



## HVO20 MET ChangeXL (shipping sector)

HVO20 is a renewable diesel (80% diesel and 20% HVO) based on waste vegetable oils and waste and residual flows such as animal fats. It contains virtually no sulfur and unsaturated molecules such as olefins (alkenes) and aromatics. This in combination with changeXL's enzyme technology ensures efficient and cleaner combustion for all types of engines, regardless of the sector or industry.

The action of HVO20 with ChangeXL is based on a mixture of natural enzymes, also called biocatalysts. This unique enzyme concentrate causes a molecular change of the fuel which leads to a faster and better combustion, resulting in:

- Lower fuel consumption
- Reduced emissions
- Lower maintenance costs
- Better performance
- Prevention of bacterial problems
- Longer engine oil life
- Longer fuel life

### ADVANTAGES HVO20 WITH ChangeXL

#### HVO20 with ChangeXL cleans fuel systems from tanks to engines

- Breaks down contaminants such as sludge, water and bacteria and gradually dissolves them in the fuel
- Gradually breaks down carbon deposits in engines

#### HVO20 with ChangeXL reduces emissions

- Reduction CO<sub>2</sub> to 22.5%
- Reduction of NOx up to 15.8%
- Reduction of soot and particulate matter up to 28.8%

#### HVO with ChangeXL reduces costs

- Fuel savings of up to 4.8%
- Extends the life of tanks, filters, injection systems, engines, engine oil and exhaust systems
- Eliminates microorganisms (bacteria, fungi and yeasts)
- Enables longer service intervals due to longer service life

### HVO20 WITH ChangeXL IS DIFFERENT

- The enzyme technology in HVO20 with ChangeXL is biological and contains no chemical components, metals or ash.
- The enzyme concentrate changes the molecular structure of the fuel, leading to better performance.
- The enzymes in HVO20 with ChangeXL continue to work actively throughout the fuel chain.
- The enzymes clean the entire fuelsystem.

### ChangeXL IS RELIABLE

The XBEE enzyme technology in ChangeXL has been extensively tested by independent laboratories and found to be safe for use in all engines.

### PRODUCT SPECIFICATIONS

HVO20 with ChangeXL complies with the NEN-EN590 standard.



## HVO20 WITH ChangeXL (shipping sector)

Properties	A-present	Specifications	Testmethods
Appearance	-	Clear and transparent	Optical inspection
Density @15°C	kg/m <sup>3</sup>	820.0-845.0	EN ISO 3675 / 12185
Sulphur content	mg/kg	Max. 10.0	EN ISO 20884 / 20846 / 13032
Centaangel	-	Min. 51.0	EN ISO 5165 / EN 15195 / 16144
Centaanindex	-	Min. 46.0	EN ISO 4264
Mangaangehalte	mg/l	Max. 2.0	IN I16576
Flash point	°C	>55	EN ISO 2719
Koolstofresidu	% (m/m)	Max. 0.30	EN ISO 10370
Asgehalte	% (m/m)	Max. 0.01	EN ISO 6245
Viscosity @40°C	mm <sup>2</sup> /s	2.00 - 4.50	EN ISO 3104
Lubricating power	µm	Max. 460	In ISO 12156-1
Copper strip corrosion (3 hours @50°C)	rating	Class 1	EN ISO 2160
Total amount of contamination	mg/kg	Max. 24	IN 12662
Oxidatiestabiliteit	g/m <sup>3</sup>	Max. 25	EN ISO 12205
Oxidatistability (not applicable if FAME content is less than 2% v/v)	h	Min. 20.0	IN 15751
Water content	mg/kg	Max. 200	EN ISO 12937
Conductivity	pS/m	Min. 50	ASTM D1500 / D6045
Fatty acid methyl esters (FAME content)	% in/in	Max. 7.0	EN 14078
Polycyclic aromatic hydrocarbons	% m/m	Max. 8.0 Am	IN 12916
Distillatieverloop: Evaporation @250°C Evaporation @350°C 95% recovered @	% in/in % in/in °C	<65.0 Min. 85.0 Max. 360.0	EN ISO 3405 / 3924
Temperature of filterability limit (CFPP) May/June/July/August/September March/April/October/November December/January/February	°C	Max. 0.0 Max. -5.0 Max. -20.0	IN 116 / 16329
Troebelingspunt (cloud point): April/May/June/July/August/September March/October November/December/January/February	°C	Max. +4.0 Max. 0.0 Max. -5.0	IN 23015
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