

Product name: *BoilerGlycol™* DF1 Inhibited Propylene Glycol (Dowfrost™)

Date Issued: November 2017

SECTION 1. IDENTIFICATION

- **Product Name:** *BoilerGlycol™* DF1 Inhibited Propylene Glycol (Dowfrost™)
- **Intended Use:**
 - This product is intended to be used by a licensed trained professional with proper equipment while taking adequate safety measures.
- **Company Identification:**
 - Glycol Incorporated:
 - Corporate: 8951 Synergy Drive, Suite 224, McKinney, TX 75070
 - Fulfillment: 526 Charlotte Avenue, Burkburnett, TX 76354
- **Emergency Phone Numbers:**
 - United States Emergency Phone Number: 1-800-633-8253

SECTION 2. HAZARDS IDENTIFICATION

- **Hazard Classification:**
 - Material is not hazardous under the United States Federal OSHA Hazard Communication Standard 29 CFR 1910.1200 criteria.
- **Other Hazards:**
 - No information or data available

SECTION 3. COMPOSITION AND INFORMATION ABOUT INGREDIENTS

- **Propylene Glycol:** 95% or Greater
 - Chemical Abstracts Service (CAS) Number: 57-55-6
 - Chemical Formula: Formula: CH₃CH(OH)CH₂OH
- **Proprietary Corrosion Inhibition Package:** 6% or Less
 - Dipotassium Hydrogen Phosphate
 - Chemical Abstracts Service (CAS) Number: 7758-11-4
 - Chemical Formula: K₂HPO₄
 - Water
 - Chemical Abstracts Service (CAS) Number: 7732-18-5
 - Chemical Formula: H₂O

SECTION 4. FIRST AID INSTRUCTIONS

- **Measures of First Aid Description:**
 - **General Advice/Information:**
 - If potential for exposure exists, refer to Section 8 of this document for recommended protective equipment.
 - **Ingestion:**
 - No emergency medical treatment required.
 - **Inhalation:**
 - Move individual to fresh air. If effects occur, consult a physician.

- Eye:
 - If eye contact occurs, flush eyes for two minutes. After two minutes, remove any contact lenses, and return to flushing for 3-5 more minutes. If affects occur, consult a physician.
- Skin contact:
 - Use an abundance of water to clean off.
- Most critical symptoms and/or effects (acute and delayed):
 - Aside from the information found under *Measures of First Aid Description* (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.
- Indication of immediate medical attention and special treatment needed:
 - No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5. FIREFIGHTING MEASURES

- **Suitable extinguishing media:**
 - Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
- **Unsuitable extinguishing media:**
 - Do not use direct water stream. May spread fire.
- **Special hazards arising from the substance or mixture:**
 - Hazardous combustion products:
 - During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.
 - Unusual Fire and Explosion Hazards:
 - Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids
- **Advice for firefighters:**
 - Fire Fighting Procedures:
 - Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.
 - Special protective equipment for firefighters:
 - Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- **Personal Precautions, Protective Equipment, and Emergency Procedures:**
 - Keep personnel out of low areas. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
- **Environmental Precautions:**
 - Prevent material from entering soil, ditches, sewers, waterways, and/or groundwater. View section 12, Ecological Information.

- **Methods and Materials for Containment and Clean Up:**
 - Contain spilled material if possible.
 - **Small Spills:**
 - Any absorbent material. Collect in suitable and properly labeled open containers. Wash the spill area with large volumes of water.
 - **Large Spills:**
 - Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

- **Precautions for safe handling:**
 - No special precautions are required. Keep containers closed. View section 8, Exposure Control and Personal Protection.
 - Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.
- **Conditions for Safe Storage:**
 - Do not store in coated steel or galvanized steel containers.
 - Do not store in opened or unlabeled containers.
 - Store in original unopened container.
 - Store away from direct sunlight or ultraviolet light.
 - Keep container tightly closed when not in use.
 - Protect from atmospheric moisture.
 - Store in container comprised of the following material(s)/conditions:
 - 316 stainless steel
 - Aluminum
 - High Density Polyethylene (HDPE)
 - Container lined with phenolic or epoxy-phenolic FDA food contact approved coating.
 - View section 10 for more details. Additional storage and handling details may be obtained by contacting your customer service representative.

SECTION 8. EXPOSURE CONTROL AND PERSONAL PROTECTION

- **Control Parameters**
 - **Component:**
 - Propylene Glycol Regulation: US WEEL Listing Type: TWA Value: 10 mg/m³
 - **Legend:**
 - TWA 8-hr TWA US WEEL USA. Workplace Environmental Exposure Levels (WEEL)
- **Exposure Controls:**
 - **Engineering controls:**
 - Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.
- **Individual Protection Measures:**
 - **Eye/face protection:**
 - Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.
 - **Hand protection:**
 - Chemical protective gloves should not be needed when infrequently handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

- For frequent or prolonged handling of this material, use gloves chemically resistant to this material. Examples of preferred glove barrier materials include:
 - Butyl rubber
 - Natural rubber ("latex")
 - Neoprene
 - Nitrile/butadiene rubber ("nitrile" or "NBR")
 - Polyethylene
 - Ethyl vinyl alcohol laminate ("EVAL")
 - Polyvinyl alcohol ("PVA")
 - Polyvinyl chloride ("PVC" or "vinyl")
 - NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
 - Respiratory Protection:
 - Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator.
 - The Following Should Be Effective Types of Air-Purifying Respirators:
 - Organic vapor cartridge with a particulate pre-filter
 - Other Protection:
 - No precautions other than clean body-covering clothing should be needed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Color	Clear / Dyed Red-Pink
Odor	Odorless
Melting Point / Range	N/A (Not Applicable To Liquids)
Freezing Point	Less Than -4F (-20C) (Lit)
Boiling Point	363F (184C) at 1.0 x 10 ⁵ Pascal (<i>Approx. 752 mmHg</i>) (Lit)
Flash Point (Closed Cup)	219F (104C) at 1.0 x 10 ³ hPa EC Method A9 (PMCC)
Evaporation Rate (Butyl Acetate = 1)	<0.5 (<i>Estimate</i>)
Flammability (Solid / Gas)	Not applicable to Liquid
Lower Explosion Limit	2.6 % Volume (<i>Estimate</i>)
Upper Explosion Limit	12.5 % Volume (<i>Estimate</i>)
Vapor Pressure	20 Pa at 77F (25C) (Lit)
Relative Vapor Density (Air = 1)	2.62 (Lit)
Relative Density (Water = 1)	1.05 at 68F (20C) / 20C (Lit)
Water Solubility	100% at 68F (20C) (Lit)
Partition Coefficient (Noctanol/Water)	Log Pow: -1.07 (<i>Measured</i>)
Auto-Ignition Temperature	Greater Than 750F at 100 kPa (Lit)
Decomposition Temperature	No test data available
Kinematic Viscosity	43.4 cSt at 68F (20C) (Lit)
Explosive Properties	Not Explosive
Oxidizing Properties	No Data Available
Liquid Density	1.08 g/cm ³ at 70F (21.1C) (<i>Calculated from Lit</i>)
Pour Point	Less Than -71F (-57C) (Lit)

NOTE: The physical data in the above table are typical values and should not be interpreted as specifications

SECTION 10. STABILITY AND REACTIVITY

- **Reactivity:**
 - no data available
- **Chemical Stability:**
 - Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic
- **Possibility of Hazardous Reactions:**
 - Polymerization will not occur.
- **Conditions to Avoid:**
 - Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.
- **Incompatible Materials:**
 - Avoid contact with: Strong acids. Strong bases. Strong oxidizers.
- **Hazardous Decomposition Products:**
 - Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers. Organic acids.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

- **Acute Toxicity:**
 - **Acute Oral Toxicity**
 - Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. LD50, Rat, > 20,000 mg/kg
 - **Acute Dermal Toxicity**
 - Prolonged skin contact is unlikely to result in absorption of harmful amounts. LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.
 - **Acute Inhalation Toxicity**
 - At room temperature, exposure to vapor is minimal due to low volatility.
 - Mist may cause irritation of upper respiratory tract (nose and throat).
 - LC50, Rat, 4 Hour, Vapor, 0.00615 g/l - No deaths occurred subsequent to exposure at this concentration.
- **Skin Corrosion / Irritation:**
 - Prolonged contact is essentially nonirritating to skin.
 - Repeated contact may cause flaking and softening of skin.
- **Serious Eye Damage / Eye Irritation:**
 - May cause slight temporary eye irritation. Corneal injury is unlikely.
 - Mist may cause eye irritation.
- **Sensitization:**
 - Did not cause allergic skin reactions when tested in humans.
 - For respiratory sensitization: No relevant data found.
- **Specific Target Organ Systemic Toxicity (Single Exposure):**
 - Evaluation of available data suggests that this material is not an STOT-SE toxicant.
- **Specific Target Organ Systemic Toxicity (Repeated Exposure):**
 - In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.
- **Carcinogenicity:**
 - Comparable formations did not cause cancer in laboratory animals.
- **Teratogenicity:**
 - Did not cause birth defects or any other fetal effects in laboratory animals. (Major Components)
- **Reproductive Toxicity:**
 - In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility. (Major Components)

- **Mutagenicity:**
 - In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. (Major Components)
- **Aspiration Hazard:**
 - Based on physical properties, not likely to be an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

- **Toxicity:**

Propylene Glycol

 - **Acute Toxicity To Fish:**
 - Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
 - LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203
 - **Acute Toxicity to Aquatic Invertebrates:**
 - LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202
 - **Acute Toxicity to Algae / Aquatic Plants:**
 - ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201
 - **Toxicity to Bacteria:**
 - NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l, Method Not Specified.
 - **Chronic Aquatic Toxicity:**
 - Chronic Toxicity to Aquatic Invertebrates: NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

Dipotassium Hydrogen Phosphate

 - **Acute Toxicity To Fish:**
 - Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
 - LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, greater than 900 mg/l. Method not specified.
- **Persistence and Degradability:**

Propylene Glycol

 - **Biodegradability:**
 - Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
 - **Biodegradation:**
 - Value: 81%
 - Exposure Time: 28 Days
 - Method: OECD Test Guideline 301F or Equivalent (10 Day Window Not Applicable)
 - **Biodegradation:**
 - Value: 96%
 - Exposure Time: 64 Days
 - Method: OECD Test Guideline 306 or Equivalent
 - **Oxygen Demand:**
 - Theoretical Oxygen Demand: 1.68 mg/mg
 - Chemical Oxygen Demand: 1.53 mg/mg

- Biological Oxygen Demand (BOD):

<u>Incubation Time</u>	<u>BOD</u>
5 Days	69.000%
10 Days	70.000%
20 Days	86.000%

- Photodegradation:
 - Atmospheric Half-Life: 10 Hour
 - Method: Estimated

Dipotassium Hydrogen Phosphate

- Biodegradability:
 - Biodegradation is not applicable.

- **Bioaccumulative Potential:**

Propylene Glycol

- Bioaccumulation: Bioconcentration potential is low (BCF less than 100 or Log Pow less than 3)
- Partition coefficient: n-octanol/water(log Pow): -1.07 (*Measured*)
- Bioconcentration factor (BCF): 0.09 (*Estimate*)

Dipotassium Hydrogen Phosphate

- Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.

- **Mobility in Soil:**

Propylene Glycol

- Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process. Potential for mobility in soil is very high (Koc between 0 and 50).
- Partition Coefficient (Koc): Less than 1 (*Estimate*)

Dipotassium Hydrogen Phosphate

- No relevant data found.

SECTION 13. DISPOSAL CONSIDERATIONS

- **Disposal Methods:**

- Do not dump into any sewers, on the ground, or into any body of water. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.
- As your supplier, Glycol, Inc. has no control over the management procedures/practices or manufacturing processes of parties handling or using this material. The information presented here pertains only to the product as shipped in its intended condition as described in Section 3 COMPOSITION AND INFORMATION ABOUT INGREDIENTS. For unused and uncontaminated product, the preferred options include sending a licensed, permitted recycler, reclaimer, incinerator, or other thermal destruction service provider.

SECTION 14. TRANSPORT CONSIDERATIONS

- **Transportation Details:**

- Department of Transportation (DOT):
 - Not regulated for transport
- Classification for Sea/Maritime Transport (IMO-IMDG):
 - Not regulated for transport
- Transport in Bulk According to Annex I or II of MARPOL 73/78 and the IBC and IGC Code:
 - Consult IMO regulations before transporting ocean bulk.

- Classification for Air Transport (IATA / ICAO):
 - Not regulated for transport
- Special Note:
 - This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15. REGULATORY INFORMATION

- OSHA Hazard Communication Standard:
 - This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
- Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312:
 - This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.
- Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313:
 - This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
- Pennsylvania Worker and Community Right-To-Know Act:
 - The following chemicals are listed because of the additional requirements of Pennsylvania law:
- Components CASRN:
 - Propylene Glycol 57-55-6
- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):
 - This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.
- United States TSCA Inventory (TSCA):
 - All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

SECTION 16. ADDITIONAL INFORMATION

- Product Literature:
 - Additional information and literature on this or other Glycol, Inc. products may be found at **www.Glycol.com** or by contacting Glycol, Inc. at 1-855-GLYCOLS.
- Hazard Rating (National Fire Protection Association - NFPA):



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Special Note: Glycol, Inc. urges recipients of this MSDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this MSDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer specific MSDSs, we are not and cannot be responsible for MSDSs obtained from any source other than ourselves. If you have obtained an MSDS from another source or if you are not sure that the MSDS you have is current, please contact us for the most current version.