QUALITY AND RELIABILITY FROM START TO FINISH

LUBRICATION OF ENCLOSED GEARS

TYPES OF GEARS: GEARS ARE THE MOST COMMON WAY TO TRANSMIT POWER FROM ONE REVOLVING SHAFT TO ANOTHER. A BASIC KNOWLEDGE OF THE MOST COMMON TYPES, THEIR COMPONENTS AND METHOD OF OPERATION IS HELPFUL IN UNDERSTANDING WHICH LUBRICANT WILL ENHANCE GEAR PERFORMANCE. EACH GEAR IS TYPICALLY NAMED FOR ITS GENERAL SHAPE OR BY THE ARRANGEMENT OF ITS TEETH.

Spur Gears: A spur gear is a toothed wheel whose teeth run parallel to the gear shaft or axle. Spur gears are limited in their load carrying ability and known for their noisy operation.

Bevel Gears: These employ two intersecting shafts with meshing teeth cut straight across the face of a cone-shaped gear blank, used to divide power between two variable speed shafts. They are commonly found when 90-degree change in direction of shaft power is required.

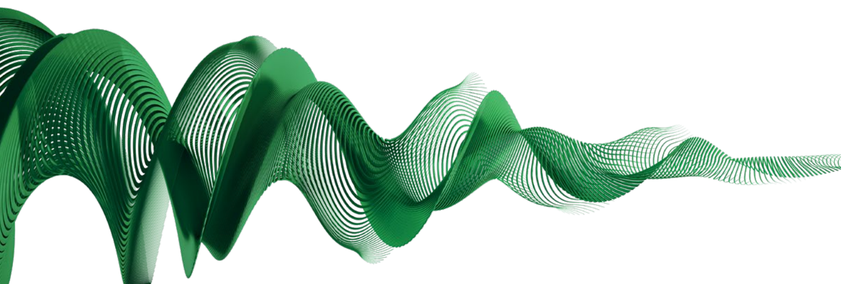
Spiral Bevel Gears: The teeth of an ordinary bevel gear can be twisted to form a spiral bevel gear. The angled teeth allow for a quiet, smooth transfer of power and strong gear system. Typically found in off-highway equipment.

Herringbone Gears: A double helical gear is commonly called a herringbone gear based on the opposing angles of the gear teeth. They can carry heavy loads at high speed.

Helical Gears: These gears transmit motion between non-intersecting parallel and nonparallel shafts, and have angled or twisted teeth so that several can be in mesh at the same time. They can carry greater loads and tend to be much quieter and smoother than spur gears.

Worm Gears: A worm gear is when shafts are intersecting at right angles and the driving gear is much smaller in diameter than the driven gear. They are typically found where great velocity reductions are required. A throated worm gear has angled teeth that increase the number of teeth in mesh at any given time, increasing load carrying ability and making operations quieter. A non-throated worm gear has only one tooth at a time in mesh, decreasing the gear's ability to carry loads. Lubricants with special additives are necessary.

Hypoid Gears: Hypoid gears transmit motion between non-intersecting shafts that cross at right angles. They need lubricants with Extreme Pressure (EP) additives to maintain film strength. These types of gears are mostly used in automotive applications.



THE COMPLETE RANGE OF GEAR OIL SOLUTIONS

CASTROL ALPHASYN EP RANGE

This range of Polyalpha Olefin (PAO) based synthetic extreme pressure gear oils offers good protection against micro-pitting, good thermal and oxidative stability, good load carrying abilities and high corrosion resistance. This is complemented by a high viscosity index, very low pour point, good demulsification and rapid air release qualities.

- **High corrosion resistance** – prolongs the working life of equipment
- **Very high viscosity index** – suitable for operations over a wide temperature range
- **Very low pour point** – allows cold start-up without pre-heating
- **Good load carrying capacity** – prevents wear of gear surfaces
- **Rapid air release and low foaming tendency** – prevents bearing damage and poor lubrication

CASTROL ALPHASYN PG RANGE

This range of Polyalkylene Glycol (PAG) based synthetic extreme pressure gear oils provides high load carrying capacity and good wear protection, along with low friction and oxidation and thermal stability, allowing operation at high loads and continuous high temperatures.

- **High load carrying capacity and outstanding wear protection** – reduces maintenance needs
- **Lower energy consumption and operating temperature** – improves productivity
- **Wide operating temperature range** – eliminates cold start issues

CASTROL MOLUB-ALLOY RANGE

This range of mineral based extreme pressure gear oils is recommended for spur, helical, herringbone and straight or spiral bevel gears. Good shock load carrying capabilities come from a special formulation and a proprietary blend of metallic lubricating solids, treated to increase their natural affinity for metal surfaces. Rust and oxidation inhibitors ensure long service life, while the high viscosity index allows use over a wide temperature range.

- **High shock load carrying capability** – enables excellent gear performance where frequent start-ups, slow speeds and high/unexpected loads are encountered
- **Very low friction** – enables increased working life of parts and lower energy requirements

CASTROL OPTIGEAR BM RANGE

This range of mineral based high-performance gear oils contains Microflux Trans (MFT), the load-active additive combination. This additive combination adjusts itself to changing loads and actively prevents wear. Issues such as abrasion, surface fatigue (pitting) and micropitting or problems in the running-in phase can be greatly reduced by use of this range.

- **Surface active additive system** – improves surface of gears even when damaged and extends gear life
- **Optimum wear protection in high load range** – extends equipment life
- **Extremely low coefficient of friction** – brings energy savings and reduced running temperatures
- **Reduced noise levels** – improves operating conditions
- **Extended oil drain intervals** over conventional mineral based gear oils and some synthetics – aids cost effectiveness

CASTROL ALPHA SP RANGE

This range of mineral based extreme pressure gear oils is formulated to provide all-round performance and good anti-scuff protection in enclosed gear drives. Use them in all types of enclosed gears with circulation or splash lubrication systems, especially where gears and bearings are subject to shock loads.

- **Good load carrying capacity** – prevents wear of gear surfaces
- **Highly resistant to oxidation** – extends service life
- **Good corrosion resistance** – reduces metal deterioration

CASTROL ALPHASYN T RANGE

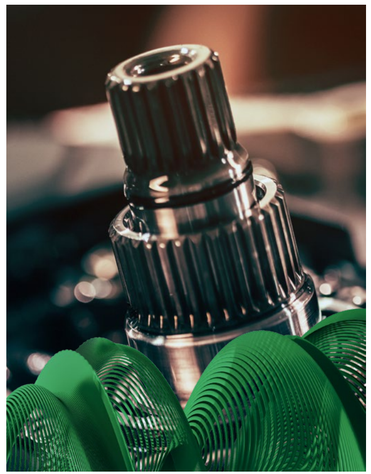
This range of Polyalpha Olefin (PAO) based synthetic gear oils offers good thermal stability and resistance to oxidation. They have medium load carrying capabilities, as well as good water/air separation, rust protection and low volatility and foam tendency. They can be used in wet environments, and oil consumption caused by evaporation is minimised.

- **Good thermal/oxidation resistance** – allows long oil life and reduced downtime
- **High corrosion resistance** – reduces metal deterioration
- **Good water separation** – can be used in very wet environments

CASTROL OPTIGEAR SYNTHETIC 800 RANGE

This range of Polyalkylene Glycol (PAG) based gear oils has been developed for application in highly loaded gears and bearings even when subjected to difficult operating conditions. The excellent properties of this range are especially evident in the lubrication of mechanically and/or thermally highly loaded friction surfaces. They are especially suited for service in spur, helical, bevel and worm gears, and the lubrication of rolling and sliding bearings found in heavy duty industrial applications.

- **Shear stability** – fully protects components over wide operating temperatures, speed and load conditions
- **Long lubricant life and extended drain intervals** – reduces maintenance costs
- **Excellent wear and corrosion protection** – ensures longer service life of gears
- **Lower friction** – allows potential energy savings



Not all products may be available in your area. Contact your local Castrol representative for further information about the availability of these products.

THE EXPERTS IN GEAR OIL TECHNOLOGY

CASTROL OFFERS YOU A COMPREHENSIVE RANGE OF WORLD-CLASS GEAR OILS AND PRODUCT SUPPORT SERVICES THAT WILL HELP YOU TO:

- PROLONG GEAR LIFE
- OBTAIN OPTIMUM GEAR PERFORMANCE
- EXTEND MAINTENANCE INTERVALS
- BOOST PRODUCTIVITY
- LOWER MAINTENANCE COSTS
- REDUCE OVERALL CONSUMPTION AND WASTE

We can bring you these powerful benefits by exploiting our global process and applications expertise through our network of engineering and research professionals. It's then all delivered directly to you by our knowledgeable local sales and support teams. Our ultimate goal is to help you achieve optimum performance in your manufacturing environment.

Castrol gear oils have been formulated using the latest thinking in raw materials and then rigorously tested in both laboratory and manufacturing conditions, in close collaboration with leading gear and machinery manufacturers. You can trust Castrol to provide the right product for the job, across all your operations.

SELECTING YOUR CASTROL GEAR OIL

CHECKLIST: LUBRICATE ENCLOSED GEARS WITH GEAR OIL THAT HAS:

- **Proper viscosity** – for the size, type and speed of the gears. Also consider operating temperatures and pressures, shock loads, ambient start-up temperatures, as well as age and condition.
- **Chemical stability** – to withstand the heightened tendency to oxidize because of the constant mixing with air at oxidizing temperatures.
- **Service classification** – as specified by the gear manufacturer.
- **Demulsibility** – the ability to separate from water so contaminating moisture can be drained from the sump of the gear case. This reduces rust and corrosion, and limits the loss of lubricating properties otherwise caused by the tendency to form sludge as a result of water contamination. (Not all gear oils demulsify at the same rate.)
- **Film strength and load capacity** – to separate, cushion and protect gears from the destructive metal-to-metal contact that comes with high torque, shock loads or cold starts.

For professional advice about Castrol Products, call our:
Technical Help Line Australia: 1300 557 998

To make any comments about Castrol Products and services call:
Customer Service and Orders: 1300 554 890

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.

LUBRICANTS

GEAR OILS

YOUR ADVANTAGE IN AN INDUSTRIAL WORLD

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