

FIREBIRD Solar LC

DESCRIPTION

FIREBIRD Solar LC - mixed with the appropriate amount of water is used as a solar heat transfer fluid based on mono propylene glycol. Ready to use products are also available and are identified below.

Firebird Solar LC is formulated to withstand periodic stagnation of solar collectors of up to and beyond 200degC.

APPLICATION

Firebird Solar LC provides protection against boiling, freezing and corrosion within solar panel systems. The dilution is determined by system requirements, mainly freezing requirements. However, to ensure good corrosion protection it is recommended to use at least 35 vol. % of **Firebird Solar LC** in the coolant solution, which provides freeze protection to -17°C .

Mixtures with more than 70 vol. % of **Firebird Solar LC** in water are not recommended, because the physical properties like heat transfer are no longer sufficient.

Dilution Firebird Solar L , vol %	Freeze Point, °C	Dilution Firebird Solar L , vol %	Freeze Point, °C
35.0	-17	54.1	- 40
40.0	-20	56.9	- 45
47.6	-30	61.8	- 55

COMPATIBILITY AND MIXABILITY

Firebird Solar LC is compatible with most other heat transfer fluids based on propylene glycol. Exclusive use of **Firebird Solar LC** is recommended for optimal corrosion protection. This heat transfer fluid is compatible with European hard tap waters, up to a water hardness of 30° dH (German hardness degrees equivalent to 535 mg/l CaCO_3).

Firebird Solar LC

CHEMICAL AND PHYSICAL PROPERTIES

Properties	Firebird Solar LC	Method	Properties	Firebird Solar LC	Method
Propylene glycol	92 % w/w glycol	Internal			
Inhibitor content	5 % w/w	internal	Specific gravity, 20°C	1.0423typ.	ASTM D1122
Water content	5 % w/w max	ASTM D1123	Equilibrium boiling point	157°C typ.	ASTM D1120
Nitrite, amine, phosphate	nil	IC	pH	9.1 typ.	ASTM D1287
Colour	light blue-green	visual	Refractive Index, 20°C	1.445 typ.	ASTM D1218

Properties	L -35°C	L -20°C	L -17°C	method
Colour	light blue-green	light blue-green	light blue-green	visual
pH	8.8 typ.	8.8 typ.	8.7 typ.	ASTM D1287
Freeze Point	- 35°C	- 20°C	-17°C	ASTM D 1177
Specific gravity, 20°C	1.041 typ.	1.037 typ.	1.029 typ.	ASTM D1122

CORROSION PROTECTION

Firebird Solar LC contains an optimized inhibitor package to ensure maximum and long lasting corrosion protection at both high and low temperature. The inhibitors are based on carboxylate technology, which guarantees a longer lifetime than with traditional products within solar applications.

The product has been successfully tested to temperatures beyond 300deg C eg; during stagnation/continuous high temperature exposure.

Anti-corrosion performance is demonstrated through standard and specific corrosion testing.

ASTM D1384 glassware corrosion tests	Weight loss in mg/coupon ¹					
	Brass	Copper	Solder	Steel	Cast Iron	Aluminum
'Industry' limit (max)	10	10	30	10	10	30
Reference product ²	1.0	1.5	1.25	-0.1	-0.1	-0.9
Firebird Solar LC	0.6	0.9	0.7	0.2	0.1	-2.0



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1 : Weight loss AFTER chemical cleaning. Weight gain is indicated by a - sign.

2 : Reference product is a mono propylene glycol based product, but with a traditional inhibitor package

<u>Dynamic heat transfer corrosion test (2000 W - 48 hrs)</u>	Weight loss in mg/coupon¹ on Aluminum
Firebird Solar L SolarL-7²	
Hot coupon	23.2
Top coupon	2.0
Firebird Solar L SolarL-30	
Hot coupon	31.7
Top coupon	7.5
Firebird Solar L SolarL-40	
Hot coupon	116.7
Top coupon	15.6
Reference product -30³	
Hot coupon	343.8
Top coupon	30.8

1 Weight loss AFTER chemical cleaning. Weight gain is indicated by a - sign.

2 Typical test conditions are 20 vol-%

3 Reference product is a mono propylene glycol based product with a traditional inhibitor package

STORAGE REQUIREMENTS

The product should be stored at ambient temperatures and periods of exposure to temperatures above 35°C should be minimized. As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation

Firebird Solar LC can be stored for minimum 8 years in unopened containers without any effect on the product quality or performance. It is strongly recommended to use new containers and not recycled ones.

TOXICITY & SAFETY

For detailed Toxicity and Safety Data we refer to the Material Safety Data Sheet. The transport is not regulated.

All information contained in this Product Information Leaflet is accurate to the best of our knowledge and belief as at the date of issue specified. However, the Company makes no warranty or representation, express or implied, as to the accuracy or completeness of such information.

