Zitrec™ LC

1. Description

Zitrec LC - mixed with the appropriate amount of water - is used as a multipurpose heat transfer fluid based on mono propylene glycol.

2. Application

Many applications in the industry require a fluid to transport heat or cold. Those applications range from solar panels or heat pump systems, over cooling or heating of industrial processes and refrigerants in indirect cooling systems to artificial ski-tracks or ice rigs. This transport medium is usually called secondary refrigerant or secondary coolant. The ideal secondary refrigerant must ensure a good thermal conductivity; have a high specific heat and low viscosity. It is also important that the secondary refrigerant is non-flammable and compatible with common engineering materials.
Zitrec LC provides protection against boiling, freezing and corrosion. 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 **Zitrec LC** in the coolant solution, which provides freeze protection to –17°C. For lower freezing protection it is recommended to use **Zitrec L–15°C**. This ready-to-use solution contains an adjusted corrosion inhibitor package to ensure optimal corrosion protection.

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

dilution Zitrec L, vol %	freeze point, °C	dilution Zitrec L, vol %	freeze point, °C
33.5	-15	54.1	- 40
43.7	-25	56.9	- 45
47.6	- 30	61.8	- 55

3. Compatibility and mixability

Zitrec LC is compatible with most other heat transfer fluids based on propylene glycol. Exclusive use of **Zitrec 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 $CaCO_3$).

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4. 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.

Zitrec 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.

5. Toxicity & safety

For detailed toxicity and safety data we refer to the material safety data sheet. The transport is not regulated.

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Addendum - Technical information

Chemical and physical properties

properties	Zitrec LC	method	properties	Zitrec LC	method
propylene glycol	92 % w/w glycol	internal			
inhibitor content	5 % w/w	internal	density, 20°C	1.0423typ.	ASTM D5931
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	1.432 typ.	ASTM D1218

properties	L –35°C	L –25°C	L –15°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	- 25°C	-15°C	ASTM D 1177
specific gravity, 20°C	1.041 typ.	1.037 typ.	1.029 typ.	ASTM D1122

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

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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
Zitrec LC	0.6	0.9	0.7	0.2	0.1	-0.2

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

Dynamic heat transfer corrosion test (2000W – 48 hrs)

	weight loss in mg/coupon[1] on Aluminum
Zitrec L-7 [2]	
hot coupon	23.2
top coupon	2.0
Zitrec L-30	
hot coupon	31.7
top coupon	7.5
Zitrec L-40	
hot coupon	116.7
top coupon	15.6
Reference product -30 [3]	
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

Corrosion protection

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