



ETHYLENE GLYCOL (INTERCOOL OP-100)

INTERCOOL OP-100 is chemically engineered using organic and inorganic inhibitors for corrosion protection in an ethylene glycol base and used as an industrial heat transfer fluid. Best suited for applications with operating temperatures in the -51°C (-60°F) to 149°C (300°F) range.

Industrial Inhibitors

Intercool OP-100 contains industrial grade inhibitors for a longer service life, superior performance, and resistance to biological growth in the system. It's long service life is enhanced through annual complimentary analysis and with the option of re-inhibiting, it's the perfect solution for many demanding applications including HVAC systems, cold storage equipment, and vapor recovery systems – just to name a few.

The inhibitors also provide a high level of reserve alkalinity so they remain effective for longer periods requiring less testing and re-inhibiting.

Most importantly, Intercool OP-100's industrial grade corrosion inhibitors are specially formulated for effective corrosion resistance to protect systems and their metal components, including ferrous and nonferrous metals such as brass, copper, copper alloys, steel, cast iron, and aluminum.

Dilutions

Our pre-diluted glycols use high quality, chemically treated, pure de-ionized water, which is essential in preventing scale formation inside the system.

For those planning to dilute concentrated glycol themselves, we recommend using water that meets high standards for purity to maintain the effectiveness of the corrosion inhibitors, reduce inhibitor depletion, and prevent scale build-up. (Please see page 4 of this document for more information on water quality).

Intercool OP-100 is available in full concentrate or in several concentrations pre-diluted with high quality de-ionized water. See below for concentrations needed for freeze point protection.

Concentration Needed For Freeze Point Protection

30% Concentration provides a freeze point of -16°C ($+3^{\circ}\text{F}$)

40% Concentration provides a freeze point of -25°C (-13°F)

50% Concentration provides a freeze point of -37°C (-34°F)

Environmental

Intercool OP-100 is biodegradable and will not concentrate in common water systems though massive contamination should be avoided as this may have harmful effects on aquatic life.



INTERCOOL HEAT TRANSFER FLUIDS

Typical Questions and Answers

1. What kind of service life can I expect from my fluid?

A fluid can last over twenty years if properly maintained and the recommended operating procedures are followed.

2. What is the shelf life (re-sample time) of the fluid?

If your fluid remains in storage for over two years, we recommend you have it analyzed prior to use.

3. How can glycol degradation be reduced?

Eliminate any oxygen in the system, prevent high temperature excursions, and avoid contamination.

4. Do I need to use additional chemicals or hire a water treatment company to assist in fluid maintenance?

No, INTERCOOL is a complete heat transfer fluid. Adding incompatible inhibitors may result in fluid failure. By simply submitting samples routinely, we will assist you in maintaining your fluid.

5. What is the best way to monitor and maintain the fluid?

The INTERCOOL fluid maintenance program will make recommendations on your reports for any necessary adjustments. INTERCOOL sample analysis will be performed on a semi annual basis.

6. Is there a simple and inexpensive way to check my glycol concentration?

Yes, a Duo-Check refractometer, Model 7084, is available from Misco Products (1-800-358-1100) for testing the freeze point of ethylene or propylene glycol solutions.

7. Why not use automotive antifreeze?

The inhibitors in automotive antifreeze are not designed for extended service and cannot be replenished. Additionally, silicated fluids may cause gels in your fluid. Also, the inhibitors are not compatible with INTERCOOL.

8. Are INTERCOOLS compatible with all metals?

Although they are suitable for most metals of construction, they are not recommended for use with galvanized metals.

9. What concentrations should I use?

Always use the lowest concentration of HTF necessary to meet your temperature requirements. However, remember that in order to provide adequate corrosion protection and not support bacterial growth, you must use a minimum concentration of 25%. A maximum concentration of 65% should not be exceeded to prevent reduced heat transfer and freezing protection. Remember we offer INTERCOOL in premixed solutions for your convenience.



INTERCOOL HEAT TRANSFER FLUIDS

Typical Questions and Answers

10. Does water quality matter if I decide to dilute the fluid at the site?

Yes, water quality is critical to the life of your fluid. Your fluid will assume the corrosivity of the dilution water, so avoid highly chlorinated water or water with a high sulfate content. Hard water can cause inhibitor precipitation and will leave the system unprotected against corrosion. Additionally, the precipitate and hard water ions will cause scale formation and reduce your heat transfer efficiency.

11. What are the recommended guidelines for water quality?

De-ionized or distilled water is recommended. Municipal water may be used if it meets the following criteria.

Water specification as per ASTM D-1193.

<100 PPM, total hardness as CaCo₃

<100 PPM chloride and sulfate

< 40 PPM calcium + magnesium

12. What if I am not certain of the quality of my water?

The INTERCOOL lab will be happy to test your source of dilution water prior to the fill.

13. If I have used a competitive HTF prior to purchasing INTERCOOL, do I need to dispose of that fluid?

Not necessarily, INTERCOOL HTF is compatible with most other industrial heat transfer fluids. Automotive antifreezes are not compatible and must be removed; inhibited waters also tend not to be compatible.

14. Can I mix ethylene glycol and propylene glycol?

Yes, but it is not recommended as it becomes difficult to determine an accurate freezing point.

15. Do I have to clean my system before I add INTERCOOL?

Older systems should be inspected for rust, scale, oil, hydrocarbons, or other contaminants. Cleaning with INTERCLEAN MC-1 and / or DG-3 may be recommended. For new systems, rinsing with the proper quality water is generally adequate. If the new system contains minor grease, oil, pipe dope, or flash rust, a single application with INTERCLEAN DG-3 may be recommended.

16. How do propylene glycol based fluids compare to ethylene glycol based fluids?

Ethylene glycol exhibits a lower viscosity at lower temperatures, a higher boiling point and a lower vapor pressure. It is a more effective freeze point depressant and heat transfer medium. Ethylene glycol is more readily biodegraded and is also relatively non-toxic to aquatic life. Although ethylene glycol is considered more toxic to humans than propylene glycol, industrial grade propylene glycol coolants may not exhibit this same lower toxicity due to the use of non-food grade inhibitors and other ingredients.



INTERCOOL HEAT TRANSFER FLUIDS

Dilution Water Quality

To ensure superior corrosion protection, the dilution water must be high quality. Poor quality water contains ions that make the fluid “hard” and corrosive. Calcium and magnesium hardness ions build up as scale on the walls of the system and reduce heat transfer. These ions may also react with the corrosion inhibitors in INTERCOOL HTF, causing them to precipitate out of solution and rendering the inhibitors ineffective in protecting against corrosion. In addition, high concentrations of corrosive ions, such as chloride and sulfate, will eat through any protective layer that the corrosion inhibitors form on the walls of the system. Ideally, de-ionized water should be used for dilution since de-ionizing removes both corrosive and hardness ions – distilled water and zeolite-softened water are also acceptable. Softened water, although free of hardness

ions, may actually have increased concentrations of corrosive ions and, therefore, its quality must be monitored. It is recommended that dilution water contain less than 100 PPM calcium carbonate or less than 25 PPM calcium plus magnesium ions; and less than 25 PPM chloride or sulfate ions. For systems where high-quality dilution water is not available, Interstate Chemical offers various INTERCOOL Heat Transfer Fluids in pre-diluted mixtures – from 25% to 65% by volume – that use only the highest quality de-ionized water..



INTERCOOL HEAT TRANSFER FLUIDS

The Effects of Pressure on Boiling Point Temperatures

A system under pressure can handle higher temperatures, and offers a higher static boiling point. Most liquids have a specific "boiling point", which is the temperature at which the liquid begins to change to a gas. If pressure is applied to the liquid, it must become hotter before it can boil. Pure water in a cooling system will boil at 100°C (212°F) at sea level. At higher altitudes, atmospheric pressure is less than at sea level. **Example: Water at 5,280 feet will boil at a mere 95°C (203°F).** A cooling system that is under 15 pounds of pressure however, will now allow the water to reach nearly 121°C (250°F) before it boils. Even at this temperature the water is able to circulate through the engine, cooling parts that are at a much higher temperature without the water boiling. As long as the coolant remains in liquid form it can do its job and transfer heat to the radiator or heat exchanger so it can be dissipated. Coolant that is boiling cannot transfer as much heat and overheating is likely to occur if the coolant turns to a gaseous state. Steam adjacent to a hot surface, such as a combustion wall, can actually act as an insulator – thus preventing any heat transfer to the coolant.

FOR EVERY POUND OF PRESSURE EXERTED ON THE COOLANT IN THE SYSTEM, THE STATIC BOILING POINT OF THE COOLANT IS RAISED BY APPROXIMATELY 1.7C° (3F°).

Effect of System Pressure on Boiling Point

Coolant	0 psi	4 psi	8 psi	12 psi	16 psi	20 psi	24 psi
Water	212°F	225°F	233°F	242°F	252°F	260°F	265°F
33%	220°F	230°F	240°F	253°F	260°F	268°F	273°F
44%	224°F	234°F	245°F	257°F	265°F	272°F	279°F
60%	231°F	241°F	253°F	264°F	273°F	280°F	285°F
50%	226°F	236°F	248°F	259°F	267°F	275°F	280°F

Boiling Point of Coolant with Varying Percentages of Ethylene Glycol @t Atmospheric Pressure & @ 15 P.S.I.

% E.G.	Atmospheric		15 PSI (103 kPa)	
	B.P. C	B.P. F	B.P. C	B.P. F
0	100°C	212°F	120°C	248°F
33	104°C	219°F	125°C	257°F
44	107°C	224°F	128°C	262°F
50	108°C	227°F	129°C	265°F
60	111°C	232°F	132°C	270°F

Effect of System Pressure on Boiling Point

Coolant	0 psi	3 psi	5 psi	10 psi	12 psi	15 psi	20 psi
Water	212°F	221°F	227°F	242°F	248°F	257°F	272°F
PG Conc.	323°F	332°F	338°F	353°F	359°F	368°F	383°F
30%	216°F	225°F	231°F	246°F	252°F	261°F	276°F
40%	219°F	228°F	234°F	249°F	255°F	264°F	279°F
50%	222°F	231°F	237°F	252°F	258°F	267°F	282°F



Suggested Actions

Any scale in a boiler is undesirable. The best way to deal with scale is not to let it form in the first place. Prevent scale formation by:

- Pretreating of boiler makeup water (using water softeners, demineralizers, and reverse osmosis to remove scale-forming minerals)
- Injecting chemicals into the boiler feedwater
- Adopting proper boiler blowdown practices

Clean Boiler Waterside Heat Transfer Surfaces

Even on small boilers, the prevention of scale formation can produce substantial energy savings. Scale deposits occur when calcium, magnesium, and silica, commonly found in most water supplies, react to form a continuous layer of material on the waterside of the boiler heat exchange tubes.

Scale creates a problem because it typically possesses a thermal conductivity an order of magnitude less than the corresponding value for bare steel. Even thin layers of scale serve as an effective insulator and retard heat transfer. The result is overheating of boiler tube metal, tube failures, and loss of energy efficiency. Fuel waste due to boiler scale may be 2% for water-tube boilers and up to 5% in fire-tube boilers. Energy losses as a function of scale thickness and composition are given in the table below.

Scale Thickness, inches	Fuel Loss, % of Total Use		
	Scale Type		
	“Normal”	High Iron	Iron Plus Silica
1/64	1.0	1.6	3.5
1/32	2.0	3.1	7.0
3/64	3.0	4.7	–
1/16	3.9	6.2	–

Note: “Normal” scale is usually encountered in low-pressure applications. The high iron and iron plus silica scale composition results from high-pressure service conditions.

*Extracted from *National Institute of Standards and Technology, Handbook 115, Supplement 1*. On well-designed natural gas-fired systems, an excess air level of 10% is attainable. An often stated rule of thumb is that boiler efficiency can be increased by 1% for each 15% reduction in excess air or 40°F reduction in the stack gas temperature.

Resources

U.S. Department of Energy—DOE’s software, the *Steam System Assessment Tool* and *Steam System Scoping Tool*, can help you evaluate and identify steam system improvements. In addition, refer to *Improving Steam System Performance: A Sourcebook for Industry* for more information on steam system efficiency opportunities.

Visit the BestPractices Web site at www.eere.energy.gov/industry/bestpractices to access these and many other industrial efficiency resources and information on training.

Example

A boiler annually uses 450,000 million Btu (MMBtu) of fuel while operating for 8,000 hours at its rated capacity of 45,000 pounds per hour (lb/hr) of 150-pounds-per-square-inch-gauge (psig) steam. If scale 1/32nd of an inch thick is allowed to form on the boiler tubes, and the scale is of “normal” composition, the table indicates a fuel loss of 2%. The increase in operating costs, assuming energy is priced at \$8.00 per million Btu (\$8.00/MMBtu), is:

$$\begin{aligned} \text{Annual Operating Cost Increase} &= 450,000 \text{ MMBtu/yr} \times \$8.00/\text{MMBtu} \times 0.02 \\ &= \$72,000 \end{aligned}$$

Monitor Flue Gas Temperature

An indirect indicator of scale or deposit formation is flue gas temperature. If the flue gas temperature rises (with boiler load and excess air held constant), the effect is possibly due to the presence of scale.



Perform Visual Inspections

Visually inspect boiler tubes when the unit is shut down for maintenance. Scale removal can be achieved by mechanical means or acid cleaning. If scale is present, consult with your local water treatment specialist and consider modifying your feedwater treatment or chemical additives schedule.

Adapted from an Energy TIPS fact sheet that was originally published by the Industrial Energy Extension Service of Georgia Tech.

BestPractices is part of the Industrial Technologies Program Industries of the Future strategy, which helps the country's most energy-intensive industries improve their competitiveness. BestPractices brings together emerging technologies and best energy-management practices to help companies begin improving energy efficiency, environmental performance, and productivity right now.

BestPractices emphasizes plant systems, where significant efficiency improvements and savings can be achieved. Industry gains easy access to near-term and long-term solutions for improving the performance of motor, steam, compressed air, and process heating systems. In addition, the Industrial Assessment Centers provide comprehensive industrial energy evaluations to small- and medium-size manufacturers.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

EERE Information Center
1-877-EERE-INF
(1-877-337-3463)
www.eere.energy.gov

Industrial Technologies Program
Energy Efficiency
and Renewable Energy
U.S. Department of Energy
Washington, DC 20585-0121
www.eere.energy.gov/industry

A STRONG ENERGY PORTFOLIO FOR A STRONG AMERICA

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

DOE/GO-102006-2252
January 2006
Steam Tip Sheet #7

Revised from DOE/GO-10099-952 • June 2001



INTERCOOL OP-100

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/07/2015 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : INTERCOOL OP-100
CAS No : Mixture
Product code : 22820

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

Use of the substance/mixture : Heat Transfer Fluid

1.3. Details of the supplier of the safety data sheet

Interstate Chemical Company, Inc.
2797 Freedland Road
Hermitage, PA 16148-0210 - United States
T (724) 981-3771 - F (724) 509-1015
jwarren@interstatechemical.com - www.interstatechemical.com

1.4. Emergency telephone number

Emergency number : For 24-Hour Emergency Information Call Chemtrec: +1 (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral) H302

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07

Signal word (GHS-US) : Warning
Hazard statements (GHS-US) : H302 - Harmful if swallowed
Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301+P312 - If swallowed: Call a doctor or poison center if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/container to a hazardous or special waste collection point, an approved waste disposal plant, an authorized waste collection point, an industrial incineration plant

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

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Name	Product identifier	%	Classification (GHS-US)
ethylene glycol	(CAS No) 107-21-1	80 - 100	Acute Tox. 4 (Oral), H302
CORROSION INHIBITORS AND pH BUFFERS	(CAS No) Trade Secret	1 - 10	Not classified
LIQUID DYE	(CAS No) Mixture	< 1	Not classified

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	:	Keep only in the original container in a cool, well ventilated place away from : Sources of ignition. Keep container closed when not in use.
Incompatible products	:	Strong bases. Strong acids.
Incompatible materials	:	Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

INTERCOOL OP-100 (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	
ethylene glycol (107-21-1)		
ACGIH	ACGIH Ceiling (mg/m ³)	100 mg/m ³
ACGIH	Remark (ACGIH)	URT & eye irr
OSHA	Not applicable	
CORROSION INHIBITORS AND pH BUFFERS (Trade Secret)		
ACGIH	Not applicable	
OSHA	Not applicable	
LIQUID DYE (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	

8.2. Exposure controls

Personal protective equipment	:	Avoid all unnecessary exposure.
Hand protection	:	Wear protective gloves.
Eye protection	:	Chemical goggles or safety glasses.
Respiratory protection	:	Wear appropriate mask.
Other information	:	Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Clear, Yellow Liquid.
Molecular mass	:	62.07 g/mol
Color	:	Light yellow
Odor	:	No data available
Odor threshold	:	No data available
pH	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Melting point	:	-13 °C
Freezing point	:	No data available
Boiling point	:	197 °C
Flash point	:	111 °C
Critical temperature	:	372 °C
Auto-ignition temperature	:	398 °C
Decomposition temperature	:	> 500 °C
Flammability (solid, gas)	:	No data available
Vapor pressure	:	0.07 hPa
Vapor pressure at 50 °C	:	1.1 hPa
Relative vapor density at 20 °C	:	2.1

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Relative density	:	1.1
Specific gravity / density	:	1130 kg/m ³
Solubility	:	Soluble in water. Soluble in ethanol. Soluble in acetone. Soluble in acetic acid. Soluble in glycerol. Soluble in pyridine. Water: Ethanol: Complete Acetone: Complete
Log Pow	:	-1.34 (Experimental value)
Log Kow	:	No data available
Viscosity, kinematic	:	18.86 mm ² /s (20 °C)
Viscosity, dynamic	:	0.021 Pa.s (20 °C)
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	3 - 15 vol %

9.2. Other information

Specific conductivity	:	116 µS/m
Saturation concentration	:	0.31 g/m ³
VOC content	:	0 %

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

INTERCOOL OP-100 (l f)Mixture	
ATE US (oral)	531.915 mg/kg body weight
ethylene glycol (107-21-1)	
LD50 oral rat	> 5000 mg/kg (Rat; Literature study)
ATE US (oral)	500.000 mg/kg body weight

Skin corrosion/irritation	:	Not classified
Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	Not classified
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	Not classified

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Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

ethylene glycol (107-21-1)	
LC50 fish 1	53000 mg/l (96 h; Pimephales promelas; Static system)
EC50 Daphnia 1	> 10000 mg/l (24 h; Daphnia magna)
LC50 fish 2	40761 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Static system)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda)
Threshold limit algae 2	2000 mg/l (192 h; Microcystis aeruginosa)

12.2. Persistence and degradability

INTERCOOL OP-100 (Mixture)	
Persistence and degradability	Not established.
ethylene glycol (107-21-1)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil.
Biochemical oxygen demand (BOD)	0.47 g O ₂ /g substance
Chemical oxygen demand (COD)	1.24 g O ₂ /g substance
ThOD	1.29 g O ₂ /g substance
BOD (% of ThOD)	0.36 % ThOD

12.3. Bioaccumulative potential

INTERCOOL OP-100 (Mixture)	
Log Pow	-1.34 (Experimental value)
Bioaccumulative potential	Not established.
ethylene glycol (107-21-1)	
BCF fish 1	10 (72 h; Leuciscus idus)
BCF other aquatic organisms 1	0.21 - 0.6 (Procambarus sp.; Chronic)
BCF other aquatic organisms 2	190 (24 h; Algae)
Log Pow	-1.34 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

ethylene glycol (107-21-1)	
Surface tension	0.048 N/m (20 °C)

12.5. Other adverse effects

Effect on ozone layer :
Effect on the global warming : No known ecological damage caused by this product.
Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to an approved hazardous waste plant and/or drum reconditioner.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT
Transport document description : UN3082 Environmentally hazardous substances, liquid, n.o.s. (Ethylene Glycol), 9, III
UN-No.(DOT) : UN3082
Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.
Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

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Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102) : 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.

146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination.

173 - An appropriate generic entry may be used for this material.

335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging.

IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).

T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 155

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : No limit

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Additional information

Emergency Response Guide (ERG) Number : 171

Other information : Only regulated by DOT if product exceeds Reportable Quantity under CERCLA. The reportable quantity can be found in Section 15 of this SDS.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

INTERCOOL OP-100

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

ethylene glycol (107-21-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on United States SARA Section 313

RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
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15.2. International regulations

CANADA

EU-Regulations

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

No additional information available

15.3. US State regulations

ethylene glycol (107-21-1)

U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

Abbreviations and acronyms : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. European Agreement concerning the International Carriage of Dangerous Goods by Road. Acute Toxicity Estimate. Bioconcentration factor. Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. Derived Minimal Effect level. Derived-No Effect Level. Dangerous Preparations Directive 1999/45/EC. Dangerous Substances Directive 67/548/EEC. Median effective concentration. International Agency for Research on Cancer. International Air Transport Association. International Maritime Dangerous Goods. Median lethal concentration. Median lethal dose. Lowest Observed Adverse Effect Level. No-Observed Adverse Effect Concentration. No-Observed Adverse Effect Level. No-Observed Effect Concentration. Organisation for Economic Co-operation and Development. Persistent Bioaccumulative Toxic. Predicted No-Effect Concentration. Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. Regulations concerning the International Carriage of Dangerous Goods by Rai. Safety Data Sheet. Sewage treatment plant. Median Tolerance Limit. Very Persistent and Very Bioaccumulative.

Other information : None.

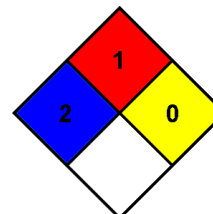
Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
H302	Harmful if swallowed

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 1 - Must be preheated before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 1 Slight Hazard

Physical : 0 Minimal Hazard

Personal Protection : B,n

INTERCOOL OP-100

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SDS US (GHS HazCom 2012)

Interstate Chemical Company, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.



INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/08/2015 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : INTERCOOL OP-100 30/70
CAS No : Mixture
Product code : 22990

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

Use of the substance/mixture : Heat Transfer Fluid

1.3. Details of the supplier of the safety data sheet

Interstate Chemical Company, Inc.
2797 Freedland Road
Hermitage, PA 16148-0210 - United States
T (724) 981-3771 - F (724) 509-1015
jwarren@interstatechemical.com - www.interstatechemical.com

1.4. Emergency telephone number

Emergency number : For 24-Hour Emergency Information Call Chemtrec: +1 (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral) H302

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07

Signal word (GHS-US) : Warning
Hazard statements (GHS-US) : H302 - Harmful if swallowed
Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301+P312 - If swallowed: Call a doctor or poison center if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/container to a hazardous or special waste collection point, an approved waste disposal plant, an authorized waste collection point, an industrial incineration plant

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	Classification (GHS-US)
DEIONIZED WATER	(CAS No) 7732-18-5	60 - 80	Not classified
ethylene glycol	(CAS No) 107-21-1	20 - 40	Acute Tox. 4 (Oral), H302
CORROSION INHIBITORS AND pH BUFFERS	(CAS No) Trade Secret	1 - 10	Not classified
LIQUID DYE	(CAS No) Mixture	< 1	Not classified

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Sources of ignition. Keep container closed when not in use.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

INTERCOOL OP-100 30/70 (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	
ethylene glycol (107-21-1)		
ACGIH	ACGIH Ceiling (mg/m ³)	100 mg/m ³
ACGIH	Remark (ACGIH)	URT & eye irr
OSHA	Not applicable	
CORROSION INHIBITORS AND pH BUFFERS (Trade Secret)		
ACGIH	Not applicable	
OSHA	Not applicable	
DEIONIZED WATER (7732-18-5)		
ACGIH	Not applicable	
OSHA	Not applicable	
LIQUID DYE (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Wear appropriate mask.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Clear, Yellow Liquid.

Color : Yellow

Odor : No data available

Odor threshold : No data available

pH : 8 - 9.5

Relative evaporation rate (butyl acetate=1) : < 1 at room temperature

Melting point : 3 °F

Freezing point : 3 °F Freezing Point Chart

Boiling point : 218 °F Boiling Point Chart

Flash point : Not Flammable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Vapor pressure	: < 15 mm Hg at room temperature
Relative vapor density at 20 °C	: > 1.53 (Air=1)
Relative density	: 1.046 (Water=1) at 20 degrees celsius
Specific gravity / density	: 8.721 lb/gal at room temperature
Solubility	: Soluble in water. Water: Solubility in water of component(s) of the mixture : • :
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

INTERCOOL OP-100 30/70 (l f)Mixture	
ATE US (oral)	1718.213 mg/kg body weight
ethylene glycol (107-21-1)	
LD50 oral rat	> 5000 mg/kg (Rat; Literature study)
ATE US (oral)	500.000 mg/kg body weight

Skin corrosion/irritation	: Not classified pH: 8 - 9.5
Serious eye damage/irritation	: Not classified pH: 8 - 9.5
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

ethylene glycol (107-21-1)	
LC50 fish 1	53000 mg/l (96 h; Pimephales promelas; Static system)
EC50 Daphnia 1	> 10000 mg/l (24 h; Daphnia magna)
LC50 fish 2	40761 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Static system)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda)
Threshold limit algae 2	2000 mg/l (192 h; Microcystis aeruginosa)

12.2. Persistence and degradability

INTERCOOL OP-100 30/70 (Mixture)	
Persistence and degradability	Not established.
ethylene glycol (107-21-1)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil.
Biochemical oxygen demand (BOD)	0.47 g O ₂ /g substance
Chemical oxygen demand (COD)	1.24 g O ₂ /g substance
ThOD	1.29 g O ₂ /g substance
BOD (% of ThOD)	0.36 % ThOD

12.3. Bioaccumulative potential

INTERCOOL OP-100 30/70 (Mixture)	
Bioaccumulative potential	Not established.
ethylene glycol (107-21-1)	
BCF fish 1	10 (72 h; Leuciscus idus)
BCF other aquatic organisms 1	0.21 - 0.6 (Procambarus sp.; Chronic)
BCF other aquatic organisms 2	190 (24 h; Algae)
Log Pow	-1.34 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

ethylene glycol (107-21-1)	
Surface tension	0.048 N/m (20 °C)

12.5. Other adverse effects

Effect on ozone layer :
Effect on the global warming : No known ecological damage caused by this product.
Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to an approved hazardous waste plant and/or drum reconditioner.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT
Transport document description : UN3082 Environmentally hazardous substances, liquid, n.o.s. (Ethylene Glycol), 9, III
UN-No.(DOT) : UN3082
Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.
Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102) : 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.
146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination.
173 - An appropriate generic entry may be used for this material.
335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging.
IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).
T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 155

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : No limit

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Additional information

Emergency Response Guide (ERG) Number : 171

Other information : Only regulated by DOT if product exceeds Reportable Quantity under CERCLA. The reportable quantity can be found in Section 15 of this SDS.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

ethylene glycol (107-21-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
--	---------

15.2. International regulations

CANADA

EU-Regulations

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

No additional information available

15.3. US State regulations

ethylene glycol (107-21-1)

U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

Abbreviations and acronyms : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. European Agreement concerning the International Carriage of Dangerous Goods by Road. Acute Toxicity Estimate. Bioconcentration factor. Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. Derived Minimal Effect level. Derived-No Effect Level. Dangerous Preparations Directive 1999/45/EC. Dangerous Substances Directive 67/548/EEC. Median effective concentration. International Agency for Research on Cancer. International Air Transport Association. International Maritime Dangerous Goods. Median lethal concentration. Median lethal dose. Lowest Observed Adverse Effect Level. No-Observed Adverse Effect Concentration. No-Observed Adverse Effect Level. No-Observed Effect Concentration. Organisation for Economic Co-operation and Development. Persistent Bioaccumulative Toxic. Predicted No-Effect Concentration. Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. Regulations concerning the International Carriage of Dangerous Goods by Rai. Safety Data Sheet. Sewage treatment plant. Median Tolerance Limit. Very Persistent and Very Bioaccumulative.

Other information : None.

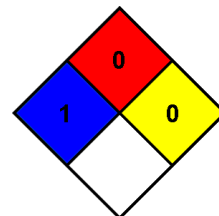
Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
H302	Harmful if swallowed

NFPA health hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B,n

INTERCOOL OP-100 30/70

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SDS US (GHS HazCom 2012)

Interstate Chemical Company, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.



INTERCOOL OP-100 40/60

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/08/2015 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : INTERCOOL OP-100 40/60
CAS No : Mixture
Product code : 22940

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

Use of the substance/mixture : Heat Transfer Fluid

1.3. Details of the supplier of the safety data sheet

Interstate Chemical Company, Inc.
2797 Freedland Road
Hermitage, PA 16148-0210 - United States
T (724) 981-3771 - F (724) 509-1015
jwarren@interstatechemical.com - www.interstatechemical.com

1.4. Emergency telephone number

Emergency number : For 24-Hour Emergency Information Call Chemtrec: +1 (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral) H302

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07

Signal word (GHS-US) : Warning
Hazard statements (GHS-US) : H302 - Harmful if swallowed
Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301+P312 - If swallowed: Call a doctor or poison center if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/container to a hazardous or special waste collection point, an approved waste disposal plant, an authorized waste collection point, an industrial incineration plant

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

INTERCOOL OP-100 40/60

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	Classification (GHS-US)
DEIONIZED WATER	(CAS No) 7732-18-5	60 - 80	Not classified
ethylene glycol	(CAS No) 107-21-1	20 - 40	Acute Tox. 4 (Oral), H302
CORROSION INHIBITORS AND pH BUFFERS	(CAS No) Trade Secret	1 - 10	Not classified
LIQUID DYE	(CAS No) Mixture	< 1	Not classified

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

INTERCOOL OP-100 40/60

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Sources of ignition. Keep container closed when not in use.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

INTERCOOL OP-100 40/60 (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	
ethylene glycol (107-21-1)		
ACGIH	ACGIH Ceiling (mg/m ³)	100 mg/m ³
ACGIH	Remark (ACGIH)	URT & eye irr
OSHA	Not applicable	
CORROSION INHIBITORS AND pH BUFFERS (Trade Secret)		
ACGIH	Not applicable	
OSHA	Not applicable	
DEIONIZED WATER (7732-18-5)		
ACGIH	Not applicable	
OSHA	Not applicable	
LIQUID DYE (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Wear appropriate mask.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Clear, Yellow Liquid.

Color : Yellow

Odor : No data available

Odor threshold : No data available

pH : 8 - 9.5

Relative evaporation rate (butyl acetate=1) : < 1 at room temperature

Melting point : -13 °F

Freezing point : -13 °F Freezing Point Chart

Boiling point : 2201 °F Boiling Point Chart

Flash point : Not Flammable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

INTERCOOL OP-100 40/60

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Vapor pressure	:	≈ 10 mm Hg at room temperature
Relative vapor density at 20 °C	:	≈ 1.84 (Air=1)
Relative density	:	1.0608 (Water=1) at 20 degrees celsius
Specific gravity / density	:	8.8 lb/gal at room temperature
Solubility	:	Soluble in water. Water: Solubility in water of component(s) of the mixture : • :
Log Pow	:	No data available
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

INTERCOOL OP-100 40/60 (l f)Mixture	
ATE US (oral)	1250.000 mg/kg body weight
ethylene glycol (107-21-1)	
LD50 oral rat	> 5000 mg/kg (Rat; Literature study)
ATE US (oral)	500.000 mg/kg body weight

Skin corrosion/irritation	:	Not classified pH: 8 - 9.5
Serious eye damage/irritation	:	Not classified pH: 8 - 9.5
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	Not classified
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	Not classified

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

ethylene glycol (107-21-1)	
LC50 fish 1	53000 mg/l (96 h; Pimephales promelas; Static system)
EC50 Daphnia 1	> 10000 mg/l (24 h; Daphnia magna)
LC50 fish 2	40761 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Static system)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda)
Threshold limit algae 2	2000 mg/l (192 h; Microcystis aeruginosa)

12.2. Persistence and degradability

INTERCOOL OP-100 40/60 (Mixture)	
Persistence and degradability	Not established.
ethylene glycol (107-21-1)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil.
Biochemical oxygen demand (BOD)	0.47 g O ₂ /g substance
Chemical oxygen demand (COD)	1.24 g O ₂ /g substance
ThOD	1.29 g O ₂ /g substance
BOD (% of ThOD)	0.36 % ThOD

12.3. Bioaccumulative potential

INTERCOOL OP-100 40/60 (Mixture)	
Bioaccumulative potential	Not established.
ethylene glycol (107-21-1)	
BCF fish 1	10 (72 h; Leuciscus idus)
BCF other aquatic organisms 1	0.21 - 0.6 (Procambarus sp.; Chronic)
BCF other aquatic organisms 2	190 (24 h; Algae)
Log Pow	-1.34 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

ethylene glycol (107-21-1)	
Surface tension	0.048 N/m (20 °C)

12.5. Other adverse effects

Effect on ozone layer :
Effect on the global warming : No known ecological damage caused by this product.
Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to an approved hazardous waste plant and/or drum reconditioner.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT
Transport document description : UN3082 Environmentally hazardous substances, liquid, n.o.s. (Ethylene Glycol), 9, III
UN-No.(DOT) : UN3082
Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.
Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

INTERCOOL OP-100 40/60

Safety Data Sheet

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Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102) : 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.

146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination.

173 - An appropriate generic entry may be used for this material.

335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.,"

UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging.

IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).

T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 155

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : No limit

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Additional information

Emergency Response Guide (ERG) Number : 171

Other information : Only regulated by DOT if product exceeds Reportable Quantity under CERCLA. The reportable quantity can be found in Section 15 of this SDS.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

INTERCOOL OP-100 40/60

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

ethylene glycol (107-21-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
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15.2. International regulations

CANADA

EU-Regulations

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

No additional information available

15.3. US State regulations

ethylene glycol (107-21-1)

U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

Abbreviations and acronyms : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. European Agreement concerning the International Carriage of Dangerous Goods by Road. Acute Toxicity Estimate. Bioconcentration factor. Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. Derived Minimal Effect level. Derived-No Effect Level. Dangerous Preparations Directive 1999/45/EC. Dangerous Substances Directive 67/548/EEC. Median effective concentration. International Agency for Research on Cancer. International Air Transport Association. International Maritime Dangerous Goods. Median lethal concentration. Median lethal dose. Lowest Observed Adverse Effect Level. No-Observed Adverse Effect Concentration. No-Observed Adverse Effect Level. No-Observed Effect Concentration. Organisation for Economic Co-operation and Development. Persistent Bioaccumulative Toxic. Predicted No-Effect Concentration. Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. Regulations concerning the International Carriage of Dangerous Goods by Rai. Safety Data Sheet. Sewage treatment plant. Median Tolerance Limit. Very Persistent and Very Bioaccumulative.

Other information : None.

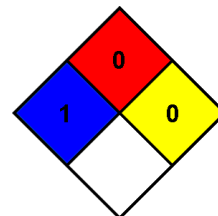
Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
H302	Harmful if swallowed

NFPA health hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B,n

INTERCOOL OP-100 40/60

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SDS US (GHS HazCom 2012)

Interstate Chemical Company, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.



INTERCOOL OP-100 50/50

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/09/2015 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : INTERCOOL OP-100 50/50
CAS No : Mixture
Product code : 22860

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

Use of the substance/mixture : Heat Transfer Fluid

1.3. Details of the supplier of the safety data sheet

Interstate Chemical Company, Inc.
2797 Freedland Road
Hermitage, PA 16148-0210 - United States
T (724) 981-3771 - F (724) 509-1015
jwarren@interstatechemical.com - www.interstatechemical.com

1.4. Emergency telephone number

Emergency number : For 24-Hour Emergency Information Call Chemtrec: +1 (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral) H302

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07

Signal word (GHS-US) : Warning
Hazard statements (GHS-US) : H302 - Harmful if swallowed
Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301+P312 - If swallowed: Call a doctor or poison center if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/container to a hazardous or special waste collection point, an approved waste disposal plant, an authorized waste collection point, an industrial incineration plant

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

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Name	Product identifier	%	Classification (GHS-US)
ethylene glycol	(CAS No) 107-21-1	40 - 60	Acute Tox. 4 (Oral), H302
DEIONIZED WATER	(CAS No) 7732-18-5	40 - 60	Not classified
CORROSION INHIBITORS AND pH BUFFERS	(CAS No) Trade Secret	1 - 10	Not classified
LIQUID DYE	(CAS No) Mixture	< 1	Not classified

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

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Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Sources of ignition. Keep container closed when not in use.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

INTERCOOL OP-100 50/50 (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	
ethylene glycol (107-21-1)		
ACGIH	ACGIH Ceiling (mg/m ³)	100 mg/m ³
ACGIH	Remark (ACGIH)	URT & eye irr
OSHA	Not applicable	
CORROSION INHIBITORS AND pH BUFFERS (Trade Secret)		
ACGIH	Not applicable	
OSHA	Not applicable	
DEIONIZED WATER (7732-18-5)		
ACGIH	Not applicable	
OSHA	Not applicable	
LIQUID DYE (Mixture)		
ACGIH	Not applicable	
OSHA	Not applicable	

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Wear appropriate mask.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Clear, Yellow Liquid.

Color : Yellow

Odor : No data available

Odor threshold : No data available

pH : 8 - 9.5

Relative evaporation rate (butyl acetate=1) : < 1 at room temperature

Melting point : -34 °F

Freezing point : -34 °F Freezing Point Chart

Boiling point : 225 °F Boiling Point Chart

Flash point : Not Flammable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

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Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Vapor pressure	:	< 15 mm Hg at room temperature
Relative vapor density at 20 °C	:	≈ 1.84 (Air=1)
Relative density	:	1.07 (Water=1) at 20 degrees celsius
Specific gravity / density	:	8.92 lb/gal at room temperature
Solubility	:	Soluble in water. Water: Solubility in water of component(s) of the mixture : • :
Log Pow	:	No data available
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

INTERCOOL OP-100 50/50 (l f)Mixture	
ATE US (oral)	1030.928 mg/kg body weight
ethylene glycol (107-21-1)	
LD50 oral rat	> 5000 mg/kg (Rat; Literature study)
ATE US (oral)	500.000 mg/kg body weight

Skin corrosion/irritation	:	Not classified pH: 8 - 9.5
Serious eye damage/irritation	:	Not classified pH: 8 - 9.5
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	Not classified
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	Not classified

INTERCOOL OP-100 50/50

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

ethylene glycol (107-21-1)	
LC50 fish 1	53000 mg/l (96 h; Pimephales promelas; Static system)
EC50 Daphnia 1	> 10000 mg/l (24 h; Daphnia magna)
LC50 fish 2	40761 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Static system)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda)
Threshold limit algae 2	2000 mg/l (192 h; Microcystis aeruginosa)

12.2. Persistence and degradability

INTERCOOL OP-100 50/50 (Mixture)	
Persistence and degradability	Not established.
ethylene glycol (107-21-1)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil.
Biochemical oxygen demand (BOD)	0.47 g O ₂ /g substance
Chemical oxygen demand (COD)	1.24 g O ₂ /g substance
ThOD	1.29 g O ₂ /g substance
BOD (% of ThOD)	0.36 % ThOD

12.3. Bioaccumulative potential

INTERCOOL OP-100 50/50 (Mixture)	
Bioaccumulative potential	Not established.
ethylene glycol (107-21-1)	
BCF fish 1	10 (72 h; Leuciscus idus)
BCF other aquatic organisms 1	0.21 - 0.6 (Procambarus sp.; Chronic)
BCF other aquatic organisms 2	190 (24 h; Algae)
Log Pow	-1.34 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

ethylene glycol (107-21-1)	
Surface tension	0.048 N/m (20 °C)

12.5. Other adverse effects

Effect on ozone layer :
Effect on the global warming : No known ecological damage caused by this product.
Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to an approved hazardous waste plant and/or drum reconditioner.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT
Transport document description : UN3082 Environmentally hazardous substances, liquid, n.o.s. (Ethylene Glycol), 9, III
UN-No.(DOT) : UN3082
Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.
Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

INTERCOOL OP-100 50/50

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102) : 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.
146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination.
173 - An appropriate generic entry may be used for this material.
335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging.
IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).
T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 155

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : No limit

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Additional information

Emergency Response Guide (ERG) Number : 171

Other information : Only regulated by DOT if product exceeds Reportable Quantity under CERCLA. The reportable quantity can be found in Section 15 of this SDS.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

INTERCOOL OP-100 50/50

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

ethylene glycol (107-21-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
--	---------

15.2. International regulations

CANADA

EU-Regulations

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

No additional information available

15.3. US State regulations

ethylene glycol (107-21-1)

U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

Abbreviations and acronyms : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. European Agreement concerning the International Carriage of Dangerous Goods by Road. Acute Toxicity Estimate. Bioconcentration factor. Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. Derived Minimal Effect level. Derived-No Effect Level. Dangerous Preparations Directive 1999/45/EC. Dangerous Substances Directive 67/548/EEC. Median effective concentration. International Agency for Research on Cancer. International Air Transport Association. International Maritime Dangerous Goods. Median lethal concentration. Median lethal dose. Lowest Observed Adverse Effect Level. No-Observed Adverse Effect Concentration. No-Observed Adverse Effect Level. No-Observed Effect Concentration. Organisation for Economic Co-operation and Development. Persistent Bioaccumulative Toxic. Predicted No-Effect Concentration. Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. Regulations concerning the International Carriage of Dangerous Goods by Rai. Safety Data Sheet. Sewage treatment plant. Median Tolerance Limit. Very Persistent and Very Bioaccumulative.

Other information : None.

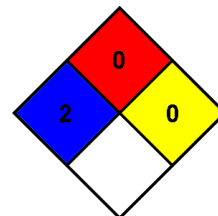
Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
H302	Harmful if swallowed

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B,n

INTERCOOL OP-100 50/50

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SDS US (GHS HazCom 2012)

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