## SECTION 1: Identification of the substance/mixture and of the company/undertaking

**Product information**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Isoprene Feedstock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>1059202, 1059201, 1037432, 1015403</td>
</tr>
</tbody>
</table>

**Use**

Chemical intermediate

**Company**

Chevron Phillips Chemical Company LP  
10001 Six Pines Drive  
The Woodlands, TX 77380

**Emergency telephone:**

**Health:**

- 866.442.9628 (North America)
- 1.832.813.4984 (International)

**Transport:**

- CHEMTREC 800.424.9300 or 703.527.3887 (Int'l)
- Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
- EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
- Mexico CHEMTREC 01-800-681-9531 (24 hours)
- South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
- Argentina: +(54)-1159839431

**Responsible Department**

Product Safety and Toxicology Group

**E-mail address**

SDS@CPChem.com

**Website**

www.CPChem.com

## SECTION 2: Hazards identification

**Classification of the substance or mixture**

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

**Classification**

- Flammable liquids, Category 1
- Acute toxicity, Category 4, Oral
- Skin irritation, Category 2
- Eye irritation, Category 2A
- Germ cell mutagenicity, Category 1B
- Carcinogenicity, Category 1A
- Reproductive toxicity, Category 2
Isoprene Feedstock

Specific target organ toxicity - single exposure, Category 3, Central nervous system
Specific target organ toxicity - repeated exposure, Category 1, Blood
Specific target organ toxicity - repeated exposure, Category 2, Auditory organs, Liver, Kidney, Nervous system
Specific target organ toxicity - repeated exposure, Category 2, Inhalation, Auditory organs
Aspiration hazard, Category 1

Labeling

Symbol(s)

Signal Word: Danger

Hazard Statements:

H224: Extremely flammable liquid and vapor.
H302: Harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
H340: May cause genetic defects.
H350: May cause cancer.
H361: Suspected of damaging fertility or the unborn child.
H372: Causes damage to organs (Blood, Auditory organs, Liver, Kidney, Nervous system) through prolonged or repeated exposure.
H373: May cause damage to organs (Auditory organs) 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/vapor/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh...
Isoprene Feedstock

SECTION 3: Composition/information on ingredients

Synonyms : C5 Amylene
            C5 Diolefin Stream
            Crude Isoprene

Molecular formula : UVCB

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naphtha, (Petroleum), Light Steam-Cracked, Isoprene-Rich</td>
<td>68514-39-6</td>
<td>100</td>
</tr>
<tr>
<td>Isopentane</td>
<td>78-78-4</td>
<td>0 - 60</td>
</tr>
<tr>
<td>n-Pentane</td>
<td>109-66-0</td>
<td>0 - 60</td>
</tr>
<tr>
<td>Isoprene</td>
<td>78-79-5</td>
<td>0 - 60</td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>542-92-7</td>
<td>0 - 30</td>
</tr>
</tbody>
</table>

Carcinogenicity:

IARC

Group 1: Carcinogenic to humans
- Benzene 71-43-2
- 1,3-Butadiene 106-99-0

Group 2B: Possibly carcinogenic to humans
- Isoprene 78-79-5
- Ethylbenzene 100-41-4

NTP

Known to be human carcinogen
- Benzene 71-43-2
- 1,3-Butadiene 106-99-0
- Reasonably anticipated to be a human carcinogen
- Isoprene 78-79-5

SDS Number: 100000013397 3/21
**SAFETY DATA SHEET**

**Isoprene Feedstock**

**Version 3.1**

**Revision Date 2019-10-22**

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Blend Proportion</th>
</tr>
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<tbody>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>0 - 5</td>
</tr>
<tr>
<td>n-Butane</td>
<td>106-97-8</td>
<td>0 - 5</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>287-92-3</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0 - 5</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Methylcyclopentane</td>
<td>96-37-7</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

### SECTION 4: First aid measures

**General advice**

Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

**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**

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

**If swallowed**

Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

### SECTION 5: Firefighting measures

**Flash point**

-54 °C (-65 °F)

Method: Tag closed cup

**Autoignition temperature**

220 °C (428 °F)

**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.

**Special protective equipment for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**Further information**

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 separately in closed containers.

**SDS Number:** 100000013397

4/21
## Isoprene Feedstock

### Version 3.1

**Revision Date**: 2019-10-22

<table>
<thead>
<tr>
<th>Contaminations</th>
<th>Use a water spray to cool fully closed containers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire and explosion protection</td>
<td>Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides.</td>
</tr>
</tbody>
</table>

### SECTION 6: Accidental release measures

| Personal precautions | Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors 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 for 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

**Handling**

| Advice on safe handling | Avoid formation of aerosol. Do not breathe vapors/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. Container may be opened only under exhaust ventilation hood. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. |
| Advice on protection against fire and explosion | Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition. |

**Storage**

| Requirements for storage areas and containers | 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 |

**SDS Number**: 100000013397

5/21
materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

**Ingredients with workplace control parameters**

**US**

<table>
<thead>
<tr>
<th>Components</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopentane</td>
<td>ACGIH</td>
<td>TWA 1,000 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA 1,000 ppm, 2,950 mg/m³</td>
<td>(b).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 600 ppm, 1,800 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL 750 ppm, 2,250 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA 1,000 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoprene</td>
<td>US WEEL</td>
<td>TWA 2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>ACGIH</td>
<td>TWA 75 ppm</td>
<td>URT irr, eye irr,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA 75 ppm, 200 mg/m³</td>
<td>(b).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 75 ppm, 200 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA 0.5 ppm</td>
<td></td>
<td>URT irr, LRT irr, eye irr,</td>
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<tr>
<td>Benzene, dimethyl-</td>
<td>OSHA Z-1</td>
<td>TWA 100 ppm, 435 mg/m³</td>
<td>(b).</td>
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</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL 150 ppm, 655 mg/m³</td>
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<tr>
<td>ACGIH</td>
<td>TWA 100 ppm</td>
<td></td>
<td>CNS impair, URT irr, eye irr, BEL, A4,</td>
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<tr>
<td></td>
<td>STEL 150 ppm</td>
<td></td>
<td>CNS impair, URT irr, eye irr, BEL, A4,</td>
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<tr>
<td>Ethylbenzene</td>
<td>OSHA Z-1</td>
<td>TWA 100 ppm, 435 mg/m³</td>
<td>(b).</td>
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<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 100 ppm, 435 mg/m³</td>
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</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL 125 ppm, 545 mg/m³</td>
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<td>ACGIH</td>
<td>TWA 20 ppm</td>
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<td>cochlear imp, kidney dam (nephropathy), URT irr, BEL, A3,</td>
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<td>n-Butane</td>
<td>OSHA Z-1</td>
<td>TWA 800 ppm, 1,900 mg/m³</td>
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<tr>
<td></td>
<td>ACGIH</td>
<td>STEL 1,000 ppm</td>
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<td>ACGIH</td>
<td>STEL 1,000 ppm</td>
<td>CNS impair, EX,</td>
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<td>Methylcyclopentane</td>
<td>ACGIH</td>
<td>TWA 500 ppm</td>
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</tr>
<tr>
<td></td>
<td>STEL 1,000 ppm</td>
<td></td>
<td>CNS impair, URT irr, eye irr,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA 500 ppm, 1,800 mg/m³</td>
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<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 1,000 ppm, 3,600 mg/m³</td>
<td></td>
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</tr>
<tr>
<td>n-Heptane</td>
<td>OSHA Z-1</td>
<td>TWA 500 ppm, 2,000 mg/m³</td>
<td>(b).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 400 ppm, 1,600 mg/m³</td>
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<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL 500 ppm, 2,000 mg/m³</td>
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</tr>
<tr>
<td>ACGIH</td>
<td>TWA 400 ppm</td>
<td></td>
<td>CNS impair, URT irr,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL 500 ppm</td>
<td></td>
<td>CNS impair, URT irr,</td>
<td></td>
</tr>
<tr>
<td>n-hexane</td>
<td>ACGIH</td>
<td>TWA 50 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA 500 ppm, 1,800 mg/m³</td>
<td>(b).</td>
<td></td>
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<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 50 ppm, 180 mg/m³</td>
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<tr>
<td>Cyclopentane</td>
<td>ACGIH</td>
<td>TWA 600 ppm</td>
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<tr>
<td></td>
<td>STEL 600 ppm</td>
<td></td>
<td>CNS impair, URT irr, eye irr, SKIN,</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>ACGIH</td>
<td>TWA 20 ppm</td>
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<td></td>
<td>OSHA Z-1</td>
<td>TWA 200 ppm</td>
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<tr>
<td></td>
<td>OSHA Z-2</td>
<td>STEL 300 ppm</td>
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<tr>
<td></td>
<td>OSHA Z-2</td>
<td>Peak 500 ppm</td>
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<tr>
<td>Benzene</td>
<td>ACGIH</td>
<td>TWA 0.5 ppm</td>
<td>leukemia, BEL, A1, SKIN,</td>
<td></td>
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<tr>
<td></td>
<td>STEL 2.5 ppm</td>
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<td>leukemia, BEL, A1, SKIN,</td>
<td></td>
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<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA 1 ppm</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA 5 ppm</td>
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<td></td>
<td>OSHA Z-1-A</td>
<td>Peak 50 ppm</td>
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<tr>
<td></td>
<td>OSHA 29 CFR 1910.1028(c)</td>
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<td>STEL 5 ppm</td>
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</tr>
<tr>
<td>1,3-Butadiene</td>
<td>ACGIH</td>
<td>TWA 2 ppm</td>
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<td>cancer, A2,</td>
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<tr>
<td></td>
<td>STEL 5 ppm</td>
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<td></td>
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<td>1,3-Butadiene</td>
<td>OSHA Z-1</td>
<td>TWA 1 ppm</td>
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</tbody>
</table>
### Hazardous components without workplace control parameters

**Immediately Dangerous to Life or Health Concentrations (IDLH)**

<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Pentane</td>
<td>109-66-0</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
<td>1995-03-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1500 parts per million</td>
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<tr>
<td>Cyclopentadiene</td>
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<td>1995-03-01</td>
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<td></td>
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<td>750 parts per million</td>
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</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
<td>1995-03-01</td>
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<tr>
<td></td>
<td></td>
<td>750 parts per million</td>
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</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
<td>1995-03-01</td>
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<td></td>
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<td>800 parts per million</td>
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</tr>
<tr>
<td>n-Butane</td>
<td>106-97-8</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
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</tr>
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<td></td>
<td></td>
<td>1500 parts per million</td>
<td></td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
<td>1995-03-01</td>
</tr>
<tr>
<td></td>
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<td>1500 parts per million</td>
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</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td>500 parts per million</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
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<td>2000 parts per million</td>
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<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>Immediately Dangerous to Life or Health Concentration Value</td>
<td>2017-02-03</td>
</tr>
<tr>
<td></td>
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<td>2000 parts per million</td>
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</table>
### Biological exposure indices

<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Sampling time</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>Methylhippuric acids: 1.5 g/g creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2013-03-01</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Sum of mandelic acid and phenylglyoxylic acid: 0.15 g/g creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2016-03-01</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>2.5-Hexanodione: 0.4 mg/l (Urine)</td>
<td>End of shift at end of workweek</td>
<td>2007-01-01</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Toluene: 0.02 mg/l (In blood)</td>
<td>Prior to last shift of workweek</td>
<td>2010-03-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toluene: 0.03 mg/l (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2010-03-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o-Cresol: 0.3 mg/g Creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2010-03-01</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>S-Phenylmercapturic acid: 25 µg/g creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2010-03-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L-Muconic acid: 500 µg/g creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2010-03-01</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>1,2 Dihydroxy-4-(N-acetylcysteinyl)-butane: 2.5 mg/l (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2010-03-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mixture of N-1 and N-2(hydroxybutenyl)valine: 2.5 picomoles per gram Hemoglobin (Hemoglobin (Hb) adducts in blood)</td>
<td>Not critical</td>
<td>2010-03-01</td>
</tr>
</tbody>
</table>

### Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### Personal protective equipment

**Respiratory protection**

Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Full-Face Air-Purifying Respirator for Organic Vapors, Dusts and Mists. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

**Hand protection**

The suitability for a specific workplace should be discussed.
with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state : Liquid
Color : Colorless
Odor : distinct, hydrocarbon-like

Safety data

Flash point : -54 °C (-65 °F)
Method: Tag closed cup

Lower explosion limit : 1.5 % (V)
Upper explosion limit : 8.9 % (V)
Oxidizing properties : No

Autoignition temperature : 220 °C (428 °F)
Thermal decomposition : No data available

Molecular formula : UVCB
Molecular weight : Not applicable
pH : Not applicable
Freezing point : -147 °C (-233 °F)

Pour point : No data available

Boiling point/boiling range : 33.9 °C (93.0 °F)
Vapor pressure : 400.00 MMHG
SECTION 10: Stability and reactivity

Chemical stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Hazardous reactions: Hazardous polymerization does not occur.

Further information: No decomposition if stored and applied as directed.

Hazardous reactions: Vapors may form explosive mixture with air.

Conditions to avoid: Heat, flames and sparks.

Materials to avoid: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Thermal decomposition: No data available

Hazardous decomposition products: Carbon oxides

Other data: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Isoprene Feedstock
Acute oral toxicity: LD50: 310.56 mg/kg
Species: Rat
Method: Acute toxicity estimate
| Isoprene Feedstock | Acute inhalation toxicity  | : LC50: > 20 mg/l  
|                   | Species: Rat               | Test atmosphere: vapor  
|                   | Method: Acute toxicity estimate |
| Isoprene Feedstock | Acute dermal toxicity     | : LD50 Dermal: > 2,000 mg/kg  
|                   | Species: Rabbit            |
|                   | Method: Acute toxicity estimate |
| Isoprene Feedstock | Skin irritation            | : Irritating to skin.  
|                   | May cause skin irritation in susceptible persons. |
| Isoprene Feedstock | Eye irritation             | : Irritating to eyes.  
|                   | Vapors may cause irritation to the eyes, respiratory system and the skin. |
| Isoprene Feedstock | Sensitization              | : Did not cause sensitization on laboratory animals.  
|                   | Information refers to the main ingredient. |
| Isoprene Feedstock | Repeated dose toxicity     | : This information is not available. |
| Genotoxicity in vitro | Isopentane               | : Test Type: Ames test  
| |                   | Concentration: 1, 2, 5, 8, 10%  
| |                   | Metabolic activation: with and without metabolic activation  
| |                   | Method: OECD Test Guideline 471  
| |                   | Result: negative |
| |               | Test Type: Ames test  
| |                   | Concentration: 1, 2, 5, 8, 10, 25, 50%  
| |                   | Metabolic activation: with and without metabolic activation  
| |                   | Method: OECD Test Guideline 471  
| |                   | Result: negative  
| |                   | Remarks: Information given is based on data obtained from similar substances. |
| |               | Test Type: Chromosome aberration test in vitro  
| |                   | Metabolic activation: with and without metabolic activation  
| |                   | Method: Mutagenicity (in vitro mammalian cytogenetic test)  
| |                   | Result: negative  
| |                   | Remarks: Information given is based on data obtained from similar substances. |
| n-Pentane          | Test Type: Ames test  
|                   | Metabolic activation: with and without metabolic activation  
<p>|                   | Result: negative |</p>
<table>
<thead>
<tr>
<th>Compound</th>
<th>Test Type</th>
<th>Result</th>
<th>Metabolic activation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoprene</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Sister Chromatid Exchange Assay</td>
<td>Result: positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Mouse lymphoma assay</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Unscheduled DNA synthesis assay</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butane</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Heptane</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method: Mutagenicity (Escherichia coli - reverse mutation assay)</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Mammalian cell gene mutation assay</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method: OECD Guideline 476</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Chromosome aberration test in vitro</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method: OECD Guideline 473</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Mitotic recombination</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-hexane</td>
<td>Test Type: Ames test</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Mouse lymphoma assay</td>
<td>Result: negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metabolic activation: with and without metabolic activation</td>
<td>Method: OECD Test Guideline 476</td>
<td>Result: negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Type: Mouse lymphoma assay</td>
<td>Result: positive</td>
<td></td>
<td>Positive results were obtained in some in vitro tests.</td>
</tr>
<tr>
<td></td>
<td>Metabolic activation: with and without metabolic activation</td>
<td>Method: OECD Test Guideline 476</td>
<td>Result: negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method: see user defined free text</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>Test Type: Modified Ames test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concentration: 1250 microgram/plate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Isoprene Feedstock

**Result:** negative  
Remarks: In vitro tests did not show mutagenic effects

- **Test Type:** Mouse lymphoma assay  
- **Concentration:** 200 microgram/milliliter  
- **Metabolic activation:** with and without metabolic activation  
- **Result:** negative  
- **Remarks:** In vitro tests did not show mutagenic effects

### Toluene

- **Test Type:** Ames test  
- **Result:** negative

- **Test Type:** Sister Chromatid Exchange Assay  
- **Result:** negative

- **Test Type:** Mouse lymphoma assay  
- **Result:** negative

- **Test Type:** Cytogenetic assay  
- **Result:** negative

### Benzene

- **Test Type:** Ames test  
- **Result:** negative

- **Test Type:** Cytogenetic assay  
- **Result:** positive

- **Test Type:** Mouse lymphoma assay  
- **Result:** positive

- **Test Type:** Sister Chromatid Exchange Assay  
- **Result:** negative

### 1,3-Butadiene

- **Test Type:** Ames test  
- **Metabolic activation:** with and without metabolic activation  
- **Result:** Positive results were obtained in some in vitro tests.

- **Test Type:** Chromosome aberration test in vitro  
- **Test system:** Chinese hamster cells  
- **Method:** OECD Guideline 473  
- **Result:** positive

### Genotoxicity in vivo

- **Isopentane**

  - **Test Type:** In vivo micronucleus test  
  - **Species:** Rat  
  - **Cell type:** Bone marrow  
  - **Route of Application:** inhalation (vapor)  
  - **Remarks:** Information given is based on data obtained from similar substances.

- **n-Pentane**

  - **Test Type:** Micronucleus test  
  - **Species:** Rat  
  - **Cell type:** Bone marrow  
  - **Result:** negative

- **Isoprene**

  - **Result:** negative
**Isoprene Feedstock**

**Test Type:** Micronucleus test  
**Result:** positive

Benzene, dimethyl-

**Test Type:** Mouse micronucleus assay  
**Result:** negative

**Species:** Mouse

Ethylbenzene

**Test Type:** Mouse micronucleus assay  
**Result:** negative

**Species:** Mouse

n-hexane

**Test Type:** Dominant lethal assay  
**Species:** Mouse  
**Dose:** 100 and 400 ppm  
**Result:** negative

**Test Type:** Cytogenetic assay  
**Species:** Rat  
**Dose:** 900, 3000, 9000 ppm  
**Result:** negative

Cyclopentane

**Test Type:** Micronucleus test  
**Species:** Mouse  
**Dose:** 28.7 mg/l  
**Result:** negative

Toluene

**Test Type:** Cytogenetic assay  
**Result:** negative

**Test Type:** Mouse micronucleus assay  
**Result:** negative

Benzene

**Test Type:** Mouse micronucleus assay  
**Result:** positive

**Species:** Mouse

1,3-Butadiene

**Test Type:** Mouse micronucleus assay  
**Species:** mice  
**Route of Application:** inhalation (gas)  
**Exposure time:** 6 h per day for 5 days  
**Dose:** 50, 200, 500, 1300 ppm  
**Method:** OECD Test Guideline 474  
**Result:** positive

**Test Type:** Dominant lethal assay  
**Species:** mice  
**Method:** OECD Test Guideline 478  
**Result:** Positive results were obtained in some in vivo tests.

**Isoprene Feedstock Carcinogenicity**

: Remarks: This information is not available.

**Isoprene Feedstock Reproductive toxicity**

: This information is not available.

**Isoprene Feedstock Developmental Toxicity**

: This information is not available.
**Isoprene Feedstock**

**Version 3.1**

**Revision Date** 2019-10-22

---

### Toxicology Assessment

**Isoprene Feedstock**

**Aspiration toxicity**

- May be fatal if swallowed and enters airways.
- Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

---

### Toxicology Assessment

**Isoprene Feedstock**

**CMR effects**

- Carcinogenicity:
  - May cause cancer.
- Mutagenicity:
  - May cause genetic defects.
- Teratogenicity:
  - Not available
- Reproductive toxicity:
  - May damage the unborn child.

---

### Further information

**Isoprene Feedstock**

- 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.

---

### Ecological information

**SECTION 12: Ecological information**

**Ecotoxicity effects**

**Toxicity to fish**

- Toxic to fish.
  - Information given is based on data obtained from similar substances.

**Toxicity to daphnia and other aquatic invertebrates**

- Toxic to aquatic organisms.
  - Information given is based on data obtained from similar substances.

**Toxicity to algae**

- Toxic to algae.
  - Information given is based on data obtained from similar substances.

**Toxicity to fish (Chronic toxicity)**

- **n-Heptane**
  - NOELR: 1.284 mg/l
  - Exposure time: 28 d
  - Species: Oncorhynchus mykiss (rainbow trout)
  - Method: QSAR modeled data

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

- **Ethylbenzene**
  - NOEC: 1 mg/l
  - Exposure time: 7 d
Isoprene Feedstock

Species: Daphnia pulex (Water flea)
semi-static test
Analytical monitoring: yes

Biodegradability: Expected to be ultimately biodegradable

Elimination information (persistence and degradability)

Bioaccumulation: This material is not expected to bioaccumulate.

Results of PBT assessment: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

Additional ecological information: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life with long lasting effects.

Ecotoxicology Assessment

Short-term (acute) aquatic hazard: Toxic to aquatic life.

Long-term (chronic) aquatic hazard: Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, water courses or the soil. 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

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, I, MARINE POLLUTANT, (ISOPRENE), RQ
Isoprene Feedstock

**SAFETY DATA SHEET**

(BENZENE, 1,3-BUTADIENE)

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**
UN3295, HYDROCARBONS, LIQUID. N.O.S., 3, I, (-54 °C), MARINE POLLUTANT, (NAPTHA, (PETROLEUM), LIGHT STEAM-CRACKED, ISOPRENE-RICH)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**
UN3295, HYDROCARBONS, LIQUID. N.O.S., 3, I

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**
UN3295, HYDROCARBONS, LIQUID. N.O.S., 3, I, (D/E), ENVIRONMENTALLY HAZARDOUS, (NAPTHA, (PETROLEUM), LIGHT STEAM-CRACKED, ISOPRENE-RICH)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**
UN3295, HYDROCARBONS, LIQUID. N.O.S., 3, I, ENVIRONMENTALLY HAZARDOUS, (NAPTHA, (PETROLEUM), LIGHT STEAM-CRACKED, ISOPRENE-RICH)

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**
UN3295, HYDROCARBONS, LIQUID. N.O.S., 3, I, ENVIRONMENTALLY HAZARDOUS, (NAPTHA, (PETROLEUM), LIGHT STEAM-CRACKED, ISOPRENE-RICH)

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

**SECTION 15: Regulatory information**

National legislation

**SARA 311/312 Hazards**
- Flammable (gases, aerosols, liquids, or solids)
- Acute toxicity (any route of exposure)
- Skin corrosion or irritation
- Serious eye damage or eye irritation
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity (single or repeated exposure)
- Aspiration hazard

**EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW**

CERCLA Reportable Quantity : 167 lbs
Isoprene

SDS Number:100000013397 17/21
SARA 302 Reportable Quantity: This material does not contain any components with a SARA 302 RQ.

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

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

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

- Dicyclopentadiene - 77-73-6
- Benzene, dimethyl- - 1330-20-7
- Ethylbenzene - 100-41-4
- n-hexane - 110-54-3
- Toluene - 108-88-3
- Benzene - 71-43-2
- 1,3-Butadiene - 106-99-0
- Styrene - 100-42-5

Clean Air Act

Ozone-Depletion Potential: 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).

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

- Ethylbenzene - 100-41-4
- n-hexane - 110-54-3
- Toluene - 108-88-3
- Benzene - 71-43-2

The following chemical(s) are listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F):

- Isopentane - 78-78-4
- Isoprene - 78-79-5
- n-Butane - 106-97-8
- cis-2-Pentene - 627-20-3
- trans-2-Pentene - 646-04-8
- 3-Methyl-1-Butene - 563-45-1
- 2-methyl-1-butene - 563-46-2

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):

- Isopentane - 78-78-4
- Isoprene - 78-79-5
**SAFETY DATA SHEET**

### Isoprene Feedstock

**Version 3.1**

**Revision Date 2019-10-22**

<table>
<thead>
<tr>
<th>Benzene, dimethyl-</th>
<th>1330-20-7</th>
</tr>
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<tbody>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
</tr>
</tbody>
</table>

### US State Regulations

#### Pennsylvania Right To Know

- Isopentane - 78-78-4
- n-Pentane - 109-66-0
- Isoprene - 78-79-5
- Cyclopentadiene - 542-92-7
- Benzene, dimethyl - 1330-20-7
- Ethylbenzene - 100-41-4
- n-Butane - 106-97-8
- n-Heptane - 142-82-5
- n-hexane - 110-54-3
- Cyclopentane - 283-92-3
- Toluene - 108-88-3
- Benzene - 71-43-2
- 1,3-Butadiene - 106-99-0
- Methylcyclopentane - 96-37-7

#### California Prop. 65 Components

- WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov/food](http://www.P65Warnings.ca.gov/food).

  - Isoprene 78-79-5

- WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

  - Toluene 108-88-3

### Notification status

<table>
<thead>
<tr>
<th>Europe REACH</th>
<th>Not in compliance with the inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland CH INV</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>United States of America (USA) TSCA</td>
<td>On or in compliance with the active portion of the TSCA inventory</td>
</tr>
<tr>
<td>Canada NDSL</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Australia AICS</td>
<td>Not in compliance with the inventory</td>
</tr>
<tr>
<td>New Zealand NZIoC</td>
<td>Not in compliance with the inventory</td>
</tr>
<tr>
<td>Japan ENCS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Korea KECI</td>
<td>A substance(s) in this product was not registered,</td>
</tr>
</tbody>
</table>
ISOPRENE FEEDSTOCK

SECTION 16: Other information

NFPA Classification: Health Hazard: 2
Fire Hazard: 4
Reactivity Hazard: 2

Further information
Legacy SDS Number: PE0052

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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.

Key or legend to abbreviations and acronyms used in the safety data sheet

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
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<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
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<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
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<td>DSL</td>
<td>Canada, Domestic Substances List</td>
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<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
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<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
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<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
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<tr>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>EC50 50%</td>
<td>Effective Concentration 50%</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
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<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
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<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<tr>
<td>MAK</td>
<td>Germany Maximum Concentration</td>
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<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<td>Values</td>
<td>GHS</td>
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<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
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<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
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<td>Less Than or Equal To</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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