

### Section 1 - Product and Company Identification

Hazard Label DANGER/Flammable label

#### Company Information

Johns Manville  
Roofing Systems  
P.O. Box 5108  
Denver, CO 80127 USA

Telephone: 303-978-2000 8:00AM-5:00PM M-F  
Internet Address: <http://www.jm.com>  
Emergency: 800-424-9300 (Chemtrec, in English)

Trade Names: JM TPO Low VOC Membrane Adhesive

Use: This product is used to adhere TPO membranes to various substrates including polyisocyanurate and wood fiber board insulations.

### Section 2 - Hazards Identification

#### Emergency Overview

DANGER: Extremely flammable liquid and vapor. Vapor may cause flash fire. Use water spray to cool materials in or near a fire. Fire may be difficult to extinguish. Vapors may travel, and can be ignited by a remote source.

HMS Ratings: Health= 2, Fire= 3, Reactivity= 0

#### Inhalation

Inhalation of vapors or mists may cause irritation of the upper respiratory tract or central nervous system depression.

#### Skin

Drying of skin, dermatitis, and blistering may occur following prolonged exposures.

#### Absorption

Toluene can be absorbed by skin, mucous membranes, and eyes, either by direct contact, or exposure to vapors. Absorption may result in over-exposure to toluene, despite air levels that are within the applicable exposure limits.

#### Ingestion

This product is not intended to be ingested under normal conditions of use. May be harmful if swallowed. May cause gastrointestinal irritation and disturbances. May cause effects similar to those for inhalation exposure. Aspiration into the lungs may cause lung inflammation and other lung injury.

#### Eyes

Irritation, redness, and burning in eyes may occur.

#### Primary Routes of Entry (Exposure)

Inhalation, skin, and eye contact.

#### Target Organs

Skin, eye, lungs, central nervous system (CNS), respiratory system, kidney, liver.

#### Medical Conditions Aggravated by Exposure

Pre-existing eye, skin, respiratory, central nervous system (CNS), liver and kidney diseases or conditions.

### Section 3 - Composition/Information on Ingredients

CAS #	Component	Percent
98-56-6	p-Chloro-a,a,a-trifluorotoluene	50-60
108-88-3	Toluene	5-10
67-64-1	Acetone	15-20
100-41-4	Ethyl benzene	0.1-0.5

#### General Product Description

Amber liquid with solvent odor.

### Section 4 - First Aid Measures

#### First Aid: Inhalation

If the affected person is having difficulty breathing, administer oxygen or apply artificial respiration and immediately contact a medical professional.

#### First Aid: Skin

Remove contaminated clothing. Wash exposed areas with soap and water. If irritation develops or persists, seek medical attention. Launder contaminated clothing before reuse.

**First Aid: Ingestion**

Product is not intended to be ingested or eaten. If this product is ingested, do not induce vomiting and seek medical attention immediately.

**First Aid: Eyes**

Flush eyes with large amounts of water until irritation subsides. If irritation persists, seek medical attention.

**First Aid: Notes to Physician**

Treatment for inhalation, skin contact, or ingestion should be symptomatic. Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias.

**Section 5 - Fire Fighting Measures**

Flash Point: 0°F/-17.7°C

Upper Flammable Limit (UFL): 7.5%

Auto Ignition: Not determined

Rate of Burning: Not determined

Method Used:

Lower Flammable Limit (LFL): 1.1%

Flammability Classification: Flammable

**General Fire Hazards**

DANGER: EXTREMELY FLAMMABLE liquid and vapor.

Keep away from heat, sparks, and flame. Material is highly volatile and readily gives off vapors which are heavier than air and may travel along the ground or be moved by ventilation and ignited by pilot lights, other flames, sparks heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Keep container closed. Use with adequate ventilation.

NFPA Ratings: Health= 2, Fire= 3, Reactivity= 0

**Hazardous Combustion Products**

Carbon monoxide, carbon dioxide, halogenated hydrocarbons, nitrogen oxides, and various hydrocarbons.

**Extinguishing Media**

Carbon dioxide (CO<sub>2</sub>), dry chemical.

**Fire Fighting Equipment/Instructions**

Use NIOSH-approved self-contained breathing apparatus operating in the pressure demand mode and full fire fighting protective clothing. Avoid inhalation of vapors.

**Section 6 - Accidental Release Measures**

**Containment Procedures**

Remove all sources of ignition. Evacuate and ventilate spill area. Dam spill area with sand, earth, or other suitable absorbent. Prevent entry of material into sewers, other water sources, or land areas. Wear full protective clothing and respiratory protection during clean-up as required to maintain exposures below the applicable exposure limit. Shovel absorbed material into containers in well-ventilated area.

**Clean-Up Procedures**

Place in closable container for disposal.

**Section 7 - Handling and Storage**

**Handling Procedures**

Use protective equipment as described in Section 8 of this safety data sheet when handling uncontained material. Handle in accordance with good industrial hygiene and safety practices.

**Storage Procedures**

Warehouse storage should be in accordance with package directions, if any. Product should be kept in a cool and dry area in original packaging. Do not freeze.

**Section 8 - Exposure Controls / Personal Protection**

**Exposure Guidelines**

**A: General Product Information**

Protective equipment should be provided as necessary to prevent inhalation of vapors, prolonged skin contact, and to keep exposure levels below the applicable exposure limits.

**B: Component Exposure Limits**

Toluene (108-88-3)

ACGIH: 20 ppm TWA

OSHA: 200 ppm TWA



**Acetone (67-64-1)**

ACGIH: 500 ppm TWA  
750 ppm STEL  
OSHA: 1000 ppm TWA; 2400 mg/m3 TWA

**Ethyl benzene (100-41-4)**

ACGIH: 100 ppm TWA  
125 ppm STEL  
OSHA: 100 ppm TWA; 435 mg/m3 TWA

**PERSONAL PROTECTIVE EQUIPMENT**

**Personal Protective Equipment: Eyes/Face**

Safety glasses with sideshields, chemical goggles, or a face shield is required.

**Personal Protective Equipment: Skin**

Impervious gloves such as nitrile rubber should be used to help prevent excessive skin contact.

**Personal Protective Equipment: Respiratory**

A NIOSH approved respirator must be used if vapor concentrations exceed exposure limits.

**Ventilation**

Local exhaust or general dilution ventilation may be required to maintain exposures below the applicable exposure limits. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

**Personal Protective Equipment: General**

Protective equipment should be provided as necessary to prevent irritation of the throat, eyes, and skin, and to keep exposures below the applicable exposure limits identified in Section 8.

**Section 9 - Physical & Chemical Properties**

<b>Appearance:</b> Amber liquid	<b>Odor:</b> Solvent odor
<b>Physical State:</b> liquid	<b>pH:</b> No data
<b>Vapor Pressure:</b> 307.96 hPa @ 77 F / 25 C	<b>Vapor Density:</b> Not available
<b>Boiling Point:</b> 56.00 C / 133 F @ 1,013.23 hPa	<b>Melting Point:</b> Not available
<b>Solubility (H2O):</b> No data	<b>Evaporation Rate:</b> Not determined
<b>Freezing Point:</b> Not determined	<b>VOC:</b> <250 g/L EPA Method 24
<b>Viscosity:</b> Not determined	

**Section 10 - Stability & Reactivity Information**

**Stability**

These products are not reactive.

**Stability: Conditions to Avoid**

Keep away from ignition sources. Do not freeze. Do not thin.

**Incompatibility**

Strong acids, alkalis, and oxidizing agents

**Hazardous Decomposition**

May form carbon dioxide, carbon monoxide, halogenated hydrocarbons, nitrogen oxides, various hydrocarbons.

**Hazardous Polymerization**

Will not occur.

**Section 11 - Toxicological Information**

**Acute Toxicity**

**A: General Product Information**

Vapors from this product may cause eye and upper respiratory irritation, dry throat and mouth, nausea, headache, dizziness, drowsiness, and coma in extreme cases. Prolonged exposures may lead to liver and kidney injury.

**B: Component Analysis - LD50/LC50**

p-Chloro-a,a,a-trifluorotoluene (98-56-6)

Inhalation LC50 Rat: 33 mg/L/4H; Oral LD50 Rat:13 g/kg; Dermal LD50 Rabbit:>2 mg/kg

**Toluene (108-88-3)**

Inhalation LC50 Rat: 12.5 mg/L/4H; Inhalation LC50 Rat:>26700 ppm/1H; Oral LD50 Rat:636 mg/kg; Dermal LD50 Rabbit:8390 mg/kg; Dermal LD50 Rat:12124 mg/kg

**Acetone (67-64-1)**

Oral LD50 Rat: 5800 mg/kg

**Ethyl benzene (100-41-4)**

Inhalation LC50 Rat: 17.2 mg/L/4H; Oral LD50 Rat:3500 mg/kg; Dermal LD50 Rabbit:15354 mg/kg

**Carcinogenicity**

**A: General Product Information**

Ethylbenzene has been shown to cause cancer in laboratory animals. The relevance of this finding to humans is uncertain. The International Agency for Research on Cancer (IARC) has classified ethylbenzene as a possible human carcinogen. In testing of C-6 isomers for carcinogenicity by inhalation, there was a treatment-related increase in liver tumors (adenomas and carcinomas) in female mice at the highest dose only (9,000 ppm). There was no increase in tumor incidence in male mice or in rats of either sex at any dose level.

**B: Component Carcinogenicity**

**Toluene (108-88-3)**

ACGIH: A4 - Not Classifiable as a Human Carcinogen  
IARC: Group 3 – Not Classifiable (IARC Monograph 71 [1999], Monograph 47 [1989])

**Acetone (67-64-1)**

ACGIH: A4 - Not Classifiable as a Human Carcinogen

**Ethyl benzene (100-41-4)**

ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans  
IARC: Group 2B – Possibly Carcinogenic to Humans (IARC Monograph 77 [2000])

**Neurotoxicity**

Toluene is a central nervous system depressant which produces lightheadedness, nausea, headache, and ataxia at low doses and confusion behavioral and intelligence effects, coma, and death at high doses.

**Mutagenicity**

Some evidence in animals exposed to toluene. Sister chromatid exchanges and chromosome aberrations were elevated in lymphocytes from laboratory workers exposed to toluene and other solvents.

**Teratogenicity**

Toluene may be harmful to the human fetus based on positive test results with laboratory animals. Case studies show that prolonged intentional abuse of toluene during pregnancy can cause birth defects in humans.

**Section 12 - Ecological Information**

**Ecotoxicity**

**A: General Product Information**

No data available for this product.

**B: Component Analysis - Ecotoxicity - Aquatic Toxicity**

**p-Chloro-a,a,a-trifluorotoluene (98-56-6)**

48 Hr LC50 Lepomis macrochirus: 11.5-15.8 mg/L [static]  
5 min EC50 Photobacterium phosphoreum: 11.1 mg/L; 15 min EC50 Photobacterium phosphoreum: 13.4 mg/L; 30 min EC50 Photobacterium phosphoreum: 14.3 mg/L  
48 Hr EC50 Daphnia magna: 3.68 mg/L



**Toluene (108-88-3)**

96 Hr LC50 Pimephales promelas: 25 mg/L [flow-through] (1 day old); 96 Hr LC50 Oncorhynchus mykiss: 24.0 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 24.0 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 13 mg/L [static]  
96 Hr EC50 Selenastrum capricornutum: >433 mg/L  
30 min EC50 Photobacterium phosphoreum: 19.7 mg/L  
48 Hr EC50 water flea: 11.3 mg/L; 48 Hr EC50 water flea: 310 mg/L; 48 Hr EC50 Daphnia magna: 11.3 mg/L

**Acetone (67-64-1)**

96 Hr LC50 Oncorhynchus mykiss: 5540 mg/L [static]; 96 Hr LC50 Pimephales promelas: 6210 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 8300 mg/L [static]  
15 min EC50 Photobacterium phosphoreum: 14500 mg/L  
48 Hr EC50 water flea: 0.0039 mg/L; 48 Hr EC50 water flea: 12700 mg/L [Static]; 48 Hr EC50 Daphnia magna: 12600 mg/L

**Ethyl benzene (100-41-4)**

96 Hr LC50 Oncorhynchus mykiss: 14.0 mg/L [static]; 96 Hr LC50 Pimephales promelas: 9.09 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 150.0 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 4.2 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 32 mg/L [static]; 96 Hr LC50 Pimephales promelas: 48.5 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 9.6 mg/L [static]  
72 Hr EC50 Selenastrum capricornutum: 4.6 mg/L; 96 Hr EC50 Selenastrum capricornutum: >438 mg/L  
30 min EC50 Photobacterium phosphoreum: 9.68 mg/L; 24 Hr EC50 Nitrosomonas: 96 mg/L  
48 Hr EC50 Daphnia magna: 1.8-2.4 mg/L

**Section 13 - Disposal Considerations****US EPA Waste Number & Descriptions****A: General Product Information**

This product is classified an ignitable hazardous waste by the Resource Conservation and Recovery Act (RCRA; 40 CFR 261: Waste # D001). Dispose of spilled material in accordance with federal, state, and local regulations in a hazardous waste facility. Empty containers must be handled with care due to product residue. Do not heat or cut empty containers with electric or gas torch. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the Environmental Protection Agency (EPA).

**B: Component Waste Numbers****Toluene (108-88-3)**

RCRA: waste number U220

**Acetone (67-64-1)**

RCRA: waste number U002 (Ignitable waste)

**Disposal Instructions**

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

**Section 14 - Transport Information****International Transport Regulations**

DOT: UN1133, Adhesives, 3, PG II  
FLAMMABLE LIQUID label required

**Section 15 - Regulatory Information****US Federal Regulations****A: General Product Information**

SARA 311 Status. The following SARA 311 designations apply to this product: Immediate (acute) health hazard. Delayed (chronic) health hazard. Fire hazard.

**B: Component Analysis**

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

**Toluene (108-88-3)**

SARA 313: 1.0 % de minimis concentration  
CERCLA: 1000 lb final RQ; 454 kg final RQ

**Acetone (67-64-1)**

CERCLA: 5000 lb final RQ; 2270 kg final RQ

**Ethyl benzene (100-41-4)**

SARA 313: 0.1 % de minimis concentration

CERCLA: 1000 lb final RQ; 454 kg final RQ

**State Regulations**

**A: General Product Information**

Other state regulations may apply. Check individual state requirements.

**B: Component Analysis - State**

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Toluene	108-88-3	Yes	No	Yes	Yes	Yes	Yes
Acetone	67-64-1	Yes	No	Yes	Yes	Yes	Yes
Ethyl benzene	100-41-4	Yes	No	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):  
WARNING! This product contains a chemical known to the state of California to cause cancer.

Component	CAS #
Toluene	108-88-3
Acetone	67-64-1
Ethyl benzene	100-41-4
Benzene	71-43-2
Formaldehyde	50-00-0
Lead oxide	
Cadmium oxide	

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component	CAS #
Toluene	108-88-3
Benzene	71-43-2
Lead oxide	
Cadmium oxide	

**A: TSCA Status**

This product and its components are listed on the TSCA 8(b) inventory.

None of the components listed in this product are listed on the TSCA Export Notification 12(b) list.

**B: Component Analysis - Inventory**

Component	CAS #	TSCA	DSL	EINECS
p-Chloro-a,a,a-trifluorotoluene	98-56-6	Yes	Yes	Yes
Toluene	108-88-3	Yes	Yes	Yes
Acetone	67-64-1	Yes	Yes	Yes
Ethyl benzene	100-41-4	Yes	Yes	Yes

**Component Analysis - WHMIS IDL**

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Toluene	108-88-3	1 %
Acetone	67-64-1	1 %
Ethyl benzene	100-41-4	0.1 %

**WHMIS Classification**

Controlled Product Classification: B2, D2A, D2B

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

**Section 16 - Other Information****Other Information**

Prepared for:  
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The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Date	MSDS #	Reason
05/14/08	3235-1.0000	New MSDS authoring system.

End of Sheet 3235