SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : JM EPDM Membrane Adhesive (Solvent Based)

Manufacturer or supplier's details
Company : Johns Manville
Address : P.O. Box 5108
         Denver, CO USA 80127
Telephone : 303-978-2000   8:00AM-5:00PM M-F
Emergency telephone number : 1-800-424-9300 (Chemtrec, in English)
Prepared by : product_safety@jm.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Flammable liquids : Category 2
Skin irritation : Category 2
Eye irritation : Category 2A
Reproductive toxicity : Category 2
Specific target organ toxicity - single exposure : Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure (Inhalation) : Category 2

GHS Label element
Hazard pictograms : ![Hazard Pictograms]

Signal word : Danger
Hazard statements : H225 Highly flammable liquid and vapour.
                   H315 Causes skin irritation.
                   H319 Causes serious eye irritation.
                   H336 May cause drowsiness or dizziness.
                   H361 Suspected of damaging fertility or the unborn child.
                   H373 May cause damage to organs (Neurologic: other (neuropsychological effects, auditory dysfunction and effects on colour vision) through prolonged or repeated exposure if inhaled.

Precautionary statements : Prevention:
                        P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical components</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>&gt;= 30 - &lt; 50</td>
</tr>
<tr>
<td>acetone</td>
<td>67-64-1</td>
<td>&gt;= 20 - &lt; 30</td>
</tr>
<tr>
<td>Solvent naphtha (petroleum), light aliph.</td>
<td>64742-89-8</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
<tr>
<td>cyclohexane</td>
<td>110-82-7</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
</tbody>
</table>
SECTION 4. FIRST AID MEASURES

General advice
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.

If inhaled
Consult a physician after significant exposure.
If unconscious place in recovery position and seek medical advice.

In case of skin contact
If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact
Remove contact lenses.
Immediately flush eye(s) with plenty of water.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed
Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media
High volume water jet

Specific hazards during firefighting
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products
No hazardous combustion products are known

Specific extinguishing methods
Standard procedure for chemical fires.

Further information
Standard procedure for chemical fires.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored
SAFETY DATA SHEET
JM EPDM Membrane Adhesive (Solvent Based)
Version 1.1 Revision Date 04/13/2015 Print Date 04/13/2015

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Advice on safe handling: Avoid formation of aerosol. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Components with workplace control parameters
<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 375 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>150 ppm 560 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEIL</td>
<td>300 ppm</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peak</td>
<td>500 ppm</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 375 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>150 ppm 560 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>acetone</td>
<td>67-64-1</td>
<td>TWA</td>
<td>500 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>750 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>250 ppm 590 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1,000 ppm 2,400 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>750 ppm 1,800 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>1,000 ppm 2,400 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>Solvent naphtha (petroleum), light aliph.</td>
<td>64742-89-8</td>
<td>TWA</td>
<td>500 ppm 2,000 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>400 ppm 1,600 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>TWA</td>
<td>50 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm 180 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>500 ppm 1,800 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm 180 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>cyclohexane</td>
<td>110-82-7</td>
<td>TWA</td>
<td>100 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>300 ppm 1,050 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>300 ppm 1,050 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>300 ppm 1,050 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>magnesium oxide</td>
<td>1309-48-4</td>
<td>TWA (Inhalable fraction)</td>
<td>10 mg/m3</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (fume, total particulate)</td>
<td>15 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Fume - total particulate)</td>
<td>10 mg/m3</td>
<td>OSHA</td>
</tr>
<tr>
<td>heptane</td>
<td>142-82-5</td>
<td>TWA</td>
<td>85 ppm 350 mg/m3</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>
Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection Remarks : Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection : Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the workplace.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. Written instructions for handling must be available at the work place.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : yellow

Odour : No data available
Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

: 56 °C

Flash point : -1.11 °C

Method: closed cup

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : No data available

Density : 0.872 g/cm³ (25 °C)

Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : No data available

Thermal decomposition : No data available

Viscosity

Viscosity, dynamic : 2.5 mPa.s (20 °C)

Viscosity, kinematic : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous reactions : No decomposition if stored and applied as directed.
SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:
Acute oral toxicity : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate : > 30000 ppm
Exposure time: 4 h
Test atmosphere: gas
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Components:
Toluene:
Acute oral toxicity : LD50 Oral (Rat): 5,580 mg/kg
Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Acute dermal toxicity : LD50 (Rabbit, male): > 5,000 mg/kg

Acetone:
Acute oral toxicity : LD50 (Rat, female): 5,800 mg/kg
Acute inhalation toxicity : LC50 (Rat): 120 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Acute dermal toxicity : LD50 (Rabbit): 20,000 mg/kg

Solvent naphtha (petroleum), light aliph.:
Acute oral toxicity : LD50 (Rat): > 8,000 mg/kg
Acute inhalation toxicity : LC50 (Rat): 3400 ppm
Exposure time: 4 h
Acute dermal toxicity : LD50 (Rat): > 4,000 mg/kg
n-hexane:
Acute oral toxicity: LD50 (Rat): 25,000 mg/kg
Acute inhalation toxicity: LC50 (Rat): 48000 ppm
Exposure time: 4 h
Acute dermal toxicity: LD50 (Rabbit): > 1,300 mg/kg

Acute toxicity
cyclohexane:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity: LC50 (Rat): > 5540 ppm
Exposure time: 4 h
Test atmosphere: vapour
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg

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

Acute toxicity
heptane:
Acute oral toxicity: LD50 (Rat): > 15,000 mg/kg
Acute inhalation toxicity: LC50 (Rat): 103 mg/l
Exposure time: 4 h
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg

Acute toxicity
ethylbenzene:
Acute oral toxicity: LD50 (Rat): 3,500 mg/kg
Acute inhalation toxicity: LC50 (Rat): 4000 ppm
Exposure time: 4 h
Acute dermal toxicity: LD50 (Rabbit): 17,800 mg/kg

Skin corrosion/irritation
Product:
Remarks: May cause skin irritation in susceptible persons.

Skin corrosion/irritation
Components:
toluene:
Species: Rabbit
Assessment: Irritating to skin.
Result: Irritating to skin.
Skin corrosion/irritation

n-hexane:
Result: Skin irritation

Skin corrosion/irritation
cyclohexane:
Assessment: Irritating to skin.
Result: Skin irritation
Remarks: Irritating to skin.

Skin corrosion/irritation
heptane:
Result: Skin irritation

Serious eye damage/eye irritation

Product:
Remarks: May cause irreversible eye damage.

Serious eye damage/eye irritation

Components:
toluene:
Species: Rabbit
Result: Mild eye irritation
Exposure time: 24 h

Serious eye damage/eye irritation
acetone:
Species: Rabbit
Result: Eye irritation
Exposure time: 24 h
Assessment: Irritating to eyes.
Method: Draize Test

Germ cell mutagenicity

Components:
Solvent naphtha (petroleum), light aliph.:
Germ cell mutagenicity-
Assessment: In vivo tests showed mutagenic effects

Carcinogenicity

Components:
Solvent naphtha (petroleum), light aliph.:
Carcinogenicity -
Assessment: Possible human carcinogen

Carcinogenicity
ethylbenzene:
Carcinogenicity -
Assessment: Limited evidence of carcinogenicity in human studies
Assessment

IARC
Group 2B: Possibly carcinogenic to humans

ethylbenzene 100-41-4

ACGIH
Confirmed animal carcinogen with unknown relevance 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.

Reproductive toxicity

Components:

toluene:
Reproductive toxicity - Assessment: Suspected of damaging the unborn child. Some evidence of adverse effects on development, based on animal experiments.

n-hexane:
Reproductive toxicity - Assessment: Suspected of damaging fertility.

STOT - single exposure

Components:

toluene:
Assessment: May cause drowsiness or dizziness.

Acetone:
Exposure routes: inhalation (vapour)
Target Organs: Nervous system
Assessment: May cause drowsiness or dizziness.

n-hexane:
Assessment: May cause drowsiness or dizziness.

cyclohexane:
Assessment: May cause drowsiness or dizziness.
STOT - single exposure
heptane:
Assessment: May cause drowsiness or dizziness.

STOT - repeated exposure

Components:
toluene:
Assessment: May cause damage to organs through prolonged or repeated exposure.

STOT - repeated exposure
n-hexane:
Assessment: May cause damage to organs through prolonged or repeated exposure.

STOT - repeated exposure
ethylbenzene:
Target Organs: Sensory organs
Assessment: May cause damage to organs through prolonged or repeated exposure.

Components:
cyclohexane:
Repeated dose toxicity - Assessment: Causes skin irritation.
heptane:
Repeated dose toxicity - Assessment: Causes skin irritation.

Aspiration toxicity

Components:
toluene:
May be fatal if swallowed and enters airways.

Solvent naphtha (petroleum), light aliph.:
May be fatal if swallowed and enters airways.

n-hexane:
May be fatal if swallowed and enters airways.
cyclohexane:
May be fatal if swallowed and enters airways.
heptane:
May be fatal if swallowed and enters airways.

Experience with human exposure

Components:
toluene:
Skin contact:
Remarks: Prolonged skin contact may defat the skin
and produce dermatitis.

n-hexane:
Repeated or prolonged exposure may cause irritation of eyes and skin.

ethylbenzene:
Skin contact:

Remarks: Prolonged skin contact may defat the skin and produce dermatitis.

Further information

Product:
Remarks: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
No data available

Persistence and degradability
No data available

Bioaccumulative potential

Components:
toluene:
Partition coefficient: n-octanol/water : Pow: 2.7

acetone:
Partition coefficient: n-octanol/water : log Pow: 0.24

Mobility in soil
No data available

Other adverse effects
No data available

Product:
Regulation 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available
SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Disposal of residual product : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

International transport regulations
US DOT: UN1133 Adhesive, 3, II

SECTION 15. REGULATORY INFORMATION

TSCA list : Not relevant
Not relevant

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

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>1000</td>
<td>2857</td>
</tr>
</tbody>
</table>

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

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

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

- toluene 108-88-3 35 %
- n-hexane 110-54-3 8 %
- cyclohexane 110-82-7 3 %
- ethylbenzene 100-41-4 0.3 %

Clean Air Act
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
JM EPDM Membrane Adhesive (Solvent Based)

Version 1.1  Revision Date 04/13/2015  Print Date 04/13/2015

toluene 108-88-3  35 %
n-hexane 110-54-3  8 %

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).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

toluene 108-88-3  35 %
acetone 67-64-1  25 %
cyclohexane 110-82-7  3 %

California Prop 65

WARNING! This product contains a chemical known to the State of California to cause cancer.
ethylbenzene 100-41-4

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
toluene 108-88-3

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

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

SECTION 16. OTHER INFORMATION

Further information
Revision Date : 04/13/2015

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.