



# MAK STEEL

## New generation high performance Morgan bearing oils

MAK Steel oils are a range of premium quality heavy duty circulating oils designed for lubricating Morgan bearings. It is formulated with high quality severely hydroprocessed mineral base oils and a high performance ashless additive system designed to provide outstanding antioxidant property, exceptional equipment protection and reliability under severe operating conditions. This product has high film strength providing extra rust protection and eliminating scuffing and scoring of the bearing. It has a superior water separating ability. MAK Steel oils are compatible with the seal materials and paints normally specified for use with mineral oils.

**Grades** – MAK Steel oils are available in the following ISO VG grades – **320, 460 and 680**, non-ISO VG grades – **257, 381 and 521**.

### Applications:

MAK Steel Oils are especially developed for Morgan Bearings used in roll neck in steel mills where the conditions are very severe due to high temperature, heavier loads coupled with ingress of water and foreign materials. They are suitable for roll neck bearings in the Plate Mill, Wire Rod Mill, Merchant Mill, Blooming and Billet Mill, Rail and Structural Mill etc. These oils can also be used in gear applications requiring anti-wear properties such as machine tools and mildly loaded gear boxes.

### Performance/ Benefits:

**Excellent Demulsibility** – excellent water separation characteristics for efficient operation. Superior demulsibility is maintained even at high level of water contamination.

**High Oxidation and Thermal Stability** – outstanding resistance to oxidation and thermal break down. Resists sludge and deposit formation. Has the capability to work under varied operating temperatures. Minimises filter choking due to oil ageing. Ensures reliability, longer operating life and less maintenance.

**Excellent Air Release Property** – helps minimise cavitation and other related damages to the circulating pumps.

**Low Foaming Tendency** – helps maintaining continuous strong oil film between critical moving parts and provides protection against scuffing of bearings.

**Strong Rust & Corrosion Protection** – prevents rusting and corrosion. Fewer unscheduled stoppages and lower maintenance costs.

### Specification:

- Meets Morgan specification MORGOIL (Revision 1.0 a)
- IPSS – 1 – 09 – 001 – 97

### 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:

These oils are unlikely to be hazardous when properly used in recommended applications. Contamination of the coolant 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 Steel Oils

Characteristics	Method	257	320	381	460	521	680
Kinematic Viscosity @40°C, cSt	ASTM D445	258	321	390	472	531	678
Kinematic Viscosity @100°C, cSt	ASTM D445	21.19	24.28	27.58	30.80	33.24	38.91
Viscosity Index	ASTM D2270	97	96	96	95	95	95
Foaming Characteristics/ Stability, ml/ml, for sequences I, II, III	ASTM D892	NIL	NIL	NIL	NIL	NIL	NIL
Pour Point, °C	ASTM D97	-9	-9	-6	-6	-6	-6
Flash Point, COC, °C	ASTM D92	256	260	264	268	272	276
Copper Corrosion, 100°C, 3 hrs.	ASTM D130	1a	1a	1a	1a	1a	1a
Rust test	ASTM D665	Pass	Pass	Pass	Pass	Pass	Pass
Demulsibility @ 82°C, minutes to 3 ml	ASTM D1401	30	30	30	30	30	30