



# Anti-Freeze and Heat Transfer Fluids

Made from a Renewable Source



**WHITLAM**  
Specialty Chemicals



**FREEZE-FIGHTER CONCENTRATE** is a Propylene Glycol base anti-freeze made from a renewable seed oil source that is formulated with corrosion inhibitors to prevent sludge and cavitation in the system. **FREEZE-FIGHTER CONCENTRATE** is also available in custom blend applications and pure propylene glycol in bulk without inhibitors. Contact **Whitlam** for special blends.

Stock Code	Package Size	Package	#/ Case	Case Wt. Lbs.	Case Wt. Kg.
FF1	1 Gal. (3.785 L)	Plastic Jug with Spout	6	57	25.9
FF5	5 Gallon (18.9 L)	Pail with Handle	1	44	20.0
FF55	55 Gallon (208 L)	55 Gallon Drum	1	515	233.6
FF275	275 Gallon (1040 L)	275 Gallon Tote	1	2575	1168.0

# FREEZE-FIGHTER CONCENTRATE

## ANTI-FREEZE AND HEAT TRANSFER FLUID FOR HVAC, POTABLE WATER, AND SOLAR SYSTEMS

**FREEZE-FIGHTER CONCENTRATE** is an optimal concentration of propylene glycol with corrosion inhibitors which allows the glycol to be diluted in the field to receive maximum cost efficiencies. **FREEZE-FIGHTER CONCENTRATE** has an operating temperature range of -50°F to 250°F (-46°C to 121°C) and solutions in water provide freeze protection to below -60°F (-51°C) and burst protection to below -100°F (-73°C). See the chart below for proper dilution ratios.



	Percent in Solution					
	75%	60%	50%	40%	30%	25%
<b>Burst Protection °F</b>	-110.0	-90.0	-75.0	-50.0	-20.0	-10.0
<b>Burst Protection °C</b>	-78.9	-67.8	-59.4	-45.6	28.9	-23.3
<b>Freeze Point °F</b>	-70.0	-50.0	-21.0	-2.0	11.0	16.0
<b>Freeze Point °C</b>	-56.7	-45.6	-29.4	-18.9	-11.7	-8.9

Recommended for Hydronic Systems that demand an environmentally friendly product. Excellent for Radiant Tubing, Closed Loop Solar Piping, Boilers, and Potable Water Lines. Deionized water is recommended for diluting **FREEZE-FIGHTER**.



**FREEZE-FIGHTER SOLUTION** is a Propylene Glycol base anti-freeze made from a renewable seed oil source that is formulated with corrosion inhibitors to prevent sludge and cavitation in the system. Recommended for Hydronic Systems that demand an environmentally friendly product. Excellent for Radiant Tubing, Geo-Thermal, Closed Loop Solar Piping, Boilers, and Potable Water Lines.

Stock Code	Package Size	Package	#/ Case	Case Wt. Lbs.	Case Wt. Kg.
AF1	1 Gal. (3.785 L)	Plastic Jug with Spout	6	57	25.9
AF5	5 Gallon (18.9 L)	Pail with Handle	1	44	20.0
AF55	55 Gallon (208 L)	55 Gallon Drum	1	500	226.8
AF275	275 Gallon (1040 L)	275 Gallon Tote	1	2500	1134.0

# FREEZE-FIGHTER SOLUTION

## ANTI-FREEZE AND HEAT TRANSFER FLUID FOR HVAC, POTABLE WATER, AND SOLAR SYSTEMS

**FREEZE-FIGHTER SOLUTION** Anti-Freeze is an economical pre-diluted formula that allows for direct replacement of anti-freeze without the potential of adding contaminants into the system, giving burst protection to -50°F (-46°C). The direct replacement of anti-freeze, without having to measure or calculate the amount needed, provides for an error free method to protect the system. **FREEZE-FIGHTER SOLUTION** Anti-Freeze can also be diluted to offer higher freeze points and burst protection in warmer climates. See chart below.



	Percent in Solution					
	100%	80%	75%	60%	50%	40%
<b>Burst Protection °F</b>	-50.0	-40.0	-30.0	-20.0	-10.0	0.0
<b>Burst Protection °C</b>	-45.6	-40.0	-34.4	-28.9	-23.3	-17.8
<b>Freeze Point °F</b>	-20.0	0.0	6.0	10.0	16.0	19.0
<b>Freeze Point °C</b>	-28.9	-17.8	-14.4	-12.2	-8.9	-7.2

Recommended for Hydronic Systems that demand an environmentally friendly product. Excellent for Radiant Tubing, Closed Loop Solar Piping, Boilers, and Potable Water Lines. Deionized water is recommended for diluting **FREEZE-FIGHTER**.

**FREEZE-FIGHTER Concentrate and FREEZE-FIGHTER Solution** Anti-Freeze are suitable for use with continuous operating systems with temperatures up to 250°F (121°C), and will not degrade significantly from short term exposures to temperatures up to 350°F (177°C). Compatible with PEX, elastomeric tubing, copper, and most all components commonly used in radiant heat and cooling systems.



# FREEZE-POINT-100 SOLUTION

## ANTI-FREEZE AND HEAT TRANSFER FLUID FOR HVAC, POTABLE WATER, AND SOLAR SYSTEMS



**FREEZE-POINT -100** Anti-Freeze is an economical pre-diluted formula that allows for direct replacement of anti-freeze without the potential of adding contaminants into the system, giving burst protection to -100°F (-73°C). The direct replacement of anti-freeze, without having to measure or calculate the amount needed, provides for an error free method to protect the system. **FREEZE-POINT -100** Anti-Freeze can also be diluted to offer higher freeze points and burst protection in warmer climates. See chart below.

	Percent in Solution					
	50%	60%	70%	80%	90%	100%
Burst Point °F	-50.0	-54.0	-57.0	-80.0	-84.0	-100.0
Burst Point °C	-45.6	-47.8	-49.4	-62.2	-64.5	-73.3
Freeze Point °F	0.0	-5.0	-11.0	-35.0	-44.0	-50.0
Freeze Point °C	-17.8	-20.6	-23.9	-37.2	-42.2	-45.6

**FREEZE-POINT -100** Anti-Freeze is suitable for use with continuous operating systems with temperatures up to 250°F (121°C), and will not degrade significantly from short term exposures to temperatures up to 350°F (177°C). Compatible with PEX, elastomeric tubing, copper, and most all components commonly used in radiant heat and cooling systems.



**FREEZE-POINT -100** is a Propylene Glycol base anti-freeze made from a renewable seed oil source that is formulated with corrosion inhibitors to prevent sludge and cavitation in the system. **FREEZE-POINT -100** is recommended for Hydronic Systems that demand an environmentally friendly product. Excellent for Radiant Tubing, Closed Loop Solar Piping, Boilers, and Potable Water Lines.

Stock Code	Package Size	Package	#/Case	Case Wt. Lbs.	Case Wt. Kg.
FP1	1 Gal. (3.785 L)	Plastic Jug with Spout	6	58	26.3
FP5	5 Gallon (18.5 L)	Pail with Handle	1	45	20.4
FP55	55 Gallon (208 L)	55 Gallon Drum	1	515	233.6
FP275	275 Gallon (1040 L)	275 Gallon Tote	1	2575	1168.0



**SOLAR HI-TEMP** Heat Transfer Fluid and Anti-Freeze Solution works excellent in Closed Back Solar Systems, Closed Loop Solar Systems, Evacuated Tube Systems, Hydronic HVAC Systems, Potable Water Lines, and Fire Sprinkler Systems.

## SOLAR HI-TEMP HEAT TRANSFER AND ANTI-FREEZE SOLUTION

- Withstands Temperatures up to 450°F (232°C)\*
- Generally Recognized as Safe
- Fully Biodegradable
- Easy, Ready Mixed Formula
- Nontoxic, Noncorrosive

**SOLAR HI-TEMP** is a Nontoxic Heat Transfer Fluid and Anti-Freeze Solution with special anti-corrosion inhibitors, and color indicators, that provides heat transfer up to 356°F (180°C), freeze protection to -15°F (-26°C) and system burst protection to -50°F (-46°C). **SOLAR HI-TEMP** is excellent for HVAC, Potable Water, and Solar Systems. **SOLAR HI-TEMP** Heat Transfer Fluid and Anti-Freeze Solution is ready to use. The formula provides an error free method to protect the system. No dilution is necessary to maintain maximum heat transfer and freeze protection.

Properties of SOLAR HI-TEMP at Varying Degrees										
Temperature (Celsius)	0	10	20	30	40	50	60	70	80	90
Viscosity of Solar Hi-Temp										
Centipoises	15.2	9.7	6.5	4.9	3.8	2.8	2.3	1.8	1.5	1.3
Heat Coefficient of Solar Hi-Temp										
Coefficient of Thermal Conductivity	0.00100	0.00102	0.00103	0.00105	0.00106	0.00108	0.00109	0.00111	0.00112	0.00114
K1=0.001+0.00000155 (t)										

\*Suitable for use with continuous operating systems with temperatures up to 356°F (180°C), and will not degrade significantly from short term exposures to temperatures up to 450°F (232°C).



Physical Properties	
Coefficient of Thermal Expansion (Gravimetric):	0.000515 at 20° C
Molar Heat of Solution:	973 Cal (4074 Joules)
Surface Tension:	65 dynes/cm at 20°C
Specific Gravity:	1.19 g/cm <sup>3</sup>
Boiling Point:	468° F (242° C)
pH:	5.8 ± 0.2
Color:	Deep Blue

Stock Code	Package Size	Package	#/Case	Case Wt. Lbs.	Case Wt. Kg.
SH1	1 Gal. (3.785 L)	Plastic Jug with Spout	6	62	28.1
SH5	5 Gallon (18.5 L)	Pail with Handle	1	51	23.1
SH55	55 Gallon (208 L)	55 Gallon Drum	1	580	263.1



# Anti-Freeze and Heat Transfer Fluids



## Made from Renewable Sources



Whitlam has had a long tradition since 1900 of manufacturing environmentally friendly products with the advent of the first "lead free" packaged thread compound. Today we are dedicated, more than ever, in providing top quality materials that offer a sustainable future. Whitlam's Anti-Freeze and Heat Transfer Fluids are specifically engineered from renewable sources, and are considered "Generally Regarded as Safe" (GRAS), making them safe for incidental food contact. Along with offering a safe solution for incorporation, Whitlam's Anti-Freeze and Heat Transfer Fluids offer a biodegradable product allowing for safe and proper disposal.

The product quality you depend on is based on chemical engineering expertise. We maintain quality control by testing products during manufacture, and assure that packaging and shipping conditions are correct for each product. We are here to meet the demands of the market and exceed customer expectations. Whitlam continues to explore new ways to bring you the next generation of quality, innovative products.



## How to Size Your System

The capacity of your boiler can be found on the boiler plate, in the boiler manual or contact the manufacturer. To determine the Total Capacity of the System use one of the following methods:

**Direct Method:** Fill system completely, making sure all components of system are full. Shut system down, let pressure drop to a safe level. Drain out fluid into suitable container and record the number of gallons removed. This is Total System Fluid Capacity.

**Estimated Method:** Determine system pipe sizes and amount of linear footage for each size. Use the following chart to help determine the number of gallons of solution required to fill the system. Add this number to the gallon capacity of the boiler or equipment in the system to determine the Total System Fluid Capacity.

VOLUME/PIPE SIZING									
PIPE DIAMETER	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
Number of Gallons Per 100' Standard Steel Pipe	1.6	2.8	4.5	10.5	17.5	25.0	39.0	53.0	66.7
Number of Gallons Per 100' Type "L" Copper Tubing	1.2	2.5	4.3	9.3	16.1	24.8	35.4	47.8	62.0

Whitlam Anti-Freeze and Heat Transfer products are formulated using virgin propylene glycol and glycerin. For assurance of material compatibility and nontoxicity characteristic, dilution or mixing of Whitlam products with other manufacturers' products may compromise these critical requirements and is not recommended.

