SAFETY DATA SHEET
GC Headspace Evaluation Standard Kit, Part Number 8500-4328

Section 1. Identification

1.1 Product identifier
Product name: GC Headspace Evaluation Standard Kit, Part Number 8500-4328
Part no.: 8500-4328
Validation date: 10/25/2021

1.2 Relevant identified uses of the substance or mixture and uses advised against
Material uses: Reagents and Standards for Analytical Chemistry Laboratory Use (8500-4328-1) GC Headspace Evaluation Standard 3 x 2 ml

1.3 Details of the supplier of the safety data sheet
Supplier/Manufacturer: Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

1.4 Emergency telephone number
In case of emergency: CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture
OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

H227 
FLAMMABLE LIQUIDS - Category 4
H332 
ACUTE TOXICITY (inhalation) - Category 4
H315 
SKIN IRRITATION - Category 2
H319 
EYE IRRITATION - Category 2A
H351 
CARCINOGENICITY - Category 2
H360 
TOXIC TO REPRODUCTION - Category 1B
H335 
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H373 
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
H304 
ASPIRATION HAZARD - Category 1
H411 
AQUATIC HAZARD (LONG-TERM) - Category 2

Ingredients of unknown toxicity: Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: > 60%

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 89.5%

2.2 GHS label elements
Hazard pictograms:

Signal word: Danger

Date of issue: 10/25/2021
Section 2. Hazards identification

Hazard statements:
- H227 - Combustible liquid.
- H304 - May be fatal if swallowed and enters airways.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H332 - Harmful if inhaled.
- H335 - May cause respiratory irritation.
- H351 - Suspected of causing cancer.
- H360 - May damage fertility or the unborn child.
- H373 - May cause damage to organs through prolonged or repeated exposure. (central nervous system (CNS))
- H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements:
Prevention:
- P201 - Obtain special instructions before use.
- P280 - Wear protective gloves, protective clothing and eye or face protection.
- P210 - Keep away from flames and hot surfaces. No smoking.
- P273 - Avoid release to the environment.
- P260 - Do not breathe vapor.
- P264 - Wash thoroughly after handling.

Response:
- P391 - Collect spillage.
- P308 + P313 - IF exposed or concerned: Get medical advice or attention.
- P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
- P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor.
  Do NOT induce vomiting.
- P362 + P364 - Take off contaminated clothing and wash it before reuse.
- P302 + P352 - IF ON SKIN: Wash with plenty of water.
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes.
  Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 - IF eye irritation persists: Get medical advice or attention.

Storage:
- P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 - Keep cool.

Disposal:
- P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 Other hazards
Hazards not otherwise classified:
- None known.

Section 3. Composition/information on ingredients

Substance/mixture:
- Mixture

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>≥75 - ≤90</td>
<td>112-40-3</td>
</tr>
<tr>
<td>nonane</td>
<td>≤10</td>
<td>111-84-2</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>≤0.87</td>
<td>95-50-1</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>&lt;1</td>
<td>98-95-3</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 and hence require reporting in this section.

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

Date of issue: 10/25/2021
Section 4. First aid measures

4.1 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.

Inhalation: 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.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. 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. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. 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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: Causes serious eye irritation.

Inhalation: Harmful if inhaled. May cause respiratory irritation.

Skin contact: Causes skin irritation.

Ingestion: May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

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

Inhalation: Adverse symptoms may include the following:
- respiratory tract irritation
- coughing
- 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:
- nausea or vomiting
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations

Date of issue: 10/25/2021
Section 4. First aid measures

4.3 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media: Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical: Combustible liquid. 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. 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

5.3 Advice for firefighters

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

6.1 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".

Date of issue: 10/25/2021
Section 6. Accidental release measures

6.2 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.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

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.

Section 7. Handling and storage

7.1 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 swallow. 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. 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.

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

7.3 Specific end use(s)

Recommendations

Industrial applications, Professional applications.

Industrial sector specific solutions

Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits
### Section 8. Exposure controls/personal protection

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>None.</td>
</tr>
<tr>
<td>nonane</td>
<td>ACGIH TLV (United States, 1/2021). TWA: 200 ppm 8 hours. TWA: 1050 mg/m³ 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 200 ppm 8 hours. TWA: 1050 mg/m³ 8 hours. NIOSH REL (United States, 10/2020). TWA: 200 ppm 10 hours. TWA: 1050 mg/m³ 10 hours.</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>ACGIH TLV (United States, 1/2021). TWA: 25 ppm 8 hours. TWA: 150 mg/m³ 8 hours. STEL: 50 ppm 15 minutes. STEL: 301 mg/m³ 15 minutes. OSHA PEL 1989 (United States, 3/1989). CEIL: 50 ppm CEIL: 300 mg/m³ NIOSH REL (United States, 10/2020). CEIL: 50 ppm CEIL: 300 mg/m³ OSHA PEL (United States, 5/2018). CEIL: 50 ppm CEIL: 300 mg/m³</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>ACGIH TLV (United States, 1/2021). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 5 mg/m³ 8 hours. OSHA PEL 1989 (United States, 3/1989). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 5 mg/m³ 8 hours. NIOSH REL (United States, 10/2020). Absorbed through skin. TWA: 1 ppm 10 hours. TWA: 5 mg/m³ 10 hours. OSHA PEL (United States, 5/2018). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 5 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

#### 8.2 Exposure controls

**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

**Date of issue**: 10/25/2021
Section 8. Exposure controls/personal protection

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.

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 and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

**Appearance**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Not available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>-10°C (14°F)</td>
</tr>
<tr>
<td>Boiling point, initial boiling point, and boiling range</td>
<td>216°C (420.8°F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Closed cup: 61 to 93.3°C (141.8 to 199.9°F)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower and upper explosion limit/flammability limit</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>0.13 kPa (1 mm Hg)</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>5.96 [Air = 1]</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td>Miscible with water</td>
<td>No.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

Date of issue: 10/25/2021
Section 9. Physical and chemical properties and safety characteristics

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>°C</th>
<th>°F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>200</td>
<td>392</td>
<td></td>
</tr>
<tr>
<td>nonane</td>
<td>205</td>
<td>401</td>
<td></td>
</tr>
</tbody>
</table>

Section 10. Stability and reactivity

10.1 Reactivity
No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability
The product is stable.

10.3 Possibility of hazardous reactions
Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 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.

10.5 Incompatible materials
Reactive or incompatible with the following materials: oxidizing materials

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

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>LD50 Dermal</td>
<td>Rabbit - Male, Female</td>
<td>&gt;5000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rabbit - Male, Female</td>
<td>&gt;5000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>nonane</td>
<td>LC50 Inhalation Vapor</td>
<td>Rat</td>
<td>17000 mg/m³</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Vapor</td>
<td>Rat</td>
<td>3200 ppm</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat - Male, Female</td>
<td>&gt;5000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>LC50 Inhalation Dusts and mists</td>
<td>Rat</td>
<td>8150 mg/m³</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>&gt;10 g/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>500 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Vapor</td>
<td>Rat</td>
<td>556 ppm</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>760 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>2100 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>349 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Irritation/Corrosion

Date of issue: 10/25/2021
### Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>Skin - Moderate irritant</td>
<td>Rat</td>
<td>-</td>
<td>96 hours 300 uL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 0.05 MI</td>
<td></td>
</tr>
<tr>
<td>nonane</td>
<td>Skin - Moderate irritant</td>
<td>Rat</td>
<td>-</td>
<td>96 hours 300 uL</td>
<td></td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>0.5 minutes 100 mg</td>
<td></td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 mg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 mg</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion/Summary**
- **Skin**: Repeated exposure may cause skin dryness or cracking.

**Sensitization**
Not available.

**Mutagenicity**
**Conclusion/Summary**: Not available.

**Carcinogenicity**
**Conclusion/Summary**: Not available.

**Classification**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>-</td>
<td>2B</td>
<td>-</td>
<td>Reasonably anticipated to be a human carcinogen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Narcotic effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
**Conclusion/Summary**: Not available.

**Teratogenicity**
**Conclusion/Summary**: Not available.

**Specific target organ toxicity (single exposure)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodecane</td>
<td>Category 3</td>
<td>-</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>nonane</td>
<td>Category 3</td>
<td>-</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>Category 3</td>
<td>-</td>
<td>Narcotic effects</td>
</tr>
<tr>
<td></td>
<td>Category 3</td>
<td>-</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

**Specific target organ toxicity (repeated exposure)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>nonane</td>
<td>Category 2</td>
<td>-</td>
<td>central nervous system (CNS)</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>Category 1</td>
<td>inhalation</td>
<td>blood system</td>
</tr>
</tbody>
</table>

**Aspiration hazard**

*Date of issue: 10/25/2021*
Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC Headspace Evaluation Standard Kit, Part Number 8500-4328</td>
<td>ASPIRATION HAZARD - Category 1</td>
</tr>
<tr>
<td>dodecane</td>
<td>ASPIRATION HAZARD - Category 1</td>
</tr>
<tr>
<td>nonane</td>
<td>ASPIRATION HAZARD - Category 1</td>
</tr>
</tbody>
</table>

Information on the likely routes of exposure

Potential acute health effects

**Eye contact**
- Causes serious eye irritation.

**Inhalation**
- Harmful if inhaled. May cause respiratory irritation.

**Skin contact**
- Causes skin irritation.

**Ingestion**
- May be fatal if swallowed and enters airways.

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:
  - respiratory tract irritation
  - coughing
  - 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:
  - nausea or vomiting
  - 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**
- **General**: May cause damage to organs through prolonged or repeated exposure.
- **Carcinogenicity**: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
- **Mutagenicity**: No known significant effects or critical hazards.
- **Reproductive toxicity**: May damage fertility or the unborn child.

Date of issue: 10/25/2021
Section 11. Toxicological information

**Numerical measures of toxicity**

**Acute toxicity estimates**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Oral (mg/kg)</th>
<th>Dermal (mg/kg)</th>
<th>Inhalation (gases) (ppm)</th>
<th>Inhalation (vapors) (mg/l)</th>
<th>Inhalation (dusts and mists) (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC Headspace Evaluation Standard Kit, Part Number 8500-4328</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>18.6</td>
<td>N/A</td>
</tr>
<tr>
<td>nonane</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>17</td>
<td>N/A</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>500</td>
<td>N/A</td>
<td>N/A</td>
<td>11</td>
<td>8.15</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>349</td>
<td>760</td>
<td>N/A</td>
<td>2.8</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

**12.1 Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>Acute EC50 12.8 mg/l Fresh water</td>
<td>Algae - Phaeodactylum tricornutum</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 0.74 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 4.52 ppm Marine water</td>
<td>Crustaceans - Americamysis bahia</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1.4 mg/l Fresh water</td>
<td>Fish - Gibelion catla</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 630 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 9.95 ppm Marine water</td>
<td>Algae - Skeletonema costatum</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 9.65 ppm Marine water</td>
<td>Algae - Skeletonema costatum</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 5.86 ppm Marine water</td>
<td>Crustaceans - Americamysis bahia</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 7.2 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 43 mg/l Fresh water</td>
<td>Fish - Lepomis macrochirus - Young of the year</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 9200 µg/l Fresh water</td>
<td>Algae - Chlorella pyrenoidosa</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 2600 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>21 days</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>Acute EC50 9.95 ppm Marine water</td>
<td>Algae - Skeletonema costatum</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 9.65 ppm Marine water</td>
<td>Algae - Skeletonema costatum</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 5.86 ppm Marine water</td>
<td>Crustaceans - Americamysis bahia</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 7.2 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 43 mg/l Fresh water</td>
<td>Fish - Lepomis macrochirus - Young of the year</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 9200 µg/l Fresh water</td>
<td>Algae - Chlorella pyrenoidosa</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 2600 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>21 days</td>
</tr>
</tbody>
</table>

**12.2 Persistence and degradability**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitrobenzene</td>
<td>OECD 301F Ready Biodegradability - Manometric Respirometry Test</td>
<td>50 to 60 % - Readily - 28 days</td>
<td>100 mg/l</td>
<td>-</td>
</tr>
</tbody>
</table>

**12.3 Bioaccumulative potential**

Date of issue: 10/25/2021
Section 12. Ecological information

<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>dodecane</td>
<td>6.98</td>
<td>239.88</td>
<td>low</td>
</tr>
<tr>
<td>nonane</td>
<td>5.65</td>
<td>105</td>
<td>low</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>3.38</td>
<td>150 to 230</td>
<td>low</td>
</tr>
<tr>
<td>nitrobenzene</td>
<td>1.86</td>
<td>3.1 to 4.8</td>
<td>low</td>
</tr>
</tbody>
</table>

12.4 Mobility in soil

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

12.5 Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

13.1 Waste treatment methods

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.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

<table>
<thead>
<tr>
<th>UN number</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>Mexico Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (nonane)</td>
<td>SUBSTANCIA LIQUIDA POTENCIALMENTE PELIGROSA PARA EL MEDIO AMBIENTE, N.E. P. (nonane)</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (nonane)</td>
<td>Environmentally hazardous substance, liquid, n. o.s. (nonane)</td>
<td></td>
</tr>
<tr>
<td>UN3082</td>
<td>Not regulated</td>
<td>UN3082</td>
<td>UN3082</td>
<td>UN3082</td>
<td>UN3082</td>
</tr>
</tbody>
</table>

Date of issue: 10/25/2021
Section 14. Transport information

Transport hazard class(es) | 9 | 9 | 9 | 9
---|---|---|---|---
Packing group | III | III | III | III
Environmental hazards | No. | Yes. | Yes. | Yes. | Yes.

Additional information
Remarks: Excepted Quantity

DOT Classification: Reportable quantity 28653.3 lbs / 13008.6 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

TDG Classification: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

Explosive Limit and Limited Quantity Index: 5
Special provisions: 16, 99

Mexico Classification: The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Special provisions: 274, 331, 335

IMDG: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.
Emergency schedules: F-A, S-F
Special provisions: 274, 335, 969

IATA: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.
Special provisions: A97, A158, A197, A215

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 IMO instruments: Not available.

Section 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Federal regulations: TSCA 4(a) final test rules: nonane
TSCA 8(a) PAIR: nonane; 1,2-Dichlorobenzene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 12(b) one-time export: nonane
Clean Water Act (CWA) 307: 1,2-Dichlorobenzene; nitrobenzene
Clean Water Act (CWA) 311: 1,2-Dichlorobenzene; nitrobenzene

Date of issue: 10/25/2021
Section 15. Regulatory information

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

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>EHS</th>
<th>SARA 302 TPQ (lbs)</th>
<th>SARA 304 RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitrobenzene</td>
<td>&lt;1</td>
<td>Yes.</td>
<td>10000</td>
<td>1000</td>
</tr>
</tbody>
</table>

SARA 304 RQ: 310559 lbs / 140993.8 kg

SARA 311/312

Classification:
- FLAMMABLE LIQUIDS - Category 4
- ACUTE TOXICITY (inhalation) - Category 4
- SKIN IRRITATION - Category 2
- EYE IRRITATION - Category 2A
- CARCINOGENICITY - Category 2
- TOXIC TO REPRODUCTION - Category 1B
- SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 3
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
- ASPIRATION HAZARD - Category 1

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Classification</th>
</tr>
</thead>
</table>
| dodecane | ≥75 - ≤90 | FLAMMABLE LIQUIDS - Category 4  
SKIN IRRITATION - Category 2  
EYE IRRITATION - Category 2A  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3  
ASPIRATION HAZARD - Category 1  
HNOC - Static-accumulating flammable liquid  
HNOC - Defatting irritant  

| nonane   | ≤10 | FLAMMABLE LIQUIDS - Category 3  
ACUTE TOXICITY (inhalation) - Category 4  
SKIN IRRITATION - Category 2  
EYE IRRITATION - Category 2A  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3  
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2  
ASPIRATION HAZARD - Category 1  
HNOC - Static-accumulating flammable liquid  

| nitrobenzene | <1  | FLAMMABLE LIQUIDS - Category 4  
ACUTE TOXICITY (oral) - Category 4  
ACUTE TOXICITY (dermal) - Category 3  
ACUTE TOXICITY (inhalation) - Category 3  
EYE IRRITATION - Category 2B  
CARCINOGENICITY - Category 2  
TOXIC TO REPRODUCTION - Category 1B  
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1  

Date of issue: 10/25/2021
Section 15. Regulatory information

**SARA 313**

<table>
<thead>
<tr>
<th>Form R - Reporting requirements</th>
<th>Product name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitrobenzene</td>
<td>98-95-3</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>Supplier notification</td>
<td>nitrobenzene</td>
<td>98-95-3</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

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: NONANE
- **New York**: None of the components are listed.
- **New Jersey**: The following components are listed: NONANE; NITROBENZENE; OIL of MIRBANE; NITROBENZOL; BENZENE, NITRO-
- **Pennsylvania**: The following components are listed: NONANE
- **California Prop. 65**: WARNING: This product can expose you to Nitrobenzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

**Ingredient name**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrobenzene</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**International regulations**

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

**Inventory list**

- **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**: Not determined.
- **Europe**: All components are listed or exempted.
- **Japan**
  - **Japan inventory (CSCL)**: All components are listed or exempted.
  - **Japan inventory (ISHL)**: All components are listed or exempted.
- **New Zealand**: All components are listed or exempted.
- **Philippines**: All components are listed or exempted.
- **Republic of Korea**: All components are listed or exempted.
- **Taiwan**: All components are listed or exempted.
- **Thailand**: Not determined.
- **Turkey**: Not determined.

**Date of issue**: 10/25/2021
Section 15. Regulatory information

United States: All components are active or exempted.
Viet Nam: All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAMMABLE LIQUIDS - Category 4</td>
<td>On basis of test data</td>
</tr>
<tr>
<td>ACUTE TOXICITY (inhalation) - Category 4</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SKIN IRRITATION - Category 2</td>
<td>Calculation method</td>
</tr>
<tr>
<td>EYE IRRITATION - Category 2A</td>
<td>Calculation method</td>
</tr>
<tr>
<td>CARCINOGENICITY - Category 2</td>
<td>Calculation method</td>
</tr>
<tr>
<td>TOXIC TO REPRODUCTION - Category 1B</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2</td>
<td>Calculation method</td>
</tr>
<tr>
<td>ASPIRATION HAZARD - Category 1</td>
<td>Expert judgment</td>
</tr>
<tr>
<td>AQUATIC HAZARD (LONG-TERM) - Category 2</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

History

Date of issue: 10/25/2021
Date of previous issue: 02/23/2021
Version: 6.1

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
- N/A = Not available
- UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

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