Product name: **SHELL PREMIUM ANTIFREEZE LONGLIFE CONCENTRATE 774 D-F**
Formulation code: **CRX511**

Supplier for: Shell Chemicals Europe B.V.,
PO Box 2334; 3000 CH Rotterdam, Netherlands
Supplier: Kemetyl Polska, Sp. z o.o.,
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Pack size: 1-4 ltr HDPE

Products Shell Premium Antifreeze Longlife 774 D-F, GlycoShell Longlife and GlycoCool Premium Antifreeze G30 Longlife are the same coolant technology type and completely mixable under all conditions without showing any antagonistic effects during operation with guarantee of the highest level of cooling system protection.

1. Composition/information on ingredients

Shell Premium Antifreeze Longlife 774 D-F are a nitrite-, amine-, phosphate free (NAP free) and also silicate-, borate- free engine coolant based on mono ethylene glycol, which must be diluted before use with water. Shell Premium Antifreeze Longlife 774 D-F contains corrosion inhibitor package with salts of organic acids.

Shell Premium Antifreeze Longlife 774 D-F meet the requirements of the s standards PN-C40007; BR 637; ASTM D3306; ASTM D4656; ASTM D4985; BS 6580; NFR 15-601; FVV Heft R443; JASO M325; JIS K2234, KSM 2142; BT-PS-606 A; DCSEA 615/C; E/L-1415b; FSD 8704; NATO S-759; Önorm V5123; SAE J1034; uNE 26-361-88/1. Shell Premium Antifreeze Longlife 774 D-F meet or exceed requirements from most of the car manufacturers.

2. Application

In all modern engines of car, truck and bus Shell Premium Antifreeze Longlife 774 D-F gives outstanding protection against frost, corrosion and overheating. It effectively protects against corrosion in the cooling system in engines of both ferrous and aluminium construction. It gives high degree of corrosion protection of vital parts, the coolant channels in the block and cylinder head, the radiator, the water pump and the heater.
Because of used technology Shell Premium Antifreeze Longlife 774 D-F remains effective over a long period of time. Shell Premium Antifreeze Longlife 774 D-F inhibitor package offers excellent cavitation protection even without using supplemental coolant additives (SCA). During extensive fleet testing has proven to provide protection for at least **650,000 km** (ca. 8,000 hours) in truck & bus application or **250,000 km** (ca. 2,000 hours) for passenger cars or **32,000 hours (or 6 years)** for stationary engines. For coolant change intervals follow the vehicle manufacturer recommendations. Safe for all car parts, in which has contact.

Shell Premium Antifreeze Longlife 774 D-F meets OEM requirements us follow:

ADE
Aston Martin

Behr	**PN°-AR.00247**
Caterpillar	**MAK A4.05.09.01**
Claas	
Cummins	**IS series u N14**
Daimler	**Mercedes-Benz 325.3**
Detroit Diesel Power Cool Plus	
Deuitz	**MWM 0199-99-2091/8**
Deutz	**0199-99-1115/6**
Ford	**WSS-M97B44-D/E**
GM - Chevrolet	
GM - Opel/Saab/Vauxhall	**GM 6277M (+B040 1065)**
GM – Opel	**GMW3420**
GM – Vauxhall	**GME L1301**
GM – Saturn	
Hitachi	
Isuzu	
Jenbacher	**TA1000-0201**
John Deere	**JDMH5**
Karosa	
Kobelco	
Komatsu	**07.892 (2009)**
Liebherr	**MD1-36-130**
MAN	**MAN 324 Typ SNF**
MAN	**B&W AG D36 5600**
MAN	**B&W A/S**
MAN Semt Pielstick	
Mazda	**MEZ MN 121 D**
MG-Motors Rover	
Mitsubishi Heavy Industry	**MHI**
MTU MTL 5048	
Paccar	**DAF 74002**
Paccar Leyland Trucks	**DW03245403**
Renault-Nissan	**RNUR 41-01-001/--S Type D**
Suzuki Santana Motors	
Tata Motors Jaguar	**CMR 8229**
Tata Motors Jaguar	**WSS-M97B44-D**
Tata Motors Land Rover	**WSS-M97B44-D**
Tata Motors Land Rover	
Thermo King	
Ulstein Bergen	**2.13.01**
Volvo AB - Mack	**014 GS 17009**
Volvo AB – Penta	**128 6083/002**
Volvo AB – Construction	**128 6083/002**
Volvo AB – Trucks	**128 6083/002**
Volvo AB – Renault Trucks	**41-01-001/--S Type D**
VW - Audi/Skoda/Seat/ VW	**TL-774 F = G12+**
VW - Audi/Skoda/Seat/ VW	**TL-774 D = G12**
VW - Skoda	**61-0-0257**
Wärtsilä - SACM Diesel	**DLP799861**
Wärtsilä	**32-9011**
Waukesha	
Yanmar	

3. Usage

Shell Premium Antifreeze Longlife 774 D-F solution must be diluted with water in a ratio of 1:1 before filling the cooling system. Recommended final fluid concentration is between 33% and 68% by volume. In max recommended fluid concentration point (68% vol) in the same time is max frost protection (about -69°C).

Table dilutions

Number of parts Shell Premium Antifreeze Longlife concentrate 774 D-F	1	1	1
Number of parts Water	1	1,5	2
Freezing protection °C	-38°C	-25°C	-18°C

To ensure maximum protection of the cooling system is recommended to completely drain the system, rinsed, then filled with liquid Shell Premium Antifreeze Longlife 774 D-F concentrate and water in a ratio from the table above. Start the engine and warm it with the heater turned on, then fill to the end with the prepared mixture. Always follow the advice of your vehicle manufacturer.

4. Miscibility

Shell Premium Antifreeze Longlife 774 D-F can be mixed with other silicate containing engine coolants based on mono ethylene glycol, but always it is recommended to follow the instruction of car manufacturer and in longer term replace mixture fluid on the homogeneous coolant. Particular advantages of cooling fluid such as better protection for aluminum radiators and longer drain intervals can only be achieved with pure Premium Antifreeze Longlife 774 D-F.

Product is compatible with hard water and can be mixed with tap water*.

** For preparation of the coolant use clean, not overly hard water. Waste water from mining, sea water, brackish water, brine, industrial waste water are all unsuitable.*
The analysis of the water should not exceed the following limits:
Water hardness 0 to 20°dH (0 – 3.6 mmol/l)
Chloride content max. 500 ppm
Sulphate content max. 500 ppm
Should the analysis of the water exceed the approved limits, then it has to be suitably treated, for example by mixing with pure, distilled or deionised water. Excessive chloride or sulphate levels can be corrected in this way.

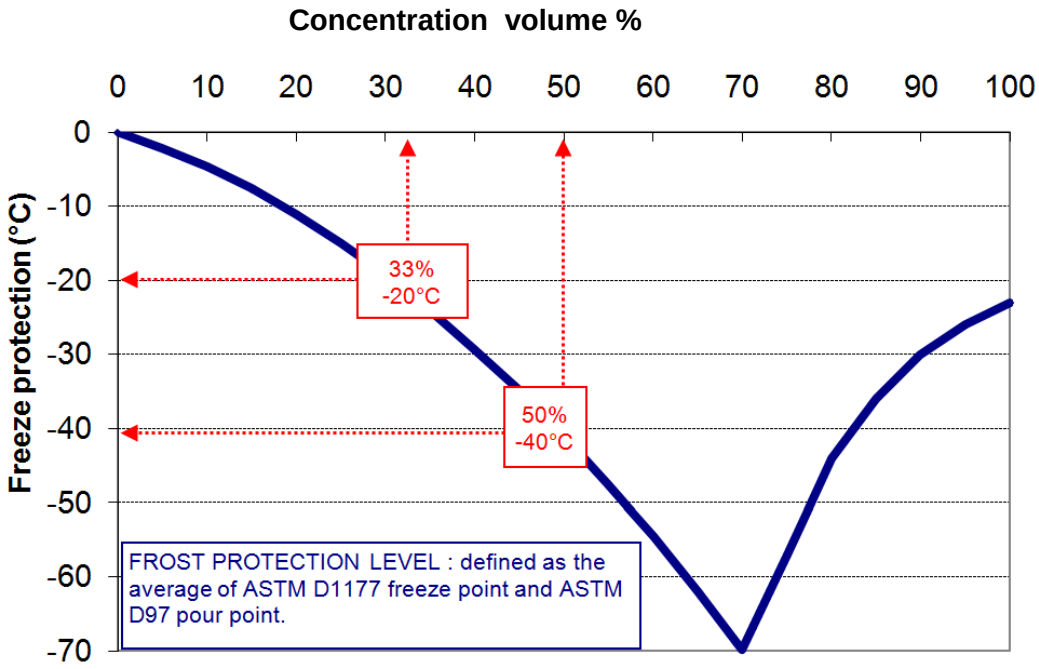
5. Physical and chemical properties

Chemical nature	Monoethylene glycol with inhibitors
Physical state	liquid
Colour	magenta

Properties	Density at 20°C (g/cm³)	1.113 typ	ASTM D5931
	Viscosity at 20°C (mm²/s)	20,5 typ	
	Refractive index, at 20°C	1.430 typ	ASTM D1218
	Boiling point	180°C typ	ASTM D1120
	Flash point (°C)	122°C typ	
	pH value	8.6 typ	ASTM D1287
	Reserve alkalinity (pH 5.5, ml)	6.2 ml typ	ASTM D1121
	Ash content (w/w)	1,1% typ	ASTM D1119
	Water content (w/w)	max 5%	ASTM D1123
	Inhibitor content (w/w)	5%	
	Nitrite, amine, phosphate		
	Borate, silicate content	nil	
Solubility	Miscibility with water	in all proportions	

Technical data to the mix fluid Shell Premium Antifreeze Longlife 774 D-F with water

Frost protection Shell Premium Antifreeze Longlife 774 D-F



Freezing point - Initial crystallization point		ASTM D 1177
	50% vol in water	-37,1°C typ
	33% vol in water	-19,3°C typ
Freezing protection	50% vol in water	-40,5°C typ
	33% vol in water	-21,8°C typ
Pour point	50% vol in water	-44,9°C typ
	33% vol in water	-24,9°C typ

Kinematic viscosity		
at 0°C,	50 vol. % in water	9.5 mm²/s typ
	33 vol. % in water	5.2 mm²/s typ
at 20°C	50 vol. % in water	4.3 mm²/s typ
	33 vol. % in water	2.6 mm²/s typ
at 80°C,	50 vol. % in water	1.0 mm²/s typ
	33 vol.% in water	0.7 mm²/s typ
Electrical conductivity	2499,03 µS/cm, at 23°C 50 vol.% in water	
Foaming characteristics	max. 50 ml/ 5s typ	ASTM D1881

Corrosion Tests

Glassware Test		ASTM D1384
Metal	typical weight loss in	limit
or alloy	mg per coupon	ASTM D3306
copper	+ 1.6	max. 10
solder	+ 1.9	max. 30
brass	+ 0.1	max. 10
steel	- 0.5	max. 10
cast iron	- 1.4	max. 10
cast aluminium	+ 4.6	max. 30

Heat Transfer Corrosion Test		ASTM D4340
	typical weight change	limit
	in mg/cm2/week	ASTM D3306
G AlSi6Cu4:	< 0.2	max. 1.0

6. Storage

Shell Premium Antifreeze Longlife 774 D-F is stable for at least 8 years if stored in airtight containers at maximum temperature of 30°C.
Keep container tightly closed. Do not keep in galvanised containers, because this can give rise to corrosion problems. Storage temperatures: ambient.

7. HSE information.

A safety data sheet according to regulations (EC) 1907/2006 is available.
The product is classified as harmful: Xn Harmful, R22 Harmful if swallowed.
No UN number.
For details, see Safety Data Sheet.

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