1. Identification

Product identifier: Light Straight Run Gasoline
Other means of identification:
- SDS number: 005-GHS
- Synonyms: LSR; LSR Gasoline; Light Straight Run; Light Straight Run Gasoline; Gasoline - Straight-Run, Topping-Plant

Recommended use: Motor fuels.
Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier: Valero Marketing & Supply Company and Affiliates
One Valero Way
San Antonio, TX 78269-6000

General Assistance: 210-345-4593
E-Mail: CorpHSE@valero.com
Contact Person: Industrial Hygienist

Emergency Telephone:
- 24 Hour Emergency: 866-565-5220
- 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards: Flammable liquids Category 1
Health hazards:
- Skin corrosion/irritation Category 2
- Germ cell mutagenicity Category 1B
- Carcinogenicity Category 1B
- Reproductive toxicity Category 2
- Specific target organ toxicity, single exposure Category 3 narcotic effects
- Specific target organ toxicity, repeated exposure Category 2
- Aspiration hazard Category 1

Environmental hazards: Hazardous to the aquatic environment, long-term hazard Category 2

OSHA defined hazards: Not classified.

Label elements

Signal word: Danger

Hazard statement: Extremely flammable liquid and vapor. Causes skin irritation. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs (blood, liver, kidney) through prolonged or repeated exposure. May be fatal if swallowed and enters airways.

Precautionary statement

Prevention: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area.
Response
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. If swallowed: Immediately call a poison center/doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. Take off contaminated clothing and wash before reuse.

Storage
Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
None known.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentane</td>
<td>109-66-0</td>
<td>0 - 35</td>
</tr>
<tr>
<td>Hexane (Other Isomers)</td>
<td>Mixture</td>
<td>0 - 25</td>
</tr>
<tr>
<td>Pentane Isomers</td>
<td>Mixture</td>
<td>0 - 25</td>
</tr>
<tr>
<td>n-Hexane</td>
<td>110-54-3</td>
<td>0 - 20</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>110-82-7</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>287-92-3</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Methylcyclohexane</td>
<td>108-87-2</td>
<td>0 - 5</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>n-Butane</td>
<td>106-97-8</td>
<td>0 - 4</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
<td>&lt; 1</td>
</tr>
</tbody>
</table>

Composition comments
Small amount of hydrogen sulfide, a highly toxic gas, may be present, especially in the headspace of containers.

4. First-aid measures

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if discomfort develops or persists.

Skin contact
Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Ingestion
Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Indication of immediate medical attention and special treatment needed
In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire-fighting measures

Suitable extinguishing media

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.
Precautions for safe handling

Environmental precautions

Gasoline may contain oxygenated blend products (Ethanol, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas. Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment. Clean up in accordance with all applicable regulations.

Specific hazards arising from the chemical

Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge. Vapors may cause a flash fire or ignite explosively.

Special protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire-fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods

Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if possible without any risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas. Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment. Clean up in accordance with all applicable regulations.

Environmental precautions

Gasoline may contain oxygenated blend products (Ethanol, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802.

7. Handling and storage

Precautions for safe handling

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.
Conditions for safe storage, including any incompatibilities
Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 ppm</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane (CAS 110-82-7)</td>
<td>PEL</td>
<td>1050 mg/m3</td>
</tr>
<tr>
<td>Methylcyclohexane (CAS 108-87-2)</td>
<td>PEL</td>
<td>2000 mg/m3</td>
</tr>
<tr>
<td>n-Heptane (CAS 142-82-5)</td>
<td>PEL</td>
<td>500 ppm</td>
</tr>
<tr>
<td>n-Hexane (CAS 110-54-3)</td>
<td>PEL</td>
<td>1800 mg/m3</td>
</tr>
<tr>
<td>Pentane (CAS 109-66-0)</td>
<td>PEL</td>
<td>2950 mg/m3</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-2 (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>Ceiling</td>
<td>25 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>10 ppm</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td>Ceiling</td>
<td>20 ppm</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>2.5 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td>Cyclohexane (CAS 110-82-7)</td>
<td>TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Cyclopentane (CAS 287-92-3)</td>
<td>TWA</td>
<td>600 ppm</td>
</tr>
<tr>
<td>Hexane (Other Isomers) (CAS Mixture)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>500 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Methylcyclohexane (CAS 108-87-2)</td>
<td>TWA</td>
<td>1 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>500 ppm</td>
</tr>
<tr>
<td>n-Butane (CAS 106-97-8)</td>
<td>STEL</td>
<td>400 ppm</td>
</tr>
<tr>
<td>n-Heptane (CAS 142-82-5)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>n-Hexane (CAS 110-54-3)</td>
<td>TWA</td>
<td>400 ppm</td>
</tr>
<tr>
<td>Pentane (CAS 109-66-0)</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>1 ppm</td>
</tr>
</tbody>
</table>
### Component Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane (CAS 110-82-7)</td>
<td>TWA</td>
<td>0.1 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1050 mg/m³</td>
</tr>
<tr>
<td>Cyclopentane (CAS 287-92-3)</td>
<td>TWA</td>
<td>300 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1720 mg/m³</td>
</tr>
<tr>
<td>Hexane (Other Isomers) (CAS Mixture)</td>
<td>Ceiling</td>
<td>600 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1800 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>510 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>350 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ppm</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td>Ceiling</td>
<td>15 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methylcyclohexane (CAS 108-87-2)</td>
<td>TWA</td>
<td>10 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 ppm</td>
</tr>
<tr>
<td>n-Butane (CAS 106-97-8)</td>
<td>TWA</td>
<td>1900 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800 ppm</td>
</tr>
<tr>
<td>n-Heptane (CAS 142-82-5)</td>
<td>Ceiling</td>
<td>1800 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>440 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
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<td></td>
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<td>85 ppm</td>
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<tr>
<td>n-Hexane (CAS 110-54-3)</td>
<td>TWA</td>
<td>180 mg/m³</td>
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<tr>
<td></td>
<td></td>
<td>50 ppm</td>
</tr>
<tr>
<td>Pentane (CAS 109-66-0)</td>
<td>Ceiling</td>
<td>1800 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>610 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>350 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120 ppm</td>
</tr>
</tbody>
</table>

### Biological Limit Values

**ACGIH Biological Exposure Indices**

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>25 µg/g</td>
<td>S-Phenylmercapturic acid</td>
<td>Creatinine in urine</td>
<td>*</td>
</tr>
<tr>
<td>n-Hexane (CAS 110-54-3)</td>
<td>0.4 mg/l</td>
<td>2,5-Hexanedi-</td>
<td>Urine</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>on, without hydrolysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.4 mg/l</td>
<td>2,5-Hexanedi-</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>on, without hydrolysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

### Exposure Guidelines

**US - California OELs: Skin designation**

- Benzene (CAS 71-43-2) Can be absorbed through the skin.
- n-Hexane (CAS 110-54-3) Can be absorbed through the skin.

**US ACGIH Threshold Limit Values: Skin designation**

- Benzene (CAS 71-43-2) Can be absorbed through the skin.
- n-Hexane (CAS 110-54-3) Can be absorbed through the skin.

**Appropriate engineering controls**

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

**Skin protection**

Avoid exposure - obtain special instructions before use. Wear protective gloves. Protective gloves.
Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

**Respiratory protection**

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

**Thermal hazards**

Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**

Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical and chemical properties**

**Appearance**

Colorless to light yellow liquid.

**Physical state**

Liquid.

**Form**

Liquid.

**Color**

Light yellow.

**Odor**

Characteristic Gasoline Odor (Strong).

**Odor threshold**

Not available.

**pH**

Not available.

**Melting point/freezing point**

44 °F (6.67 °C) Estimated

**Initial boiling point and boiling range**

> 82 °F (> 27.78 °C) Estimated

**Flash point**

> -70.9 °F (> -57.2 °C) Closed Cup Estimated

**Evaporation rate**

< 12.4 Estimated

**Flammability (solid, gas)**

Not available.

**Upper/lower flammability or explosive limits**

<table>
<thead>
<tr>
<th>Flammability limit - lower (%)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability limit - upper (%)</td>
<td>8</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Vapor pressure**

Not available.

**Vapor density**

< 3.5 Estimated

**Relative density**

0.64 - 0.7 (water=1)

**Solubility(ies)**

Solubility (water) Not available.

**Partition coefficient (n-octanol/water)**

Not available.

**Auto-ignition temperature**

> 260 °F (> 126.67 °C)

**Decomposition temperature**

Not available.

**Viscosity**

Not available.

**Other information**

Percent volatile 100 % v/v Essentially

**10. Stability and reactivity**

**Reactivity**

Not available.

**Chemical stability**

Stable under normal temperature conditions and recommended use.

**Possibility of hazardous reactions**

Hazardous polymerization does not occur.
Conditions to avoid
Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion
May be fatal if swallowed and enters airways.

Inhalation
In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.

Skin contact
Causes skin irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Eye contact
May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity
Harmful: may cause lung damage if swallowed.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane (CAS 110-82-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOEL</td>
<td>Monkey</td>
<td>1243 mg/l, 6 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>1300 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>29820 mg/kg</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 0.38 mg/l, 960 Minutes</td>
</tr>
<tr>
<td>Methylcyclohexane (CAS 108-87-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC25</td>
<td>Rabbit</td>
<td>7300 mg/l</td>
</tr>
<tr>
<td>n-Butane (CAS 106-97-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>658 mg/l, 4 Hours</td>
</tr>
<tr>
<td>n-Heptane (CAS 142-82-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>103 mg/l, 4 Hours</td>
</tr>
<tr>
<td>n-Hexane (CAS 110-54-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>28710 mg/kg</td>
</tr>
<tr>
<td>Pentane (CAS 109-66-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>364 mg/l, 4 Hours</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Causes skin irritation.
Serious eye damage/eye irritation
Based on available data, the classification criteria are not met.

Respiratory or skin sensitization
Respiratory sensitization
Based on available data, the classification criteria are not met.
Skin sensitization
Based on available data, the classification criteria are not met.

Germ cell mutagenicity
May cause genetic defects. In in-vitro experiments benzene did not change the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes.

Carcinogenicity
May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity
Benzene (CAS 71-43-2) 1 Carcinogenic to humans.

NTP Report on Carcinogens
Benzene (CAS 71-43-2) Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Benzene (CAS 71-43-2) Cancer

Reproductive toxicity
Suspected of damaging fertility or the unborn child. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. May damage fertility or the unborn child. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid exposure to women during early pregnancy. Avoid contact during pregnancy/while nursing.

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure
May cause damage to the following organs through prolonged or repeated exposure: Blood. Liver. Kidney.

Aspiration hazard
May be fatal if swallowed and enters airways.

Chronic effects
Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anemia and to the later development of acute myelogenous leukemia (AML). Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.

Further information
Symptoms may be delayed.

12. Ecological information

Ecotoxicity
Toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea EC50</td>
<td>Water flea (Daphnia magna)</td>
<td>8.76 - 15.6 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Rainbow trout,donaldson trout (Oncorhynchus mykiss)</td>
<td>7.2 - 11.7 mg/l, 96 hours</td>
</tr>
<tr>
<td>Cyclohexane (CAS 110-82-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Fathead minnow (Pimephales promelas)</td>
<td>23.03 - 42.07 mg/l, 96 hours</td>
</tr>
<tr>
<td>Cyclopentane (CAS 287-92-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Crustacea EC50</td>
<td>Daphnia magna</td>
<td>10.5 mg/l, 48 hours</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Lake whitefish (Coregonus clupeaformis)</td>
<td>0.002 mg/l, 96 hours</td>
</tr>
<tr>
<td>Methylcyclohexane (CAS 108-87-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Striped bass (Morone saxatilis)</td>
<td>5.8 mg/l, 96 hours</td>
</tr>
<tr>
<td>n-Heptane (CAS 142-82-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Western mosquitofish (Gambusia affinis)</td>
<td>4924 mg/l, 96 hours</td>
</tr>
</tbody>
</table>
Components Test Results

Species

n-Hexane (CAS 110-54-3)

Aquatic
Fish LC50 Fathead minnow (Pimephales promelas) 2.101 - 2.981 mg/l, 96 hours

Pentane Isomers (CAS Mixture)

Aquatic
Crustacea EC50 Daphnia 2.3 mg/l, 48 Hours
Fish LC50 Fish 3.1 mg/l, 96 Hours

Persistence and degradability None known.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)
Benzene (CAS 71-43-2) 2.13
Cyclohexane (CAS 110-82-7) 3.44
Cyclopentane (CAS 287-92-3) 3
Hexane (Other Isomers) (CAS Mixture) 3.6
Methylcyclohexane (CAS 108-87-2) 3.61
Pentane (CAS 109-66-0) 3.39
n-Butane (CAS 106-97-8) 2.89
n-Heptane (CAS 142-82-5) 4.66
n-Hexane (CAS 110-54-3) 3.9

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. This material and its container must be
disposed of as hazardous waste. Dispose of this material and its container to hazardous or special
waste collection point. Incinerate the material under controlled conditions in an approved
incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate
ponds, waterways or ditches with chemical or used container.

Hazardous waste code D001: Waste Flammable material with a flash point <140 °F
D018: Waste Benzene

US RCRA Hazardous Waste U List: Reference
Benzene (CAS 71-43-2) U019
Cyclohexane (CAS 110-82-7) U056
Hydrogen sulfide (CAS 7783-06-4) U135

Waste from residues / unused
products Dispose of in accordance with local regulations.

Contaminated packaging Offer rinsed packaging material to local recycling facilities.

14. Transport information

DOT
UN number UN1265
UN proper shipping name Pentanes

Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group I

Environmental hazards
Marine pollutant Yes

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions T11, TP2
Packaging exceptions 150
Packaging non bulk 201
Packaging bulk 243

IATA
UN number UN1265
UN proper shipping name Pentanes liquid
Transport hazard class(es)
  Class 3
  Subsidiary risk -
  Label(s) 3
Packing group I
Environmental hazards Yes
ERG Code 3H
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG
UN number UN1265
UN proper shipping name PENTANES, liquid
Transport hazard class(es)
  Class 3
  Subsidiary risk -
  Label(s) 4
Packing group I
Environmental hazards
  Marine pollutant Yes
EmS F-E, S-D
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.
Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information
US federal regulations This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Benzene (CAS 71-43-2) Cancer
  Central nervous system
  Blood
  Aspiration
  Skin
  Eye
  Respiratory tract irritation
  Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)
Benzene (CAS 71-43-2) LISTED
Cyclohexane (CAS 110-82-7) LISTED
Cyclopentane (CAS 287-92-3) LISTED
Hexane (Other Isomers) (CAS Mixture) LISTED
Hydrogen sulfide (CAS 7783-06-4) LISTED
Methylcyclohexane (CAS 108-87-2) LISTED
n-Butane (CAS 106-97-8) LISTED
n-Heptane (CAS 142-82-5) LISTED
n-Hexane (CAS 110-54-3) LISTED
Pentane (CAS 109-66-0) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories Immediate Hazard - No
  Delayed Hazard - No
  Fire Hazard - No
  Pressure Hazard - No
  Reactivity Hazard - No
### SARA 302 Extremely hazardous substance

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>Reportable quantity</th>
<th>Threshold planning quantity</th>
<th>Threshold planning quantity, lower value</th>
<th>Threshold planning quantity, upper value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
<td>100</td>
<td>500 lbs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SARA 311/312 Hazardous chemical

- Yes

### SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Hexane</td>
<td>110-54-3</td>
<td>0 - 20</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>110-82-7</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

### Other federal regulations

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
- Benzene (CAS 71-43-2)
- n-Hexane (CAS 110-54-3)

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
- Hydrogen sulfide (CAS 7783-06-4)
- n-Butane (CAS 106-97-8)
- Pentane (CAS 109-66-0)

#### Safe Drinking Water Act (SDWA)
- Not regulated.

### US state regulations

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

#### US. Massachusetts RTK - Substance List
- Benzene (CAS 71-43-2)
- Cyclohexane (CAS 110-82-7)
- Cyclopentane (CAS 287-92-3)
- Hexane (Other Isomers) (CAS Mixture)
- Hydrogen sulfide (CAS 7783-06-4)
- Methylcyclohexane (CAS 108-87-2)
- n-Butane (CAS 106-97-8)
- n-Heptane (CAS 142-82-5)
- n-Hexane (CAS 110-54-3)
- Pentane (CAS 109-66-0)

#### US. New Jersey Worker and Community Right-to-Know Act
- Benzene (CAS 71-43-2)
- Cyclohexane (CAS 110-82-7)
- Cyclopentane (CAS 287-92-3)
- Hydrogen sulfide (CAS 7783-06-4)
- Methylcyclohexane (CAS 108-87-2)
- n-Butane (CAS 106-97-8)
- n-Heptane (CAS 142-82-5)
- n-Hexane (CAS 110-54-3)
- Pentane (CAS 109-66-0)

#### US. Pennsylvania Worker and Community Right-to-Know Law
- Benzene (CAS 71-43-2)
- Cyclohexane (CAS 110-82-7)
- Cyclopentane (CAS 287-92-3)
- Hexane (Other Isomers) (CAS Mixture)
- Hydrogen sulfide (CAS 7783-06-4)
- Methylcyclohexane (CAS 108-87-2)
- n-Butane (CAS 106-97-8)
- n-Heptane (CAS 142-82-5)
- n-Hexane (CAS 110-54-3)
- Pentane (CAS 109-66-0)

#### US. Rhode Island RTK
- Benzene (CAS 71-43-2)
- Cyclohexane (CAS 110-82-7)
- Hydrogen sulfide (CAS 7783-06-4)
- n-Butane (CAS 106-97-8)
n-Hexane (CAS 110-54-3)
Pentane (CAS 109-66-0)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Benzene (CAS 71-43-2)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
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<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
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<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>No</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
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</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date: 27-June-2013
Revision date: 23-May-2014
Version #: 02

NFPA Ratings

References

ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

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