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# Freecor® BFC

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## 1 Description

**Freecor® BFC** is a highly cost-efficient OAT (organic additive technology) engine coolant concentrate providing frost and corrosion protection.

In today's combustion engines, the engine and cooling system need to be protected against corrosion and frost damage. Therefore, the engine coolant needs to provide freezing and boiling protection, be compatible with commonly used metals and elastomers while providing efficient heat transfer.

**Freecor® BFC** combines MEG (Mono Ethylene Glycol) as base fluid with a well-balanced fully organic inhibitor package, offering protection to all cooling system components including standard used metals and elastomers.

As our **Freecor® BFC** inhibitor package is fully organic, it offers excellent heat transfer properties. Exempt from potentially harmful additives such as nitrites, amines and phosphates, the coolant also contributes to a safer environment. **Freecor BFC** is also silicate free, which excludes any possible issues caused by instable silicate gel or silicate drop-out.

**Freecor® BFC** is an all-round coolant, meeting industry standards such as British Standard BS 6580 and the French Standard NF R 15-601.

This makes **Freecor® BFC** a cost-effective solution for multiple engine coolant system applications.

## 2 Benefits

**Freecor® BFC** offers the following benefits to the user:

- **corrosion protection, also for non-ferrous metals**
- **frost protection**
- **boiling protection**
- **good miscibility**
- **seal compatibility**
- **hard water stability**
- **environmentally friendly**
- **cost-efficient**

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### 3 Application

**Freecor® BFC** provides year-round frost and corrosion protection. It is recommended to use 50 vol. % of **Freecor® BFC** in the coolant solution and a minimum of 33 vol.% to secure corrosion protection properties. A 33 vol.%

dilution provides frost protection to -19°C. Concentrations higher than 70 vol. % are not recommended as the maximum frost protection is reached at that level.

### 4 Standards

**Freecor® BFC** conforms to British Standard BS 6580:1992 and BS 6580:2010\* and French Standard NF R 15-601.

**Freecor® BFC** meets the requirements of:

- AS 2108-2004
- ASTM D3306-20 Type III for dilutions of 52v% and higher
- CUNA NC 956-16 & 18 (Except RA)
- GB 29743-2013 type II for dilutions
- SAE J1034 for dilutions of 52v% and higher
- UNE 26-361-88/1

\* For products containing 25% or more 1,2 ethane diol (MEG), supplied as packaged goods intended for retail to the general public, BS 6580:2010 requires the addition of minimum 25 ppm of denatonium benzoate (bitterant), or the package must be fitted with a childproof closure.

### 5 Availability

Please contact your local area sales manager on availability of packages, dilutions, and colours.

### 6 Compatibility and miscibility

**Freecor® BFC** is compatible with MEG - based coolants. Exclusive use of **Freecor® BFC** is however recommended for optimum corrosion protection and inhibitor stability. To guarantee optimal performance and controlled quality, we also recommend the

use of deionised or distilled water to prepare the ready-to-use dilutions. Please read our product information leaflet on water quality recommendations or contact your local area sales manager for more information.

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## Freecor<sup>®</sup> BFC

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### 7 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.

As with any antifreeze coolant, please avoid the use of galvanized steel for pipes or any other part of the storage/mixing installation. To prevent the degradation of the colour dyes and fading or discoloration in time of the

colour present in the coolant, it is strongly advised not to expose the coolant in translucent packages to direct sunlight. This discoloration process can be accelerated if coupled with high ambient temperatures. It is therefore advisable to store coolant filled in translucent packages indoors to preserve the colour.

### 8 Toxicity & safety

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

chemicals. This product must not be used to protect the inside of drinking water systems against freezing.

The transport is not regulated.

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## Addendum - Technical information

### Chemical and physical properties

	<b>Freecor® BFC</b>	Specification limits NF R 15-601	specification limits BS 6580:2010	method
appearance	clear liquid		clear liquid	visual
colour	optional		optional	visual
density 20°C, kg/l	1.110 typ		-	ASTM D5931
refractive Index, 20°C	1.427 typ	report	-	ASTM D1218
ash content, % w/w	0.4 typ		-	ASTM D1119
equilibrium boiling point, °C	159 typ	≥ 155	> 150	ASTM D1120
pH (33 vol %)	8.2 typ	7.0 ≤ pH ≤ 9.5	-	ASTM D1287
pH (50 vol %)	8.4 typ	7.0 ≤ pH ≤ 9.5	-	ASTM D1287
freezing point, °C (50 vol %)	-35.0 typ		-33 max	ASTM D1177
reserve alkalinity (pH 5.5)	3.0 typ	report	-	ASTM D1121
foaming properties at 88°C		report		
■ foam, ml	50 typ		50	ASTM D1881
■ break time, sec	5 typ		5	
hard water stability, ml	<0.05 typ	<0.05 typ	< 0.5	NF R15-602-6 ASTM D7437

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### ASTM D1384: Standard Test Method for Corrosion Test for Engine Coolants in Glassware

ASTM D1384 is almost identical to NF R15-602-7

Corrosion protection

	weight loss in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast iron	Aluminium
NF R 15-601 (max)	5	5	-	2.5	4	10
BS 6580:2010 (max)	10	10	30	10	10	15
<b>Freecor® BFC</b>	0.5	0.5	4.9	0.7	0.3	3.0

<sup>1</sup> weight loss AFTER chemical cleaning acc. to ASTM procedure. weight gain is indicated by a - sign.

### ASTM D4340 aluminium heat transfer test

	weight loss in mg/cm <sup>2</sup> /week
NF R 15-601 (max)	1.0
BS 6580:2010 (max)	1.0
<b>Freecor® BFC (typ)</b>	0.3