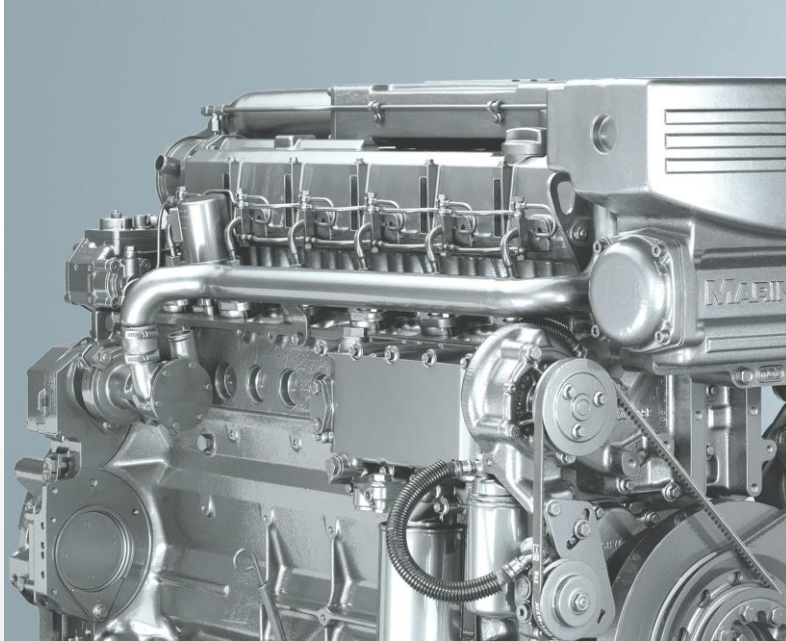


CORACON Corrosion Protection Concentrates

CORACON
ENGINE COOLANTS



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Technical terms

The logo for CORACON, featuring the word "CORACON" in a stylized, outlined blue font. A blue curved line arches over the text from the left side.

ANTIFREEZE:

A base containing ethyleneglycol or propylene glycol and chemical additives to prevent corrosion, foaming and other damage to the cooling system components. It must be mixed with water to be used. The most common mixture is 50%.

ASTM:

American Society for Testing of Materials (www.astm.org). Most important standards setting organization in the world. ASTM publish specifications for engine coolants.

DEPLETION RATE:

The rate at which the corrosion inhibitors within a coolant deplete or wear out as they protect the cooling system

BORAT:

A pH buffer used in some anti-freezes to maintain the pH of coolant as it ages.

CONVENTIONAL COOLANT:

Glycol based coolant using a mainly inorganic based inhibitor package such as borate, phosphate, nitrite, nitrate, silicate etc.

COOLANT:

The fluid in the cooling system, usually 50% antifreeze and 50% water.

CONDEMNATION LIMIT:

The point at which individual, critical contaminants within the coolant signal the end of the life of that coolant.

DISTILLED WATER:

Water which is purified by being boiled and the steam is condensed and collected.

ETHYLENE GLYCOL (EG):

Is an organic chemical most often used as a base for antifreeze.

FREEZE POINT:

Measured by a specific ASTM test, the point where coolant freezes.

HARDNESS SALTS:

The minerals usually found in most tap water, based on calcium and magnesium salts.

HYDROMETER:

A testing device used to measure the concentration of glycol by measuring its specific gravity or density.

HYBRID COOLANT:

Glycol based coolant using part organic acid and part inorganic corrosion inhibitor package.

MOLYBDATE:

A component to prevent cylinder liner cavitation and protect hard and soft metals from corrosion.

NITRATE:

A general anti-corrosion additive that is especially effective in preventing iron and steel corrosion. Reduces Nitrite depletion rate.

NITRITE:

Present in all good fully formulated coolants, it is the most important additive for preventing cylinder liner cavitation.

OAT COOLANT:

Organic acid technology coolant using essentially organic acids/ carboxylates for corrosion inhibitor package.

ORGANIC ACID:

A large family of chemicals used to make OAT and hybrid coolants.

pH:

A scale that indicates the acidity or alkalinity of fluid. The scale runs from 0 to 14 with values below 7 being acidic and those above 7 being alkaline. Most coolants range from 7.5 to 11.0.

PHOSPHATE:

A pH buffer used in some anti-freezes to maintain the pH of coolant as it ages. An alternative to borate.

pH-buffer:

Part of the chemical inhibitor package which absorbs any free acid to prevent the coolant from becoming acidic and damaging the engine (see also pH and Reserve Alkalinity).

PROPYLENE GLYCOL (PG):

An alternative organic chemical sometimes used as an anti-freeze base, slightly more expensive and more environmentally friendly than ethylene glycol.

REFRACTOMETER:

An optical testing device used to measure the concentration of glycol using the principle of refractive index (how much a beam of light is bent as it passes through a sample of coolant).

RESERVE ALKALINITY:

The ability of a coolant to resist aging as reflected by the amount of hydrochloric acid required to lower pH to 7.0 in an ASTM test. Phosphates coolants typically have RA of 10, borate buffered coolants have RA of about 7.

SILICATE:

By far, the best protection against aluminium corrosion. Has limited solubility in coolant and often associated with radiator plugging.

SOFT WATER:

Water purified by deionisation. It is chemically pure, and contains no calcium or magnesium found in many tap waters. It is recommended as the make up for coolant, especially extended service coolants.

WATER FILTER (WF):

A filter through which the coolant flows. These filters are widely used as delivery devices for anti corrosive chemicals.

Product Overview



CORACON products are liquid additives for closed water circuits. They protect metallic surfaces and, in addition to increasing the operating safety, reduce operating costs increase the service life of engines and systems.

Overview

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Product overview CORACON liquids /antifreezes

Composition / Application	contains nitrite	nitrite free silicate free phosphate free	nitrite free silicate free phosphate free sec. amine free Bio-degradable
engine contains less non-ferrous metal	BL 1 4% - 6%		
engines contains much non-ferrous metal	BL AL 10% - 15%	BL 3 14% - 18%	BL 6 3% - 4%
anti freeze	BF 1	BF 3	BF 6
engine test stand / standstill conservation			BL 6 10%

tips Do not mix CORACON corrosion protection concentrates together or with other inhibitors – **the addition of glycol (antifreeze) is permitted.**

Product Information

CORACON BL 1



Common Characteristics

CORACON Liquid BL 1 is a long-term corrosion protection concentrate for engine cooling systems that is free of mineral oils. It is well-suited for the protection of all metallic surfaces, but restricted for engines with a high due of aluminium parts. It shows excellent compatibility with elastomers (seals).

Specific Characteristics

- Contains nitrites, nitrates and silicates
- Free of mineral oil
- Specific weight: 1,12 g/ml
- dosage: **5%**
- pH-value (application): **10,5**
- No hazardous good – Water hazard class 1
- Can be used in combination with all CORACON water filters

Approvals of engine manufacturers

- DEUTZ AG
- GE Jenbacher
- MAK
- MAN B&W
- Steyr

CORACON antifreeze BF 1

Engines, who are operating in cold regions can be filled with **CORACON antifreeze BF 1**, based on ethylene-glycol, which is the ideal protection against freezing, corrosion and cavitation.

Frost protection	BF 1 - dosage
- 20 °C	33%
- 30 °C	40%
- 42 °C	50%

CORACON Liquid BL 1					
article no.	421 260	421 261	421 262	421 263	421 264
CORACON antifreeze BF 1					
article no.	on request	on request	471 215	on request	on request
quantity	0,5 l	1 l	20 l	60 l	200 l
package	plastic bottle	plastic bottle	plastic bottle	plastic canister	plastic drum

Instructions for use

BL 1 / BF 1



Cooling system

The cooling system has to be free from all deposits or other inhibitors. If necessary the cooling system has to be flushed. The metallic surfaces must be clean and free of deposits.

CORACON Additive ZN1 (item no. 476115) is used to destroy the nitrite prior to disposal of the cooling water. After neutralization, the water can be drained into the canalization system.

Water requirements

Only drinking water or deionised water may be used for filling (no sea water or brack water). The maximum permissible concentration of chloride plus sulphate ions is 200 mg/l. The following applies to the total hardness of water:

- 0 – 15 °dGH: is permissible without any restrictions
- > 15 °dGH: soften or dilute the water to a value of less than 15 °dGH

Environment and safety

CORACON Liquid BL 1 is alkaline. Avoid contact with the skin. In case of direct contact, wash with soap and water. In case of contact with eyes, rinse thoroughly with plenty of clear water. **CORACON Liquid BL 1** has no negative impact on oil separation. It does not lead to the formation of any emulsions.

Application with CORACON water filters

If **CORACON Liquid BL 1** is used with CORACON water filters having corrosion protection (types BS and BT), no topping up is necessary as long as there is no severe loss of water or a complete change of the water used. Follow the maintenance instructions given in the product information for CORACON water filter systems.

Operation check

The concentration of **CORACON Liquid BL 1** must be regularly checked once a month with simple test kits. The according diagnostic equipment (**CORACON Titration Test** or **CORACON Test Strips ...**) can be seen on **page 16**. If the concentration gets too low sufficient protection is not guaranteed and subsequent **topping up** is necessary. Antifreeze has to be checked by an antifreeze tester.

In principle a system check is necessary all 60.000 km, all 3.500 working hours or at least after 6 months.

Product Information

BL AL



Common Characteristics

CORACON Liquid BL AL is a corrosion protection concentrate which was developed out of CORACON Liquid BL 1, for a long-term use in engine cooling systems with **high due** of aluminium parts. The product is well-suited to protect any kind of metallic surface and has been graded as Water Hazard Class 1. It shows excellent compatibility with elastomers (seals).

Specific Characteristics

- Contains nitrites
- Free of silicates
- Free of mineral oil
- Specific weight: 1,08 g/ml
- dosage: **10% - 15%**
- pH-value (application): **8,5**
- No hazardous good – Water hazard class 1
- Can be used in combination with all chemical free CORACON water filters

CORACON BL AL has long term experiences in Mitsubishi marine engines.

Engines, who are operating in cold regions can be filled with ethylene-glycol, which is the ideal protection against freezing, corrosion and cavitation.

CORACON BLAL is also available as a antifreeze product CORACON BF AL.

CORACON Liquid BL AL					
article no.	on request	on request	471 115	on request	on request
quantity	0,5 l	1 l	20 l	60 l	200 l
package	plastic bottle	plastic bottle	plastic bottle	plastic canister	plastic drum

Instructions for use

BL AL



Cooling system

The cooling system has to be free from all deposits or other inhibitors. If necessary the cooling system has to be flushed. The metallic surfaces must be clean and free of deposits.

CORACON Additive ZN1 (item no. 476115) is used to destroy the nitrite prior to disposal of the cooling water. After neutralization, the water can be drained into the canalization system.

Water requirements

Only drinking water or deionised water may be used for filling (no sea water or brack water). The maximum permissible concentration of chloride plus sulphate ions is 200 mg/l. The following applies to the total hardness of water:

- 0 – 15 °dGH: is permissible without any restrictions
- > 15 °dGH: soften or dilute the water to a value of less than 15 °dGH

Environment and safety

CORACON Liquid BL AL is light alkaline. Avoid contact with the skin. In case of direct contact, wash with soap and water. In case of contact with eyes, rinse thoroughly with plenty of clear water. **CORACON Liquid BL AL** has no negative impact on oil separation.

Application with CORACON water filters

CORACON Liquid BL AL can be used with all chemical free water filters (types BTOC ... or BT ...).

Topping up is only necessary in case of an severe loss of water. Follow the maintenance instructions given in the product information for CORACON water filter systems.

Operation check

The concentration of **CORACON Liquid BL AL** must be regularly checked once a month with simple test kits. The according diagnostic equipment (**CORACON Titration Test** or **CORACON nitrite test Strips ...**) can be seen on **page 16**. If the concentration gets too low sufficient protection is not guaranteed and subsequent **topping up** is necessary. Antifreeze has to be checked by an antifreeze tester.

In principle a system check is necessary all 60.000 km, all 3.500 working hours or at least after 6 months.

Product Information

BL 3 / BF 3



Common Characteristics

CORACON Liquid BL 3 is a modern **eco-friendly** corrosion protection concentrate that does not contain any mineral oils, nitrites, or silicates. **CORACON Liquid BL 3** is **bio-degradable** and is suitable also for long-term use in engines made of aluminium alloys. It shows excellent compatibility with elastomers (seals).

Specific Characteristics

- Free of nitrites, nitrates
- Free of silicates and phosphates
- Free of mineral oil
- **Secondary amine free**
- **Bio-degradable**
- Specific weight: 1,12 g/ml
- dosage: **14%**
- pH-value (application): **8,0**
- No hazardous good – Water hazard class 1
- Can be used in combination with all chemical free CORACON water filters

CORACON antifreeze BF 3

Engines, who are operating in cold regions can be filled with **CORACON antifreeze BF 3**, based on ethylene-glycol, which is the ideal protection against freezing, corrosion and cavitation.

antifreeze	BF 3 - dosage	BL 3 - dosage
- 27°C	40%	14%

Approvals of engine manufacturers

- MAN Nutzfahrzeuge AG

CORACON Liquid BL 3					
article no.	421 754	421 755	421 756	421 757	421 758
CORACON Antifreeze BF 3					
article no.	on request	421 820	421 821	421 822	421 823
quantity	0,5 l	1 l	20 l	60 l	200 l
package	plastic bottle	plastic bottle	plastic bottle	plastic canister	plastic drum

Instructions for use

BL 3 / BF 3



Cooling system

The cooling system has to be free from all deposits or other inhibitors. If necessary the cooling system has to be flushed. The metallic surfaces must be clean and free of deposits.

In case of cloudiness because of suspended solids the cooling water must be changed with fresh water and the right dosage of **CORACON Liquid BL 3**. The water can be drained into the canalization system under consideration of the regional regulations.

Water requirements

Only drinking water or deionised water may be used for filling (no sea water or brack water). The maximum permissible concentration of chloride plus sulphate ions is 200 mg/l. The following applies to the total hardness of water:

- 0 – 15 °dGH: is permissible without any restrictions
- > 15 °dGH: soften or dilute the water to a value of less than 15 °dGH

Environment and safety

CORACON Liquid BL 3 is light alkaline. Avoid contact with the skin. In case of direct contact, wash with soap and water. In case of contact with eyes, rinse thoroughly with plenty of clear water. **CORACON Liquid BL 3** has no negative impact on oil separation.

Application with CORACON water filters

CORACON Liquid BL 3 can be used with all chemical free water filters (types **BTOC ... or BT ...**).

Topping up is only necessary in case of an severe loss of water. Follow the maintenance instructions given in the product information for CORACON water filter systems.

Operation check

The concentration of **CORACON Liquid BL 3** must be regularly checked once a month with simple test kits. The according diagnostic equipment (**CORACON Titration Test**) can be seen on **page 16**.

If the concentration gets too low sufficient protection is not guaranteed and subsequent **topping up** is necessary. Antifreeze has to be checked by an antifreeze tester.

In principle a system check is necessary all 60.000 km, all 3.500 working hours or at least after 6 months.

product information

BL 6 for test standings



Common Characteristics

CORACON BL 6 is a new development corrosion protection concentrate without any mineral oils, nitrites, or silicates and is secondary amine free.

Because of that it is **ecologic friendly**. It generates a stable protective film, which is ideally suited for use in **engine test stands** and for **standstill conservation** of drained engines and systems. It is suitable also for long-term use in engines made of aluminium alloys. It shows excellent compatibility with elastomers (seals). Mixable also with glycols.

For long term conservation (one year and longer) it is recommended to use additionally the **CORACON VCI** with a high due of vapour phase inhibitors.

Specific Characteristics

- Free of nitrites, nitrates
- Free of silicates, phosphates, borates
- Free of mineral oil
- **Secondary amine free**
- **Bio-degradable**
- Specific weight: 1,10 g/ml
- dosage: **10%**
- pH-value (application): **8,5**
- No hazardous good – Water hazard class 1

Operation check

- refractometer

Approvals of engine manufacturers

- MWM
- Caterpillar
- Liebherr

CORACON BL 6					
article no.	on request	on request	421841	421842	421843
quantity	0,5 l	1 l	20 l	60 l	200 l
package	Plastic bottle	Plastic bottle	Plastic canister	Plastic canister	Plastic drum

product information

BL 6 liquid



Common Characteristics

CORACON liquid BL 6 is a new development corrosion protection concentrate without any mineral oils, nitrites, or silicates and is secondary amine free. Because of that it is **ecologic friendly**.

CORACON liquid BL 6 is suitable for long-term use in engines made of aluminium alloys. It shows excellent compatibility with elastomers (seals). Mixable also with monoethylene-glycols.

It generates a stable protective film, which is ideally suited for use in **engine test stands** and for **standstill conservation** of drained engines.

Specific Characteristics

- Free of nitrites, nitrates
- Free of silicates, phosphates, borates
- Free of mineral oil
- **Secondary amine free**
- **Bio-degradable**
- Specific weight: 1,10 g/ml
- dosage: **3%-4% for long term use**
- pH-value (application): **8,0 - 8,5**
- No hazardous good – Water hazard class 1

Operation check

- refractometer

Approvals of engine manufacturers

- MWM

CORACON BL 6					
article no.	on request	on request	421841	421842	421843
quantity	0,5 l	1 l	20 l	60 l	200 l
package	Plastic bottle	Plastic bottle	Plastic canister	Plastic canister	Plastic drum

Instructions for use

BL 6 liquid



Cooling system

The cooling system has to be free from all deposits or other inhibitors. If necessary the cooling system has to be flushed. The metallic surfaces must be clean and free of deposits.

In case of cloudiness because of suspended solids the cooling water must be changed with fresh water and the right dosage of **CORACON liquid BL 6**. The water can be drained into the canalization system under consideration of the regional regulations.

Water requirements

Only drinking water or deionised water may be used for filling (no sea water or brack water). The maximum permissible concentration of chloride plus sulphate ions is 200 mg/l. The following applies to the total hardness of water:

- 0 – 15 °dGH: is permissible without any restrictions
- > 15 °dGH: soften or dilute the water to a value of less than 15 °dGH

Environment and safety

CORACON BL 6 is light alkaline. Avoid contact with the skin. In case of direct contact, wash with soap and water. In case of contact with eyes, rinse thoroughly with plenty of clear water. **CORACON BL 6** has no negative impact on oil separation.

Application with CORACON water filters

CORACON Liquid BL 6 can be used with all chemical free water filters (types **BTOC ... or BT ...**).

Topping up is only necessary in case of an severe loss of water. Follow the maintenance instructions given in the product information for CORACON water filter systems.

Operation check

The concentration of **CORACON Liquid BL 5** must be regularly checked once a month with simple test kits. The according diagnostic equipment (**CORACON Titration Test or refractometer**).

If the concentration gets too low sufficient protection is not guaranteed and subsequent **topping up** is necessary. Antifreeze has to be checked by an antifreeze tester.

In principle a system check is necessary all 60.000 km, all 3.500 working hours or at least after 6 months.

Product Information

BF 6



Common Characteristics

CORACON BF 6 is a new development corrosion protection concentrate inclusive freeze protection. It is without any mineral oils, nitrites, or silicates and is secondary amine free. Because of that it is **ecologic friendly**.

It is suitable also for long-term use in engines made of aluminium alloys. It shows excellent compatibility with elastomers (seals).

The minimum dosage is 25%.

Frost protection	Water	BF 6 - dosage
- 12 °C	75%	25%
- 24 °C	60%	40%
- 37 °C	50%	50%

Specific Characteristics

- Free of nitrites, nitrates
- Free of silicates and phosphates
- Free of mineral oil
- **Secondary amine free**
- Specific weight: 1,11 g/ml
- dosage: > **25%**
- pH-value (application): **8,1**
- No hazardous good – Water hazard class 1
- Can be used in combination with all chemical free CORACON water filters

CORACON BF 6					
article no.	on request	on request	423 351	423 352	423 353
quantity	0,5 l	1 l	20 l	60 l	200 l
package	plastic bottle	plastic bottle	plastic bottle	plastic canister	plastic drum

Instructions for use

BF 6



Cooling system

The cooling system has to be free from all deposits or other inhibitors. If necessary the cooling system has to be flushed. The metallic surfaces must be clean and free of deposits.

In case of cloudiness because of suspended solids the cooling water must be changed with fresh water and the right dosage of **CORACON BF 6**. The water can be drained into the canalization system under consideration of the regional regulations.

Water requirements

Only drinking water or deionised water may be used for filling (no sea water or brack water). The maximum permissible concentration of chloride plus sulphate ions is 200 mg/l. The following applies to the total hardness of water:

- 0 – 15 °dGH: is permissible without any restrictions
- > 15 °dGH: soften or dilute the water to a value of less than 15 °dGH

Environment and safety

CORACON BF 6 is light alkaline. Avoid contact with the skin. In case of direct contact, wash with soap and water. In case of contact with eyes, rinse thoroughly with plenty of clear water. **CORACON BF 6** has no negative impact on oil separation.

Application with CORACON water filters

CORACON BF 6 can be used with all chemical free water filters (**types BTOC ... or BT ...**).

Topping up is only necessary in case of an severe loss of water. Follow the maintenance instructions given in the product information for CORACON water filter systems.

Operation check

The concentration of **CORACON BF 6** must be regularly checked twice a year with simple test kits. The according diagnostic equipment is the **CORACON Titration testbox.**, artnr. 482010.

If the concentration gets too low sufficient protection is not guaranteed and subsequent **topping up** is necessary. Antifreeze has to be checked by an antifreeze tester.

In principle a system check is necessary all 60.000 km, all 3.500 working hours or at least after 6 months.

Diagnostic Equipment



Corrosion titration box alcalinity test BL 1, BL 2, BL 3



Art Nr. 482 010

Indirect and fast method to indicate the concentration of anti-corrosion inhibitors from **BL 1, BL2, BL3**

Corrosion titration box alcalinity test BL AL



Art Nr. 482 003

Indirect and fast method to indicate the concentration of anti-corrosion inhibitors from **BL AL**

Corrosion test stripes Nitrite test for BL 1, BL AL



Art Nr. 421 363

Test stripes 100 pieces for dipping. Indication of **anti-corrosion inhibitors** by colour comparison

Corrosion tester refractometer gefo



Art Nr. 422 300

Refractometer tester for indicating the concentration of **anti-corrosion inhibitors** by refractive index

pH-value test stripes Measurement range 0-14



Art Nr. 482 004

Test stripes 100 pieces for dipping. Indication of **pH-value** by colour comparison

pH-value tester micro pH 2



Art Nr. D 5510214

Electronic tester for indication the pH-value. Measurement range from 0-14 pH, Exactness $\pm 0,1$ pH

Chloride Titration box 5-200 mg/l



Art Nr. D 3100707

Indirect and fast method to indicate the concentration of chlorides

Sulfate Titration box 5-200 mg/l



Art Nr. D 3100706

Indirect and fast method to indicate the concentration of sulfates

Microbes test Easicult determining colony count



Art Nr. D 3500100

Fast method for indicating the number of microbes in water (germs, yeast, fungi), contents: 10 pieces

Water hardness titration box 0,5 – 30 °dH



Art Nr. D 3100701

Easy and fast method for indicating the water hardness in °dH

Conductivity tester ECTEST 11



Art Nr. D 5510215

Electronical tester for measuring the conductivity. Measurement range: 0 - 2000 µS/cm

Anti-freeze tester Propylene glycol-test Ethylene glycol-test



Art Nr. 421 834

Art Nr. 421 835

headquarter



Coracon is a registered brand of Aqua-Concept GmbH that only provides engine cooling products. **Coracon** emerged from the BEDIA filter systems and BEDIA corrosion protection concentrates that **Aqua-Concept** took over from the company BEDIA Motorentchnik at the end of 2000.

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