



HO PLUS 32 / PLUS 46

HYDRAULIC OIL – HEES

(Specification: ISO 15380)

Description

Hydraulic oil **PLUS** is a high performance fully synthetic hydraulic oil from mixture of saturated and unsaturated esters. Hydraulic oils **PLUS** has a great lubricity characteristics, excellent thermooxidation stability and perfect cold-exposure properties. It also provides a great temperature range performances. Enables a long oil change interval (extended lifetime filling interval).

Areas of Application

Hydraulic oil **PLUS** is designed for hydrostatic and hydrodynamic mechanical parts of machines and machinery. The ready biodegradability and non-toxic nature of these products make this hydraulic oil an excellent choice where leakage or spillage could enter environmentally sensitive areas (forestry works, hydroelectric stations, earth-moving industry, agriculture industry etc.)

Characteristic features:

- Great lubrication performances
- Perfect anti-wear propertiest
- Non-toxic
- Great cold-exposure properties
- Excellent thermooxidation stability
- Easily biodegradable
- Good compatilby with sealing materials, paints and hose
- Great protection against rust and corrosion
- Excellent wide temperature range performances
- With non-foaming additives

Synthetic esters

- Synthetic esters are made from organic acids and alcohols
- Originally formulated as a replacement for triglycerides, they perform better in nearly every performance criteria
- Work better at both higher and lower temperatures
- Low volatility and a higher lubricity all while maintaining high levels of biodegradability

Advantages of synthetic esters against mineral fluids

- LUBRICATING PROPERTIES
- HIGH VISCOSITY INDEX
- RESISTANT TO EXTREME PRESSURE/TEMPERATURE
- CLEANING PROPERTIES



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CHARACTERISTICS OF HO PLUS	Method	UNIT	ISO VG 32	ISO VG 46
Viscosity 40°C	ASTM D445	mm ² /s	32	46
Viscosity 100°C	ASTM D445	mm ² /s	6,7	9,4
VI	ASTM D 2270		165	187
Density (15 °C)	ASTM D 4052	g/cm ³	0,965	0,921
Flash point COC	ASTM D92	°C	>260	>260
Pour point	ASTM D97	°C	<-35	<-35
Total Acid Number (TAN)	ASTM D 664 /ASTM D 974	mg KOH/g	≤ 1	≤ 1
Water content	ASTM D 4928	%	≤ 0,01	≤ 0,01
Foam Seq. 1/2/3	ASTM D 892	ml/ml	0/0/0	0/0/0
Air release 50°C	ASTM D 3427	min	3	3
Copper corrosion (3h/100°C; 24h/100°C)	ASTM D 130	rating	1a/1a-1b	1a/1a-1b
Steel corrosion Procedure A (distilled water); B (synthetic sea water)	ASTM D 665	rating	pass;pass	pass;pass
AW - Four Ball Tests (1500 rpm/1h/300N)	ASTM D 4172	mm	<0,4	<0,4
FZG Gear Test A 8.3/90 (visual) - damage load stage	DIN 51354, part 2)	rating	>12	>12
RVPOT (150°C, H2O, O2, Cu Catalyst) - life time	ASTM D 2272	min	465	511

SEAL COMPATIBILITY (ISO 6072) 100°C / 168H	NBR 1	HNBR	FKM2	AU
HO PLUS 46 - Change of volume (%)	4.45	2.82	0.3	0.8

Vickers vane pump test type V 104-C (DIN 51389, part 2)	UNIT	ISO VG 32	ISO VG 46
Weight loss ring	mg	≤ 10	≤ 10
Weight loss vanes	mg	≤ 7	≤ 7

The above-listed data represent average values. They are intended as a guide to facilitate handling and cannot be regarded as specified data.