



# SYNTHETIC INDUSTRIAL GEAR OIL

TRC's Synthetic Industrial Gear Oil is formulated to withstand harsh conditions such as high loads and speeds, high temperatures and high contamination environments typically found in Mining and Quarries, Primary Steel, Manufacturing, Energy Production, Construction, Agriculture and Off Highway applications. TRC's Synthetic IGO provides outstanding load carrying capacity, superior bearing protection, reduced operating temperatures, and excellent oxidation and thermal resistance to prevent degradation of the lubricant in tough environments.

## Maximized Efficiency

Industrial gearboxes have changed significantly over the past few decades, which has also increased the demand on the lubricant. The size and weight of the gearboxes have been reduced, but they are required to produce more power. The smaller size of the gearbox means less oil and additive to lubricate the gears, which are now carrying higher loads. This results in higher temperatures and an acceleration of the oxidation process, which is harmful in industrial gear oils because it can form sludge and shorten the oil life and component life of the gearbox.

TRC's Synthetic IGO is carefully formulated to prevent degradation of the lubricant from oxidation and thermal stress, providing the optimum balance for sludge free gear sets and extreme pressure protection for heavy duty durability. This combination prolongs the life of gearboxes, maximizing efficiency and preventing downtime.

## Superior Bearing Protection

The FAG FE-8 bearing test is performed according to DIN 51819-3, using an FE-8 bearing test rig. The goal of the test is to measure the effect of gear oil on rolling bearing wear. In this test, cylinder roller thrust bearings are subjected to a speed of 7.5 rpm with an axial force of 80kN at a steady-state temperature of 176°F over a period of 80 hours. In order to pass the test, an industrial gear oil can allow no more than 30mg of weight loss over 15 rolling elements. Many competitive industrial gear oils experience more than 100mg of weight loss in this test, while the chemistry in TRC's Synthetic IGO only showed 1.1mg of weight loss.

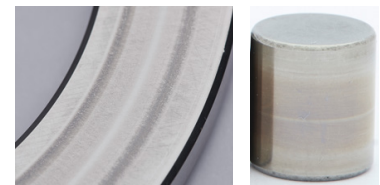
TRC's Synthetic IGO is formulated to protect bearings from wear, allow peak performance and keep equipment operational where other industrial gear oils fail to perform. Downtime will be kept to a minimum and operational costs significantly reduced.

## Unique Performance Polymer Improves Efficiency

TRC's Synthetic IGO is formulated with a very unique performance polymer which improves shear stability of the fluid, helping to maintain its viscosity over a wide temperature range and to help lower the traction coefficient of the fluid for optimum energy efficiency.

The unique performance polymer has shown up to a 2% improvement in efficiency over other synthetic industrial gear oils, and up to an 8% improvement in efficiency over commercial mineral-oil based industrial gear oils.

**PASS**



**FAIL**

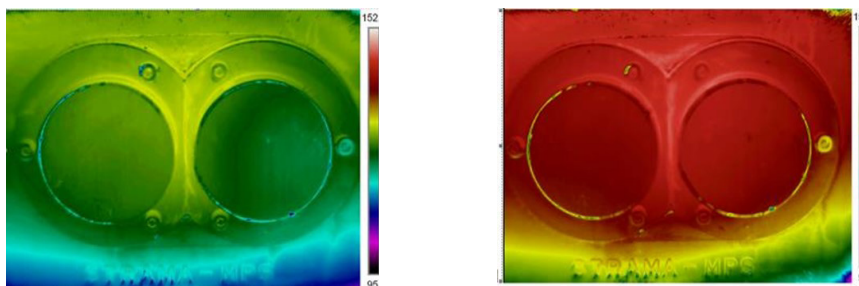


## Outstanding Wear Protection

Gears are heavily loaded and require high levels of extreme pressure protection to protect system components. Typical gear oils do not always demonstrate high levels of extreme pressure performance. TRC's Synthetic IGO provides additional protection against wear compared to the competition by using higher quality base oils and additive packages in the blending process. Using a high EP (Extreme Pressure) additive, this product provides outstanding wear protection as measured in the 4-Ball Load Test and the Timken OK Test for highly loaded gear systems. TRC's Synthetic IGO is built to meet the multiple and complex challenges facing your gearboxes every day.

## Reduced Operating Temperatures

Temperatures are reduced in applications with TRC's Synthetic IGO by preventing oxidation and thermal stress of the lubricant. Compared to a standard gear oil in the FZG Gear Test, TRC's Synthetic IGO produced a 62° temperature reduction. Another benefit of preventing oxidation is superior cleanliness for sludge-free gearboxes. Reducing temperatures will help to extend the life of the oil, while increasing the durability of the gearboxes.



## Water Separation

Demulsibility is important because water in a gearbox can lead to rust, corrosion and a decrease in overall performance. TRC's Synthetic IGO provides effective water separation at both high and low temperatures to protect in different environments. Unlike most gear oils that emulsify with water, this product will repel water and provides the ability to drain water from the gearbox as needed, helping to extend the life of the components as well as extend the life of the oil. Additional chemistry also provides exceptional resistance to rust and corrosion, foam control and air release.

Meets/or Exceeds these Specification Requirements: AGMA 9005-F16 AS, David Brown S1.53.101 Type M, A & E, DIN 51517 Part 1, 2 & 3, GM LS 2 EP Gear Oil, ISO 12925-1 CKC/CKD, AIST 224 (Association for Iron and Steel Technology) (Formerly US Steel 224), Fives Cincinnati EP Gear Oils

## **SYNTHETIC INDUSTRIAL GEAR OIL SPECIFICATIONS**

ISO Viscosity	68	100	150	220	320	460	680
Viscosity @ 100° C, cSt, ASTM D445	12	15	22	30	40	52	75
Viscosity @ 40° C, cSt, ASTM D445	68	100	150	220	339	460	680
Viscosity Index ASTM D2270	175	175	175	175	175	175	190
Flash Point °F, ASTM D92	437 F	455 F	455 F	455 F	457 F	457 F	457 F
Fire Point °F, ASTM D92	482 F	500 F	500 F	500 F	502 F	502 F	502 F
Pour Point °F, ASTM D97	-58 F	-58 F	-49 F	-46 F	-46 F	-40 F	-40 F
4-Ball EP Weld Load, kg, ASTM D2783	400	400	400	400	400	400	400
4-Ball Wear Scar 20kg/60 mins/1800 rpm, 54°C, ASTM D4172	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Timken OK Load, lbs., ASTM D2782	75 min	75 min	75 min	75 min	75 min	75 min	75 min
FZG A/8.3/90, damage load stage, ASTM D5182	>12	>12	>12	>12	>12	>12	>12
FE-8 Bearing Test, ASTM, Rollers wt loss mg.	1	1	1	1	1	1	1

## **TEXAS REFINERY CORP**

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