Section 1: IDENTIFICATION

PRODUCT IDENTIFIER
Polar Guard® Advance
Type IV Aircraft Deicing / Anti-icing Fluid
Complies with Specification AMS 1428/1

RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE
Deicing / Anti-icing aircraft

DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET
Name/Address
Cryotech Deicing Technology
6103 Orthoway
Fort Madison, IA 52627
United States

Contact Information
Telephone: +1 (800) 346-7237
Fax: +1 (319) 372-2662
Email: deicers@cryotech.com
Website: www.cryotech.com

EMERGENCY TELEPHONE NUMBER
CHEMTREC (800) 424-9300
Outside USA and Canada (703) 741-5970

Section 2: HAZARD(S) IDENTIFICATION

CLASSIFICATION ACCORDING TO OSHA HAZCOM 2012
Hazard Class
Not classified as hazardous

LABEL ELEMENTS ACCORDING TO OSHA HAZCOM 2012
There are no OSHA required label elements for this product.

CLASSIFICATION ACCORDING TO WHMIS (Canada)
Hazard Class
Not Classified
WHMIS Hazard Symbols
Not Applicable
WHMIS Signal Word
Not Applicable

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

MIXTURES

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol</td>
<td>57-55-6</td>
<td>50</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>49</td>
</tr>
<tr>
<td>Proprietary Ingredients</td>
<td></td>
<td>&lt;1</td>
</tr>
</tbody>
</table>
Section 4: FIRST- AID MEASURES

DESCRIPTION OF FIRST-AID MEASURE

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids open. If easy to do, remove contact lenses, if worn. No additional first aid should be necessary, however, if irritation persists, get medical attention.

Skin As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Inhalation Not expected to be an inhalation hazard. If inhaled, remove to fresh air. Get medical advice / attention if feeling unwell.

Ingestion If swallowed, give milk or water to drink. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

MOST IMPORTANT SYMPTOMS / EFFECTS

Eye May be slightly irritating to the eyes. Symptoms may include discomfort or pain, excess blinking, and tear production, with possible redness and swelling.

Skin May be slightly irritating to the skin. Symptoms may include redness, drying, and cracking of the skin.

Inhalation Not expected to be an inhalation hazard under normal conditions of use.

Ingestion Not expected to be an ingestion hazard under normal conditions of use. High doses may cause central nervous system depression.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT

Note to Physicians Treat symptomatically.

Specific Treatments In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY

Flammability Non-flammable by OSHA/WHMIS criteria

EXTINGUISHING MEDIA

Suitable Extinguishing Media Water spray, alcohol-resistant foam, carbon dioxide, dry chemical.

Unsuitable Extinguishing Media Do not use solid water stream.

SPECIAL HAZARDS

Products of Combustion May include and are not limited to: oxides of carbon.

Explosion Data Data not available. Not considered to be an explosion hazard.

Unusual Fire Hazards Heat from fire can generate flammable vapor.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Keep upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA)
Section 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES
Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANUP

Methods for Containment
Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Use appropriate Personal Protective Equipment (PPE).

Methods for cleanup
Scoop up material and place in a disposal container.

Section 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

Handling
Avoid contact with skin and eyes. Avoid breathing mists and vapors when spraying.

General Hygiene Advice
Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

PRECAUTIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Storage
Store in tightly sealed original UV resistant containers, away from direct heat and strong oxidizing agents. Product should not be stored in clear or semi-transparent containers.

Temperature Storage Limits
Minimum -30°C (-20°F)
Maximum 50°C (122°F)

Section 8: EXPOSURE CONTROLS/PERSOAL PROTECTION

EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>OSHA PEL</th>
<th>ACGIH-TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>None Listed</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

EXPOSURE CONTROLS

Engineering Controls
No special ventilation is necessary.

INDIVIDUAL PROTECTIVE MEASURES/PERSOAL PROTECTIVE EQUIPMENT

Personal Protective Equipment

Eye/Face Protection
Safety glasses or goggles are recommended if splashing / spraying is possible.

Skin Protection/Hand Protection
No special skin protection is usually necessary. Chemical resistant gloves should be worn if prolonged exposure is possible to prevent drying of skin.

Respiratory Protection
No special respiratory protection is usually necessary. Breathing of mist/aerosol should be avoided. If operating conditions create high airborne concentrations of this material, the use of an approved respirator is recommended.

by Cryotech Deicing Technology, 6103 Orthoway, Fort Madison, IA 52627
Form #MKT1602 Rev. August 01, 2020
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General Health and Safety Measures
Do not eat, smoke or drink where material is handled, processed, or stored. Wash hands carefully before eating or smoking. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Semi-transparent, green, liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Green</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>pH (20°C)</td>
<td>6.4 – 7.4</td>
</tr>
<tr>
<td>Melting Point / Freezing Point</td>
<td>-37°C (-34°F)</td>
</tr>
<tr>
<td>Initial Boiling Point and Boiling Range</td>
<td>~105°C (220°F)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;100°C (212°F)</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Flammability / Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Flammability / Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure (20°C)</td>
<td>~15mm Hg</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Relative Density/Specific Gravity (20°C)</td>
<td>1.038</td>
</tr>
<tr>
<td>Solubility</td>
<td>Miscible in water</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>&gt;400°C (750°F)</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity (20°C)(Brookfield, Spindle LV-1,0.3rpm)</td>
<td>4,050 – 16,200 cP</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not available</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Section 10: STABILITY AND REACTIVITY

REACTIVITY
No dangerous reactions known under conditions of normal use.

CHEMICAL STABILITY
Stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS
No dangerous reaction known under conditions of normal use.

CONDITIONS TO AVOID
High temperatures, contact with incompatible materials.
INCOMPATIBLE MATERIALS
Strong Oxidizers. Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS
May include, and are not limited to: oxides of carbon.

Section 11: TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Likely Routes of Exposure
Skin contact, eye contact, inhalation, and ingestion.

Symptoms related to physical/chemical/toxicological characteristics

Eye
May cause eye irritation. Symptoms may include discomfort or pain, excess blinking, and tear production, with possible redness and swelling.

Skin
May cause skin irritation. Symptoms of prolonged contact may include redness, drying and cracking of the skin.

Ingestion
Not expected to be an ingestion hazard. Ingestion of large doses may cause central nervous system depression.

Inhalation
Not expected to be an inhalation hazard under normal conditions of use.

Acute Toxicity
LD50 rat-oral: >22 g/kg

DELAYED, IMMEDIATE EFFECTS AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE

Skin Corrosion / Irritation
Based on available data, the classification criteria are not met.

Serious Eye Damage/Irritation
Based on available data, the classification criteria are not met.

Respiratory Sensitization
Based on available data, the classification criteria are not met.

Skin Sensitization
Based on available data, the classification criteria are not met.

STOT-Single Exposure
Based on available data, the classification criteria are not met.

STOT-Repeated Exposure
Based on available data, the classification criteria are not met.

Germ Cell Mutagenicity
Based on available data, the classification criteria are not met.

Carcinogenicity
This product does not contain any ingredients that are considered to be carcinogens by IARC, NTP or OSHA.

Reproductive Toxicity
Based on available data, the classification criteria are not met.

STOT-Single Exposure
Based on available data, the classification criteria are not met.

STOT-Repeated Exposure
Based on available data, the classification criteria are not met.

Aspiration Hazard
Based on available data, the classification criteria are not met.

Section 12: ECOLOGICAL INFORMATION

ECOTOXICITY (AQUATIC AND TERRESTRIAL)

Acute/Chronic Toxicity
Not expected to cause long-term adverse effects in the aquatic environment.

LC50
Pimephales promelas  707 mg/L
Daphnia magna  >1,000 mg/L

PERSISTENCE AND DEGRADABILITY
Readily biodegradable.

COD  0.82 g O₂/g deicer
BOD₅ (20°C)  0.4 g O₂/g deicer
5 day BOD/COD:  0.49
**Section 13: DISPOSAL CONSIDERATIONS**

**WASTE TREATMENT AND METHODS OF DISPOSAL**
Based on available information this product is neither listed as a hazardous waste nor does it exhibit any characteristics that would cause it to be classified as a RCRA hazardous waste. If product should spill or be otherwise unsuitable for normal deicing applications, it may be absorbed onto suitable materials and disposed of in a sanitary landfill unless local, state or provincial regulations prohibit such disposal.

**Section 14: TRANSPORT INFORMATION**

**TRANSPORT INFORMATION**
Not regulated as dangerous goods per US DOT or IATA.

**Section 15: REGULATORY INFORMATION**

**INVENTORY LISTS**
All of the components in this product are on the following inventory lists: USA (TSCA), Canada (DSL/NDSL), Europe (EINECS).

**TSCA SECTION 12(b)**
None of the chemicals in this product are listed under TSCA Section 12 (b).

**CERCLA HAZARDOUS SUBSTANCES**
There is no CERCLA Reportable Quantity for this material.
SARA 311/312 CATEGORIES

<table>
<thead>
<tr>
<th>Physical hazards</th>
<th>Health hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive</td>
<td>Acute toxicity (any route of exposure) No</td>
</tr>
<tr>
<td>Flammable (gases, aerosols, liquids or solids) No</td>
<td>Skin corrosion or irritation No</td>
</tr>
<tr>
<td>Oxidizer (liquid, solid or gas)</td>
<td>Serious eye damage or eye irritation No</td>
</tr>
<tr>
<td>Self-reactive</td>
<td>Respiratory or skin sensitization No</td>
</tr>
<tr>
<td>Pyrophoric (liquid or solid)</td>
<td>Germ cell mutagenicity No</td>
</tr>
<tr>
<td>Pyrophoric Gas</td>
<td>Carcinogenicity No</td>
</tr>
<tr>
<td>Self-heating</td>
<td>Reproductive toxicity No</td>
</tr>
<tr>
<td>Corrosive to metal</td>
<td>Specific target organ toxicity (single or repeated exposure) No</td>
</tr>
<tr>
<td>Gas under pressure (compressed gas)</td>
<td>Aspiration hazard No</td>
</tr>
<tr>
<td>In contact with water emits flammable gas</td>
<td>Simple Asphyxiant No</td>
</tr>
<tr>
<td>Combustible Dust</td>
<td>Hazard Not Otherwise Classified (HNOC) No</td>
</tr>
<tr>
<td>Hazard Not Otherwise Classified (HNOC)</td>
<td>No</td>
</tr>
</tbody>
</table>

SARA 313

None of the components in this product are subject to reporting under SARA Section 313.

CLEAN WATER ACT

None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

STATE RIGHT-TO-KNOW

This product does not contain components at levels which are required to be reported under the statutes of the following states: MA

This product contains the following chemicals regulated by New Jersey’s Worker and Community Right to Know Act:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol</td>
<td>57-55-6</td>
<td>50%</td>
</tr>
</tbody>
</table>

This product contains the following chemicals regulated by Pennsylvania Right to Know Act:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol</td>
<td>57-55-6</td>
<td>50%</td>
</tr>
</tbody>
</table>
This product may contain the following materials known to the State of California (Proposition 65) to cause cancer, birth defects, or other reproductive harm:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Oxide</td>
<td>75-21-8</td>
<td>&lt; 0.003 ppm</td>
</tr>
</tbody>
</table>

**NFPA - National Fire Protection Association**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>Amount</th>
</tr>
</thead>
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<tr>
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</table>

**Health:**

<table>
<thead>
<tr>
<th>Health Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

**Fire:**

<table>
<thead>
<tr>
<th>Fire Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slight</td>
</tr>
</tbody>
</table>

**Reactivity:**

<table>
<thead>
<tr>
<th>Reactivity Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

**Hazard Rating:**

<table>
<thead>
<tr>
<th>Health Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
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</tr>
</tbody>
</table>

**Hazard Rating:**

<table>
<thead>
<tr>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</tbody>
</table>

<table>
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<tr>
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<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Reactivity Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

(* = chronic hazard)

**Section 16: OTHER INFORMATION**

**SDS REVISION DATE**

August 01, 2020

**EXPIRATION DATE**

August 01, 2023

Latest version of this SDS can be obtained from Cryotech.

**NOTICE TO EMPLOYER**

This Safety Data Sheet contains environmental, health, and toxicology information for your employees. Please ensure this information is provided to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this SDS must be given to the buyer or the information incorporated in your SDS. Discard any previous edition of this SDS.

**DISCLAIMER**

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use or misuse are beyond our control, GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology makes no warranty, either express or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology assumes no responsibility for any injury or loss resulting from the use of the product described herein. User should satisfy himself that he has all current data relevant to his particular use.

End of Safety Data Sheet