PetroFlo HVAC-511

Heavy-Duty, Ethylene Glycol-Based Heat Transfer Fluid

Product Features

- Inhibitor system is phosphate-based
- Functional equivalent to Dowtherm* SR-1 Ucartherm* and Jeffcool E-100* and can be mixed with these products with no adverse effects.
- Stable in water hardness up to 350ppm
- Operating range of -60ºF to +250ºF
- Unique additive package:
  - o Controls corrosion of metals
  - o Helps prevent scaling and fouling of heat transfer surfaces

Buffers the pH to maintain it in the optimum operating range

Industry Standards

PetroFlo HVAC-511 Heat Transfer Fluid has been formulated to meet the requirements of the following ASTM standards:

- Food Chemicals Codex (4th Edition)
- ASTM D 1384 Corrosion in glassware of steel, cast iron, aluminum, copper, brass and solder.
- ASTM D 2809 Water pump cavitation erosion/corrosion test
- ASTM D 1881 Foaming tendency test
- ASTM D 4340 Aluminum corrosion at heat transfer surfaces
- ASTM D 2570 Simulated service metal coupon corrosion test

Contact Information :

Tel: (800) 713-0202
(305) 681-6110
www.Petro-Florida.com

Overview

PetroFlo HVAC-511 Heat Transfer Fluid is a fully-formulated containing an inhibitor additive package that controls corrosion of metals, helps prevent scaling and fouling of heat transfer surfaces and buffers the pH to maintain it in the optimum operating range. It was specifically developed for use in heavy-duty industrial applications, including use as a coolant in large stationary engines that drive natural gas compressors and in process heating/cooling systems in refineries and chemical plants. **PetroFlo HVAC-511 Heat Transfer Fluid** meets or exceeds ASTM D 1384, which is the industry-accepted multi-metal corrosion test. The inhibitor system is based on a high-phosphate, multi-component formulation which allows **PetroFlo HVAC-511 Heat Transfer Fluid** to meet or exceed the specifications of the very best national brands on the market, including Ambitrol CN*, Norkool*, Dowtherm* SR-1 and Ucartherm*. It is also stable when mixed with water containing up to 350 ppm total hardness. **PetroFlo HVAC-511 Heat Transfer Fluid** contains a minimum of 92% (vol.) ethylene glycol, and 8% (vol.) deionized water, inhibitors and other performance enhancing additives.

Applications

- Cooling systems for large stationary engines that drive natural gas and other compressors
- Natural gas pipeline line heaters and bath heaters
- Cooling systems for electrical generator set engines
- Power plant combustion air preheaters
- Refinery and chemical plant high load heating/cooling systems
- Pulp and paper processing plant heating/cooling systems

Operating Temperature Range and Freeze/Burst Protection

PetroFlo HVAC-511 Heat Transfer Fluid has a recommended operating temperature range of -60ºF to +350ºF.

PetroFlo HVAC-511 Heat Transfer Fluid can be used to provide both freeze and burst protection for systems which may be exposed to very low temperatures. To obtain adequate freeze protection, select a glycol concentration with a freeze point at least 5°F below the lowest anticipated ambient temperature. (The concentration should be at least 25% to maintain adequate corrosion inhibitors.)

Corrosion Protection

PetroFlo HVAC-511 Heat Transfer Fluid provides outstanding corrosion protection for copper, brass, solder, steel, and cast iron and aluminum. (Aluminum should only be used at temperatures below 190° F.) It meets or exceeds ASTM D 1384, the standard industry corrosion test for these metals. It is also completely compatible with most plastics, elastomers and types of rubber. Its corrosion protection system includes a high level of dipotassium phosphate which passivates iron and steel metal surfaces to protect them from acidic attack and rust formation with a thin molecular coating that doesn't cause fouling or significantly reduce heat conduction through the metal heat transfer surfaces. **PetroFlo HVAC-511 Heat Transfer Fluid** also contains tolytriazoles to protect copper, brass and solder from attack and oxygen scavengers to provide further protection from rust and pitting. A very effective buffering system neutralizes acids formed by the normal thermal and oxidative degradation of glycols, thus maintaining the pH in its optimum range. Additives that control scaling and fouling also help prevent corrosion that occurs below water hardness scale deposits and minimizes coatings that reduce heat transfer rates.

*Dowfrost and Ucarfreeze are trademarks of the Dow Chemical Co.; Jeffcool is a trademark of Hunstman

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Water Quality Requirements

We recommend using deionized or distilled water for dilution. However, tap water, well water, or city water may be used when it meets the quality standards. Your Product contains ingredients that help prevent water hardness compounds, such as calcium and magnesium carbonates and sulfates, from reacting with the inhibitor/additive package ingredients to form precipitates, which can reduce corrosion-protection capabilities and can form corrosion-promoting and heat-transfer-limiting deposits. However, it is still recommended that water with no more than 350 ppm hardness be used to dilute Your Product concentrate or be used as make-up water. Chlorides and sulfates are also usually present in municipal water sources. Both should be limited to concentrations no greater than 50 ppm.

Characteristics	Using Propylene Glycol
Composition (Concentration)	
Ethylene glycol	92.0 volume % min.
Inhibitors & deionized water	8.0 volume % max.
Color	Fluorescent Orange
pH	
50% solution	8.5-9-0
Specific Gravity (60°F)	
94% solution	1.030-1.144
Reserve Alkalinity	
94% solution	25.0 ml. min.
Flash Point	
94% solution	240°F min.

Vol. % Ethylene Glycol	Vol. % PetroFlo HVAC-511	Freezing Point °F	Boiling Point °F @ 760 mm Hg
18.01	19.6	(17.9)	216
27.7	30.0	(96.7)	220
37.5	40.6	-8.1	222
47.6	51.4	-28.9	225
57.6	62.6	-54.9	230

Typical Concentrations of HVAC-511 Fluid Required to Provide Freeze and Burst Protection at Various Temperatures.

Temperature °C	(F)	Fluid Concentration Required: For Freeze Protection Volume %	For Burst Protection Volume %
-7	(20)	17.3	11.9
-12	(10)	27.1	18.4
-18	(0)	35.7	23.8
-23	(-10)	42.2	28.1
-29	(-20)	47.6	32.5
-34	(-30)	51.9	32.5
-40	(-40)	56.3	32.5
-46	(-50)	60.6	32.5
-51	(-60)	64.9	32.5

NOTE: These figures are examples only and may not be appropriate to your situation. Generally, for an extended margin of protection, you should select a temperature in this table that is at least 3C (51`) lower than the expected lowest ambient temperature. Inhibitor levels should be adjusted for solutions of less than 30% glycol. ATTENTION: These are typical numbers only and are not to be regarded as specifications. As use conditions are not within its control, Petro-Florida does not guarantee results from use of the information or products herein; and gives no warranty, express or implied.