



Peak Oil

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TECHNICAL DATA

Masterfrost Automotive Antifreeze



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Masterfrost

Automotive Antifreeze

A unique concept in automotive coolant technology. Unlike conventional automotive coolants, it is based on the active chemical ingredient Mono Propylene Glycol.

In addition to providing excellent protection against freezing of the cooling system, Masterfrost offers outstanding performance benefits compared to the conventional mono ethylene glycol (MEG) based products.

Modern trends in automotive coolant system design place very severe demands on the performance of a coolant. When this is linked to changes in health & safety legislation and environmental concerns it becomes apparent that in many cases these can only be satisfied by the use of high performance products based on mono propylene glycol.

- ◆ *Superior protection against wear of the engine / cooling system arising from cavitation effects*
- ◆ *Enhanced corrosion protection from Masterfrost's sophisticated additive system*
- ◆ *Better heat transfer / cooling when compared to mono ethylene glycol*

- ◆ *Improved hard water tolerance. The risks of precipitation leading to cooling system blockage greatly reduced*
- ◆ *Excellent freezing protection. Particularly suitable for arctic conditions where very high antifreeze strengths are required to prevent freeze up*
- ◆ *Extremely low toxicity - avoids the risk of accidental or intentional poisoning*
- ◆ *Incorporates the TRIGARD triple protection system for all round superior coolant performance*
- ◆ *Extended life cycle/coolant drain intervals*

Performance Specifications

BS6580
ASTM D-5216
NFR.15-601
Mercedes Benz 325.0
VW TL 774C



Freezing Protection

Masterfrost Concentration (% wt)	First Ice Crystal Temp °C	Pour Point °C
25	-10	-14
33	-15	-22
50	-34	-59

Protection Against Cavitation

Cavitation in the cooling system can lead to mechanical wear. Areas around water pumps, wet liners, the cylinder head, gaskets and radiators are particularly prone to wear due to cavitation erosion. Many of the original equipment manufacturers have seen field problems where cavitation effects have resulted in premature failures of engine components in contact with the cooling system. Modern engine design has exacerbated these problems. Smaller units, higher rated output and the increased use of aluminium has had a negative effect on the rate of mechanical wear.

Various studies have been carried out as to the causes of cavitation erosion and the impact of antifreeze formulation in preventing these phenomena. The overriding conclusion drawn from these studies is that Mono Propylene Glycol-based products (Masterfrost) offer far better protection against cavitation than conventional antifreeze based on MEG.

The figures below show comparative test results between the two different fluids when run on an Ultrasonic Cavitation Test Bed. As can be seen, weight loss (wear) is far greater with the conventional fluid compared to that achieved with Masterfrost.

Weight Loss	Aluminium Wt Loss (mg)		Cast Iron Wt Loss (mg)	
	Masterfrost	Conventional MEG	Masterfrost	Conventional MEG
10% Solution	10.0	12.20	46.0	52.80
50% Solution	5.60	9.60	24.80	29.60



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Lubricants of Excellence

Corrosion Protection

Effective cooling is obviously of paramount importance to the operation of an engine. The incorporation of water into the cooling system plays a leading role in providing satisfactory cooling but has the attendant disadvantage that it will cause corrosion and engine failure if used on its own. To overcome this, anticorrosive additives can be incorporated via the antifreeze.

There is a general misconception among end users that antifreeze is antifreeze - all products being broadly the same. In reality nothing could be further from the truth and in the area of preventing corrosion there are major differences between commercially available products. The market for antifreeze is dominated by price - a fact that has tended to drive quality down. In an effort to meet a price, formulators often focus on cost rather than quality, in their choices of the very expensive corrosion inhibitor systems.

The performance of the anticorrosive additives is vital to both the performance of an engine, its reliability and the ultimate life expectancy that can be achieved. Selection of the inhibitor system on quality grounds is fundamental to achieving optimum performance from the vehicle.

Masterfrost is formulated on this principal and utilises the TRIGARD triple protection system with advanced anticorrosive additives ensuring all round protection to the multimetal components used in modern engine design.

Health & Safety

Conventional antifreeze formulated on MEG poses some very serious health hazards associated with its use. It is particularly hazardous in terms of its oral toxicity, if it is accidentally or intentionally swallowed. There are many reported instances of death resulting from accidental swallowing of MEG antifreeze.

Masterfrost offers a safer alternative. Mono Propylene Glycol is actually used as a food additive and as a base for cosmetic products. It is intrinsically safe compared to MEG and is in fact the recommended antidote in cases of MEG poisoning.

[Further detailed information on Health & Safety of Masterfrost is available on request].

Storage

Drums should be stored on their sides in a clean dry place and protected from extremes of temperature.

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