

# MAK SYNGEAR PG 320

## Description

MAK SYNGEAR PG 320 is a synthetic gear lubricant based on the Polyalkylene Glycol base fluid and selected additives.

Polyalkylene Glycols (PAGs) are homopolymers of ethylene oxide or propylene oxide, or copolymers of ethylene oxide or propylene oxide. Because of the unique structure, PAG's possess a low friction coefficient. Polyglycolbased gear oils offer significant advantages over mineral oils when a lot of sliding friction occurs in gearboxes and lowers oil temperatures that in turn extend oil change intervals. PAG based gear oils are used whenever mineral gear oils have reached their performance limit and can no longer meet the application requirements.

## Application

PAG gear oils are recommended for highly stressed crown, bevel, planetary and worm drive gears. Polyglycolbased gear oils offer significant advantages over mineral oils when a lot of sliding friction occurs in gearboxes and lowers oil temperatures that in turn extend oil change intervals.

## Features & Benefits

Excellent friction modification properties coupled with high thermal stability make PAG Gear oils the right choice as for gear oils, especially for worm gears and gears sealed for life. Polyglycols provide the highest energy efficiency in gear oil applications. Due to chemical structure of PAG molecules, PAG based gear oils provide performance benefits such as,

- Exceptional EP/antiwear protection for critical gears
- Great micropitting protection for sensitive gear systems
- Protection against rust and corrosion in-service
- Resistance against foam build up
- Excellent lubricity because of inherent structural aspects of PAG
- Low traction coefficient resulting increased energy efficiency
- Very good thermal and oxidative stability to reduce sludge and deposits
- Lowering operating oil sump temperature due to good frictional properties
- Reduced Energy Consumption
- Good air separation, low foaming

## Technical Specifications

Sr	Property	Test Method	Requirement	Typical Result
1	Viscosity @ 40°C, mm <sup>2</sup> /s	D445	288 to 352	347
2	Viscosity @ 100°C, mm <sup>2</sup> /s	D445	To Report	54
3	Viscosity Index, min	D2270	90	223
4	Density at 15°C, g/ml	D1298		1.001
5	Flash Point, °C, min	D92	200	244
6	Pour Point, °C	D97		-21
7	Copper Corrosion protection, 3 h @ 100°C, rating, max	D130	1b	1b
8	Rust prevention	D665 Part B	Pass	Passes
9	Wear Preventive Characteristics by Four Ball method, WS Diam., mm, max	D 4172	--	0.29
10	Scuffing load capacity, FZG visual method, A8.3/90, fail stage, min	D51082	>12	>12

## Precautions

### 1. Compatibility

This oil is NOT compatible with mineral oils. It is not recommended for use in systems previously filled with mineral oils or PAO base gear oils. It is recommended to check compatibility when topping up or replacing existing PAG Gear oil with this oil. It is preferred to avoid mixtures by draining, flushing and refilling. While changing from mineral oil to PAG oil, it is critical to clean the system thoroughly and flush with suitable fluids prior to conversion.

### 2. Water miscibility

PAG based gear oils are hygroscopic and absorb more water than mineral oils or PAOs. There extra care should be taken to avoid exposure to excessive moisture. This oil is water miscible / partly water miscible.

### 3. Seal Compatibility

PAG lubricants are not compatible with the seal materials used for mineral or PAO based gear oil. Incompatible materials are likely to shrink or swell, causing severe

leakage. Consult the equipment supplier or seal manufacturer for specific recommendations.

#### **4. Paints, Coatings**

Paints, coatings and some plastics are not compatible for use with PAG oils. It is preferable to leave interiors of gear box uncoated for PAG lubricants.

#### **5. Light Metals/alloys**

PAG gear oil is well suited for gear applications with ferrous and most non ferrous materials, however not recommended for use with light metal alloys containing aluminium and magnesium. Please consult OEM for additional information

### **Storage and Handling**

- Indoor Storage is always preferable
- Barrels should be kept horizontally with bunk position at 3 O'clock 9 O'clock position
- Barrels should be kept away from dusty or heated areas.
- During handling any contact with dust must be avoided.

### **Health and Safety**

These oils are not hazardous under normal conditions of use. For further guidance appropriate Material Safety Data Sheet (MSDS) may be referred.

### **Advice**

For any further advice on applications or otherwise please contact the nearest Bharat Petroleum Territory Office or Technical Services Department at the address given below.

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