

ELGINE PREMIUM ANTIFREEZE

Long life Engine Coolant Concentrate

1. Technical Data Sheet

ELGINE PREMIUM ANTIFREEZE is an engine coolant concentrate (antifreeze) based on monoethylene glycol, containing no nitrites, amines, phosphates, borax, silicates and no other mineral additives, suitable for both petrol and diesel engines. Carefully chosen additives give it the following properties in aqueous mixtures:

1. Increased life time, allowing less frequent maintenance, thanks to the corrosion inhibitors which are little consumed in the time.
2. Thermal characteristics that permit effective engine cooling without boiling.
3. Elimination of deposit problems caused by the use of hard water.
4. Elimination of abrasives solids, which gives a better protection of the joints of the water pump.
5. Improved anticorrosion protection of all metals and alloys used in the cooling system of modern vehicles, more over the aluminium.
6. Protection against frost, depending on the concentration chosen.
7. Excellent antifoaming characteristics.
8. Meets most European and International Standards.

2. Commercial Information

Typical Properties

Appearance	Clear liquid, free from matter in suspension	
Density at 20 °C	1.114 kg/m ³	ASTM D 4052
pH (50 volume per cent aqueous solution)	8.2	ASTM D 1287
Freezing point		ASTM D 1177
- 50 volume per cent aqueous solution	-38 °C	
Reserve alkalinity (ml HCl N/10)	6.2 ml	ASTM D 1121
Water content	2.95 per cent by weight	ASTM D 1123
Foaming characteristics at 88 °C		ASTM D 1881
- Height	35 ml	
- Breaktime	1.5 seconds	

Details on test methods are available on request.

These are typical properties and do not constitute a specification. For specification limits please refer to product specification. Product can be dyed to various different colours by request. Bittering agent denatonium benzoate can be added by request.

Standards and approvals

ELGINE PREMIUM ANTIFREEZE complies with most of the European and International quality standards:

- ASTM D3306 (USA)
- ASTM D4656 (USA)
- ASTM D4985 (USA)
- BS 6580: 1992 (UK)
- AFNOR NF R15-601 (France)*
- AS 2108 (Australia)
- SAE J 1034
- FFV Heft R443
- CUNA NC 956-16
- UNE 26361-88
- NATO S 759

*except for reserve alkalinity

It also meets the requirements of the following OEM specifications;

- Ford WSS-M97B44-D
- Mercedes-Benz 325.3
- Renault 41-01-001
- General Motors GM 6277M
- Volkswagen VAG TL 774 D & F
- MAN 324 SNF
- Mazda
- Volvo

Packages

ELGINE PREMIUM ANTIFREEZE is available in bulk, drums and IBC's.

3. Technical information

ELGINE PREMIUM ANTIFREEZE contains an inhibitor package recently elaborated which protects engines from corrosion much longer than the traditional borate/silicate based antifreezes. The distance between two cleanings, which is at 50000 to 80000 kms (2-3years) with the traditional coolants, is up to 240000 kms (5 years) with ELGINE PREMIUM ANTIFREEZE.

This has a positive impact not only on maintenance costs but also on the environment by decreasing the used

coolant quantities to be eliminated.

As supplied, ELGINE PREMIUM ANTIFREEZE must be diluted with water to a concentration between 33 and 50 per cent by volume to produce an effective engine coolant and corrosion protecting fluid. The vehicle owners should follow the dilution recommendation provided by the specific car manufacturers. Solventis recommends a 50 per cent by volume dilution with water to achieve optimum performance.

4. Composition

ELGINE PREMIUM ANTIFREEZE does not contain any traditional mineral corrosion inhibitors. Some of the traditional inhibitors such as phosphates can form insoluble salts with the calcium contained in hard waters if they are not stabilized with the appropriate molecules. This leads to a deposit accumulation and therefore a decrease in the heat transfer efficiency.

The corrosion inhibitors ("all organic") of ELGINE PREMIUM ANTIFREEZE were selected to avoid this problem. They are very stable and do not precipitate, even when in contact with hard water.

5. Corrosion protection

The inhibitor package of ELGINE PREMIUM ANTIFREEZE has been developed based upon latest organic acid technology to give long-term protection for all the metals presents in the modern engines, especially, aluminium and brass.

The inhibitor package of ELGINE PREMIUM ANTIFREEZE is the result of very extensive testing which includes laboratory tests, simulated service tests, static engine test and field service trials. It indeed also successfully passes the FVV Heft R443 / 1986 test.

ELGINE PREMIUM ANTIFREEZE provides extra protection of the alloys used in the cooling system of modern vehicles. The table below compares corrosion, in mg/specimen, in a water/monoethylene glycol solution and in a water/ ELGINE PREMIUM ANTIFREEZE solution as described in ASTM D1384. The results demonstrate the effective corrosion inhibition provided by ELGINE PREMIUM ANTIFREEZE.

	Water	Monoethylene glycol (33 vol% in H ₂ O)	ELGINE PREMIUM (33 vol% in H ₂ O) Fresh	ASTM D3306
Copper	49	6.5	0	10
Solder	137	345	-5	30
Brass	13	8	1	10
Steel	700	1474	1	10
Cast iron	775	2472	1	10
Aluminium	121	30	1	30

The corrosion rate of cast aluminium alloys at heat rejecting surfaces (ASTM D4340) is 0.35 mg/cm²/week and is well below the test limit (1.0 mg/cm²/week).

6. Compatibility

The logo for ELGINE, featuring the word "ELGINE" in a bold, white, sans-serif font, set against a dark rectangular background.

ELGINE PREMIUM ANTIFREEZE is formulated to be able to cope with all water qualities and is compatible with hard water. ELGINE PREMIUM ANTIFREEZE is compatible with all types of plastics and rubbers used in engine coolant systems.

7. Foaming

Foaming has the potential to cause problems in both handling and use of an engine coolant. ELGINE PREMIUM ANTIFREEZE contains powerful antifoaming agents to prevent this.

8. Mixing

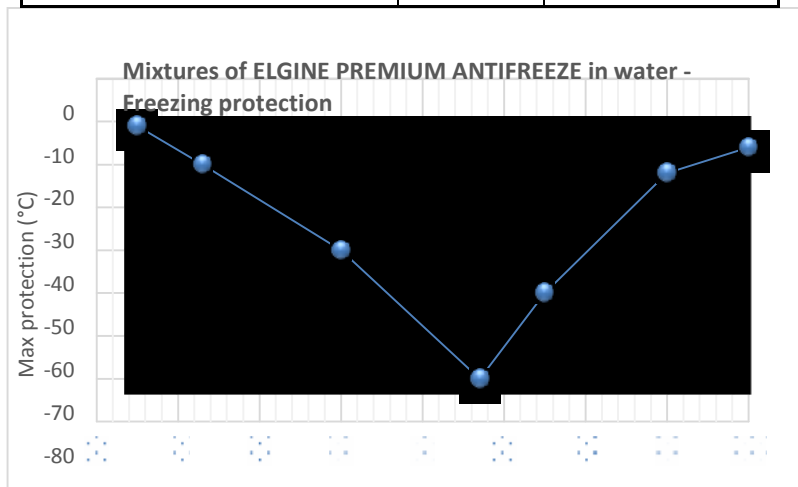
ELGINE PREMIUM ANTIFREEZE is readily miscible with all engine coolants, however we advise not to mix organic acid based products with traditional mineral containing coolants since optimum performance & longevity of service can only be guaranteed by using ELGINE PREMIUM ANTIFREEZE exclusively.

9. Application

ELGINE PREMIUM ANTIFREEZE is a concentrated product and should be diluted for use with good quality water. Solventis recommends that for optimum performance dilutions are made up with distilled or deionized water. The freeze protection afforded by the various dilutions is detailed in the table and charts below. Please note that the maximum freeze protection (approx. -70°C) is obtained at approx. 67 vol% ELGINE PREMIUM ANTIFREEZE. Therefore mixtures above this level are not recommended as freeze protection will be reduced rather than enhanced.

In order to provide a satisfactory level of corrosion protection it is recommended to use at least 1-2 (33 vol%) of ELGINE PREMIUM ANTIFREEZE in the coolant solution. In line with most car manufacturers Solventis recommends a 1-1 (50 vol%) solution of ELGINE PREMIUM ANTIFREEZE for optimum corrosion protection.

Concentration ELGINE PREMIUM	vol % H2O	Max protection °C
25	75	-11
33	67	-20
50	50	-40
67	33	-70
75	25	-50
90	10	-22
100	0	-16



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ELIA

3rd km National Road Thessaloniki-Athens, 54628, 2310755111, info@eliaproducts.eu
www.elgine.eu

Freezing protection = average of freezing point (ASTM D1177) and pour point (ASTM D97)

10. Recommendations

ELGINE PREMIUM ANTIFREEZE is an extended life antifreeze which should be replaced every five years (or every 200000 kms - 240000 kms) or as per car manufacturer's instruction. Original Equipment Manufacturers' (OEMs) recommendations should be followed when changing out cooling systems. Always dispose of used coolants in accordance with local state and federal regulations.

For optimum year round protection against freezing, boiling and corrosion Solventis recommends a 1:1 dilution by volume with water. For maximum protection against freezing in extremely cold areas a 60 per cent solution can be used. Concentrations greater than 67 percent or less than 30 per cent are not recommended.

11. Storage and Handling

ELGINE PREMIUM ANTIFREEZE is inhibited against corrosion of steel, cast iron, brass, copper, solder and aluminium. Storage, therefore, presents few problems and under normal conditions mild steel vessels are adequate. Tanks lined with phenolic, epoxy or other thermosetting resins steel vessels can also be used. As with any glycol based engine coolant the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation. The product is hygroscopic and, during long storage periods, a nitrogen blanket can be used to exclude atmospheric moisture. Alternatively, a desiccant unit can be installed on the tank vent line to prevent the ingress of moist air. Care should be taken to ensure that the product is protected from direct sunlight. It is advised not to pack into translucent packaging which may be exposed to direct sunlight as this can degrade the colour dyes present in the coolant.

ELGINE PREMIUM ANTIFREEZE is combustible at ordinary temperatures. Fires can be extinguished by water spray, foam, dry chemical or carbon dioxide. Water and foam may cause frothing. Spills should be washed with plenty of water, although the authorities should be informed if a major spillage occurs. ELGINE PREMIUM ANTIFREEZE contains over 90% of ethylene glycol, which is a slight eye and skin irritant, and is harmful if swallowed. Precautions should be taken to prevent entry into the eyes and to avoid contact with the skin. If skin contact occurs the liquid should be removed immediately by washing with water. The use of chemical goggles and PVC, neoprene, natural or nitrile rubber gloves is recommended with additional protective clothing where necessary. Excessive exposure to mist or vapour should be prevented by the provision of efficient ventilation. The Threshold Limit Value for ethylene glycol adopted by the American Conference of Governmental Industrial Hygienists (1998) is 100 mg/m³ (for mist). This is a "ceiling" notation indicating that this value should never be exceeded.

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of ELGINE PREMIUM ANTIFREEZE, identifying the potential hazards and giving advice on handling precautions and emergency procedures. This must be consulted and fully understood before handling, storage or use.

12. Physical Properties

Flash point	°C	124
Boiling point	°C	187
Viscosity at 20 °C	cP	25
Coefficient of expansion at 20 °C	/°C	0.00062
Thermal conductivity at 80 °C	cal.cm/s.cm ²	0.00058
Refractive index n ₂₀ /D		1.432
Specific heat at 80°C	cal/g.°C	0.63
Vapour pressure at 20°C	mbar	0.08

Physical data refer to typical values for ELGINE PREMIUM ANTIFREEZE and do not constitute part of the delivery specification.

13. Toxicological properties

ELGINE PREMIUM ANTIFREEZE contains more than 90 per cent ethylene glycol and as such it is classified as “harmful” in accordance with the EEC Dangerous Preparations Directive (88/379/EEC) as amended and adapted to technical progress. The following risk and safety phrases are assigned: R22, S2, S20, S46, and S24.

Ingestion may give rise to serious systemic toxicity with symptoms of CNS depression and kidney damage, which lead to renal failure and unconsciousness. The fatal dose in humans is about 100 mls.

14. Exclusion of liability

Information contained in this publication is accurate to the best of the knowledge and belief of Solventis.

Any information or advice obtained from Solventis otherwise than by means of this publication is given in good faith. However it remains at all times the responsibility of the customer to ensure that Solventis materials are suitable for the purpose for which they are intended by the customer.

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