

# Engine Protector Plus VPA

## 1 Description

**Engine Protector Plus VPA** is a water-based inhibitor superconcentrate that - mixed with the appropriate amount of water – is used as a hot test fluid for new engine blocks. The corrosion inhibitors offer corrosion protection

of engine metals during storage and transport of the empty engine block. The specific inhibitors active in the vapor phase protect the engine block even after having drained the fluid.

**Engine Protector Plus VPA** offers following benefits to an engine designer:

- **overall metal corrosion protection**
- **good miscibility with engine coolants**
- **good seal compatibility**
- **low toxicity and operator friendly use**
- **environmentally friendly**
- **reduced slip risk**

both in the liquid and vapor phase

There are no glycols used in this formulation  
optimal selection of inhibitors  
low viscosity thanks to the absence of glycols

## 2 Application

Newly manufactured engines are usually tested for a short period of time prior to assembly in the vehicle. Automotive engine blocks typically require testing for 5 to 10 minutes. Heavy duty diesel engines take some more time to run the test cycle. To ensure engine cooling during the test a suitable hot test fluid is necessary. **Engine Protector Plus VPA** provides excellent heat dissipation as well as corrosion protection for the duration of the test.

After testing, the **Engine Protector Plus VPA** is drained from the engine. The residual fluid left in the engine will continue to provide corrosion protection in case the engine is not immediately built into vehicles. Under sealed conditions, corrosion protection is guaranteed for an extended storage period. The drained hot test fluid is often recycled into a central system, and re-used for testing of other engines. To maintain the performance of the vapor phase inhibitor in the recycled **Engine**

**Protector Plus VPA**, pH, dilution rate and vapor phase inhibitor content must be kept within specification at all times. We also recommend filtering the used fluid before recycling, to remove welding deposits or other 'foreign' particles that were left behind in the engine and were picked up by the hot test fluid. This will prolong the life-time of the hot test fluid. We recommend filtration through 50µm.

**Engine Protector Plus VPA** has been positively evaluated with ferrous as well as with aluminum engine parts. **Engine Protector Plus VPA** is however particularly recommended for heavy duty engines where superior cast iron protection is required.

For a proper use we recommend to use a dosage rate of **10 to 20 vol% Engine Protector Plus VPA** with water. Lower dosages will further dilute the corrosion and vapor phase inhibitors, reducing the corrosion protection level.

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### 3 Compatibility and Mixability

Unlike common hot test fluids **Engine Protector Plus VPA** does not contain any soluble oils, and therefore should not be mixed with these type of hot test fluids. **Engine Protector Plus VPA** is compatible with most other water-soluble hot test fluids, and with common engine coolants based on ethylene glycol. Exclusive use of **Engine Protector Plus VPA** is however strongly recommended for optimum corrosion protection and sludge control.

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. To ensure optimal functioning of the vapor phase inhibitor, any dilution with water should have a pH between 8.7 and 9.5. Hard water (= above 18°dH or 320g/ml CaCO<sub>3</sub>) should be avoided as this may affect the long term stability.

### 4 Availability

Please contact your local area sales manager on availability.

### 5 Storage requirements

The product should be stored above -5°C and preferably at ambient temperatures. **Engine Protector Plus VPA** can be stored for minimum 1 year in unopened containers without any effect on the product quality or performance. It is strongly recommended to use new dark containers and not recycled ones.

Periods of exposure to temperatures above 35°C should be minimized. It is strongly advised not to expose the coolant in translucent packages to direct sunlight

because this can result in 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.

As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation.

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### 6 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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## Engine Protector Plus VPA

### Addendum - Technical information

Chemical and physical properties

	Engine Protector Plus VPA	method
appearance	clear liquid	visual
color	colorless	visual
odor	slight ammonia odor	smell
inhibitors	no nitrites, amines and borates	
density 20°C, kg/l	1.077 typ	ASTM D1122
refractive Index, 20°C	1.387 typ	ASTM D1218
equilibrium boiling point, °C	101,5 min	ASTM D1120
pH	9.2 typ	ASTM D1287
pH (10 vol %)	8.9 typ	ASTM D1287
freezing point, °C	-6 °C max	ASTM D1177
reserve alkalinity (10 vol % inflection point)	19.2 typ	ASTM D1121