



Havoline[®] XLC-PG

High performance extended life antifreeze coolant

Product description

Havoline XLC-PG is a high performance extended life propylene glycol based antifreeze coolant concentrate formulated to offer freezing, boiling and corrosion protection, including high temperature corrosion protection in modern aluminium engines.

Havoline XLC-PG is formulated with advanced non-depleting corrosion inhibitor technology which offers long, low maintenance coolant service life.

Customer benefits

- High performance non-depleting corrosion inhibitor technology promotes extended, low maintenance coolant service life
- Offers protection in excess of 650,000 km in trucks and buses, 250,000 km in passenger cars and 32,000 hours in stationary engines
- Silicate and phosphate-free formulation contributes stability and reliability in hard water dilutions
- Promotes protection in thermostats, radiators, water pumps and other critical engine components, helping reduce maintenance costs
- Aids corrosion protection in a wide range of metals, including aluminium in modern high temperature engine environments
- Advanced technology carboxylic additives aid environmental protection

Product highlights

- **Non-depleting corrosion inhibitor**
- **Extended, low maintenance coolant life**
- **Silicate and phosphate-free stability in hard water dilutions**
- **Critical engine component protection**
- **High temperature corrosion resistance**

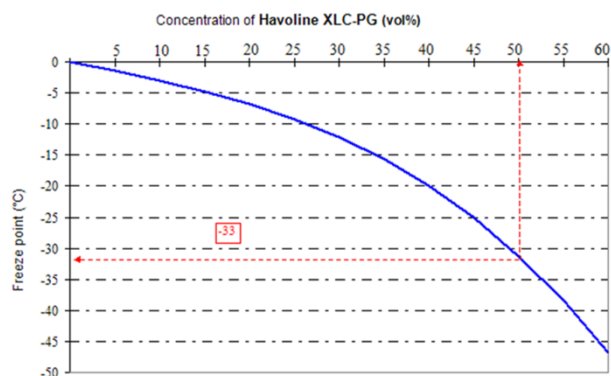
Selected specification standards include:

Ulstein Bergen

Volkswagen

Applications

- Based on patented silicate-free aliphatic additive technology, Havoline XLC-PG contributes long-life corrosion protection in a wide range of engine metals, including aluminium and ferrous alloys. The synergistic combination of mono- and di-carboxylates present in this coolant, helps provide protection for approximately 650,000 km (8,000 hours) in trucks and buses, 250,000 km (2,000 hours) for passenger cars and 32,000 hours (or 6 years) for stationary engines. It is recommended to change the coolant every five years or at above distances or operating times, whichever comes first
- Havoline XLC-PG helps provide long-life protection against many types of corrosion through the use of patented organic corrosion inhibitors
- Havoline XLC-PG offers long-life protection to aluminium heat transfer surfaces in modern engines. The inhibitor package offers cavitation protection without using nitrite or nitrite-based supplemental coolant additives (SCA's)
- Havoline XLC-PG helps provide long-life frost and corrosion protection. To ensure good corrosion protection it is recommended to use at least 33 vol. % of Havoline XLC-PG in the coolant solution. This provides frost protection to -17°C. Typical mixtures in Northern Europe are 50/50, offering frost protection down to -38°C
- Havoline XLC-PG may be used in engines manufactured from cast iron, aluminium or combinations of the two metals, and in cooling systems made of aluminium or copper alloys. Havoline XLC-PG is recommended for hi-tech engines, where high temperature aluminium protection is important. For racing cars we recommend the use of Havoline extended life corrosion inhibitor, an aqueous solution of the same carboxylic additives



Disclaimer Chevron accepts no liability for any loss or damage suffered as a result of using this product for any application other than applications specifically stated in any Product Data Sheets.

Health, safety, storage and environmental Based on current available information, this product is not expected to produce adverse effects on health when used for the intended application and in accordance with the recommendations provided in the Material Safety Data Sheet (MSDS). MSDSs are available upon request through your local sales office, or via the Internet. This product should not be used for purposes other than its intended use. When disposing of used product, take care to protect the environment and follow local legislation.

A Chevron company product

Approvals, performance and recommendations

Approvals

- Volkswagen TL52176
- Ulstein Bergen Diesel and gas engines

Compatibility

- Havoline XLC-PG is compatible with most other coolants based on propylene or ethylene glycol. Exclusive use of Havoline XLC-PG is, however, recommended for optimum corrosion protection and sludge control
- The use of soft water is preferred for dilution. Laboratory testing has shown that acceptable corrosion results are still obtained with water of 20°dH, containing up to 500 ppm chlorides or 500 ppm sulphates

Storage and handling

- The product should be stored above -20°C and preferably at ambient temperatures. Periods of exposure to temperatures above +35°C should be minimised
- Exposure of the coolant to direct sunlight in translucent packages can degrade the dyes present in the coolant, and result in fading of the colour or discolouration over time. This reaction can be accelerated if coupled with high ambient temperatures. It is therefore advisable to store coolant in translucent packages indoors
- Havoline XLC-PG can be stored for approximately 8 years in unopened containers without any effect on the product quality or performance. It is strongly recommended to use new containers and not recycled ones
- As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation

Typical test data			
	Havoline XLC-PG	ASTM 5216 reqs.	Method
Propylene glycol	93.0 % w/w glycol	Base	—
Other glycols	0.5 % max.	5 % w/w max.	—
Inhibitor content	5 % w/w	—	—
Water content	4 % w/w max	5 % w/w max	ASTM D1123
Ash content	1.4 % w/w typ.	5 % w/w max	ASTM D1119
Nitrite, amine, phosphate, borate, silicate	Nil	—	—
Colour	Uncoloured	—	—
Specific gravity, 15°C	1.045 typ.	1.030 to 1.065	ASTM D1122
Specific gravity, 20°C	1.042 typ.	—	ASTM D1122
Equilibrium boiling point	165°C typ.	> 152°C	ASTM D1120
Reserve alkalinity	6.3 typ.	Report	ASTM D1121
Refractive index	1.431 typ.	—	—

Typical test data				
Dilution, %	50 %	33 %	ASTM 5216	Method
pH	8.8	8.3	7.5 to 11.0	ASTM D1287
Foaming properties at 25°C	50 ml typ.	—	—	ASTM D1881
Break time	5 sec. typ.	—	—	
Foaming properties at 88°C	50 ml typ.	50 ml typ.	150 ml max.	ASTM D1881
Break time	5 sec. typ.	5 sec. typ.	—	
Initial crystallization	< - 32.6 °C	< -15 °C	< - 32 °C	ASTM D 1177
Freezing protection	-33°C.typ.	- 15 °C typ.	—	—
Effect on non-metals	No effect	No effect	—	GME 60 255
Staining characteristics	—	No effect	No effect	ASTM D 1882
Hard water stability	No precipitate	—	—	VW PV 1426

Disclaimer Chevron accepts no liability for any loss or damage suffered as a result of using this product for any application other than applications specifically stated in any Product Data Sheets.

Health, safety, storage and environmental Based on current available information, this product is not expected to produce adverse effects on health when used for the intended application and in accordance with the recommendations provided in the Material Safety Data Sheet (MSDS). MSDSs are available upon request through your local sales office, or via the Internet. This product should not be used for purposes other than its intended use. When disposing of used product, take care to protect the environment and follow local legislation.

A Chevron company product

Corrosion Protection

ASTM D1384 glassware corrosion tests

	Weight loss in mg/coupon ¹						
	Brass	Copper	Solder	Steel	Cast Iron	Aluminium	AlMn
ASTM D5216 (max)	10	10	30	10	10	30	-
Havoline XLC-PG	0.7	1.1	1.8	0.1	-0.3	1.5	2.1

¹ Weight loss AFTER chemical cleaning acc. to ASTM procedure. Weight gain is indicated by a - sign.

ASTM D4340 Aluminium heat rejection test, 25 %

	Weight loss in mg/cm ² /week ¹
ASTM D5216 (max)	1.0
Havoline XLC-PG	< 0.4

¹ Weight loss AFTER chemical cleaning acc. to ASTM procedure. Weight gain is indicated by a - sign.

Modified MTU High Temperature corrosion test (2000 W)

	Weight loss in mg/coupon ²					
	Cast Iron			Aluminium		
Test duration, hrs	48	69	116	48	69	116
Reference coolant ³						
hot coupon	-30.0	-13.1	4.3	-18.2	284.2	—
top coupon	-20.0	1.6	5.7	6.2	152.2	—
Havoline XLC-PG						
hot coupon	—	3.8	—	—	23.9	29.0
top coupon	—	0.3	—	—	-0.6	-3.7

² Weight loss AFTER chemical cleaning acc. to (shortened) MTU procedure. Weight gain is indicated by a - sign.

³ Reference coolant is a conventional, high quality, silicate-based MEG coolant.

Disclaimer Chevron accepts no liability for any loss or damage suffered as a result of using this product for any application other than applications specifically stated in any Product Data Sheets.

Health, safety, storage and environmental Based on current available information, this product is not expected to produce adverse effects on health when used for the intended application and in accordance with the recommendations provided in the Material Safety Data Sheet (MSDS). MSDSs are available upon request through your local sales office, or via the Internet. This product should not be used for purposes other than its intended use. When disposing of used product, take care to protect the environment and follow local legislation.

A Chevron company product

Aging test

To emphasise the corrosion protection offered by Havoline XLC-PG, the aging test is conducted under more severe conditions compared to those commonly used in the industry.

Test Conditions	Typical Industry	Havoline XLC-PG
Test duration	169 h	504 h
Fluid content	5.0 l	6.0 l
Pressure	1.5 bar	2.5 bar
Flow	3.0 l/min	3.5 l/min
Heat input	5500 W	5000 W
Temperature in heating vessel	95 °C	115°C
Temperature in cooling vessel	75 °C	95°C
Concentration of coolant in water	40 vol. %	20 vol. %

	Weight loss in g/m ² (using Chevron test parameters) ¹						
	Al 2	AlMn	Cast Iron	Steel	Cu	CuZn	Solder CB
Reference Coolant ³							
- after initial cleaning	82.10	64.02	-2.19	-1.68	3.62	2.90	21.45
- after final cleaning	125.01	94.33	-0.36	0.11	4.99	5.66	25.83
Havoline XLC-PG							
- after initial cleaning	1.40	0.38	-0.02	0.10	1.66	1.55	0.36
- after final cleaning	11.02	5.81	0.16	0.10	2.51	2.19	0.51

¹ Weight loss AFTER chemical cleaning acc. to (shortened) MTU procedure. Weight gain is indicated by a - sign.

² Aluminium SAE 329.

³ Reference coolant is a conventional, high quality, silicate-based MEG coolant

The information given in the typical data does not constitute a specification but is an indication based on current production and can be affected by allowable production tolerances. The right to make modifications is reserved. This supersedes all previous editions and information contained in them.

Disclaimer Chevron accepts no liability for any loss or damage suffered as a result of using this product for any application other than applications specifically stated in any Product Data Sheets.

Health, safety, storage and environmental Based on current available information, this product is not expected to produce adverse effects on health when used for the intended application and in accordance with the recommendations provided in the Material Safety Data Sheet (MSDS). MSDSs are available upon request through your local sales office, or via the Internet. This product should not be used for purposes other than its intended use. When disposing of used product, take care to protect the environment and follow local legislation.

A Chevron company product