

LUBRICANTS

# GREASES

YOUR ADVANTAGE IN AN INDUSTRIAL WORLD





# THE EXPERTS IN GREASE TECHNOLOGY

CASTROL OFFERS YOU A COMPREHENSIVE RANGE OF WORLD-CLASS GREASES AND PRODUCT SUPPORT SERVICES FULLY CAPABLE OF PROVIDING YOUR CAPITAL INTENSIVE EQUIPMENT WITH ADVANCED PROTECTION.

WE CAN HELP MAKE SURE THAT YOUR EQUIPMENT RUNS RELIABLY, EVEN IN DIFFICULT AND SOMETIMES HOSTILE ENVIRONMENTS—AND FOR LONG PERIODS OF TIME—GIVING YOU IMPROVED PRODUCTION EFFICIENCY.

Our goal is to achieve:

- > **Longer bearing life**
- > **Optimum bearing performance**
- > **Extended maintenance intervals**
- > **Increased productivity**
- > **Decreased maintenance costs**
- > **Lower overall grease consumption and waste**

These benefits have been made available to you through the global process and applications expertise of Castrol's network of engineering and research professionals, and are delivered to you by our knowledgeable local sales and support teams to help achieve proven performance in your manufacturing environment.

Castrol greases have been formulated using the latest raw materials and tested in both laboratory and manufacturing conditions in close cooperation with leading bearing and machinery manufacturers.

## A CHOICE TO SUIT YOUR NEEDS

### Grease Types

The structure and the performance properties of any grease are determined by the thickener, base oil and additive systems and also by the manufacturing and packaging processes deployed.

Grease types are commonly identified in terms of the thickener/soap involved.

**Simple Soaps** – Combinations of a fatty acid (derived from animal or vegetable fat) and an active metal. Lithium soap greases are the most commonly used, providing good all-round performance.

**Complex Soaps** – Formed by the joint reaction of an active metal with a fatty acid and a non-fatty acid. The main advantage of complex over simple soap-based greases is the ability to operate at higher temperatures.

**Non-Soaps** – Primarily made up of inorganic thickeners of mineral origin and organic thickeners of polymeric nature—making them best suited for higher temperature applications:

- **Inorganic** thickeners include modified clays (bentonite), graphite, carbon black, silica gel and various metallic oxides.
- **Organic** thickeners include polyurea, polyethylene, polypropylene, polycarbohydrates and polytetrafluoroethylene (PTFE – better known by the trade name Teflon®).

# THE COMPLETE RANGE OF GREASES

We offer you a comprehensive range of greases. This enables you to choose the best product to suit your exact needs from the following categories:

- > **Multi-purpose**
- > **Multi-purpose High-performance**
- > **High Temperature**
- > **Open Gear**



## MULTI-PURPOSE (MP)

Our multi-purpose range of greases provide reliable performance for a wide variety of applications.

The MP range is designed for use in plain and rolling element bearings and exhibits good mechanical stability, adhesion, water resistance, copper and steel corrosion resistance and wear protection for good all-around performance.

Range	Key Benefits
Spheerol EPL/EPLX	• General-purpose grease providing good Extreme Pressure (EP) and anti-wear properties designed for plant-wide lubrication
Spheerol LMM	• General-purpose grease for applications subject to shock loading, offering good load carrying capacity and resistance to scuffing and fretting

## MULTI-PURPOSE HIGH PERFORMANCE (MP-HP)

Castrol's high-performance greases have been developed over many years of extensive research and development. These products have gained an excellent track record in many industries and in the most severe applications, bringing you increased security and peace of mind.

Our MP-HP products have a number of key advantages over conventional ones, including excellent load carrying ability, friction reduction characteristics, mechanical stability and oxidation/thermal resistance.

\*MFT (Microflux Trans additive system) and TGOA (Tribol Grease/Oil Additive system) are proprietary advanced technology additive systems.

Range	Key Benefits
Molub-Alloy 4086 Molub-Alloy 777 ES Molub-Alloy 860 ES	• Excellent EP and anti-wear properties. Protects equipment against extreme/shock loading and offers the greatest effectiveness at slow speeds or heavy loads
Longtime PD Optipit Tribol 4020	• Superior lubrication and surface smoothing effects due to MFT/TGOA* • Energy savings and reduced noise levels resulting from extremely low coefficients of friction
Molub-Alloy 6040	• Exceptional water resistance—coating film stays on the surface even in the presence of water (and even when exposed to the action of hot and chemically active process water)

## HIGH-TEMPERATURE (HT)

Our high-temperature range of greases have been designed for the most severe conditions. They are all fully synthetic and thermally stable, providing long re-lubrication intervals at maximum operational reliability.

These products have several major advantages over conventional greases, such as outstanding oxidation and thermal stability, corrosion protection, resistance to water washout, wear protection and mechanical stability.

Range	Key Benefits
Firetemp XT 2	<ul style="list-style-type: none"> <li>The combination of synthetic fluids and a unique thickening system offers structural stability in prolonged service at high temperatures</li> </ul>
Inertox Heavy Molub-Alloy 2115	<ul style="list-style-type: none"> <li>Excellent chemical stability; resistant to organic solvents and most chemicals even at high temperatures</li> <li>Extremely low evaporation loss in vacuum systems</li> <li>Not affected by gamma rays</li> </ul>
Molub-Alloy 1000	<ul style="list-style-type: none"> <li>The combination of synthetic fluids, a unique thickening system and Molub-Alloy lubricating solids offers structural stability and friction reduction characteristics in prolonged service at high temperatures</li> </ul>

## OPEN GEAR (OG)

Castrol's open gear greases can be divided into two main types:

### Semi-dry working film (Metallic Soap)

The primary function of this type of lubricant is to act as a friction reducing interface between the meshing surfaces and to cushion against shock loads. These uniquely compounded lubricants give maximum protection to the gears and flow readily in the film forming process, yet resist 'squeeze out' and cling tenaciously to gear teeth.

The semi-dry working film allows these lubricants to be used in low-to-moderately dusty, dirty applications, without forming abrasive compounds.

### Semi-fluid gel (Non-soap)

Our unique semi-fluid gel (thixotropic) greases are formulated with a non-soap, inorganic thickening system.

This technology (unique to Castrol) exhibits a stable form at rest. It will, however, still spread easily and evenly since the gel-like grease 'liquifies' when pressure is applied, carrying away both heat and contaminants. It will also resist fling-off.

Range	Key Benefits
Molub-Alloy 9002 Heavy Molub-Alloy 936 SF Heavy A	<ul style="list-style-type: none"> <li>Forms a tough durable film with 'cushioning' effect</li> <li>Good pumpability and set-back resistance</li> <li>Resists 'squeeze-out' and adheres to gear teeth</li> </ul>

Range	Key Benefits
Molub-Alloy 8031	<ul style="list-style-type: none"> <li>Thixotropic nature – exhibits a stable form at rest but becomes fluid when agitated so drains easily from surrounding guards</li> <li>Superior anti-scuff and anti-wear protection where no product build-up is desired</li> </ul>



**QUALITY AND  
RELIABILITY  
FROM START  
TO FINISH**

# CASTROL GREASE RANGE

## MULTI-PURPOSE

PRODUCT	GREASE PERFORMANCE (1)	THICKENER/ SOAP BASE	BASE OIL	NLGI GRADE	BASE OIL VISCOSITY ISO VG	TEMPERATURE APPLICATION RANGE °C/°F	ADDITIVES	APPLICATION
Spheerol EPL	✓	Lithium	Mineral oil	0, 1, 2	150 - 200	- 20 + 120 - 4 + 248	EP/AW	General-purpose greases designed for plant-wide lubrication.
Spheerol EPLX	✓	Lithium complex	Mineral oil	1, 2	460	- 20 + 150 - 4 + 302	EP/AW	Greases designed for plant-wide lubrication with high film strength and wide operating range.
Spheerol LMM (1)	✓	Lithium	Mineral oil	2	180	- 20 + 110 - 4 + 230	Solid lubricants	Designed for normal and heavily loaded bearings operating at low and medium speeds and those subject to shock loading. Applications also include pivot pins, cams and screws.

## MULTI-PURPOSE HIGH PERFORMANCE

Molub-Alloy 4086	✓✓	Lithium complex	Mineral oil	1, 2	320 (only NLGI 1), 460	- 10 + 150 + 14 + 302	Solid lubricants	High-performance grease designed to operate in plain, journals and anti-friction bearings. They exhibit excellent adhesive and cohesive characteristics and are highly resistant to mechanical shearing.
Molub-Alloy 777 ES	✓✓✓	Lithium	Mineral oil	1, 2	950	- 20 + 120 - 4 + 248	Solid lubricants	High-performance grease designed to operate in plain, journals, and anti-friction bearings under low and medium speeds and heavy loads. For use in industries such as metals, mining, logging, chemical and construction.
Molub-Alloy 860 ES	✓✓✓	Lithium complex	Mineral oil	1, 2	220, 460	- 30 + 150 - 22 + 302	Solid lubricants	High-performance grease designed for use in heavy-duty industrial applications. These include bearings near hot ingots, soaking pits, and reheating furnaces to lubricate pit cover carriages, mill stand screws, slipper couplings, roll bearings, manipulators and guide rolls for continuous casters, mill rolls and couplings.
Longtime PD	✓✓✓	Lithium	Mineral oil	00, 0, 1, 2	95 - 130	- 35 + 140 - 31 + 284	MFT	Designed for long-term/life-time lubrication, even under the most difficult operating conditions, of highly loaded rolling and sliding bearings. Also suitable for spreader rolls, steel mill roll neck bearing and for bearings with changing rotational directions or slewing movements. Can be used as a semi-fluid grease lubricant in gears such as flange, drum-type and worm gears.
Optipit	✓✓✓	Lithium	Mineral oil	2.5	1350	- 10 + 140 + 14 + 284	MFT	Developed for lubrication of anti-friction and plain bearings requiring a high oil viscosity and operating in wet and dusty atmospheres. For use in industries/applications such as mining, metals, tube mills and equipment exposed to sea water e.g., in harbors, ships and drilling platforms.
Tribol 4020	✓✓✓	Lithium complex	Mineral oil	1, 2	220, 460 (only NLGI 2)	- 30 + 150 - 22 + 302	TGOA	Multi-service grease for heavy-duty applications of plain and anti-friction bearings. Commonly used as a plant-wide lubricant in the automotive industry as well as industries where the preference is for a high-performance non-dark grease.
Molub-Alloy 6040	✓✓✓	Calcium complex sulphionate	Mineral oil	1.5	460	- 5 + 150 + 23 + 302	EP/AW	Primarily used in plain or anti-friction bearings and couplings under extreme environmental conditions such as steel rolling mills and continuous casters. Ideal for aggressive process water environments.

## HIGH TEMPERATURE

Firetemp XT 2	✓✓✓	Polyurea	PAO (synthetic)	2	270	- 25 + 180 - 13 + 356	EP/AW	High-temperature grease for rolling and sliding bearings. For applications such as heated bearings of dry calenders and dry cylinders, fan bearings, conveyor systems in paint lines, autoclaves, baking ovens and continuous-flow drying ovens.
Inertox Heavy	✓✓✓	PTFE	PFPE (synthetic)	2	150 (**)	- 25 + 260 - 13 + 500	Solid lubricants	Designed for high-temperature anti-friction and plain bearings requiring extended re-lubrication intervals in hostile conditions such as in paint drying lines, film stretching machines, textile tenter frames and ceramic industry oven carriages. Also for high vacuum chamber seals and friction points.
Molub-Alloy 2115	✓✓✓	PTFE	PFPE (synthetic)	2	500	- 20 + 250 - 4 + 482	Solid lubricants	Developed for extended service in oven conveyor bearings. Applications include paint drying ovens, textile tenting frames and similar service where minimum re-application and drip-free performance is required.
Molub-Alloy 1000	✓✓✓	Organic sodium	PAO/Ester (synthetic)	1	540	- 0 + 230 + 32 + 446	Solid lubricants/EP	Developed for elevated temperature bearings experiencing heavy and shock loading, such as in paint oven conveyor bearings, slides and bushings. Also for cement rotary kilns as a gas-seal lubricant to minimize hot gas leakage.

## OPEN GEARS

Molub-Alloy 9002 Heavy	✓✓	Lithium	Mineral oil	0.5	718	–	Solid lubricants	May be used on applications where multiple viscosities, from light-to-heavy, have been historically required with conventional open gear compounds and greases. This range may be used on open gears of all sizes, loads and speeds, on slides, guide rails, cams and wire ropes.
Molub-Alloy 936 SF Heavy A	✓✓✓	Lithium	Mineral oil	0.5	1890	–	Solid lubricants	Suitable for use on all types of open gears, rails and rollers, racks and pinions, dipper sticks and other slides on shovels and draglines. It is certified to Bucyrus International SD 4713 specification for open gear lubricants.
Molub-Alloy 8031	✓✓✓	Inorganic	Mineral oil	00	1500, 3000, 6000	–	Solid lubricants	Recommended for use in open gear applications in cement, mining and any other industries requiring anti-squuff and anti-wear protection and where no product build-up is desired. For open gears, screw-type actuators and low-to-moderate velocity bushings and bearings equipped with centralized or sump-type lubrication systems.



\* Indicates increasing performance

\*\* Fresh product, at temperatures above 100°C, viscosity will increase gradually up to 500 mm²/s. Grease selection is dependent on application and operating conditions.

(1) Not currently available in the Americas

EP = Extreme Pressure  
AW = Anti-wear  
MFT = Microflux Trans  
TGOA = Tribol Grease/Oil Additive

PAO = Polyalpha Olefin  
PTFE = Polytetrafluoroethylene  
PFPE = Perfluoropolyether

The bearing grease guide shown here can help with product selection. Please refer to our product data sheets for more detailed information.

BEARING GREASE LUBRICATION GUIDE					
	Low Speed/ High Load		Medium Speed/ High Load	Medium Speed/ Medium Load	High Speed/ Medium Load
Normal temperature 41 to 110°C (100 to 230°F)	Molub-Alloy 777 ES		Spheerol EPLX	Spheerol EPL	Longtime PD
	Molub-Alloy 860/460 ES		Molub-Alloy 4086/460	Spheerol LMM	
	Optipit		Molub-Alloy 860/460 ES	Molub-Alloy 4086/320	
			Tribol 4020/460	Molub-Alloy 860/220 ES	
			Molub-Alloy 6040/460	Tribol 4020/220	
Elevated temperature 76 to 150°C (168 to 300°F)	Molub-Alloy 860/460 ES		Spheerol EPLX	Molub-Alloy 4086/320	Longtime PD*
	Optipit*		Molub-Alloy 4086/460	Molub-Alloy 860/220 ES	
			Molub-Alloy 860/460 ES	Tribol 4020/220	
			Tribol 4020/460		
			Molub-Alloy 6040/460		
High temperature up to 249°C (up to 480°F)  *Up to 140°C	Molub-Alloy 2115		Inertox Heavy	Inertox Heavy	
	Molub-Alloy 1000		Molub-Alloy 2115	Molub-Alloy 1000	
			Molub-Alloy 1000	Molub-Alloy 2115	
				Firetemp XT 2	
Key to loads and speeds					
Speed RPM	Low	Medium	High	Load	
	(~335 mpm)	(~610 mpm)	(~880+ mpm)	Medium	High
Shaft < 5cm	<1500	1500 to 4000	>4000	<350kg weld	>350kg weld
5cm < Shaft < 13cm	<700	700 to 2000	>2000	(Four Ball EP - ASTM D 2596)	(Four Ball EP - ASTM D 2596)
13cm < Shaft	<400	400 to 1000	>1000		
Information above is for guidance only.					



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