MAK HYDROL HLPD

Premium quality detergent type antiwear hydraulic fluid

MAK Hydrol HLPD are superior quality hydraulic oils blended from severely hydro processed group II plus base stocks. These oils are further fortified with special anti-wear additives to offer excellent protection to the hydraulic systems and also detergent additives to provide protection from large amount of contaminants, deposits and water that may enter the hydraulic systems causing damage to various parts. High level of dispersancy in the oil prevents water drop-out in the system. They also possess very high oxidation stability, excellent anti- foaming properties, very high load carrying capability and provide long trouble-free service. These oils have excellent compatibility with seals normally used in hydraulic systems.

Grades: MAK Hydrol HLPD range is available in the following ISO VG grades – **22, 32, 46** and **68.**

Applications:
MAK Hydrol HLPD oils are specially designed to meet the general requirements of anti-wear type hydraulic oils with additional detergency characteristics to handle high levels of water ingress or contamination experienced. They are suitable for applications such as machine-tool hydraulic systems, mobile equipment and circulating systems prone to contamination. MAK Hydrol HLPD is suited for all types of hydraulic system working on a wide variety of pumps (such as vane type, axial, piston, gear and other types of hydraulic pumps) which experience high levels of water, dust/ particle contamination.

Performance/ Benefits:
Superior Oxidation Stability – offers outstanding resistance even at elevated temperatures. Resists sludge and deposit formation. Ensures long operating life of the lubricant.

Excellent Anti-wear Performance – provides extended wear protection for circulating systems and pump parts thereby offering reduced downtime.

Outstanding Detergency – special detergency properties prevent the formation of sticky residues/ deposits. Keeps the dirt evenly suspended even when it is contaminated with metalworking fluid. Ensures smooth function of hydraulic systems and maintains reliability of the systems.

Good Thermal Stability – provides good resistance to thermal break down and avoids formation of sludge even at elevated temperatures.

Anti-foam – allows precision control and high pump pressures.

Good Antirust Properties – provides high protection to machine components from rusting and corrosion.

Rapid Air Release – ensures release of entrapped air from oil to offer superior performance of the control mechanism in the system.

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

Specification:
- DIN 51524 Part II HLPD type
- 11th FLS FZG-Niemann EP Test

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:
It is 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.

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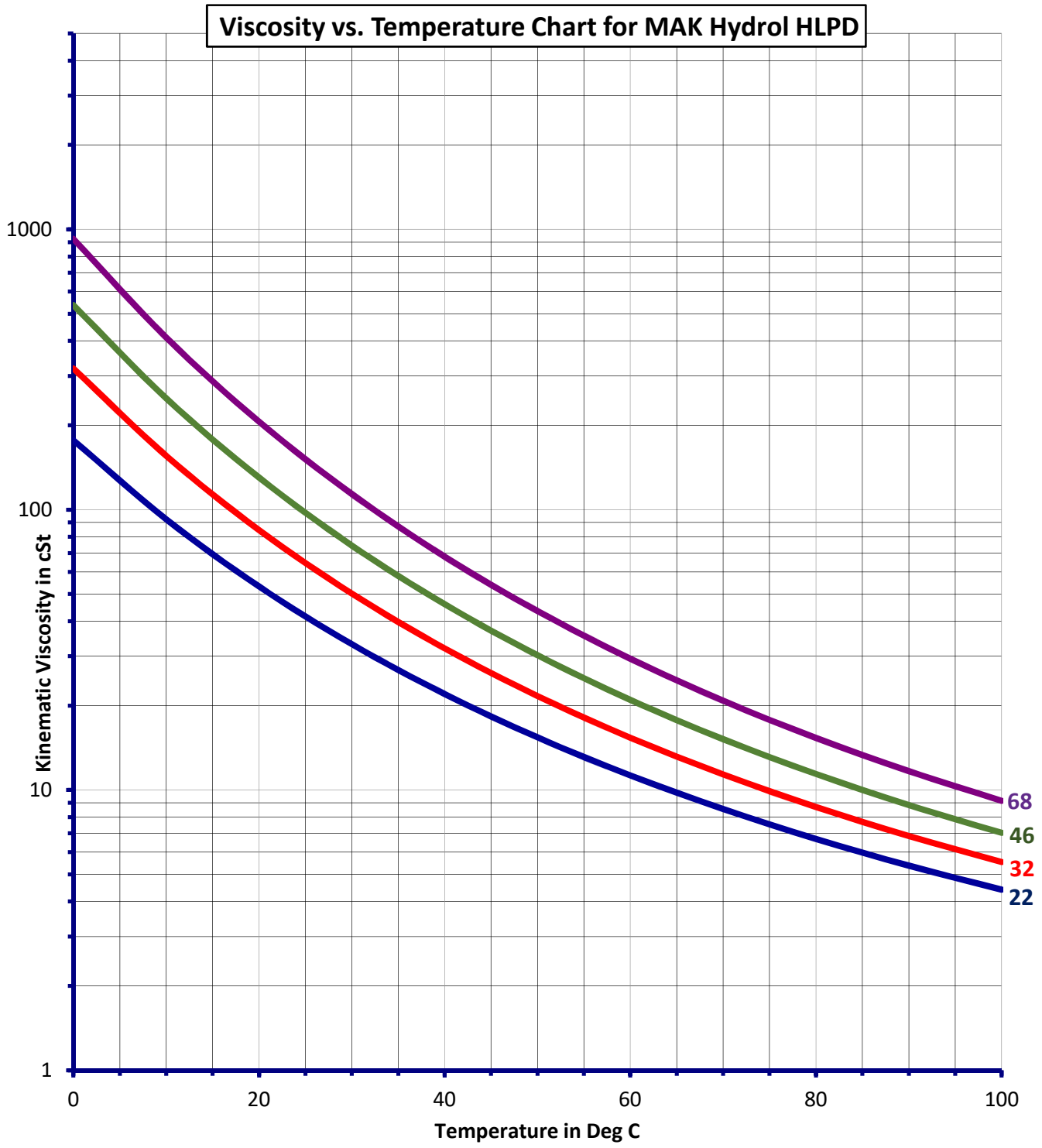
Typical Physico-Chemical Data: MAK Hydrol HLPD

Characteristics	Method	22	32	46	68
Appearance	Visual	Clear	Clear	Clear	Clear
Density, g/cc @15^{O}C	ASTM D1298	0.849	0.851	0.856	0.862
Kinematic Viscosity @40^{O}C, cSt	ASTM D445	22.5	32.3	46.7	68.5
Kinematic Viscosity @100^{O}C, cSt	ASTM D445	4.47	5.57	7.1	9.2
Viscosity Index	ASTM D2270	110	110	110	110
Flash Point, COC, ^{O}C	ASTM D92	1a	1a	1a	1a
Pour Point, ^{O}C	ASTM D97	-21	-21	-21	-21
Copper Corrosion, 100^{O}C, 3 hrs.	ASTM D130	210	220	236	248
Foaming Characteristics/ Stability Sequence I/ II/ III	ASTM D892	NIL	NIL	NIL	NIL
FZG Rating, FLS	ASTM D5182	11	11	11	11


Viscosity vs. Temperature Chart for MAK Hydrol HLPD
1000
100
10
1
Kinematic Viscosity in cSt
0
20
40
60
80
100
Temperature in Deg C
68
46
32
22