Section 1. Identification

<table>
<thead>
<tr>
<th>GHS product identifier</th>
<th>: Ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical name</td>
<td>: ethanol</td>
</tr>
<tr>
<td>Other means of</td>
<td>: ethyl alcohol; ALCOHOL; Ethyl alcohol (Ethanol); EtOH; Grain alcohol; Cologne spirit; Denatured Alcohol; METHYLCARBINOL; Ethanol in alcoholic beverages; Methylated Spirits; Ethyl hydroxide</td>
</tr>
<tr>
<td>identification</td>
<td></td>
</tr>
<tr>
<td>Product type</td>
<td>: Liquid.</td>
</tr>
<tr>
<td>Product use</td>
<td>: Synthetic/Analytical chemistry.</td>
</tr>
<tr>
<td>Synonym</td>
<td>: ethyl alcohol; ALCOHOL; Ethyl alcohol (Ethanol); EtOH; Grain alcohol; Cologne spirit; Denatured Alcohol; METHYLCARBINOL; Ethanol in alcoholic beverages; Methylated Spirits; Ethyl hydroxide</td>
</tr>
<tr>
<td>SDS #</td>
<td>: 001114</td>
</tr>
<tr>
<td>Supplier's details</td>
<td>: Airgas USA, LLC and its affiliates</td>
</tr>
<tr>
<td></td>
<td>259 North Radnor-Chester Road</td>
</tr>
<tr>
<td></td>
<td>Suite 100</td>
</tr>
<tr>
<td></td>
<td>Radnor, PA 19087-5283</td>
</tr>
<tr>
<td></td>
<td>1-610-687-5253</td>
</tr>
<tr>
<td>24-hour telephone</td>
<td>: 1-866-734-3438</td>
</tr>
</tbody>
</table>

Section 2. Hazards identification

| OSHA/HCS status        | : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
| Classification of the  | : FLAMMABLE LIQUIDS - Category 2 |
| substance or mixture   | |
| GHS label elements     | |
| Hazard pictograms      | |

| Signal word            | : Danger |
| Hazard statements      | : May form explosive mixtures with air. Highly flammable liquid and vapor. |
| 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             | : Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - 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 and store only outdoors or in a well ventilated place. |
| Response               | : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. |
| Storage                | : Store in a well-ventilated place. Keep cool. |
| Disposal               | : Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| Hazards not otherwise classified | : None known. |
Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>: Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical name</td>
<td>: ethanol</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>: ethyl alcohol; ALCOHOL; Ethyl alcohol (Ethanol); EtOH; Grain alcohol; Cologne spirit; Denatured Alcohol; METHYLCARBINOL; Ethanol in alcoholic beverages; Methylated Spirits; Ethyl hydroxide</td>
</tr>
<tr>
<td>Product code</td>
<td>: 001114</td>
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</table>

**CAS number/other identifiers**

| CAS number | : 64-17-5 |

**Ingredient name**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
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</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>100</td>
<td>64-17-5</td>
</tr>
</tbody>
</table>

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.

**Section 4. First aid measures**

**Description of necessary first aid measures**

**Eye contact**

- 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 if irritation occurs.

**Inhalation**

- Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 adverse health effects persist or are severe. 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.

**Skin contact**

- Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion**

- 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 adverse health effects persist or are severe. Never give anything by mouth to an unconscious 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** : No known significant effects or critical hazards.
- **Skin contact** : No known significant effects or critical hazards.
- **Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- **Ingestion** : No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

- **Eye contact** : No specific data.
- **Inhalation** : No specific data.
- **Skin contact** : No specific data.
Section 4. First aid measures

Ingestion: No specific data.

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. 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, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media: Do not use water jet.

Specific hazards arising from the chemical: Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

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.

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

Environmental precautions

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 specialized 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".

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.

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).
**Section 6. Accidental release measures**

**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 breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Avoid contact with eyes, skin and clothing. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

**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.

**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. 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. See Section 10 for incompatible materials before handling or use.

**Section 8. Exposure controls/personal protection**

**Control parameters**

**Occupational exposure limits**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>ACGIh TLV (United States, 3/2017). STEL: 1000 ppm 15 minutes. OSHA PEL 1989 (United States, 3/1989). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours. NIOSH REL (United States, 10/2016). TWA: 1000 ppm 10 hours. TWA: 1900 mg/m³ 10 hours. OSHA PEL (United States, 6/2016). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

**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.

**Date of issue/Date of revision**

4/8/2019

**Date of previous issue**

No previous validation

**Version**

1
Section 8. Exposure controls/personal protection

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: safety glasses with side-shields.

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.

Respiratory protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state: Liquid. [CLEAR, COLORLESS LIQUID WITH A WEAK, ETHEREAL, VINOUS ODOR]
Color: Colorless. Clear.
Odor: Characteristic.
Odor threshold: Not available.
pH: Not available.
Melting point: -114°C (-173.2°F)
Boiling point: 78.29°C (172.9°F)
Critical temperature: Not available.
Flash point: Closed cup: 9.7°C (49.5°F)
Evaporation rate: 1.7 (butyl acetate = 1)
Flammability (solid, gas): Not available.
Lower and upper explosive (flammable) limits: Lower: 3.3%  Upper: 19%
Vapor pressure: 5.7 kPa (42.95 mm Hg) [room temperature]
Vapor density: 1.6 (Air = 1)
Specific Volume (ft³/lb): 1.2716
Section 9. Physical and chemical properties

- **Gas Density (lb/ft³)**: 0.7864 (25°C / 77 to °F)
- **Relative density**: 0.8
- **Solubility**: Not available.
- **Solubility in water**: 1000 g/l
- **Partition coefficient: n-octanol/water**: -0.35
- **Auto-ignition temperature**: 455°C (851°F)
- **Decomposition temperature**: Not available.
- **Viscosity**
  - Dynamic (room temperature): 0.54 to 0.59 mPa·s (0.54 to 0.59 cP)
- **Flow time (ISO 2431)**: Not available.
- **Molecular weight**: 46.08 g/mole

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. Do not allow vapor to accumulate in low or confined areas.
- **Incompatible materials**: Reactive or incompatible with the following materials: oxidizing materials
- **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

- **Acute toxicity**: Not available.
- **Irritation/Corrosion**
  - **ethanol**
    - Eyes - Mild irritant: Rabbit, Score: - , Exposure: 24 hours 500 milligrams, Observation: -
    - Eyes - Moderate irritant: Rabbit, Score: - , Exposure: 0.066666667 minutes 100 milligrams, Observation: -
    - Eyes - Moderate irritant: Rabbit, Score: - , Exposure: 100 microliters, Observation: -
    - Eyes - Severe irritant: Rabbit, Score: - , Exposure: 500 milligrams, Observation: -
    - Skin - Mild irritant: Rabbit, Score: - , Exposure: 400 milligrams, Observation: -
    - Skin - Moderate irritant: Rabbit, Score: - , Exposure: 24 hours 20 milligrams, Observation: -

Information on toxicological effects

Date of issue/Date of revision: 4/8/2019
Date of previous issue: No previous validation
Version: 1
Section 11. Toxicological information

**Sensitization**
Not available.

**Mutagenicity**
Not available.

**Carcinogenicity**
Not available.

**Classification**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
Not available.

**Teratogenicity**
Not available.

**Specific target organ toxicity (single exposure)**
Not available.

**Specific target organ toxicity (repeated exposure)**
Not available.

**Aspiration hazard**
Not available.

Information on the likely routes of exposure: Not available.

**Potential acute health effects**

- **Eye contact**: No known significant effects or critical hazards.
- **Inhalation**: No known significant effects or critical hazards.
- **Skin contact**: No known significant effects or critical hazards.
- **Ingestion**: No known significant effects or critical hazards.

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

- **Eye contact**: No specific data.
- **Inhalation**: No specific data.
- **Skin contact**: No specific data.
- **Ingestion**: No specific data.

**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.

- **General**: No known significant effects or critical hazards.
Section 11. Toxicological information

- **Carcinogenicity**: No known significant effects or critical hazards.
- **Mutagenicity**: No known significant effects or critical hazards.
- **Teratogenicity**: No known significant effects or critical hazards.
- **Developmental effects**: No known significant effects or critical hazards.
- **Fertility effects**: No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**
Not available.

Section 12. Ecological information

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>Acute EC50 17.921 mg/l Marine water</td>
<td>Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 2000 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 25500 µg/l Marine water</td>
<td>Crustaceans - Artemia franciscana - Larvae</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 42000 µg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 4.995 mg/l Marine water</td>
<td>Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 100 µ/L Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.375 µ/L Fresh water</td>
<td>Fish - Gambusia holbrooki - Larvae</td>
<td>12 weeks</td>
</tr>
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</table>

**Persistence and degradability**
Not available.

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>-0.35</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

**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...
# Section 13. Disposal considerations

with soil, waterways, drains and sewers.

# Section 14. Transport information

<table>
<thead>
<tr>
<th>DOT</th>
<th>TDG</th>
<th>Mexico</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
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<td>UN number</td>
<td>UN1170</td>
<td>UN1170</td>
<td>UN1170</td>
<td>UN1170</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>ETHANOL OR ETHYL ALCOHOL OR ETHANOL SOLUTIONS OR ETHYL ALCOHOL SOLUTIONS</td>
<td>ETHANOL MORE THAN 24 PER CENT ETHANOL, BY VOLUME; ETHANOL SOLUTION MORE THAN 24 PER CENT ETHANOL, BY VOLUME; ETHYL ALCOHOL MORE THAN 24 PER CENT ETHANOL, BY VOLUME; OR ETHYL ALCOHOL SOLUTION MORE THAN 24 PER CENT ETHANOL, BY VOLUME</td>
<td>ETHANOL OR ETHYL ALCOHOL OR ETHANOL SOLUTIONS OR ETHYL ALCOHOL SOLUTIONS</td>
<td>ETHANOL (ETHYL ALCOHOL) OR ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)</td>
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<tr>
<td>Transport hazard class(es)</td>
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<td>3</td>
<td>3</td>
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<tr>
<td>Packing group</td>
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<td>II</td>
<td>II</td>
<td>II</td>
</tr>
</tbody>
</table>

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

**Additional information**

**DOT Classification**

- **Limited quantity** Yes.
- **Quantity limitation** Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
- **Special provisions** 24, IB2, T4, TP1

**TDG Classification**

- **Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).**
- **Explosive Limit and Limited Quantity Index** 5
- **Passenger Carrying Road or Rail Index** 60

**IATA**

- **Quantity limitation** Passenger and Cargo Aircraft: 5 L. Cargo Aircraft Only: 60 L. Limited Quantities - Passenger Aircraft: 1 L.

**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 and the IBC Code**

- Not available.

**Date of issue/Date of revision** 4/8/2019

**Date of previous issue** No previous validation

**Version** 1
Section 15. Regulatory information

**U.S. Federal regulations**

- **Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)**: Not 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: No products were found.
- **SARA 304 RQ**: Not applicable.

**SARA 311/312**

- Classification: Refer to Section 2: Hazards Identification of this SDS for classification of substance.

**State regulations**

- **Massachusetts**: This material is listed.
- **New York**: This material is not listed.
- **New Jersey**: This material is listed.
- **Pennsylvania**: This material is listed.

**International regulations**

- **Chemical Weapon Convention List Schedules I, II & III Chemicals**: Not listed.
- **Stockholm Convention on Persistent Organic Pollutants**: Not listed.
- **UNECE Aarhus Protocol on POPs and Heavy Metals**: Not listed.

**Inventory list**

- **Australia**: This material is listed or exempted.
- **Canada**: This material is listed or exempted.
- **China**: This material is listed or exempted.
- **Europe**: This material is listed or exempted.
- **Japan**: Japan inventory (ENCS): This material is listed or exempted. Japan inventory (ISHL): This material is listed or exempted.
- **Malaysia**: This material is listed or exempted.
- **New Zealand**: This material is listed or exempted.
- **Philippines**: This material is listed or exempted.
- **Republic of Korea**: This material is listed or exempted.

**Date of issue/Date of revision**: 4/8/2019

**Date of previous issue**: No previous validation

**Version**: 1
Section 15. Regulatory information

Taiwan : This material is listed or exempted.
Thailand : Not determined.
Turkey : This material is listed or exempted.
United States : This material is listed or exempted.
Viet Nam : Not determined.

Section 16. Other information

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

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

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 and the associated label are not required on SDSs or products leaving a facility 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 trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

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

Flammability

Health 1 0
Instability/Reactivity 4
Special

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Procedure used to derive the classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAMMABLE LIQUIDS - Category 2</td>
<td>Expert judgment</td>
</tr>
</tbody>
</table>

History

- Date of printing : 4/8/2019
- Date of issue/Date of revision : 4/8/2019
- Date of previous issue : No previous validation
- Version : 1
- Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
Section 16. Other information

UN = United Nations

References : Not available.

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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.