: Half-life (indirect photolysis) Sensitiser: OH radicals Rate constant: Degradation half life: 0.8208 h Method: Estimated. |
| Ethylbenzene | |
| Biodegradability | Result: Readily biodegradable Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. |
| | aerobic |
| | Biodegradation: 100 % |
| | Exposure time: 6 d |
| | Method: OECD Test Guideline 301E or Equivalent |
| | Remarks: 10-day Window: Pass |
| Biochemical Oxygen Demand (BOD) | 31.50% |
| | Incubation time: 5 d |
| | 38.50% |
| | Incubation time: 10 d |
| | 45.40% |
| | Incubation time: 20 d |
| Chemical Oxygen Demand (COD) | 2.620 mg/mg |
| | Method: Dichromate |
| ThOD | 3.170 mg/mg |
| | Method: Estimated. |
| Photodegradation | Sensitiser: OH radicals Rate constant: Degradation half life: 2.2916 h Method: Estimated. |
| 2-Methoxy-1-propyl acetate | |
| Biodegradability | Remarks: No relevant data found. |
| Bioaccumulative potential | |
| <u>Product:</u> | |
| Partition coefficient: n-octanol/water | Remarks: No bioconcentration is expected because of the relatively high water solubility. |
| <u>Components:</u> | |
| Multifunctional carbodiimide | |
| Partition coefficient: n-octanol/water | Remarks: No relevant data found. |

Propylene glycol monomethyl ether acetate

Partition coefficient: n-octanol/water log Pow: 1.2
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Xylene

Bioaccumulation Species: Rainbow trout (*Salmo gairdneri*)
Bioconcentration factor (BCF): 25.9
Method: Measured

Partition coefficient: n-octanol/water log Pow: 3.12
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Ethylbenzene

Bioaccumulation Species: Fish.
Bioconcentration factor (BCF): 15
Method: Measured

Partition coefficient: n-octanol/water log Pow: 3.15
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

2-Methoxy-1-propyl acetate

Partition coefficient: n-octanol/water Remarks: No relevant data found.

Mobility in soil**Product:**

Distribution among environmental compartments Remarks: No data available.

Components:**Multifunctional carbodiimide**

Distribution among environmental compartments Remarks: No relevant data found.

Propylene glycol monomethyl ether acetate

Distribution among environmental compartments Koc: 1.7
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Xylene

Distribution among environmental compartments

Koc: 443
Method: Estimated.
Remarks: Potential for mobility in soil is medium (Koc between 150 and 500).

Ethylbenzene

Distribution among environmental compartments

Koc: 518
Method: Estimated.
Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).

2-Methoxy-1-propyl acetate

Distribution among environmental compartments

Remarks: No relevant data found.

Other adverse effects

Product:

Results of PBT and vPvB assessment

This mixture has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential

Remarks: No relevant data found.

Components:

Multifunctional carbodiimide

Results of PBT and vPvB assessment

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Propylene glycol monomethyl ether acetate

Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Additional ecological information

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Xylene

Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Ethylbenzene

Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not

considered to be very persistent and very bioaccumulating (vPvB).

2-Methoxy-1-propyl acetate

Results of PBT and vPvB assessment

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues

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

International Regulation

IATA-DGR

| | |
|--|-------------------|
| UN/ID No. | UN 1866 |
| Proper shipping name | Resin solution |
| Class | 3 |
| Packing group | III |
| Labels | Flammable Liquids |
| Packing instruction (cargo aircraft) | 366 |
| Packing instruction (passenger aircraft) | 355 |

IMDG-Code

| | |
|----------------------|-----------------|
| UN number | UN 1866 |
| Proper shipping name | RESIN SOLUTION |
| Class | 3 |
| Packing group | III |
| Labels | 3 |
| EmS Code | F-E, <u>S-E</u> |
| Marine pollutant | no |

Remarks Stowage category A

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR (DOT) – NON BULK

UN/ID/NA number 1866
 Proper shipping name RESIN SOLUTION

Class 3
 Packing group III
 Labels Class 3 - Flammable Liquid
 ERG Code 127
 Marine pollutant no

49 CFR (DOT) - BULK

UN/ID/NA number 1866
 Proper shipping name RESIN SOLUTION

Class 3
 Packing group III
 Labels Class 3 - Flammable Liquid
 ERG Code 127
 Marine pollutant no

Reportable Quantity: Xylene

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

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

| Components | CAS-No. | Component RQ (lbs) |
|------------|-----------|--------------------|
| Xylene | 1330-20-7 | 100 |

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards Fire Hazard

Acute Health Hazard
Chronic Health Hazard

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

| Cas No. | Component |
|----------------|------------------|
| 1330-20-7 | Xylene |

| Cas No. | Component |
|----------------|------------------|
| 100-41-4 | Ethylbenzene |

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

| Cas No. | Component |
|----------------|------------------|
| 1330-20-7 | Xylene |

| Cas No. | Component |
|----------------|------------------|
| 100-41-4 | Ethylbenzene |

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations**Massachusetts Right To Know**

Massachusetts Right to Know List of Chemicals and Hazard Classifications

| Cas No. | Component |
|----------------|--------------------------------------|
| 1330-20-7 | Xylene |
| 75-09-2 | Dichloromethane (methylene chloride) |

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

| Cas No. | Component |
|----------------|---|
| 667905-24-0 | Multifunctional carbodiimide |
| 108-65-6 | Propylene glycol monomethyl ether acetate |
| 1330-20-7 | Xylene |
| 100-41-4 | Ethylbenzene |

New Jersey Right To Know

The following chemicals are listed because of the additional requirements of New Jersey law:

| Cas No. | Component |
|----------------|---|
| 667905-24-0 | Multifunctional carbodiimide |
| 108-65-6 | Propylene glycol monomethyl ether acetate |
| 1330-20-7 | Xylene |
| 100-41-4 | Ethylbenzene |

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

| | |
|---------------------------------------|--|
| Cas No. 100-41-4 75-09-2 | Component Ethylbenzene Dichloromethane (methylene chloride) |
|---------------------------------------|--|

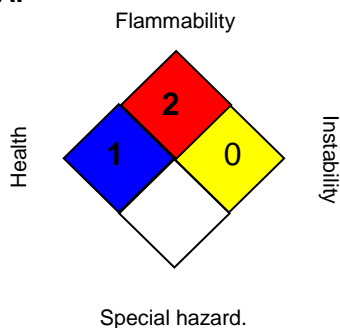
The components of this product are reported in the following inventories:

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

16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

| | |
|------------------------|----------|
| HEALTH | 2 |
| FLAMMABILITY | 2 |
| PHYSICAL HAZARD | 0 |

0 = not significant, 1 =Slight,
 2 = Moderate, 3 = High
 4 = Extreme, * = Chronic

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US / EN

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.

Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; EC_x - Concentration associated with x% response; EL_x - Loading rate associated with x% response; EmS - Emergency Schedule; ErC_x - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC₅₀ - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC₅₀ - Lethal Concentration to 50 % of a test population; LD₅₀ - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods