

# 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 rinks. 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  $-17^{\circ}\text{C}$ .

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	Refractive index @ 20°C
32.9	-15	1.371
38.8	-20	1.377
44.0	-25	1.383
48.5	-30	1.387
55.4	-40	1.395
57.8	-45	1.397
59.4	-50	1.399
60.4	-55	1.400

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## Zitrec® LC

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### 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<sub>3</sub>). For optimal

performance and controlled quality, we recommend the use of deionised or distilled water to prepare the ready-to-use dilutions. We refer to our product information leaflet on water quality recommendations. Contact your local area sales manager for more information.

### 4. Storage requirements

The product should be stored above -20°C and preferably at ambient temperatures. Periods of exposure to temperatures above 35°C should be minimized.

Further, it is strongly advised not to expose the coolant in translucent packages to direct sunlight because this can degrade the colour dyes present in the coolant, and result in fading of the colour or discoloration over time. This reaction can be accelerated if coupled with high ambient temperatures. It is

therefore advisable to store coolant filled in translucent packages indoors to avoid this issue.

**Zitrec® LC** can be stored for minimum 8 years in unopened containers without any effect on the product quality or performance. As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation.

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## Zitrec® LC

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### 5. Toxicity & safety

**Zitrec® LC** has been granted a KIWA-ATA (Toxicological Approval) certificate under the number K75197.

KIWA NV is an independent Dutch organization that issues certifications in a wide domain ranging from quality, environmental to safety. KIWA NV is in this respect responsible for the objective assessment on the suitability of a product for the regulation of materials & chemicals for drinking and warm tap water provision\*.



Based on a review of the formulation composition, as well as an on-site inspection in our production facility, **Zitrec® LC** has been granted the KIWA-ATA certification in October 2012.

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

\* *Regeling materialen en chemicaliën drink- en warm tapwatervoorziening*

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## Zitrec® LC

### Addendum - Technical information

#### Chemical and physical properties

properties	Zitrec® LC	method
propylene glycol	92 % w/w	internal
inhibitor content	5 % w/w	internal
water content	5 % w/w max	ASTM D1123
nitrite, amine, phosphate	nil	IC
colour	light blue-green	visual
density, 20°C	1.042 typ.	ASTM D5931
equilibrium boiling point	162°C typ.	ASTM D1120
pH	9.2 typ.	ASTM D1287
refractive Index, 20°C	1.433 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.	8.7 typ.	8.6 typ.	ASTM D1287
freeze point	- 35°C	- 25°C	-15°C	ASTM D 1177
density , 20°C	1.041 typ.	1.036 typ.	1.028 typ.	ASTM D5931

**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.

# Zitrec® LC

## ASTM D1384 glassware corrosion tests

	weight loss in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast iron	Aluminium
'Industry' limit (max)	10	10	30	10	10	30
<b>Zitrec® LC</b>	1	1	3	0	-1	-1

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

## Dynamic heat transfer corrosion test (2000W – 48 hrs – 20wt% dilution)

	weight loss in mg/coupon <sup>1</sup> on Aluminium	
	Zitrec® LC <sup>2</sup>	
hot coupon	18	
top coupon	13	

- 1 Weight loss AFTER chemical cleaning. Weight gain is indicated by a - sign.  
 2 Typical test conditions are 20 vol-%

Corrosion protection