

1 Description

Yukon Ultimate XLI Premixed is a low-toxic, environmentally friendly inhibitor concentrate. Based on patented carboxylate additive technology, Yukon Ultimate XLI Premixed provides long-life corrosion protection in aqueous solutions for all engine metals, including aluminium, iron, copper and solder alloys.

Mixed with the appropriate amount of water, Yukon Ultimate XLI Premixed is recommended as a coolant,

flushing fluid or hot test fluid for engine blocks and all cooling systems. During extensive field testing, the synergistic combination of mono- and di-carboxylic additives has proven to provide superior protection for at least **32,000 hours** in marine and stationary applications. The product is compatible with glycol-based engine coolants. It is recommended to change the coolant every five years or at above operating times, whichever comes first.

2 Benefits

Yukon Ultimate XLI Premixed offers a lot of benefits to the engine designer as well as to the user:

- Extended & superior corrosion protection
- Superior technology
- Excellent protection
- Reliability
- Improved hard water stability
- Save time and money
- Environmentally friendly

Yukon Ultimate XLI Premixed provides long-life protection against all forms of corrosion by the use of optimized and patented organic corrosion inhibitors. Excellent and lasting high temperature corrosion protection is provided for the aluminium heat transfer surfaces

by synergistic combination of additives provides more flexibility to engine design of thermostat, radiator and water pump depletion free and stable inhibitor absence of silicates and phosphates maintenance-free inhibitor by using carboxylic additives in the inhibitor package

contained in modern engines. The inhibitor package of Yukon Ultimate XLI Premixed offers excellent cavitation protection even without using nitrite or nitrite-based supplemental coolant additives (SCA's)

Summary Benefits:

- Superb heat transfer capabilities in diesel engines
- A service life up to 600,000 km. or 4 years
- Environmental friendly
- Easy to use (ready to pour) in the system, eliminate concern on water quality
- Excellent corrosion protection
- No need to add SCA (supplemental Coolant Additives)
- Recommend for Mercedes Benz Trucks MB312.0, Scania, MTU series2000/4000, Detroit Diesel, MAN B&W, Wartsila



3 Application

Yukon Ultimate XLI Premixed provides long-life corrosion protection. Depending on the actual application the dosage may vary from 5 – 10 % but a minimum of 5 vol. % of Yukon Ultimate XLI Premixed in water should be used. Yukon Ultimate XLI Premixed 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. The correct dosage of Yukon Ultimate XLI Premixed is being checked with a refractometer. Please contact your local Artec Area Sales Manager for more information.

Yukon Ultimate XLI Premixed is particularly recommended for hi-tech engines like racing cars and heavy duty offroad equipment, where high temperature aluminium protection is important.

- In **marine** application the concentration of Yukon Ultimate XLI Premixed should not be lower than 5 vol. %. At this dosage the recommended life-time is at least 32,000 hours. If Yukon Ultimate XLI Premixed is replenished regularly to compensate for leakage, the cooling water can be considered as fill for life.
- Small marine engines sometimes require limited frost protection. This can be obtained by using the adequate dosage of Yukon Ultimate XLI Premixed, based on ethylene glycol, supplemented with 5 % vol. Yukon Ultimate XLI Premixed. For frost protections of -10 and -15°C, the required Yukon Ultimate XLI Premixed dosages are respectively 22 and 29 vol. %.
- For **off-road, truck and bus** application the recommended life time is 8,000 hours or 650,000 km, provided a concentration of 7.5 % vol. Yukon Ultimate XLI Premixed is used.
- At 7.5 % vol., Yukon Ultimate XLI Premixed will provide outstanding corrosion protection in **stationary** engines for at least 32,000 hours.
- Yukon Ultimate XLI Premixed can also be used at 10 % vol. as a **hot test liquid** for new engine blocks. Newly manufactured engines are tested for duration of approximately 5 to 10 minutes, after which the fluid is drained and usually reused. If the engine blocks are not immediately built into vehicles, Yukon Ultimate XLI Premixed will provide corrosion protection of the empty engine for up to two months.
- At 5 % vol. Yukon Ultimate XLI Premixed performs as a **flushing fluid** to clean cooling systems that were filled with other inhibitor packages. In most cases it is required to flush the system twice. For a good result it is important that the engine has reached normal operating temperatures and all thermo-valves are opened.
- Yukon Ultimate XLI Premixed can also be applied as an inhibitor package for central heating systems, hydraulic safety fluids and mining fluids.

The use of soft water is preferred for dilution. Though, lab testing has shown that acceptable corrosion results are still obtained with water of 20°dH, containing up to 500

ppm chlorides or 500 ppm sulfates. The water used for dilution should be free of zinc as presence of zinc will result in the formation of a precipitate.

4 Approvals by OEMs & National Authorities

Yukon Ultimate XLI Premixed has been approved by several engine manufactures and an up-to-date list with approvals is available separately. Even though some OEMs have not yet given a

formal approval Yukon Ultimate XLI Premixed is suitable for use in the applications as described on the second page.

5 Storage Requirements

The product should be stored above -5°C and preferably at ambient temperatures. Periods of exposure to temperatures above 35°C should be minimized. Further, it is strongly advised to use new dark containers and not recycled ones. Exposure to direct sunlight might cause discoloration, although the product itself and the properties remain stable

Yukon Ultimate XLI Premixed can be stored for minimum 5 years in unopened containers without any effect on the product quality or performance. As with any antifreeze coolant, the use of galvanized steel is not recommended for pipes or any other part of the storage/mixing installation.

6 Toxicity & safety

For Toxicity and Safety Data we refer to the Material Safety Data Sheet. The transport is not regulated. The following labeling applies for the concentrate, but not for dilutions below 15 %: Xn: R 63 (possible risk of harm to the

unborn child) and S 36/37 (wear suitable protective clothing and gloves). This product should not be used to protect the inside of drinking water systems against freezing.

All information contained in this Product Information Leaflet is accurate to the best of our knowledge and belief as at the date of issue specified. However, the Company makes no warranty or representation, express or implied, as to the accuracy or completeness of such information.

Addendum – Technical information

Chemical and physical properties

	Yukon Ultimate XLI Premixed	method
Inhibitor content	50 % w/w	
Water content	50 % w/w	ASTM D1123
Nitrite, amine, phosphate, borate, silicate	nil	
Colour	Red Fluorecent	
Specific gravity, 20°C	1.058 typ.	ASTM D1122
pH	9.4 typ.	ASTM D1287
Cloud point	- 15°C typ.	
	5% dilution	method
pH	8.1 typ.	ASTM D1287
Effect on non-metals	no effect	GME 60 255
Hard water stability	no precipitate	VW PV 1426

Modified ASTM D1384 glassware corrosion tests – 300ppm chloride

	Weight loss in mg/coupon ¹						
	Brass	Copper	Solder	Steel	Cast Iron	Aluminium	AlMn
ASTM D5216 (max)	10	10	30	10	10	30	–
5% Yukon Ultimate XLI Premixed	0.6	0.6	4.5	0.0	0.7	9.8	4.8

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)

test duration, 116 hrs	Weight loss in mg/coupon ²		
	Cast Iron	Aluminium	
		SAE 329	AlMgSil
5 % Yukon Ultimate XLI Premixed in deionised water – hot coupon	-1.3	9.3	1.8
5 %Yukon Ultimate XLI Premixed in FVV water – hot coupon	-9.0	-16.4	40.7

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

Aging test

To emphasize the corrosion protection offered by Yukon Ultimate XLI Premixed, the aging test is conducted under more severe conditions compared to those commonly used in the industry

Test Conditions	Typical Industry	Havo
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. %

Corrosion Protection

	Weight loss in g/m ² (using Arteco test parameters) ¹						
	Al 2	AlMn	Cast Iron	Steel	Cu	CuZn	Solder CB
Reference Coolant³							
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
Yukon Ultimate XLI Premixed							
after initial cleaning	23.91	27.05	0.52	0.36	1.03	1.13	0.27
after final cleaning	60.16	63.15	0.69	0.40	1.46	1.76	0.52

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

2. Aluminum SAE 329.

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

Yukon Ultimate XLI Premixed is particularly recommended for hi-tech engines like racing cars and heavy duty offroad equipment, where high temperature aluminium protection is important.

- In marine application the concentration of Yukon Ultimate XLI Premixed should not be lower than 5 vol. %.
- Off-road, truck and bus application and stationary engines, concentration of 7.5 % vol. Yukon Ultimate XLI Premixed is used.
- Hot test liquid for new engine, Yukon Ultimate XLI Premixed can also be used at 10 % vol.
- At 5 % vol. Yukon Ultimate XLI Premixed performs as a flushing fluid to clean cooling systems that were filled with other inhibitor packages.

OEM Group	OEM	Specification	Remark
Deutz	Deutz	0199-99-1115/6	
Deutz/MWM	Deutz-MWM	0199-99-2091/8	
	Detroit Diesel		
	GEC Alsthom		
Jenbacher	Jenbacher	TA 1000-0204	
	Liebherr	MD 1-36-130(DCA)	
MAN	MAN	248	
MAN	MAN B&W AG	D36 5600	approval is for following engine types (4-stroke engines) : MAN B&W S42MC, MAN Holeby 8L 16/24
MAK	MAK	A4.05.09.01	
MTU	MTU	MTL 5049	approved for light-metal-free Series 2000 C&I and Series 4000 C&I/Genset engines
MTU	MTU	MTL 5049	
	Mercedes Benz trucks	MB 312.0	
	New Sulzer Diesel		2-cycle engines
	Ulstein Bergen	2.13.01	Diesel and gas engines
Wärtsilä	New Sulzer Diesel	TR 1508 - 10/94	
Wärtsilä	SACM Diesel	DLP799861	approved for engine SACM UD 30, 33, 45
Wärtsilä	Wärtsilä	32-9011	approved for following Wartsila engines : 20, 25, 25SG, 28SG, 32, 32DF, 32SG, 46, 50DF, 64, Vasa 22, Vasa 22/26, Vasa 32
Wärtsilä	Diesel/gas/dual fuel engines	32-9011	
Waukesha	Waukesha		

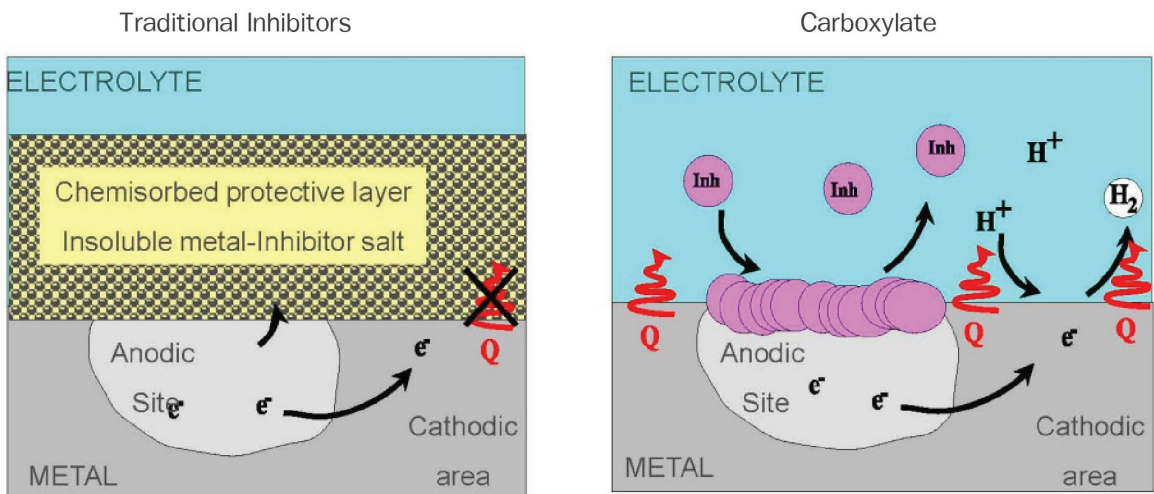
**Corrosion protection
with difference corrosion protection technology**

Carboxylate technology	Tradirional technology
High chemical stability	Lower Chemical stability
Efficient heat transfer	Less efficient heat transfer
Extended life of the coolant	Depletion of inhibitors
High temperature corrosion protectio	Less effective high temperature coorsion protection
Technical & economic advantage	Technical & economic disadvantage

Extend Life Coolant

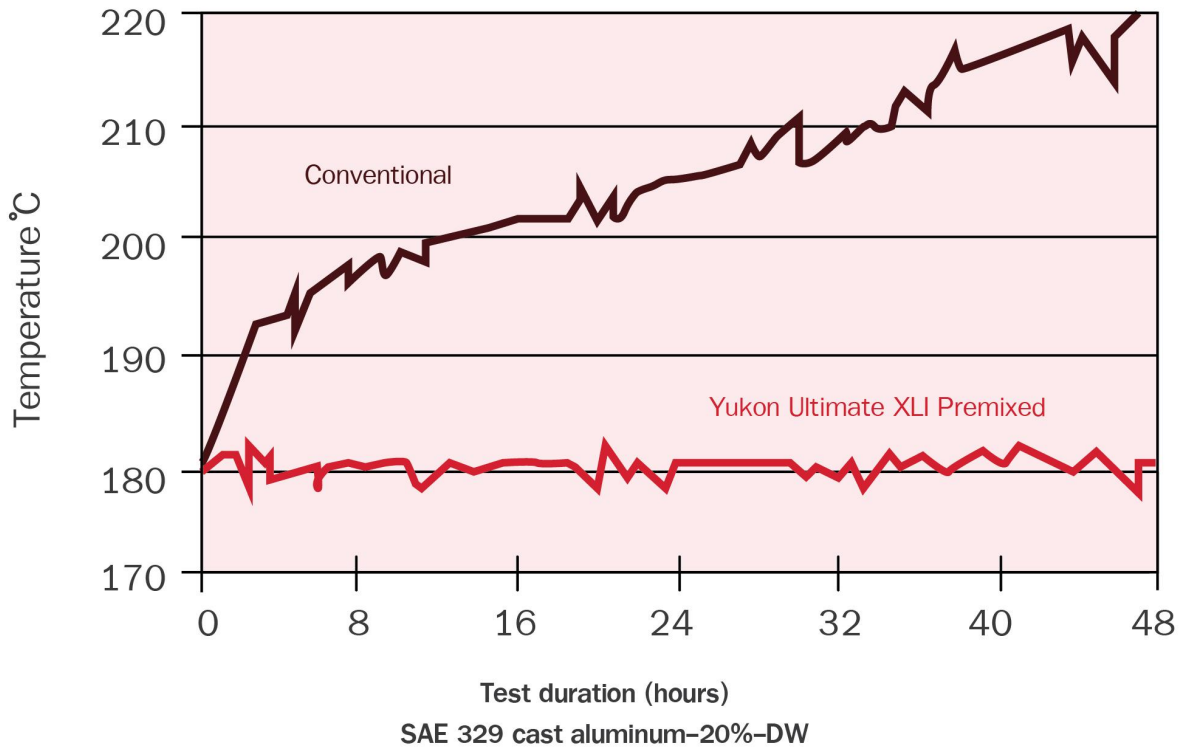
OAT (Organic Additives Technology) coolants

Our organic coolants make use of virtually non-depleting organic corrosion inhibitors.



Q=Heat

Heat transfer remains as good as



How Yukon Ultimate XLI Premixed Protect?

Corrosion is the combination of several processes, including an oxidation-reduction of the metal surface and an electron flow from anodic site to cathodic site. Conventional products protect against corrosion by creating a protective layer over the complete metal surface, thus impeding heat transfer.