



# INGEAR EP

## EXTREME PRESSURE, INDUSTRIAL GEAR OILS

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**Ingear EP** gear oils are extreme pressure type industrial gear lubricants based on sulfur-phosphorus additive technology. They are formulated to work in a wide range of industrial gear types including spur, helical, double helical (herring-bone), spiral bevel and worm gears.

In service **Ingear EP** oils offer the following benefits:

- ◆ Extreme pressure properties to minimize wear
- ◆ High temperature oxidation stability and resistance to sludge formation
- ◆ Protection against rust and corrosion
- ◆ Resistance to foaming
- ◆ Excellent demulsibility for rapid water separation

### **Product Applications**

**Ingear EP** gear oils are suitable for heavily loaded gear sets and gears that are subject to shock loading. All grades meet the European FZG load limit of 13 stages pass and can be safely used in most imported equipment. All grades have a minimum of 60 lb. (27kg) Timken OK value, thereby meeting AGMA 9005 and US Steel 224 requirements. **Ingear EP** gear oils are also suitable for use in both plain and anti-friction bearings and in circulating lubrication systems. **Ingear EP** gear oils are also suitable for spray or mist lubrication systems.

A leading edge technology sulphur/phosphorus additive package provides outstanding protection to gears when shock loading causes the oil film between mating gears to temporarily become insufficient for full fluid film lubrication. Extreme pressure additives react at high temperatures with the gear tooth surfaces, to form a low shear metal compound, thereby preventing serious damage to the gears such as local "welding" and subsequent surface metal removal.

Note that the extreme pressure additives only do their job under severe conditions such as shock loading, back lashing of gears and temporary overheating of gear drives, leading to a loss in viscosity of the base oil. Normal running gears do not require this protection and high quality turbine type oil or anti-wear hydraulic oil will suffice.

**Ingear EP** oils are resistant to sludge formation under high running temperature conditions (up to 95°C), which increases gear protection and oil life and reduces potential downtime and cleanup costs.

Note that bulk oil temperatures should be kept below 95°C for optimum oil life. **Ingear EP** oil is not recommended for worm gears operating above 85°C.

**Ingear EP** oils have very good demulsibility properties to protect against coolant leaks and condensation

### **Product Recommendations and Approvals**

**Ingear EP** can be used in applications, which require an oil meeting AGMA 9005, USS 224, Cincinnati Milacron and David Brown specifications.

## Product Maintenance and Handling

The service life of a gear lubricant depends on many variables and no hard rules apply to drain periods. It is important to follow manufacturers' recommendations. Gear lubricating systems often get contaminated with water, mill scale, dirt and fine metallic wear particles, which can be removed if the lubricant can be heated to 65°C while in the reservoir or before centrifuging. Foaming is objectionable and can occur if oil level is too high or oil is contaminated with certain additives, water or debris. Thickening of a gear oil can be caused by oxidation or contamination with heavier oil or materials such as dirt or metallic wear particles, especially copper and brass. This condition will result in the formation of petroleum acids, varnishes, laquers or coke-like deposits and eventual gear failure.

**Ingear EP** oils are manufactured from high quality petroleum base stocks, carefully blended with selected additives. As with all petroleum products, good personal hygiene and careful handling should always be practiced. Avoid prolonged contact to skin, splashing into the eyes, ingestion or vapour inhalation. Please refer to the Material Safety Data Sheet for further information.

Note: This product is not controlled under Canadian WHMIS legislation.

## Typical Properties

Ingear EP Grade	68	100	150	220	320	460	680
AGMA Grade	2 EP	3 EP	4 EP	5 EP	6 EP	7 EP	8 EP
Density @ 15°C, kg/m <sup>3</sup>	883	880	891	892	895	901	891
Pour Point, °C	-35	-32	-32	-23	-25	-23	-19
Flash Point, °C	222	234	240	250	255	257	230
Viscosity Index	105	95	95	95	95	95	90
Kinematic Viscosity, cSt							
@ 40°C	68	100	150	220	320	460	680
@ 100°C	8.8	11.0	14.6	18.2	22.9	30.1	36.0
Timken OK Load, kg	34	31	31	31	31	31	31
Foam Test, Stability Seq. I, II, III	NIL						
Demulsibility, After 30 minutes, oil	39	39	39	39	39	39	37
Rust Test,	Pass						
Corrosion, Copper Strip, 3 hr @ 100°C	1B	1B	1A	1A	1A	1A	2C
FZG Gear Test, Pass stage	13	13	13	13	13	13	13

The typical properties shown above are representative of current production. Some are controlled by manufacturing and performance specifications while others are not. All may vary within modest ranges.