Section 1. Identification

This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article.

1.1 Product identifier

Product name: Preconditioner Unit_temperature -40C

Validation date: 3/14/2018

1.2 Relevant identified uses of the substance or mixture and uses advised against

Material uses: Reagents and Standards for Analytical Chemistry Laboratory Use
1.27 oz of R507 (Genetron AZ50) in hermetically sealed refrigeration system

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

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product’s directions for use it may present potential health and safety hazards.

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

H280 GASES UNDER PRESSURE - Liquefied gas
Simple Asphyx. SIMPLE ASPHYXIANTS

2.2 GHS label elements

Hazard pictograms:

Signal word: Warning
Hazard statements: H280 - Contains gas under pressure; may explode if heated.
No Code(s) - May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention: Not applicable.

Date of issue: 03/14/2018
Section 2. Hazards identification

Response : Not applicable.
Storage : P410 - Protect from sunlight. 
P403 - Store in a well-ventilated place.
Disposal : Not applicable.
Supplemental label elements : Keep container tightly closed. Use only with adequate ventilation. Do not enter storage areas and confined spaces unless adequately ventilated.

2.3 Other hazards
Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product’s directions for use it may present potential health and safety hazards.

Substance/mixture : Mixture (encapsulated in article)

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

There are no 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

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 if irritation occurs.

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 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. 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. As this product rapidly becomes a gas when released, refer to the inhalation section.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.
Section 4. First aid measures

Inhalation: At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

Skin contact: Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion: Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms:

Eye contact: Adverse symptoms may include the following:
- frostbite

Inhalation: No specific data.

Skin contact: Adverse symptoms may include the following:
- frostbite

Ingestion: Adverse symptoms may include the following:
- frostbite

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

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

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

5.1 Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical: Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products: Decomposition products may include the following materials:
- carbon dioxide
- carbon monoxide
- halogenated compounds
- carbonyl halides

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. Contact supplier immediately for specialist advice. 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. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Date of issue: 03/14/2018
Section 5. Fire-fighting measures

Remark : Non-flammable. (ASTM E-681)

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. Avoid breathing gas. 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".

6.2 Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. 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).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate 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 away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. 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 applicable.

Section 8. Exposure controls/personal protection

Since the hazardous ingredient in this article is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

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>None.</td>
<td></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.

**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. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. 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**

The gas can cause asphyxiation without warning by replacing the oxygen in the air. Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. If operating conditions cause high gas concentrations to be produced or any recommended or statutory exposure limit is exceeded, use an air-fed respirator or self-contained breathing apparatus. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

**Appearance**
- **Physical state**: Gas. [Liquefied gas.]
- **Color**: Clear. / Colorless.
- **Odor**: Ethereal. [Slight]
- **Odor threshold**: Not available.
- **pH**: Not available.
- **Melting point**: Not available.
- **Boiling point**: -46.7°C (-52.1°F)
- **Flash point**: Not applicable.
- **Evaporation rate**: >1 (CCl₄ = 1)
- **Flammability (solid, gas)**: Non-flammable. (ASTM E-681)
- **Lower and upper explosive (flammable) limits**: Not available.
- **Vapor pressure**: 1061.1 kPa (7959 mm Hg) [room temperature]
  2529 kPa (18969 mm Hg) [54.44 °C]
- **Vapor density**: 3.43 [Air = 1]
- **Relative density**: 1.07 [Water = 1]
- **Density**: 1.07 g/cm³ [21.1°C (70°F)]
- **Solubility**: Partially soluble in the following materials: cold water and hot water.
- **Solubility in water**: 1.5 g/l
- **Partition coefficient: n-octanol/water**: 1.48

**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
- Do not allow gas to accumulate in low or confined areas.

10.5 Incompatible materials
- May react or be incompatible with oxidizing materials.
  Reactive or incompatible with the following materials: alkalis.
  Incompatible with finely-powdered metals.

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
Not available.

Irritation/Corrosion
Not available.

Sensitization
Not available.

Mutagenicity
Conclusion/Summary : Not available.

Carcinogenicity
Conclusion/Summary : Not available.

Reproductive toxicity
Conclusion/Summary : Not available.

Teratogenicity
Conclusion/Summary : 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
Routes of entry anticipated: Inhalation.

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.
Inhalation : At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.
Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following: frostbite
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following: frostbite
Ingestion : Adverse symptoms may include the following: frostbite

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

Short term exposure
Potential immediate effects : Not available.

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Section 11. Toxicological information

Potential delayed effects : Not available.
Long term exposure
Potential immediate effects
Potential delayed effects : Not available.
Potential chronic health effects
General : No known significant effects or critical hazards.
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.

Other information : Adverse symptoms may include the following: heartbeat irregularity (arrhythmia)

Section 12. Ecological information

12.1 Toxicity
Not available.

12.2 Persistence and degradability
Not available.

12.3 Bioaccumulative potential

<table>
<thead>
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<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
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<tbody>
<tr>
<td>Preconditioner Unit_temperature -40C</td>
<td>1.48</td>
<td>-</td>
<td>low</td>
</tr>
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</table>

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

12.5 Other adverse effects : This product has the potential to cause adverse global warming effects.

Section 13. Disposal considerations

13.1 Waste treatment methods

Date of issue : 03/14/2018
### 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. Empty pressure vessels should be returned to the supplier. 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. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

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

This Safety Data Sheet is written based on the encapsulated substance or mixture in this article. Since the hazardous ingredient is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>Mexico Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
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<tbody>
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<td>UN number</td>
<td>UN3363</td>
<td>UN3363</td>
<td>UN3363</td>
<td>UN3363</td>
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<td>UN proper shipping name</td>
<td>Dangerous Goods in Apparatus</td>
<td>DANGEROUS GOODS IN APPARATUS</td>
<td>MERCANCIAS PELIGROSAS EN APARATOS</td>
<td>DANGEROUS GOODS IN APPARATUS</td>
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<tr>
<td>Transport hazard class(es)</td>
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<td>9</td>
<td>9</td>
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<tr>
<td>Packing group</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Additional information**

**DOT Classification**: Limited quantity No.  
**Packaging instruction**: Exceptions: None. Non-bulk: 222. Bulk: None.  
**Special provisions**: 136, A105

**TDG Classification**: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9).

**Mexico Classification**: Special provisions 301

**IMDG**: Emergency schedules F-A, _S-P_  
**Special provisions**: 301

**Date of issue**: 03/14/2018
Section 14. Transport information


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.

Section 15. Regulatory information

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

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined

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 : **GASES UNDER PRESSURE** - Liquefied gas

**SIMPLE ASPHYXIANTS**

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td><strong>pentafluoroethane</strong></td>
<td>≥50 - ≤75</td>
<td><strong>GASES UNDER PRESSURE</strong> - Compressed gas</td>
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<tr>
<td><strong>1,1,1-trifluoroethane</strong></td>
<td>≥50 - ≤75</td>
<td><strong>SIMPLE ASPHYXIANTS</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>FLAMMABLE GASES</strong> - Category 1</td>
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<tr>
<td></td>
<td></td>
<td><strong>GASES UNDER PRESSURE</strong> - Compressed gas</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>SIMPLE ASPHYXIANTS</strong></td>
</tr>
</tbody>
</table>

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : The following components are listed: FLUORIDES; FLUORIDES

Pennsylvania : None of the components are listed.

International regulations

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Section 15. Regulatory information

**Chemical Weapon Convention List Schedules I, II & III Chemicals**
Not listed.

**Montreal Protocol (Annexes A, B, C, E)**
Not listed.

**Stockholm Convention on Persistent Organic Pollutants**
Not listed.

**Rotterdam Convention on Prior Informed Consent (PIC)**
Not listed.

**UNECE Aarhus Protocol on POPs and Heavy Metals**
Not listed.

**Inventory list**
- **Australia**
  - All components are listed or exempted.
- **Canada**
  - All components are listed or exempted.
- **China**
  - All components are listed or exempted.
- **Europe**
  - All components are listed or exempted.
- **Japan**
  - **Japan inventory (ENCS)**: All components are listed or exempted.
  - **Japan inventory (ISHL)**: 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**
  - All components are listed or exempted.
- **Taiwan**
  - All components are listed or exempted.
- **Thailand**
  - Not determined.
- **Turkey**
  - All components are listed or exempted.
- **United States**
  - All components are listed or exempted.
- **Viet Nam**
  - Not determined.

Section 16. Other information

**History**
- **Date of issue**: 03/14/2018
- **Date of previous issue**: 04/28/2016
- **Version**: 3

**Procedure used to derive the classification**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>GASES UNDER PRESSURE - Liquefied gas</td>
<td>On basis of test data</td>
</tr>
<tr>
<td>SIMPLE ASPHYXIANTS</td>
<td>Expert judgment</td>
</tr>
</tbody>
</table>

*Indicates information that has changed from previously issued version.*

**Notice to reader**

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