STRUB Antifreeze LPC

Ethylene glycol-based coolant with cutting-edge phosphate inhibitor technology

Art.-No. 33810

Description

STRUB Antifreeze LPC is an ethylene glycol based coolant containing cutting-edge phosphate inhibitor technology backed by a robust organic backbone (P-OAT "Phosphated Organic Additive Technology)". Exempt from potentially harmful additives such as nitrites, borates and amines, the coolant also contributes to a safer environment. STRUB Antifreeze LPC is free of silicates, which excludes any possible issues caused by instable silicate gel or silicate dropout. STRUB Antifreeze LPC is an all-around coolant that exceeds industry standards JIS K 2234-2018, ASTM D3306 and ASTM D6210 and is suitable for use in Japanese and Korean vehicles.

Application

STRUB Antifreeze LPC provides year-round frost and corrosion protection. It is recommended to use at least 30 vol. % of the antifreeze in the final coolant solution. This provides a freeze point of -16°C. Typical mixtures in Northern Europe are 50/50, offering a freeze point down to - 37°C. Concentrations higher than 70 vol.% are not recommended as the maximum frost protection is reached. STRUB Antifreeze LPC may be used with confidence in engines manufactured from cast iron, aluminium or combinations of the two metals, and in cooling systems made of aluminium or copper alloys. STRUB Antifreeze LPC is particularly recommended for use for Asian OEM's, in line with their basic chemistry requirements.

Features and advantages

- Long-life coolant by a synergistic combination of virtually non-depleting organic corrosion inhibitors
- Excellent hard water resistance - a unique matrix of hard water stabilisers & sequestrants
- Premium cavitation protection - thanks to synergy of P-OAT inhibitor technology
- Excellent compatibility with CAB* brazed material - unique inhibitor package neutralising the negative effects from flux residues
- Reduces repairs to thermostat, radiator and water pump
- Environmentally friendly long-life OAT technology
- Time and cost savings - maintenance free coolant
- Reliability - depletion-free and stable inhibitors
- Excellent heat transfer - absence of silicates
- Suitable for mixed fleets - fit for automotive and heavy-duty application

The high temperature stability combined with flux passivation properties makes this coolant an excellent and future proof choice for today's and tomorrow's engine cooling systems.
* CAB: Controlled Atmosphere Brazing

Performance and specifications

STRUB Antifreeze LPC fully complies with the following standards:

- JIS K 2234
- ASTM D3306
- ASTM D6210

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Technical data

	STRUB Antifreeze LPC	ASTM D3306 Requirements	Method
Ethylene glycol, % w/w	min. 92 %	Base	
Other glycols, % w/w	max. 1 %	max. 5%	
Inhibitor content, % w/w	approx. 4 %		
Water content, % w/w	max. 3.7 %	max. 5%	ASTM D1123
Ash content, % w/w	approx. 1.5 %	max. 5%	ASTM D1119
Nitrite, Amine, Borate, Silicate	nil		
Color	Coloured or uncoloured		
Specific gravity, 15°C	approx. 1,124	1.110 - 1.145	ASTM D5931
Density, 20°C, kg/l	approx. 1,119		ASTM D1122
Equilibrium boiling point, °C	approx. 178	>163	ASTM D1120
Reserve alkalinity (pH 5.5)	approx. 8.9	Report	ASTM D1121
pH, 20°C	approx. 8.3		ASTM D1287
Refractive index, 20°C	approx. 1,437		ASTM D1218

	50 % Dilution	40 % Dilution	30 % Dilution	ASTM D3306	Method
pH	7.9	7.8	7.8	7.5 - 11.0	ASTM D1287
Foaming properties in real time					
- Volume, ml	< 100		< 100		CEC C-10-X-97
- break time, s	< 15		< 15		
Initial crystallization, °C	< -36.5	< -24.0	< -15.0	< -36.4	ASTM D1177
Density, 20°C, kg/l	approx. 1,071	approx. 1,058	approx. 1,044		ASTM D5931
Equilibrium boiling point, °C	approx. 113	approx. 110	approx. 108		ASTM D1120
staining characteristics	No effect			No effect	ASTM D1882
Hard water stability	No precipitations		No precipitations		GFC L-106-A-90

ASTM D1384 glassware corrosion test

	Weight loss in mg/coupon[1]					
	Brass	**Copper**	**Solder**	**Steel**	**Cast iron**	**Aluminum**
ASTM D3306 (max)	10	10	30	10	10	30
STRUB Antifreeze LPC	0	1	1	1	1	2

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

ASTM D4340 Aluminium heat rejection test

	Weight loss in mg/cm²/week[1]
ASTM D3306 (max)	1.0
STRUB Antifreeze LPC	-0.1

1 Weight loss or gain AFTER dry cleaning according to ASTM procedures. Weight gain is indicated by a - sign

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Dynamic corrosion test CEC-C23-T-99 (cast iron 1400W/aluminum 1000W, 20Vol%, 72 hours.)

		Weight loss in mg/coupon	
	Cast iron	Aluminum	
		before chemical treatment	After chemical treatment
STRUB Antifreeze LPC	2	-3	-11

JIS K2234-2018 Circulating Corrosion Properties, (30v%, 88°C, 1000 hours)

	Weight change in mg/cm²					
	Brass	**Copper**	**Solder**	**Steel**	**Cast iron**	**Aluminum**
JIS K2234-2018	±0.30	±0.30	±0.60	±0.30	±0.30	±0.60
STRUB Antifreeze LPC	0.04	0.02	-0.16	-0.09	-0.11	-0.04

	pH	
	After the test	Change
JIS K2234-2018	6.5 to 11	+/- 1.0
STRUB Antifreeze LPC	8.1	0.1

Compatibility and mixability

STRUB Antifreeze LPC is compatible with most other coolants based on ethylene glycol. Exclusive use of STRUB Antifreeze LPC is however recommended for optimum performance. As for any coolant, we recommend the use of deionised or distilled water to prepare the ready-to-use dilutions for optimal performance and controlled quality.

Storage

The product should be stored above -20°C and preferably at ambient temperatures. Periods of exposure to temperatures above 35°C should be minimized. Further it is strongly advised not to expose the coolant in translucent packages to direct sunlight because this can result in fading of the colour or discoloration over time. This reaction can be accelerated if coupled with high ambient temperatures. It is therefore advisable to store the coolant indoors to avoid this issue. STRUB Antifreeze LPC can be stored for minimum 3 years in unopened containers without any effect on the product quality or performance. It is strongly recommended to use new and not recycled containers. As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/blending installation.

Toxicity and safety

For Toxicity and Safety Data we refer to the Safety Data Sheet. The information and advice given should be observed and due attention should be given to the precautions necessary for handling chemicals. This product should not be used to protect the inside of drinking water systems against freezing.

Transportation

ADR/SDR No dangerous goods

Disposal

FVO VeVA / EAK 16 01 14

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