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# Corrosion Inhibitor BSB-S

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## 1 Description

**Corrosion Inhibitor BSB-S** is an economical aqueous inhibitor package that can be used to formulate coolants that provide frost and corrosion protection. The inhibitor package can be used in a diversity of base fluids like MEG, MPG and alike. Only a limited amount of inhibitors is needed to provide adequate corrosion

protection. Exempt from potentially harmful additives such as nitrites, amines and phosphates, the coolant also contributes to a safer environment. The coolant is also free of silicates and borates.

Unlike higher performance coolants, it is recommended to change the coolant every 2 years.

## 2 Benefits

For the perfect operation of water-cooled internal combustion engines, the engine and cooling system have to be adequately protected from corrosion and frost damage. To that purpose antifreeze coolant is added to the cooling water.

Coolants formulated from **Corrosion Inhibitor BSB-S** offer the following benefits to the user:

- **corrosion protection**
- **frost protection**
- **boiling protection**
- **miscibility**
- **seal compatibility**
- **hard water stability**
- **low cost**

## 3 Blending engine coolant from Corrosion Inhibitor BSB-S

Coolants meeting the British Standard requirements can be blended from **Corrosion Inhibitor BSB-S** by simply mixing the following ingredients at ambient temperatures:

<i>Ingredient (weight %)</i>	<b>BS Coolant</b>
Propylene glycol or Mono Ethylene glycol	92.95
<b>Corrosion Inhibitor BSB-S</b>	6.00
Water	1.00
Antifoam	dosage depend on type used
Coloring agent	optional

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### 4 Application

**Corrosion Inhibitor BSB-S** mixed at 6 % wt in propylene glycol or monoethylene glycol provides year-round frost and corrosion protection.

It is recommended to use at least 33 vol. % of the antifreeze in the final coolant solution. This provides frost protection to

-20°C. Concentrations higher than 70 vol % are not recommended; maximum frost protection (about -69°C) is obtained at a concentration of 68 vol %.

If no freezing protection is required, BSB-S can also be used in water at a dosage of 3 wt %.

### 5 Standards

MEG and MPG coolants made from **Corrosion Inhibitor BSB-S** and blended according to the formulation mentioned in point 3, are conformable to British Standard BS 6580: 1992 and BS 6580:2010\*

*\* For product containing 25% or more 1,2 ethane diol (MEG) which is 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 has to be fitted with a childproof closure.*

### 6 Availability

**Corrosion Inhibitor BSB-S** is available in bulk and 1000 L containers.

### 7 Storage requirements & Product handling

The product should be stored above -5°C and preferably at ambient temperatures. 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.

**Corrosion Inhibitor BSB-S** can be stored for minimum 2 years in unopened containers without any effect on the product quality or performance. 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.

At higher temperatures and in open containers considerable amounts of water can evaporate and this may result in solidification of the product, without negative effect on the product.

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Because of the super concentrated character of **Corrosion Inhibitor BSB-S**, the product contains an antifoam agent to limit the foaming during pumping, drum filling and blending. This antifoam may separate in time because of the super concentrated nature of the product; however this has no adverse effect on the

product nor on the final coolant solution or antifreeze. However, this antifoam is not intended to pass foaming specifications of BS6580:1992 resp. 2010 on the finished coolant. If this is required, a specific antifoam agent should be selected and blended into the final antifreeze.

### 8 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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## Corrosion Inhibitor BSB-S

### Addendum - Technical Information

#### Chemical and physical properties

	BSB-S		method	
inhibitor content	42 % w/w			
water content	58 % w/w		ASTM D1123	
nitrite, amine, phosphate, borate, silicate	nil			
colour	uncoloured			
density, 20°C (kg/l)	1.050 – 1.080		ASTM D5931	
pH	10.0 typ.		ASTM D1287	
	6 % BSB-S in MPG <sup>2</sup>	6 % BSB-S in MEG <sup>2</sup>	limit	method
pH (33 vol%)	8.7 typ.	8.5 typ.		BS 5117:1.1
reserve alkalinity (pH 5.5)		3.2 typ.		BS 5117:1.1
boiling point		177°C typ.	≥ 150°C	BS 5117:1.2
freezing point		-36°C typ.	≤ -33°C at 50 vol%	BS 5117:1.3
hard water stability	clear solution no deposits	clear solution no deposits	≤ 0.5 ml	BS 5117:1.5

## Corrosion Inhibitor BSB-S

Corrosion protection

### BS-5117 : 2.2 Hot immersion glassware corrosion test

	weight loss in mg/coupon <sup>1</sup>					
	Brass	Copper	Solder	Steel	Cast iron	Aluminium
ASTM D3306 (max)	10	10	30	10	10	30
BS 6580: 1992 (max)	10	10	15	10	10	15
<b>6% BSB-S in MPG<sup>2</sup></b>	1	1	1	0	-0	5
<b>6% BSB-S in MEG<sup>2</sup></b>	0	1	1	0	-0	5

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

<sup>2</sup> blended according to formulation as on page 1

### BS 5117: 2.2 Aluminium heat transfer test

	weight loss in mg/cm <sup>2</sup> /week
BS 6580 (max)	1.0
<b>6 % BSB-S in MPG<sup>2</sup></b>	-0.3
<b>6 % BSB-S in MEG<sup>2</sup></b>	-0.3