MAK ENGOL

High viscosity mineral oils for industrial gears

MAK Engol is a range of premium quality industrial gear lubricants blended from high viscosity index solvent refined high quality base oils. The high load carrying capacity and anti-friction property of these oils offer excellent performance in industrial gears and other industrial applications. They offer extra protection to the gear teeth, bearings and seals in order to handle severe stresses that occur in industrial gears. These oils are not corrosive to copper and copper alloys. With antifoam, antirust and antioxidation characteristics they offer excellent lubrication performance and long service life. MAK Engol oils are compatible with seal materials and paints normally specified for use in industrial gear systems with mineral oils.

Grades: MAK Engol range is available in the following ISO VG grades – **460, 680, 1000** and **1500.**

Applications:
MAK Engol oils are designed primarily for the lubrication of all types of slow speed industrial enclosed gear drives functioning under severe stresses with circulation or splash lubrication systems. These type of oils are preferred when gear drives require a thicker lubricant due to the sliding action of gear teeth. These oils are intended for use in heavily loaded industrial gears and worm drives working under moderate to high temperature conditions where Sulphur/ Phosphorus type EP additives are not recommended. They are also recommended for the cylinder lubrication of compressor cylinder.
MAK Engol should not be used for automotive hypoid gears. The appropriate MAK Spirol oils should be used.

Performance/ Benefits:
Excellent Resistance to Oxidation – outstanding resistance to the effects of oxidising agents. Resists sludge and deposit formation. Minimises filter choking and ensures reliability, longer operating life and less maintenance.

Superior Water Separation – allows excess water to be separated and drained from the system. Resists corrosion and surface fatigue on gears and bearings.

Lubricant Film on Surface – film formed on the metal surfaces due to high viscosity assures effective lubrication of the sliding surfaces.

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.

Resistance to Foaming – allows effective lubrication, precision control and efficient power transfer. Maintains system efficiency.

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.

Good Antirust Property – provides protection from rusting and corrosion of the equipment.

Wide Range of Viscosities – caters to wide range of difficult and heavy duty applications

Excellent Compatibility – with internal gearbox paints, solid seals and liquid seals.

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:
- IS 1589:1994 Type 2 (Reaffirmed 2016)

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Storage & Handling:
The product should be stored inside. Keep it properly sealed to avoid contamination. Avoid freezing. Shelf life is 3 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 Engol

Characteristics	Method	460	680	1000	1500
Colour	Visual	Brown	Dark Brown	Dark Brown	Dark Brown
Appearance	Visual	Clear & Bright	Clear & Bright	Clear & Bright	Clear & Bright
Density, g/cc @15^{O}C	ASTM D1298	0.9033	0.9086	0.9088	0.9100
Kinematic Viscosity @40^{O}C, cSt	ASTM D445	460.2	680.1	1000.5	1500.8
Kinematic Viscosity @100^{O}C, cSt	ASTM D445	30.5	37.5	48.5	62.3
Viscosity Index	ASTM D2270	96	92	92	92
Flash Point, COC, ^{O}C	ASTM D92	276	282	290	304
Pour Point, ^{O}C	ASTM D97	-6	-6	-3	-3
Copper Corrosion, 100^{O}C, 3 hrs.	ASTM D130	1a	1a	1a	1a
Foaming Characteristics/ Stability, ml Sequence I/ II/ III	ASTM D892	NIL	NIL	NIL	NIL
Rust test	ASTM D665	Pass	Pass	Pass	Pass

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