

# SAFETY DATA SHEET

Flammable Liquid Mixture: Benzyl Chloride / Cyclohexane / Ethyl Benzene / Hexane / Phenol / Phenyl Acetylene

## Section 1. Identification

|                                      |                                                                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>GHS product identifier</b>        | : Flammable Liquid Mixture: Benzyl Chloride / Cyclohexane / Ethyl Benzene / Hexane / Phenol / Phenyl Acetylene                |
| <b>Other means of identification</b> | : Not available.                                                                                                              |
| <b>Product use</b>                   | : Synthetic/Analytical chemistry.                                                                                             |
| <b>SDS #</b>                         | : 019548                                                                                                                      |
| <b>Supplier's details</b>            | : Airgas USA, LLC and its affiliates<br>259 North Radnor-Chester Road<br>Suite 100<br>Radnor, PA 19087-5283<br>1-610-687-5253 |
| <b>24-hour telephone</b>             | : 1-866-734-3438                                                                                                              |

## Section 2. Hazards identification

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OSHA/HCS status</b>                            | : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).                                                                                                                                                                                                                                                                                                                      |
| <b>Classification of the substance or mixture</b> | : FLAMMABLE LIQUIDS - Category 1<br>SKIN CORROSION/IRRITATION - Category 2<br>TOXIC TO REPRODUCTION (Fertility) - Category 2<br>TOXIC TO REPRODUCTION (Unborn child) - Category 2<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2<br>AQUATIC HAZARD (ACUTE) - Category 2<br>AQUATIC HAZARD (LONG-TERM) - Category 2 |

### GHS label elements

#### **Hazard pictograms**



#### **Signal word**

: Danger

#### **Hazard statements**

: Extremely flammable liquid and vapor.  
May form explosive mixtures in Air.  
Causes skin irritation.  
Suspected of damaging fertility or the unborn child.  
May cause drowsiness and dizziness.  
May cause damage to organs through prolonged or repeated exposure.  
Toxic to aquatic life with long lasting effects.

### Precautionary statements

#### **General**

: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

#### **Prevention**

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Wash hands thoroughly after handling.

## Section 2. Hazards identification

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Response</b>                         | : Collect spillage. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. |
| <b>Storage</b>                          | : Store locked up. Store in a well-ventilated place. Keep cool.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Disposal</b>                         | : Dispose of contents and container in accordance with all local, regional, national and international regulations.                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hazards not otherwise classified</b> | : None known.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Section 3. Composition/information on ingredients

|                                      |                  |
|--------------------------------------|------------------|
| <b>Substance/mixture</b>             | : Mixture        |
| <b>Other means of identification</b> | : Not available. |

### CAS number/other identifiers

|                     |                   |
|---------------------|-------------------|
| <b>CAS number</b>   | : Not applicable. |
| <b>Product code</b> | : 019548          |

| <b>Ingredient name</b> | <b>%</b>        | <b>CAS number</b> |
|------------------------|-----------------|-------------------|
| n-hexane               | 79 - 85         | 110-54-3          |
| cyclohexane            | 15 - 20         | 110-82-7          |
| α-chlorotoluene        | 0.0001 - 0.0999 | 100-44-7          |
| ethylbenzene           | 0.0001 - 0.0999 | 100-41-4          |
| phenylacetylene        | 0.0001 - 0.0999 | 536-74-3          |
| phenol                 | 0.0001 - 0.0999 | 108-95-2          |

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Inhalation</b>   | : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |
| <b>Skin contact</b> | : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Ingestion</b>    | : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious                                                                                                 |

## Section 4. First aid measures

person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.
- Skin contact** : Causes skin irritation.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : Can cause central nervous system (CNS) depression.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:., pain or irritation, watering, redness
- Inhalation** : Adverse symptoms may include the following:., nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness, reduced fetal weight, increase in fetal deaths, skeletal malformations
- Skin contact** : Adverse symptoms may include the following:., irritation, redness, reduced fetal weight, increase in fetal deaths, skeletal malformations
- Ingestion** : Adverse symptoms may include the following:., reduced fetal weight, increase in fetal deaths, skeletal malformations

### Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Extremely flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

## Section 5. Fire-fighting measures

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

## Section 7. Handling and storage

**Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

| Ingredient name | Exposure limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| n-hexane        | <b>ACGIH TLV (United States, 3/2016).</b><br><b>Absorbed through skin.</b><br>TWA: 50 ppm 8 hours.<br><b>NIOSH REL (United States, 10/2013).</b><br>TWA: 180 mg/m <sup>3</sup> 10 hours.<br>TWA: 50 ppm 10 hours.<br><b>OSHA PEL (United States, 6/2016).</b><br>TWA: 1800 mg/m <sup>3</sup> 8 hours.<br>TWA: 500 ppm 8 hours.<br><b>OSHA PEL 1989 (United States, 3/1989).</b><br>TWA: 180 mg/m <sup>3</sup> 8 hours.<br>TWA: 50 ppm 8 hours.                                                 |
| cyclohexane     | <b>ACGIH TLV (United States, 3/2016).</b><br>TWA: 100 ppm 8 hours.<br><b>NIOSH REL (United States, 10/2013).</b><br>TWA: 1050 mg/m <sup>3</sup> 10 hours.<br>TWA: 300 ppm 10 hours.<br><b>OSHA PEL (United States, 6/2016).</b><br>TWA: 1050 mg/m <sup>3</sup> 8 hours.<br>TWA: 300 ppm 8 hours.<br><b>OSHA PEL 1989 (United States, 3/1989).</b><br>TWA: 1050 mg/m <sup>3</sup> 8 hours.<br>TWA: 300 ppm 8 hours.                                                                             |
| α-chlorotoluene | <b>ACGIH TLV (United States, 3/2016).</b><br>TWA: 5.2 mg/m <sup>3</sup> 8 hours.<br>TWA: 1 ppm 8 hours.<br><b>NIOSH REL (United States, 10/2013).</b><br>CEIL: 5 mg/m <sup>3</sup> 15 minutes.<br>CEIL: 1 ppm 15 minutes.<br><b>OSHA PEL (United States, 6/2016).</b><br>TWA: 5 mg/m <sup>3</sup> 8 hours.<br>TWA: 1 ppm 8 hours.<br><b>OSHA PEL 1989 (United States, 3/1989).</b><br>TWA: 5 mg/m <sup>3</sup> 8 hours.<br>TWA: 1 ppm 8 hours.                                                 |
| ethylbenzene    | <b>ACGIH TLV (United States, 3/2016).</b><br>TWA: 20 ppm 8 hours.<br><b>NIOSH REL (United States, 10/2013).</b><br>STEL: 545 mg/m <sup>3</sup> 15 minutes.<br>STEL: 125 ppm 15 minutes.<br>TWA: 435 mg/m <sup>3</sup> 10 hours.<br>TWA: 100 ppm 10 hours.<br><b>OSHA PEL (United States, 6/2016).</b><br>TWA: 435 mg/m <sup>3</sup> 8 hours.<br>TWA: 100 ppm 8 hours.<br><b>OSHA PEL 1989 (United States, 3/1989).</b><br>STEL: 545 mg/m <sup>3</sup> 15 minutes.<br>STEL: 125 ppm 15 minutes. |

## Section 8. Exposure controls/personal protection

phenylacetylene  
phenol

TWA: 435 mg/m<sup>3</sup> 8 hours.  
TWA: 100 ppm 8 hours.  
None.  
**ACGIH TLV (United States, 3/2016).**  
**Absorbed through skin.**  
TWA: 5 ppm 8 hours.  
TWA: 19 mg/m<sup>3</sup> 8 hours.  
**OSHA PEL 1989 (United States, 3/1989).**  
**Absorbed through skin.**  
TWA: 5 ppm 8 hours.  
TWA: 19 mg/m<sup>3</sup> 8 hours.  
**NIOSH REL (United States, 10/2013).**  
**Absorbed through skin.**  
TWA: 5 ppm 10 hours.  
TWA: 19 mg/m<sup>3</sup> 10 hours.  
CEIL: 15.6 ppm 15 minutes.  
CEIL: 60 mg/m<sup>3</sup> 15 minutes.  
**OSHA PEL (United States, 6/2016).**  
**Absorbed through skin.**  
TWA: 5 ppm 8 hours.  
TWA: 19 mg/m<sup>3</sup> 8 hours.

### Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

#### Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

#### Skin protection

##### Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

##### Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

##### Other skin protection

- : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

## Section 8. Exposure controls/personal protection

- 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.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Liquid.
- Color** : Not available.
- Boiling/condensation point** : Lowest known value: 68.73°C (155.7°F) (n-hexane). Weighted average: 71.01°C (159.8°F)
- Melting/freezing point** : May start to solidify at the following temperature: 6.5°C (43.7°F) This is based on data for the following ingredient: cyclohexane. Weighted average: -75.95°C (-104.7°F)
- Critical temperature** : Lowest known value: 234.25°C (453.6°F) (n-hexane).
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Closed cup: -22°C (-7.6°F)
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Highest known value: 3 (Air = 1) (n-hexane). Weighted average: 2.98 (Air = 1)
- Gas Density (lb/ft<sup>3</sup>)** : Weighted average: 0.68
- Relative density** : Not available.
- Solubility** : Not available.
- Solubility in water** : Not available.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- SADT** : Not available.
- Viscosity** : Not available.

## Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- Incompatible materials** : Reactive or incompatible with the following materials:  
oxidizing materials

## Section 10. Stability and reactivity

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name | Result                | Species | Dose                  | Exposure |
|-------------------------|-----------------------|---------|-----------------------|----------|
| n-hexane                | LC50 Inhalation Gas.  | Rat     | 48000 ppm             | 4 hours  |
|                         | LC50 Inhalation Vapor | Rat     | 96000 ppm             | 1 hours  |
|                         | LD50 Oral             | Rat     | 15840 mg/kg           | -        |
| cyclohexane             | LD50 Oral             | Rat     | 6240 mg/kg            | -        |
| α-chlorotoluene         | LC50 Inhalation Vapor | Rat     | 212.1 ppm             | 1 hours  |
|                         | LD50 Oral             | Rat     | 1231 mg/kg            | -        |
| ethylbenzene            | LD50 Dermal           | Rabbit  | >5000 mg/kg           | -        |
|                         | LD50 Oral             | Rat     | 3500 mg/kg            | -        |
| phenol                  | LC50 Inhalation Vapor | Rat     | 316 mg/m <sup>3</sup> | 4 hours  |
|                         | LD50 Dermal           | Rabbit  | 630 mg/kg             | -        |
|                         | LD50 Dermal           | Rat     | 669 mg/kg             | -        |
|                         | LD50 Oral             | Rat     | 317 mg/kg             | -        |

#### Irritation/Corrosion

| Product/ingredient name | Result                 | Species | Score | Exposure                    | Observation |
|-------------------------|------------------------|---------|-------|-----------------------------|-------------|
| n-hexane                | Eyes - Mild irritant   | Rabbit  | -     | 10 milligrams               | -           |
|                         | Eyes - Severe irritant | Rabbit  | -     | 500 milligrams              | -           |
| ethylbenzene            | Skin - Mild irritant   | Rabbit  | -     | 24 hours 15 milligrams      | -           |
|                         | Eyes - Mild irritant   | Rabbit  | -     | 0.5 minutes 5 milligrams    | -           |
| phenol                  | Eyes - Severe irritant | Rabbit  | -     | 5 milligrams                | -           |
|                         | Skin - Severe irritant | Pig     | -     | 0.5 minutes 400 microliters | -           |
|                         | Skin - Mild irritant   | Rabbit  | -     | 100 milligrams              | -           |
|                         | Skin - Severe irritant | Rabbit  | -     | 535 milligrams              | -           |

#### Sensitization

Not available.

#### Mutagenicity

Not available.

#### Carcinogenicity

Not available.

#### Classification

| Product/ingredient name | OSHA | IARC | NTP |
|-------------------------|------|------|-----|
| phenol                  | -    | 3    | -   |
| ethylbenzene            | -    | 2B   | -   |
| α-chlorotoluene         | -    | 2A   | -   |

#### Reproductive toxicity

Not available.

## Section 11. Toxicological information

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

| Name                    | Category   | Route of exposure | Target organs                |
|-------------------------|------------|-------------------|------------------------------|
| n-hexane                | Category 3 | Not applicable.   | Narcotic effects             |
| cyclohexane             | Category 3 | Not applicable.   | Narcotic effects             |
| $\alpha$ -chlorotoluene | Category 3 | Not applicable.   | Respiratory tract irritation |

### Specific target organ toxicity (repeated exposure)

| Name                    | Category   | Route of exposure | Target organs  |
|-------------------------|------------|-------------------|----------------|
| n-hexane                | Category 2 | Not determined    | Not determined |
| $\alpha$ -chlorotoluene | Category 2 | Not determined    | Not determined |
| ethylbenzene            | Category 2 | Not determined    | Not determined |
| phenol                  | Category 2 | Not determined    | Not determined |

### Aspiration hazard

| Name         | Result                         |
|--------------|--------------------------------|
| cyclohexane  | ASPIRATION HAZARD - Category 1 |
| ethylbenzene | ASPIRATION HAZARD - Category 1 |

**Information on the likely routes of exposure** : Not available.

### Potential acute health effects

**Eye contact** : No known significant effects or critical hazards.

**Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

**Skin contact** : Causes skin irritation.

**Ingestion** : Can cause central nervous system (CNS) depression.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : Adverse symptoms may include the following: pain or irritation, watering, redness

**Inhalation** : Adverse symptoms may include the following: nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness, reduced fetal weight, increase in fetal deaths, skeletal malformations

**Skin contact** : Adverse symptoms may include the following: irritation, redness, reduced fetal weight, increase in fetal deaths, skeletal malformations

**Ingestion** : Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

Not available.

## Section 11. Toxicological information

|                              |                                                                      |
|------------------------------|----------------------------------------------------------------------|
| <b>General</b>               | : May cause damage to organs through prolonged or repeated exposure. |
| <b>Carcinogenicity</b>       | : No known significant effects or critical hazards.                  |
| <b>Mutagenicity</b>          | : No known significant effects or critical hazards.                  |
| <b>Teratogenicity</b>        | : Suspected of damaging the unborn child.                            |
| <b>Developmental effects</b> | : No known significant effects or critical hazards.                  |
| <b>Fertility effects</b>     | : Suspected of damaging fertility.                                   |

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

| Product/ingredient name | Result                                    | Species                                                                        | Exposure |
|-------------------------|-------------------------------------------|--------------------------------------------------------------------------------|----------|
| n-hexane                | Acute LC50 113000 µg/l Fresh water        | Fish - Oreochromis mossambicus                                                 | 96 hours |
| cyclohexane             | Acute LC50 8300 µg/l Marine water         | Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)            | 96 hours |
| α-chlorotoluene         | Acute LC50 4400 to 5800 µg/l Marine water | Crustaceans - Penaeus setiferus                                                | 48 hours |
| ethylbenzene            | Acute LC50 4000 µg/l                      | Fish - Danio rerio                                                             | 96 hours |
|                         | Acute EC50 4600 µg/l Fresh water          | Algae - Pseudokirchneriella subcapitata                                        | 72 hours |
|                         | Acute EC50 3600 µg/l Fresh water          | Algae - Pseudokirchneriella subcapitata                                        | 96 hours |
|                         | Acute EC50 2930 to 4400 µg/l Fresh water  | Daphnia - Daphnia magna - Neonate                                              | 48 hours |
|                         | Acute LC50 40000 µg/l Marine water        | Crustaceans - Cancer magister - Zoea                                           | 48 hours |
| phenol                  | Acute LC50 4200 µg/l Fresh water          | Fish - Oncorhynchus mykiss                                                     | 96 hours |
|                         | Acute EC50 61.1 µg/l Fresh water          | Algae - Pseudokirchneriella subcapitata                                        | 96 hours |
|                         | Acute EC50 36 mg/l Marine water           | Algae - Hormosira banksii - Gamete                                             | 72 hours |
|                         | Acute EC50 94 mg/l Fresh water            | Aquatic plants - Lemna aequinoctialis                                          | 96 hours |
|                         | Acute EC50 4200 µg/l Fresh water          | Daphnia - Daphnia magna                                                        | 48 hours |
|                         | Acute LC50 800 µg/l Marine water          | Crustaceans - Archaeomysis kokuboi - Juvenile (Fledgling, Hatchling, Weanling) | 48 hours |
|                         | Acute LC50 1.75 µg/l Fresh water          | Fish - Cyprinus carpio - Larvae                                                | 96 hours |
|                         | Chronic NOEC 16 µg/l Marine water         | Algae - Hormosira banksii - Gamete                                             | 72 hours |
|                         | Chronic NOEC 1.5 mg/l Fresh water         | Daphnia - Daphnia magna                                                        | 21 days  |
|                         | Chronic NOEC 118 µg/l Fresh water         | Fish - Oncorhynchus mykiss                                                     | 90 days  |

### Persistence and degradability

Not available.

### Bioaccumulative potential

## Section 12. Ecological information

| Product/ingredient name | LogP <sub>ow</sub> | BCF     | Potential |
|-------------------------|--------------------|---------|-----------|
| n-hexane                | 4                  | 501.187 | high      |
| cyclohexane             | 3.44               | 167     | low       |
| α-chlorotoluene         | 2.3                | -       | low       |
| ethylbenzene            | 3.6                | -       | low       |
| phenylacetylene         | 2.53               | -       | low       |
| phenol                  | 1.47               | 647     | high      |

### Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : Not available.

Other adverse effects : No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

### United States - RCRA Toxic hazardous waste "U" List

| Ingredient                               | CAS #    | Status | Reference number |
|------------------------------------------|----------|--------|------------------|
| Cyclohexane (I); Benzene, hexahydro- (I) | 110-82-7 | Listed | U056             |

## Section 14. Transport information

|                                   | DOT                                                                                                                                                                                                    | TDG                                                                                                                                                                              | Mexico                                                                                     | IMDG                                                                                         | IATA                                                                                                     |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>UN number</b>                  | UN3161                                                                                                                                                                                                 | UN3161                                                                                                                                                                           | UN3161                                                                                     | UN3161                                                                                       | UN3161                                                                                                   |
| <b>UN proper shipping name</b>    | Liquefied gas, flammable n.o.s. (Hexane, Cyclohexane)                                                                                                                                                  | Liquefied gas, flammable n.o.s. (Hexane, Cyclohexane)                                                                                                                            | Liquefied gas, flammable n.o.s. (Hexane, Cyclohexane)                                      | Liquefied gas, flammable n.o.s. (Hexane, Cyclohexane)                                        | Liquefied gas, flammable n.o.s. (Hexane, Cyclohexane)                                                    |
| <b>Transport hazard class(es)</b> | 2.1<br>                                                                                                             | 2.1<br>                                                                                       | 2.1<br> | 2.1<br> | 2.1<br>             |
| <b>Packing group</b>              | -                                                                                                                                                                                                      | -                                                                                                                                                                                | -                                                                                          | -                                                                                            | -                                                                                                        |
| <b>Environment</b>                | No.                                                                                                                                                                                                    | No.                                                                                                                                                                              | No.                                                                                        | Yes.                                                                                         | No.                                                                                                      |
| <b>Additional information</b>     | This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the | Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.7 (Marine pollutant mark).<br>The marine pollutant | -                                                                                          | The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.        | The environmentally hazardous substance mark may appear if required by other transportation regulations. |

## Section 14. Transport information

|  |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                |  |  |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  | <p>general provisions of §§ 173.24 and 173.24a.</p> <p><b>Reportable quantity</b><br/>5000 lbs / 2270 kg<br/>Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.</p> | <p>mark is not required when transported by road or rail.</p> <p><b>Explosive Limit and Limited Quantity Index</b><br/>0.125</p> <p><b>ERAP Index</b><br/>3000</p> <p><b>Passenger Carrying Ship Index</b><br/>Forbidden</p> <p><b>Passenger Carrying Road or Rail Index</b><br/>Forbidden</p> |  |  |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

## Section 15. Regulatory information

**U.S. Federal regulations** : **TSCA 8(a) PAIR:** α-chlorotoluene  
**TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**United States inventory (TSCA 8b):** All components are listed or exempted.  
**Clean Water Act (CWA) 307:** phenol; ethylbenzene  
**Clean Water Act (CWA) 311:** cyclohexane; phenol; ethylbenzene; α-chlorotoluene

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 302/304

#### Composition/information on ingredients

| Name            | %               | EHS  | SARA 302 TPQ |           | SARA 304 RQ |           |
|-----------------|-----------------|------|--------------|-----------|-------------|-----------|
|                 |                 |      | (lbs)        | (gallons) | (lbs)       | (gallons) |
| phenol          | 0.0001 - 0.0999 | Yes. | 500 / 10000  | -         | 1000        | -         |
| α-chlorotoluene | 0.0001 - 0.0999 | Yes. | 500          | 54.4      | 100         | 10.9      |

**SARA 304 RQ** : 100100.1 lbs / 45445.4 kg

### SARA 311/312

## Section 15. Regulatory information

**Classification** : Fire hazard  
 Immediate (acute) health hazard  
 Delayed (chronic) health hazard

### Composition/information on ingredients

| Name            | %               | Fire hazard | Sudden release of pressure | Reactive | Immediate (acute) health hazard | Delayed (chronic) health hazard |
|-----------------|-----------------|-------------|----------------------------|----------|---------------------------------|---------------------------------|
| n-hexane        | 79 - 85         | Yes.        | No.                        | No.      | Yes.                            | Yes.                            |
| cyclohexane     | 15 - 20         | Yes.        | No.                        | No.      | Yes.                            | No.                             |
| α-chlorotoluene | 0.0001 - 0.0999 | Yes.        | No.                        | No.      | Yes.                            | Yes.                            |
| ethylbenzene    | 0.0001 - 0.0999 | Yes.        | No.                        | No.      | Yes.                            | Yes.                            |
| phenylacetylene | 0.0001 - 0.0999 | No.         | Yes.                       | No.      | No.                             | No.                             |
| phenol          | 0.0001 - 0.0999 | No.         | No.                        | No.      | Yes.                            | Yes.                            |

### SARA 313

|                                        | Product name | CAS number | %       |
|----------------------------------------|--------------|------------|---------|
| <b>Form R - Reporting requirements</b> | n-hexane     | 110-54-3   | 79 - 85 |
|                                        | cyclohexane  | 110-82-7   | 15 - 20 |
| <b>Supplier notification</b>           | n-hexane     | 110-54-3   | 79 - 85 |
|                                        | cyclohexane  | 110-82-7   | 15 - 20 |

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

### State regulations

**Massachusetts** : The following components are listed: HEXANE; N-HEXANE; CYCLOHEXANE; HEXAHYDROBENZENE

**New York** : The following components are listed: Hexane; Cyclohexane; Benzene, hexahydro-

**New Jersey** : The following components are listed: n-HEXANE; HEXANE; CYCLOHEXANE

**Pennsylvania** : The following components are listed: HEXANE; CYCLOHEXANE

### California Prop. 65

**WARNING:** This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

| Ingredient name | Cancer | Reproductive | No significant risk level                       | Maximum acceptable dosage level |
|-----------------|--------|--------------|-------------------------------------------------|---------------------------------|
| ethylbenzene    | Yes.   | No.          | 41 µg/day (ingestion)<br>54 µg/day (inhalation) | No.                             |
| α-chlorotoluene | Yes.   | No.          | Yes.                                            | No.                             |

### International regulations

#### International lists

#### National inventory

**Australia** : All components are listed or exempted.

**Canada** : At least one component is not listed in DSL but all such components are listed in NDSL.

**China** : All components are listed or exempted.

**Europe** : All components are listed or exempted.

**Japan** : All components are listed or exempted.

**Malaysia** : Not determined.

**New Zealand** : All components are listed or exempted.

**Philippines** : All components are listed or exempted.

**Republic of Korea** : Not determined.

**Taiwan** : All components are listed or exempted.

### Canada

## Section 15. Regulatory information

### WHMIS (Canada)

: Class B-2: Flammable liquid  
 Class D-2A: Material causing other toxic effects (Very toxic).  
 Class D-2B: Material causing other toxic effects (Toxic).  
**CEPA Toxic substances:** None of the components are listed.  
**Canadian ARET:** None of the components are listed.  
**Canadian NPRI:** The following components are listed: n-Hexane; Cyclohexane  
**Alberta Designated Substances:** None of the components are listed.  
**Ontario Designated Substances:** None of the components are listed.  
**Quebec Designated Substances:** None of the components are listed.

## Section 16. Other information

**Canada Label requirements** : Class B-2: Flammable liquid  
 Class D-2A: Material causing other toxic effects (Very toxic).  
 Class D-2B: Material causing other toxic effects (Toxic).

### Hazardous Material Information System (U.S.A.)

|                  |   |
|------------------|---|
| Health           | 1 |
| Flammability     | 4 |
| Physical hazards | 3 |
|                  |   |

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

### National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### Procedure used to derive the classification

| Classification                                                                                                                                                                                   | Justification                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flam. Liq. 1, H224<br>Skin Irrit. 2, H315<br>Repr. 2, H361 (Fertility)<br>Repr. 2, H361 (Unborn child)<br>STOT SE 3, H336<br>STOT RE 2, H373<br>Aquatic Acute 2, H401<br>Aquatic Chronic 2, H411 | Expert judgment<br>Calculation method<br>Calculation method<br>Calculation method<br>Calculation method<br>Calculation method<br>Expert judgment<br>Expert judgment |

### History

**Date of printing** : 1/3/2017  
**Date of issue/Date of revision** : 1/3/2017

## Section 16. Other information

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Date of previous issue</b> | : No previous validation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Version</b>                | : 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Key to abbreviations</b>   | : ATE = Acute Toxicity Estimate<br>BCF = Bioconcentration Factor<br>GHS = Globally Harmonized System of Classification and Labelling of Chemicals<br>IATA = International Air Transport Association<br>IBC = Intermediate Bulk Container<br>IMDG = International Maritime Dangerous Goods<br>LogPow = logarithm of the octanol/water partition coefficient<br>MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)<br>UN = United Nations |
| <b>References</b>             | : Not available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.