

## Castrol Molub-Alloy 860 ES

High-performance grease

### Description

Castrol Molub-Alloy™ 860 ES greases are high-performance multi-service lithium complex greases formulated from premium petroleum base oils, lubricating solids and a combination of corrosion inhibitors specifically chosen for protection against corrosive process waters. These are designed to extend the service life of bearings in heavy-duty applications and at elevated temperatures. Molub-Alloy 860 ES greases provide an appropriate oil film for applications at slower to moderate speeds, higher loads, and/or higher temperatures sustained for longer periods of time.

The load-carrying and anti-wear capabilities of Molub-Alloy 860 ES greases exceed conventional complex greases. High-performance is the result of chemical additives working synergistically with select Molub-Alloy lubricating solids which are dispersed uniformly throughout the grease. These lubricating solids offer their greatest benefit at slow speeds or when bearings endure heavy loads and shocks. Solids also protect newly machined bearing surfaces during the critical period of 'running in'. Good bearing surfaces are essential for long service life.

### Application

Primary metals, including steel – use Molub-Alloy 860 ES greases near hot ingots, soaking pits, and reheat furnaces to lubricate pit cover carriages, mill stand screws, slipper couplings, roll bearings, manipulators and guide rolls for continuous casters.

Paper and forest products – on paper machines, use Molub-Alloy 860 ES greases on the 'wet end' couch, suction, and press roll bearings where water wash, corrosive process waters, and high temperatures are present.

Molub-Alloy 860 ES greases have been used successfully in all heavy-duty industry applications including anti-friction bearings, bushings, mill rolls and couplings.

- Molub-Alloy 860/150 ES greases should be used when loads are moderate-to-heavy, temperatures are elevated (up to 232°C/450°F) and speeds are moderate-to-high
- Molub-Alloy 860/220 ES greases should be used when loads are moderate-to-heavy, temperatures are elevated (up to 232°C/450°F) and speeds are slow-to-moderate
- Molub-Alloy 860/460 ES greases should be used when loads are heavy, temperatures are elevated (up to 232°C/450°F) and speeds are slow

### Advantages

- Excellent friction reduction characteristics due to Molub-Alloy solid lubricants – easier start-up, reduced heat, and reduced energy leading to longer bearing life.
- Exceptional water resistance – coating film stays on the surface even in presence of water, even when exposed to the action of hot and chemically active process water.
- Excellent EP and anti-wear properties – protects equipment against extreme/shock loading and helps minimize bearing component wear and hence extends equipment life.
- Excellent mechanical stability and adhesion – grease keeps its consistency in service ensuring long-term protection and reduced consumption as film stays between lubricated surfaces.
- Outstanding oxidation/thermal stability and high dropping point – provides reliable performance and extended lubricant life in high-temperature applications.
- Formulated to address environmental concerns – it is free of antimony, barium, lead, and zinc.

# Typical Characteristics

Test	Method	Units	'860/150-0 ES	'860/150-1 ES	'860/150-2 ES	'860/220-0 ES	860/220-1 ES	860/220-2 ES	860/460-1 ES	860/460-2 ES
Appearance, Visual	-	-	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey
Thickener Type	-	-	Lithium complex	Lithium complex	Lithium complex	Lithium complex	Lithium complex	Lithium complex	Lithium complex	Lithium complex
Base Oil Type	-	-	Mineral oil	Mineral oil	Mineral oil	Mineral oil	Mineral oil	Mineral oil	Mineral oil	Mineral oil
NLGI Grade	-	-	0	1	2	0	1	2	1	2
Density @ 20°C/68°F	ASTM D1475	g/ml					0.883	0.886	0.887	0.896
Worked Penetration, 60 strokes @ 25°C/77°F	ISO 2137 ASTM D217	0.1mm	355-385	310-340	265-295	355-385	310-340	265-295	310-340	265-295
Dropping Point	ISO 2176 ASTM D2265	°C/°F	N/A	260+/500+	260+/500+	260+/500+	260+/500+	260+/500+	260+/500+	260+/500+
Base Oil Viscosity @ 40°C/104°F @ 100°C/212°F	ISO 3104 ASTM D 445	mm <sup>2</sup> /s	150 14	150 14	150 14	220 16.6	220 16.6	220 16.6	460 28.5	460 28.5
Base Oil Flash Point	ISO 2592 ASTM D 92	°C/°F	202/397	202/397	202/397	232/450	232/450	232/450	232/450	232/450
Base Oil Pour Point	ISO 3016 ASTM D 97	°C/°F	-3	-3	-3	-3	-3	-3	-1.2	-1.2
Rust Test, 48 hrs @ 52°C/126°F	ASTM D 1743	Rating	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Corrosion Protection (SKF Emcor)	ISO 11007 ASTM D 6138	Rating	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Copper Corrosion, 24 hrs, 100°C/212°F	ISO 2160 ASTM D4048	Rating	1b	1b	1b	1b	1b	1b	1b	1b
Four Ball EP Test Load Wear Index Weld Load	ASTM D2596	kg	60 500	60 500	60 500	60 500	60 500	60 500	60 500	60 500
Four Ball Wear Test (1 hr, 40 kg, 1200 rpm, 75°C/167°F), Scar Diameter	ASTM D2266	mm	0.6	0.6	0.55	0.55	0.55	0.55	0.5	0.5
Timken EP Test, OK Load	ASTM D2509 IP 326	kgs/lbs	23/50	23/50	23/50	23/50	23/50	23/50	27/60	27/60
Roll Stability, 2 hours, 25°C/77°F, Penetration Change	ASTM D1831	% change	N/A	10	10	N/A	10	10	10	10
Water Washout, 79°C/175°F	ASTM D1264	% loss	N/A	6	4	N/A	6	4	4	4
DIN Classification	DIN 51502	-	-	-	-	-	KPF 1 N-30	KPF 2 N-20	KPF 1 N-30	KPF 2 N-20
ISO Classification	ISO 6743/9	-	-	-	-	-	L-XCDHB-1	L-XBDHB-2	L-XCDHB-1	L-XBDHB-2

\*Currently available in US, Canada and Mexico. Please contact your local Castrol representative to check availability in other areas. Subject to usual manufacturing tolerances.

## Additional Information

At temperatures above 121°C/250°F, regular reapplications of 860 ES must be considered.

At temperatures near 177°C/350°F, weekly reapplications of 860 ES are suggested.

For continuous service near 204°C/400°F, reapply 860 ES daily or once each shift.

Molub-Alloy 860 ES greases have been used above 232°C/450°F. However, frequent reapplication of grease is necessary to prevent deterioration of the petroleum base oil. Reapply before the grease in the bearing stiffens.

In order to minimize potential incompatibilities when converting to a new grease, all previous lubricant should be removed as much as possible prior to operation. During initial operation, relubrication intervals should be monitored closely to ensure all previous lubricant is purged.

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