



## MAK HYDROL HVLP

Industrial high viscosity index extra heavy duty hydraulic fluid for excellent performance over wide temperature range

MAK Hydrol HVLP oils are high performance premium quality hydraulic oils. They are blended from hydroprocessed, high viscosity index Group II plus base oils with proven zinc based antiwear additive. These oils are designed with excellent viscosity control to operate over a wide range of working conditions including severe mechanical stress and wide temperature range. They provide outstanding protection and performance in manufacturing and other operations subjected to wide ranges of ambient and operating temperatures. Formulated for excellent water separation, exceptional hydrolytic stability, anti-foam characteristics and cleanliness they allow efficient operation of the system. Superior moisture handling capability ensures longer life and reduces the risk of rusting and corrosion. MAK Hydrol HVLP oils are compatible with seal materials and paints normally specified for use in hydraulic systems with mineral oils.

**Grades:** MAK Hydrol HVLP range is available in the following ISO VG grades – **32, 46** and **68**

### Applications:

MAK Hydrol HVLP range is recommended for hydraulic and fluid power transmission systems in exposed environments where wide variations of temperature takes place. They are suitable for precision hydraulic systems requiring very high control of fluid viscosity like high performance electro-hydraulic or numerically controlled systems particularly where close clearance servo-valves are used. HVLP oils are also used in high pressure hydraulic power systems and a wide variety of circulation systems of industrial and automotive equipment. They are also used in general manufacturing, power and metal equipment operating at high speeds, loads and temperatures. These oils are also recommended for the lubrication of rotors, bearings, gears and in piston, vane and gear pumps.

### Performance/ Benefits:

**Long Fluid Life** – helps extend oil life by resisting thermal and chemical break down. Provides excellent performance, better reliability and cleanliness.

**Outstanding Oxidation Stability** – outstanding resistance to the effects of oxidising agents. Resists sludge and deposit formation. Minimises filter choking. Ensures longer operating life, less maintenance and reduction in operating cost.

**Superior Hydrolytic Stability** – resists water absorption and the chemical decomposition of the oil in the presence of water. Protects from acid corrosion, rusting and allows longer oil life.

**Excellent Wear Protection** – excellent protection to the pump, valve and other system components. Operates on a wide range of load conditions – moderate to severe duty high load.

**Excellent Thermal Stability** – provides resistance to thermal break down and capability to work under varied ambient and operating temperatures to offer optimum life and performance.

**Anti-foam** – allows precision control, high pump pressures and efficient power transfer. Maintains system efficiency.

**High Viscosity Index** – maintains viscosity under widely varying operating conditions and helps the equipment to perform to its design standards.

**Excellent Demulsibility** – the rate of water separation from oil is very high. Increases system efficiency and reliability.

**Increased System Reliability** – by resisting thermal and chemical break down of the oil these oil minimises the risk of formation of the harmful sludge and deposit.

### Specification:

- 11<sup>th</sup> FLS FZG-Niemann EP Test
- IS 11656:1986 (Reaffirmed 2013)
- Denison HF-0 and HF-2
- Eaton Vickers I-286-S
- AIST 127
- Cincinnati Milacron P-70
- DIN 51524 Part 3 HVLP type

**Storage & Handling:**

The product should be stored inside. Keep it properly sealed to avoid contamination. Avoid freezing. Shelf life is 5 yrs. under protected storage conditions.

**Health & Safety:**

They are unlikely to be hazardous when properly used in recommended applications. Contamination of the oil from other oils, greases, chemicals, dirty water etc. can occur during the use. It should be avoided. Regular monitoring of the in-use product is recommended.

**Typical Physico-Chemical Data: MAK Hydrol HVLP**

Characteristics	Method	32	46	68
Appearance	Visual	Clear	Clear	Clear
Density, g/cc @15°C	ASTM D1298	0.8595	0.8643	0.8728
Kinematic Viscosity @40°C, cSt	ASTM D445	32.5	46.3	68.2
Kinematic Viscosity @100°C, cSt	ASTM D445	6.23	7.98	10.76
Viscosity Index	ASTM D2270	144	144	147
Flash Point, COC, °C	ASTM D92	210	230	240
Pour Point, °C	ASTM D97	-33	-30	-27
Copper Corrosion, 100°C, 3 hrs.	ASTM D130	1a	1a	1a
Foaming Characteristics/ Stability, ml Sequence I/ II/ III	ASTM D892	NIL	NIL	NIL
FZG Rating, FLS	ASTM D5182	11	11	11
Demulsibility @ 54°C (ml-mins)	ASTM D1401	40-40-0(10)	40-40-0(10)	40-40-0(15)



Viscosity vs. Temperature Chart for MAK Hydrol HVLP

