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

Product information
Product Name: Isoprene Feedstock
Material: 1059202, 1059201, 1037432, 1015403

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: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

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.

Emergency Overview

Danger
Physical state: Liquid
Color: Colorless
Odor: distinct, hydrocarbon-like
OSHA Hazards:
Flammable Liquid, Moderate skin irritant, Moderate eye irritant, Carcinogen, Mutagen, Hazardful by ingestion, Reproductive hazard, Aspiration hazard, Specific target organ systemic toxicity - repeated exposure, Specific target organ systemic toxicity - single exposure

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

Labeling

Symbol(s):

![Flammable Liquid Symbol](image)

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.
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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 air and keep comfortable for breathing. Call a POISON CENTER/doctor 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.
P331 Do NOT induce vomiting.
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 to extinguish.

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.

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

SECTION 3: Composition/information on ingredients

Synonyms: C5 Amylène
C5 Diolefin Stream
Crude Isoprene

Molecular formula: UVCB

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### Component

<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>
<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 (12-65 °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 fire fighting
Do not allow run-off from fire fighting to enter drains or water courses.

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### SECTION 6: Accidental release measures

<table>
<thead>
<tr>
<th>Personal precautions</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental precautions</td>
<td>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.</td>
</tr>
<tr>
<td>Methods for cleaning up</td>
<td>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).</td>
</tr>
</tbody>
</table>

### SECTION 7: Handling and storage

**Handling**

<table>
<thead>
<tr>
<th>Advice on safe handling</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advice on protection against fire and explosion</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>
</tbody>
</table>
## Isoprene Feedstock

### SECTION 8: Exposure controls/personal protection

#### 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 materials must comply with the technological safety standards.

#### Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropene</td>
<td>ACGIH</td>
<td>1,000 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Pentane</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>1,000 ppm, 2,950 mg/m³</td>
<td>(b),</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>600 ppm, 1,800 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-B</td>
<td>STEL</td>
<td>750 ppm, 2,250 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA</td>
<td>1,000 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoprene</td>
<td>US WEL</td>
<td>TWA</td>
<td>2 ppm</td>
<td></td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>75 ppm, 200 mg/m³</td>
<td>URT irr, eye irr,</td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>75 ppm, 200 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>75 ppm, 200 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene, dimethyl</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m³</td>
<td>(b),</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>150 ppm, 655 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA</td>
<td>100 ppm</td>
<td></td>
<td>CNS irrit, URT irrit, eye irrit, BEI, A4,</td>
</tr>
<tr>
<td>ACGIH</td>
<td>STEL</td>
<td>150 ppm</td>
<td></td>
<td>CNS irrit, URT irrit, eye irrit, BEI, A4,</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m³</td>
<td>(b),</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m³</td>
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<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>125 ppm, 545 mg/m³</td>
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<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA</td>
<td>20 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butane</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>800 ppm, 1,900 mg/m³</td>
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</tr>
<tr>
<td>ACGIH</td>
<td>STEL</td>
<td>1,000 ppm</td>
<td></td>
<td>CNS irrit, eye irrit,</td>
</tr>
<tr>
<td>Methylcyclopentane</td>
<td>ACGIH</td>
<td>TWA</td>
<td>500 ppm</td>
<td>CNS irrit, URT irrit, eye irrit,</td>
</tr>
<tr>
<td>ACGIH</td>
<td>STEL</td>
<td>1,000 ppm</td>
<td></td>
<td>CNS irrit, URT irrit, eye irrit,</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>500 ppm, 1,800 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-B</td>
<td>STEL</td>
<td>1,000 ppm, 3,600 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Heptane</td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>500 ppm, 2,000 mg/m³</td>
<td>(b),</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>400 ppm, 1,600 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>500 ppm, 2,000 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA</td>
<td>400 ppm</td>
<td></td>
<td>CNS irrit, URT irrit, eye irrit,</td>
</tr>
<tr>
<td>ACGIH</td>
<td>STEL</td>
<td>500 ppm</td>
<td></td>
<td>CNS irrit, URT irrit, eye irrit,</td>
</tr>
<tr>
<td>n-hexane</td>
<td>ACGIH</td>
<td>TWA</td>
<td>50 ppm</td>
<td>CNS irrit, eye irrit, peripheral neuropathy, BEI, Skin,</td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>500 ppm, 1,800 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>50 ppm, 180 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>ACGIH</td>
<td>TWA</td>
<td>600 ppm</td>
<td>CNS irrit, URT irrit, eye irrit, skin irrit,</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>600 ppm, 1,720 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>20 ppm</td>
<td>visual irrit, female repro, pregnancy loss, BEI, A4,</td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>TWA</td>
<td>200 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>CEIL</td>
<td>300 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>Peak</td>
<td>500 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 375 mg/m³</td>
<td></td>
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</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>150 ppm, 560 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>0.5 ppm</td>
<td>leukemia, BEI, A1, Skin,</td>
</tr>
<tr>
<td>ACGIH</td>
<td>STEL</td>
<td>2.5 ppm</td>
<td></td>
<td>leukemia, BEI, A1, Skin,</td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>1 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>CEIL</td>
<td>5 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>Peak</td>
<td>50 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA 29 CFR 1910.1028(c)</td>
<td>TWA</td>
<td>1 ppm</td>
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</tr>
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<td>OSHA 29 CFR 1910.1028(c)</td>
<td>STEL</td>
<td>5 ppm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SAFETY DATA SHEET**

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**Revision Date 2016-08-08**

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<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 1500 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>542-92-7</td>
<td>Immediately Dangerous to Life or Health Concentration Value 750 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>Immediately Dangerous to Life or Health Concentration Value 900 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Immediately Dangerous to Life or Health Concentration Value 800 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>Immediately Dangerous to Life or Health Concentration Value 750 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>Immediately Dangerous to Life or Health Concentration Value 1100 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Immediately Dangerous to Life or Health Concentration Value 500 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Immediately Dangerous to Life or Health Concentration Value 500 ppm</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>Immediately Dangerous to Life or Health Concentration Value 2000 ppm</td>
<td>1995-03-01</td>
</tr>
</tbody>
</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>
</table>

OSHA CARC PEL

OSHA CARC STEL

OSHA Z-1 TWA

OSHA CARC STEL

OSHA CARC PEL

OSHA 29 CFR 1910.1051(c) TWA

OSHA CARC STEL

OSHA CARC STEL

OSHA CARC TWA

OSHA CARC STEL

OSHA CARC STEL

OSHA CARC STEL

OSHA CARC STEL

(a) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.

(b) The value in mg/m3 is approximate.

A1 Confirmed human carcinogen

A2 Suspected human carcinogen

A4 Not classifiable as a human carcinogen

BEI Substances for which there is a Biological Exposure Index or Indices (see BEI® section)

cancer Cancer

CNS impair Central Nervous System impairment

eye irr Eye irritation

female repro Female reproductive

leukemia Leukemia

Peripheral neuropathy

pregnancy loss Pregnancy loss

Skin Danger of cutaneous absorption

Skin irrit Skin irritation

URT irr Upper Respiratory Tract irritation

visual impair Visual impairment

Hazardous components without workplace control parameters

Immediately Dangerous to Life or Health Concentrations (IDLH)

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### 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

---

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>Measure</th>
<th>Concentration</th>
<th>Exposure Time</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 phenyl glyoxylic acid: 0.15 g/g creatinine (Urine)</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2014-03-01</td>
</tr>
<tr>
<td>n-hexane</td>
<td>110-54-3</td>
<td>2,5-Hexanedione: 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>Benzene</td>
<td>71-43-2</td>
<td>S-Phenylmercapturic acid: 2.5 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>t,t-Muconic acid</td>
<td></td>
<td>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-acetylcycteiny1)-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>Mixture of N-1 and N-2(hydroxybutenyl)valine</td>
<td></td>
<td>2.5 pmol/g Hb (Hemoglobin (Hb) adducts in blood)</td>
<td>Not critical</td>
<td>2010-03-01</td>
</tr>
</tbody>
</table>
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
   at 20 °C (68 °F)
Relative density : 0.66 - 0.69
   at 15.6 °C (60.1 °F)
Isoprene Feedstock

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
- 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.

### Eye irritation
Irritating to eyes. Vapors may cause irritation to the eyes, respiratory system and the skin.

### Sensitization
Did not cause sensitization on laboratory animals. Information refers to the main ingredient.

### Repeated dose toxicity
This information is not available.

### Carcinogenicity
Remarks: This information is not available.

### Reproductive toxicity
This information is not available.

### Developmental Toxicity
This information is not available.

### 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

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

### Further information
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.

### 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 daphnia and other aquatic invertebrates (Chronic toxicity)

Ethylbenzene: NOEC: 1 mg/l
Exposure time: 7 d
Species: Daphnia pulex (Water flea)
semi-static test
Analytical monitoring: yes

Elimination information (persistence and degradability)
Bioaccumulation: This material is not expected to bioaccumulate.
Biodegradability: Expected to be ultimately biodegradable

Ecotoxicology Assessment
Acute aquatic toxicity: Toxic to aquatic life.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.
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.

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
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, RQ (BENZENE, 1,3-BUTADIENE)

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, I, (-54 °C), MARINE POLLUTANT, (NAPHTHA, (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, (NAPHTHA, (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, (NAPHTHA, (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, (NAPHTHA, (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
SDS Number: 100000013397
### SAFETY DATA SHEET

**Isoprene Feedstock**

**Version 2.3**

**Revision Date 2016-08-08**

| SARA 311/312 Hazards | Fire Hazard  
| Acute Health Hazard  
| Chronic Health Hazard |

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

| CERCLA Reportable Quantity | 167 lbs  
| Isopentane  
| Isoprene |

| 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 Ingredients | 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 Feedstock

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
- Benzene, dimethyl- - 1330-20-7
- Ethylbenzene - 100-41-4
- Toluene - 108-88-3
- Benzene - 71-43-2

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 - 287-92-3
- Toluene - 108-88-3
- Benzene - 71-43-2
- 1,3-Butadiene - 106-99-0
- Methylcyclopentane - 96-37-7

New Jersey 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 - 287-92-3
- Toluene - 108-88-3
- Benzene - 71-43-2
- 1,3-Butadiene - 106-99-0
- Methylcyclopentane - 96-37-7

California Prop. 65 Ingredients

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

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Isoprene Feedstock

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Notification status
Europe REACH: Not in compliance with the inventory
United States of America TSCA: On the inventory, or in compliance with the inventory
Canada NDSL: On the inventory, or in compliance with the inventory
Australia AICS: On the inventory, or in compliance with the inventory
New Zealand NZIoC: Not in compliance with the inventory
Japan ENCS: On the inventory, or in compliance with the inventory
Korea KECI: On the inventory, or in compliance with the inventory
Philippines PICCS: Not in compliance with the inventory
China IECSC: Not in compliance with the inventory

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.

<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
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</thead>
<tbody>
<tr>
<td>ACGIH</td>
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<td>LD50</td>
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SDS Number: 100000013397
### Isoprene Feedstock

**SAFETY DATA SHEET**

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Revision Date 2016-08-08

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>EC50%</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
</tr>
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<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
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<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
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<td>STEL</td>
<td>Short-term Exposure Limit</td>
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<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
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<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
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<td>TWA</td>
<td>Time Weighted Average</td>
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<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
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<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
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</table>

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