

# Zitrec® MC

## 1. Description

**Zitrec® MC** - based on mono ethylene glycol and mixed with the appropriate amount of

water - is used as a multipurpose heat transfer fluid.

## 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® MC** 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 33 vol. % of **Zitrec® MC** in the coolant solution, which provides freeze protection to -20°C.

Mixtures with more than 70 vol. % of **Zitrec® MC** in water are not recommended, because the freeze point is increasing again and physical properties are worse.

To boost the inhibitor concentration in installations filled with **Zitrec® MC**, **Zitrec® IC** may be added. To calculate the exact dosages, see our **Zitrec®** calculation tool.

Dilution Zitrec® M vol %	Freeze point °C	Refractive index @ 20°C
39.1	-25	1.375
43.8	-30	1.380
48.2	-35	1.385
52.4	-40	1.389
56.2	-45	1.393
59.9	-50	1.396
63.5	-55	1.399

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## 3. Compatibility and mixability

**Zitrec® MC** is compatible with most other heat transfer fluids based on ethylene glycol. Exclusive use of **Zitrec® MC** 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>).

However, 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® MC** 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.

## 5. Toxicity & safety

For Toxicity and Safety Data we refer to the Material Safety Data Sheet. The information and advice given should be observed and due attention should be given to the precautions necessary for handling

chemicals. This product should not be used to protect the inside of drinking water systems against freezing. The transport is not regulated.

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# Zitrec® MC

## Addendum - Technical information

### Chemical and physical properties

properties	Zitrec® MC	method
ethylene glycol	92% w/w glycol	internal
inhibitor content	5 % w/w	internal
water content	5% w/w max	ASTM D1123
nitrite, amine, phosphate	nil	IC
colour	yellow	visual
density, 20°C	1.113 typ.	ASTM D5931
equilibrium boiling point	180°C typ.	ASTM D1120
pH	8.6 typ.	ASTM D1287
refractive index, 20°C	1.431 typ.	ASTM D1218

properties	Zitrec® M -40°C	Zitrec® M -25°C	method
colour	yellow	yellow	visual
pH	8.6 typ.	8.5 typ.	ASTM D1287
freeze point	- 40°C	- 25°C	ASTM D 1177
specific gravity, 20°C	1.071 typ.	1.056 typ.	ASTM D5931

**Zitrec® MC** 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® MC

### ASTM D1384 glassware corrosion tests

	weight loss in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	cast iron	aluminum
industry limit (max)	10	10	30	10	10	30
<b>Zitrec® MC</b>	0.9	1	0.6	0.2	-0.1	0.1

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

## Corrosion protection

### Dynamic heat transfer corrosion tests (2000W)

	weight loss in mg/coupon <sup>1</sup>	
	cast iron	aluminium
test duration, hrs	48	48
<b>Zitrec® M-9</b> <sup>2</sup>		
hot coupon	1.5	23.3
top coupon	2.4	3.6
<b>Zitrec® M-40</b>		
hot coupon	-	2.1
top coupon	-	33.3

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

2 typical test conditions are 20 vol-% dilution