



# ESSO ANTIFREEZE/COOLANTS

December 2009

**ESSO ANTIFREEZE/COOLANT**  
**ESSO PREMIXED ANTIFREEZE/COOLANT**  
**ESSO HEAVY DUTY ANTIFREEZE/COOLANT**  
**ESSO LONG-LIFE DIESEL ANTIFREEZE**

The Esso line of Coolants and Antifreeze offers the following features and benefits:

- ◆ Range of performance products for passenger car, heavy duty and long life application requirements
- ◆ Meets major OEM performance requirements
- ◆ Provides excellent cooling, corrosion and boil-over protection

### *Primary Applications*

ESSO ANTIFREEZE/COOLANT is a high quality concentrated ethylene glycol based engine antifreeze/coolant.

Subject to the specific recommendations of engine manufacturers (OEM's), ESSO ANTIFREEZE/COOLANT is suitable for year round use in cars and light duty trucks. It is well suited for engines with aluminum cooling system components.

ESSOANTIFREEZE/COOLANT helps protect the cooling system against freezing, corrosion and boil-over, thus offering excellent cooling in the summer as well as protection against winter freeze-up.

**ESSO PREMIXED ANTIFREEZE/COOLANT** is a convenient ready to use 50/50 pre-blend of ESSO ANTIFREEZE/COOLANT and de-ionized water. The use of the 50/50 blend ensures optimum boil-over and freezing protection and the use of de-ionized water ensures that no hard water performance detriments are introduced.

**ESSO HEAVY DUTY ANTIFREEZE/COOLANT** is a high quality fully formulated ethylene glycol based engine

coolant/antifreeze concentrate The phosphate and amine free low silicate technology is aluminum compatible and provides excellent protection for passenger cars , light duty trucks and heavy duty diesel equipment applications. It meets major industry, passenger car and heavy duty diesel OEM coolant specification requirements. **ESSO HEAVY DUTY ANTIFREEZE/COOLANT** is recommended for applications were a traditional non-organic acid technology is endorsed. When appropriately diluted with deionized or distilled water , it will provide the freeze protection, boiling point elevation and corrosion protection demanded by these hard working engines.

**ESSO LONG-LIFE DIESEL ANTIFREEZE** is a "part organic acid" hybrid technology based product. It provides extended protection for on and off- road heavy-duty diesel, marine and passenger vehicle engine coolant requirements. Maintenance requirements should be minimal for up to 1,000,000 km, 12,000 operating hours or 6 years ( which ever comes first ). **In all cases, the OEM coolant monitoring program requirements need to be followed.**

### *Performance Features*

#### **Corrosion Protection**

**ESSO ANTIFREEZE/COOLANT** is a low silicate, phosphate free engine coolant formulated for use in car's and light duty trucks. It contains balanced inhibitors to minimize corrosion of copper, solder, brass, steel, cast iron and aluminum - metals which are commonly used in coolant systems. It is specially formulated to resist rust formation in the engine and "pitting" which can lead to holes in essential engine components including water pumps, radiators, and cylinder heads. **ESSO ANTIFREEZE/COOLANT** is aluminum compatible and is well suited for new engines that contain the "hard to protect" heat rejecting aluminum found in cylinder heads and engine blocks.

**ESSO HEAVY DUTY ANTIFREEZE/COOLANT** contains a balanced low silicate, phosphate free, highly effective universal and fully formulated engine coolant inhibitor system to minimize the corrosion of cast iron, steel, aluminum, solder, copper and brass cooling system components. This product provides excellent engine liner pitting protection, which if not controlled, could lead to serious engine problems.

**ESSO HEAVY DUTY ANTIFREEZE/COOLANT** is also aluminum compatible and is therefor recommended for use in heavy-duty on and off-road trucks, stationary, marine and farm, as well as light duty trucks and passenger car engines applications.

**The use of supplemental coolant additives (SCA's) as mandated for most heavy-duty diesel OEM equipment (when using traditional fully formulated or extended service interval engine coolant), will provide on-going corrosion and pitting protection during use. It must be noted, that this fully formulated technology incorporates the components required to provide wet sleeve liner cavitation protection and as such does not require a precharge of SCA upon initial fill.**

**ESSO LONG-LIFE DIESEL ANTIFREEZE** is a hybrid - part organic acid, low silicate, phosphate and amine-free - fully formulated heavy duty diesel engine coolant. It provides extended protection for on and off-road heavy-duty diesel, marine and passenger vehicle engine coolant requirements. It is fully compatible with heat-rejecting aluminum surfaces. When appropriately diluted with soft or de-ionized water, the engine coolant will offer the following performance benefits:

- Low silicate level
- Hard water compatible
- Longer life - 1,000,000 km , 6 years or 12,000 operating hours (which ever comes first)
- Minimal maintenance requirements. A Coolant monitoring program, as per OEM requirements, needs to be followed and adjustments made only if required.
- No initial charge SCA requirement
- Product is compatible with both SCA and coolant extenders.
- Universal use; fully meets or exceeds standard industry requirements for heavy duty and automotive diesel applications
- Product is compatible with other engine coolants; although to get best performance it is best to flush the old coolant and replace with **ESSO LONG-LIFE DIESEL ANTIFREEZE**

#### **Foam Protection**

In addition to causing premature boil-over, foam can increase corrosion and reduce the ability of the coolant to disperse heat. **ESSO Antifreeze/Coolants** all provide a high degree

of foam protection under normal operating conditions.

### Seal Compatibility

Solution's of all ESSO Antifreeze/Coolants with water will have a minimal effect on natural or synthetic rubber O-rings, water pump seals, hoses or gasket materials found in most cooling systems.

### Supplemental Coolant Additives (SCA's) use:

ESSO Antifreeze/Coolants were developed through extensive fleet and laboratory testing and contain the appropriate combination and proper concentration of corrosion inhibitors necessary to protect cooling systems when used as directed.

**ESSO ANTIFREEZE/COOLANT** is a car and light truck antifreeze coolant that **should not** be used in combination with SCA's. The technology employed will provide protection over the normal full service interval.

**ESSO HEAVY DUTY ANTIFREEZE/COOLANT** is a fully formulated low silicate heavy duty diesel engine coolant- hence, no initial SCA addition is required.

**However, as with most heavy duty diesel coolants, supplemental coolant additives will be required and should only be used when needed and not before.**

Using SCA's as required will provide ongoing corrosion protection and maximum coolant life. The amount of additive should not exceed engine manufacturer's recommended dosage. Follow OEM recommendations for addition rate. Over-concentration of supplemental coolant additives can cause serious plugging of coolant passageways due to deposit formation.

**ESSO LONG-LIFE DIESEL ANTIFREEZE** is a low silicate - part organic acid based heavy-duty diesel engine antifreeze/coolant that does not require an initial fill charge of supplemental coolant additive (SCA). Additional SCA or coolant extender may not be required for duration of up to 500 000 km or 6,000 hours of operation. After that, with the possible addition of SCA or coolant extender a 1,000,000km or 12,000 hr minimum drain can be achieved. ESSO

**LONG-LIFE DIESEL ANTIFREEZE** is compatible with standard SCA's and coolant extenders

### Compatibility with other Coolant/Antifreeze

ESSO ANTIFREEZE/COOLANTS are compatible with most other ethylene glycol based coolants, although mixing with other formulations is not recommended as they may dilute the concentration of additives used in these quality products and thus reducing the useful service life.

Also, many competitive "all organic acid" long life technologies may show incompatibility with non-organic acid technology products. Esso Long-Life Diesel is part organic acid technology, carefully balanced to improve compatibility with basic technologies like the other ESSO ANTIFREEZE/COOLANTS and organic acid technology products.

### Boiling Point Elevation

The boiling point of a 60% solution of ESSO Antifreeze/Coolants is increased by 10°C beyond that of water alone, regardless of cooling system pressure. This 10°C boiling point elevation is desirable for summer driving. A 50% solution of the products will increase the boiling point by 8°C over water alone.

### Freezing and Boiling Protection

Concentration in water

	Freezing Point (°C)	Boiling Point (°C)
40 %	-24	126
50%	-37	129
60%	-52	132
70%	-64	136

100 kilopascals (15 psig) radiator cap in good condition

### Operational Guidelines

The following procedure may be followed for inspection of the complete engine cooling system. Follow OEM recommendations.

1. Drain the system. if rusty or dirty and use a chemical cleaner following instructions on the cleaner package.
2. Examine all hoses and clamps and replace if necessary.
3. To change coolant, drain completely, fill with water and run the engine until warm with the heater on high; thoroughly drain the system. Repeat until drained water is visibly clear.

4. Establish cooling system capacity from owner's manual.
5. Consult the chart below. Add sufficient ESSO Antifreeze/Coolant to provide the degree of protection desired. (Under most road, weather and driving conditions a 60/40 coolant/water mix is recommended for optimum protection against boil-over as well as freeze-up. A 50/50 coolant/water mix is considered adequate under less severe conditions).
6. Run engine until warm and top up with fresh water. Use water meeting the engine manufacturers' specifications. Test and treat water as required. The use of de-ionized water is generally recommended. (Water containing too many hard water salts can constrict cooling passages with mineral deposits).
7. Coolant level should be checked frequently and topped with a solution of water and ESSO Antifreeze/Coolant when necessary (a 60/40 coolant/ water mix is recommended).
8. Fill radiator overflow with desired mix of water and antifreeze/coolant mix , to recommended level.

### ***Industry Approvals***

ESSO ANTIFREEZE/COOLANTS have been subjected to a variety of tests which measure engine corrosion protection. Because of high performance in these tests, the specifications appearing on Table 1 are met.

ESSO HEAVY DUTY ANTIFREEZE/COOLANT AND ESSO LONG-LIFE DIESEL ANTIFREEZE also meet or exceed the performance requirements

of the diesel engine manufacturers' specifications as listed in Table 2.

### ***Precautions***

DO NOT DRINK THESE PRODUCTS. As ethylene glycol solutions, they are toxic upon ingestion to both humans and animals; a four-ounce dose can be lethal to an adult.

ESSO ANTIFREEZE/COOLANTS should be stored in tightly closed, properly labeled containers, and kept out of the reach of children and pets. In case of accidental ingestion, call a physician immediately. Keep the patient warm. If patient is conscious, give one or two glasses of warm water, milk or salt water, and induce vomiting.

Due to the low volatility of ESSO ANTIFREEZE/COOLANTS, the inhalation of vapours should not be a problem in normal use. Notwithstanding, inhalation of mists should be avoided.

On direct contact, ESSO ANTIFREEZE/COOLANTS are mildly irritating to the eyes, and should be flushed with copious amounts of water. They are not skin irritants except on prolonged, repeated contact.

All concentrate products are combustible but not flammable, with a flash point of 116°C.

ESSO ANTIFREEZE/COOLANTS will remain stable for a minimum of 2 years on shelf storage. Older product may show signs of sedimentation and, if so, should not be used.

**Typical Properties**

	<b>ESSO ANTIFREEZE/ COOLANT</b>	<b>ESSO PREMIX ANTIFREEZE/ COOLANT</b>	<b>ESSO HEAVY DUTY ANTIFREEZE/ COOLANT</b>	<b>ESSO LONG- LIFE DIESEL ANTIFREEZE</b>
Specific gravity @ 20°C	1.125	1.070	1.125	1.125
Flash Point, °C				
100% Concentrate	116	None	116	116
50% Solution in Water	None	-	None	None
pH, (max) 50% Solution in Water	10.0	10.0	10.0	8.0
Ash Content (max), wt%	5.0	2.5	5.0	5.0
Colour	Green	Green	Purple	Red
Total Apparent Water (max), wt%	3.5	-	3.5	3.5
Reserve Alkalinity (min), ml	10.0	5.0	10.0	6.0
Foaming				
Foam Height (max), ml	50	50	50	50
Break Time (max), sec	5	5	5	5

**Table 1**

	<b>ESSO ANTIFREEZE/ COOLANT</b>	<b>ESSO PREMIX ANTIFREEZE /COOLANT</b>	<b>ESSO HEAVY DUTY ANTIFREEZE /COOLANT</b>	<b>ESSO LONG LIFE DIESEL ANTIFREEZE</b>
American Society for Testing and Materials (tests in brackets are included in the ASTM D3306 and / or D4985 specification and are listed for reference only)	D3306 D4985 (D1384) (D2570) (D2809) (D4340)	D3306 D4985 (D1384) (D2570) (D2809) (D4340)	D3306 D4985 D6210 (D1384) (D2570) (D2809) (D4340)	D3306 D4985 D6210 (D1384) (D2570) (D2809) (D4340)
Society of Automotive Engineers	J1034/J1941	J1034/J1941	J1034,J1941	J1034/J1941
Regular Common Carrier Conference	RP 302A	RP 302A	RP 329	RP 329
DaimlerChrysler	MS 7170	MS 7170	MS 7170	MS7170
Ford	ESE-M97B44A	ESE-M97B44A	ESE-M97B44A ESE-M97B18C	ESE-M97B44A ESE-M97B18C WSS-M97B51-A1
General Motors	GM 1899M GM 1825M	GM 1899M GM 1825M	GM 1825M GM 1899M Volvo/GM Heavy Truck	GM 1825M GM 1899M Volvo/GM Heavy Truck
U.S. government	A-A-870-A	A-A-870-A	A-A-870-A	A-A-870-A

**Table 2**

<b>ESSO HEAVY DUTY ANTIFREEZE/COOLANT *</b>		<b>ESSO LONG-LIFE DIESEL ANTIFREEZE*</b>	
<b>Manufacturer</b>	<b>Specification</b>	<b>Manufacturer</b>	<b>Specification</b>
Cummins	Bulletin # 3666132	Caterpillar	EC 1
Detroit Diesel	Bulletin # 7SE298	Cummins	Bulletin CES 14603
Mack	014GS17004	John Deere	JDM HD24
Navistar	B1	MAN	MAN324 (TUC 1637/77)
Caterpillar	Commercial Coolant Spec.	Perkins	Coolant Spec.
PACCAR	70214-A-010	Mercedes-Benz	DBL 325
J.I. Case	JIC-501	Detroit Diesel	Bulletin # 7SE 298
Massey Combines Corp	M1130A	Landrover	Coolant Spec.
John Deere	JDM HD24	GM	1825M/1899M/ Heavy Truck
Versatile	42-M	MTU	MTL 5048
Chrysler	MS-7170	Volvo	Heavy Truck
Ford Motor Company	ESE-M97B18C/ ESE-M97B44A	Chrysler	MS 7170, MS9769
General Motors	GM 1825M/1899M/ Heavy Truck	Saab-Scania	6901
Kenworth	R026-170-97	Kenworth	R026-170-97
Volvo	Heavy Truck	Mack	Truck Spec.
Freightliner	48-22880	Freightliner	48-22880
New Holland	WSN-M97B18-D	New Holland	WSN-M97B18-D
Peterbilt	8502.002	PACCAR	Coolant Spe.
		Peterbilt	8502.002
		JIS	K2234

**\* follow the OEM instructions for initial and supplemental addition of a SCA inhibitor package**