

# Freecor<sup>®</sup> BMC

## Si-OAT technology with phosphate

**Freecor<sup>®</sup> BMC** is Arteco's most versatile and multifunctional coolant for Internal Combustion Engines and Battery Electric Vehicles that provides unique hard water and oxidation stability.

As an ethylene glycol-based coolant, **Freecor<sup>®</sup> BMC** contains cutting-edge silicate inhibitor technology with phosphate supported by a robust organic backbone (OAT - Organic Additive Technology).

**Freecor<sup>®</sup> BMC** is a next generation Si-OAT technology coolant.



## PRODUCT BENEFITS



### Reduced complexity

- Replaces former Si-OAT generation coolants
- Replaces former hybrid Si-OAT generation coolants containing borate, molybdate and nitrate



### Advanced features

- Thermal oxidative stability
- Controlled Atmosphere Brazing (CAB) flux compatibility
- State-of-the-art silicate stabilisation
- Outstanding aluminium passivation
- Excellent hard water stability



### Environment and Health

- Reduced waste thanks to long drain intervals and less replacement of materials
- Free from nitrites, borates, amines and 2-ethylhexanoic acid



### Compatibility

- Compatible with widely and commonly used construction materials such as metals, alloys, rubbers and engineering (thermo)plastics
- Compatible with other coolants, such as former generations of Si-OAT

## Application

Arteco's **Freecor® BMC** can be used in a wide range of drivetrains. It is especially designed for use in modern Internal Combustion Engines (ICE), Hybrids and indirect cooling systems of Battery Electric Vehicles (BEV).

**Freecor® BMC** provides year-round frost and corrosion protection. It is recommended to use at least 35 vol.% of the antifreeze in the final coolant solution. Concentrations higher than 70 vol.% are not recommended.

## Key approvals, standards and specifications

**Freecor® BMC** meets the following standards:

- ASTM D3306
- JIS K2234:2018
- FVV R 530:2005
- BS 6580:2010\*
- Ö-Norm<sup>1</sup>\*
- GB 29743:2013\* (PC)
- AFNOR 15-601

<sup>1</sup> except for RA

\* modified

**Freecor® BMC** is suitable for use in / meets requirements of:

- BMW LC 87, LC 97, LC 18
- Alfa Romeo, Fiat, Lancia 9.55523
- Chrysler MS 7170
- Opel / Vauxhall GME L1301
- VW G12 EVO (TL 774-L)
- MAN 324NF, MAN 324 Si-OAT
- MWM 0199-99-2091/12
- Iveco standard 18-1830
- Cummins 85T8-2
- MB 325.5
- Deutz DQC CA-14
- Ford ESD-M97B49-A
- Volvo Cars 128 6083/002
- JI Case JIC-501
- MTU / Roll Royce MTL 5048
- Toyota 1WW/2WW Engines

## Toxicity & safety

For Toxicity and Safety Data we refer to the 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.

## Packaging

Arteco's **Freecor® BMC** is available in the following packs & colours:



**Bulk**



**Pail**



**Flexi bag/  
IBC 1000L**



**Drum**



**Other:  
1L, 2L, 5L, 20L**



Pink



Blue



Green

## Contact details

Should you have questions with regards to Arteco's **Freecor® BMC**, related to available packages or colours or on one of the other Arteco solutions, please do not hesitate to contact your local Area Sales Manager or send your inquiry to [info@artecco-coolants.com](mailto:info@artecco-coolants.com).

## Addendum - Technical information

### Chemical and Physical Properties

Property	Freecor® BMC	Unit	ASTM D3306 requirements	Method
Ethylene glycol	91 min.	% w/w	base	
Other glycols	1 max.	% w/w	5% max.	
Inhibitor content	4.5 typ.	% w/w		
Water content	4 max.	% w/w	5% max.	ASTM D1123
Ash content	4.5 max.	% w/w	5% max.	ASTM D1119
Nitrite, amine, borate, 2EHA	-			
Relative density - specific gravity (15°C)	1.123		1.110 - 1.145	ASTM D5931
Density (20°C)	1.120 typ.	kg/l		ASTM D1122
Equilibrium boiling point	163 min.	°C	> 163	ASTM D1120
Reserve Alkalinity	9.1 min.		report	ASTM D1121
pH (20°C)	8.5 typ.			ASTM D1287
Refractive Index (20°C)	1.432 typ.			ASTM D1218

### Physical data - typical values

	50% dilution	35% dilution	Method
pH	8.2	8.1	ASTM D1287
Initial crystallisation, °C	-36.4	-19.9	ASTM D1177
Density (20°C), kg/l	1.072	1.051	ASTM D1121
Refractive index	1.387	1.371	ASTM D1218
Equilibrium boiling point, °C	109	106	ASTM D1120

## Addendum - Laboratory test results

Arteco's **Freecor® BMC** has been submitted to various lab tests. For more details, please contact your local Area Sales Manager.

### ASTM D1384 - Glassware corrosion test

	Weight change in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast Iron	Aluminium
<b>ASTM D3306 (max.)</b>	10	10	10	10	10	10
<b>Freecor® BMC</b>	0	0	1	0	0	0

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

### ASTM D4340 - Aluminium heat rejection test (Hot surface corrosion test)

	Weight change in mg/cm <sup>2</sup> /week <sup>1</sup>
<b>ASTM D3306 (max.)</b>	1.0
<b>Freecor® BMC</b>	-0.1

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

### ASTM D2570 - Simulated service corrosion test (Circulation test)

	Weight change in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast Iron	Aluminium
<b>ASTM D3306 (max.)</b>	20	20	60	20	20	60
<b>Freecor® BMC</b>	2	3	20	0	0	-2

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

### ASTM D2809 - Water pump cavitation test

	Pump rating <sup>1</sup>	pH	
<b>ASTM D3306 requirement</b>	> / = 8	Before test	After test
<b>Freecor® BMC</b>	8	8.01	7.6

<sup>1</sup> ASTM D3306 requires a pump rating of 8 or higher on a scale of 10

**JIS K2234:2018 - Circulating corrosion properties (30v%, 88°C, 1000Hrs)**

	Weight change in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast Iron	Aluminium
<b>JIS K2234:2018</b>	0.30	0.30	0.60	0.30	0.30	0.60
<b>Freecor® BMC</b>	0.03	0.03	-0.07	0.00	0.22	0.04

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

	pH	
	After test	Change
<b>JIS K2234:2018</b>	6.55 to 11	+/- 1.0
<b>Freecor® BMC</b>	8.06	-0.01

**Shelflife & storage requirements**

**Freecor® BMC** can be stored for minimum 3 years in unopened containers without any effect on the product quality for performance. The product should be stored above -20°C and preferably at ambient temperatures. Periods of exposure to temperatures above 35°C should be minimised.

It is strongly advised not to expose the coolant in translucent packages to direct sunlight because this can 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 the coolant indoors, to use new and not recycled containers and where possible packages with a UV filter. As with any antifreeze coolant, the use of galvanised steel is not recommended for pipes or any other part of the storage/mixing installation and for packaging.

**Compatibility and mixability**

**Freecor® BMC** is compatible with most other coolants based on ethylene glycol such as (former) Si-OAT coolant generations. Exclusive use of **Freecor® BMC** is however recommended for optimum performance. As for any coolant, we recommend the use of deionised or distilled water to prepare the ready-to-use dilutions for optimal performance and controlled quality.

We refer to our product information leaflet on water quality recommendations. Contact your local Area Sales Manager for more information.

*The information contained in this Product Information Leaflet is intended to provide the customer and/or end-user with an understanding of the properties of the product, it being understood that this information may not be construed as any express or implied warranty that the product is suitable for a specific use or application. All information contained in this Product Information Leaflet, including but not limited to text or graphic material, is the property of Artec NV, is accurate to the best of our knowledge at the date of issue specified, supersedes all previous editions and information contained in them, and is subject to change without notice. Any textual or graphic material you copy, print, or download from this Product Information Leaflet is for your personal, non-commercial use only, and you not change or delete any copyright, trademark or other proprietary notices. Any other use, including but not limited to the reproduction, distribution, display or transmission of the content of this document is strictly prohibited, unless authorized by Artec NV in writing.*

Version 202206-v01.1