



Product Data Sheet

High performance Molub-Alloy 860/220 ES Greases are multiservice lubricants designed to extend the service life of bearings in heavy duty applications and at elevated temperatures. 860/220 ES Greases are intended to provide a heavier oil film for applications at slower speeds, higher loads, and/or higher temperatures sustained for longer periods of time. These greases match the rugged service requirements associated with mills producing primary metals, chemicals, cement, glass, and paper.

The following performance characteristics were emphasized in the development of 860/220 ES Greases:

- **Higher viscosity base oil**, ISO VG 220, to increase the load carrying capacity;
- **Temperature stability** to withstand elevated and intermittently high temperatures (dropping point over 260°C/500°F)
- **Shear stability** to match the anticipated service life of precision antifriction bearings.

In addition, the 860/220 ES Greases resist the washing action of water and contain a combination of corrosion inhibitors specifically chosen to provide protection from chemically active process waters.

Molub-Alloy 860/220 ES Greases are part of Castrol Performance Lubricants' Eco-Solutions™ product offering. Formulated to address environmental concerns, they are free of lead, chlorinated solvents, barium, antimony and zinc.

DESCRIPTION

Molub-Alloy 860/220-0 ES, 860/220-1 ES, and 860/220-2 ES meet NLGI Consistency Grades No. 0, No. 1, and No. 2 respectively.

The load-carrying and antiwear capabilities of 860/220 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 must 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.

860/220 ES Greases can maintain a high degree of mobility in the work zone of a bearing for its anticipated service life without losing their original consistency. This critical physical property is due to the use of a highly stable, advanced lithium complex thickening system and special manufacturing techniques.

Molub-Alloy 860/220 ES Greases are formulated from premium petroleum base oils, ISO VG 220 and are an extension of the Molub-Alloy 860/150 ES series of lithium complex greases. In addition to lubricating solids, these lubricants contain a combination of corrosion inhibitors specifically chosen for protection against corrosive process waters.

Still other premium components in the balanced additive package provide excellent oxidation resistance for very long service life.

TYPICAL APPLICATIONS

GENERAL - 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. 860/220 ES Greases have been used successfully in antifriction bearings, bushings and couplings. Apply 860/220-2 ES by hand packing or with a grease gun. 860/220-1 ES may be applied manually or by automatic dispensing systems capable of pumping higher viscosity greases. As minimum ambient temperatures approach 0°C/32°F, change to 860/220-0 ES which pumps at lower temperatures.

PRIMARY METALS, INCLUDING STEEL - Use 860/220 ES 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 860/220 ES on the "wet end" couch, suction, and press roll bearings where water wash, corrosive process waters, and high temperatures prevail. Use the 860/150 ES for wire, felt roll and fourdrinier bearings where lower viscosity greases are recommended.

Please See Reverse Side for Typical Properties.

**REAPPLICATION FREQUENCY-
HIGH TEMPERATURE USAGE**

At temperatures above 121°C/250°F, regular applications of 860/220 ES must be considered.

Establish reapplication intervals by inspection. See Notes regarding temperatures and speeds.

Generally, for continuous service at temperatures near 177°C/350°F, weekly reapplications of 860/220 ES are suggested. For continuous service near 204°C/400°F, reapply 860/220 ES daily or once each shift.

Molub-Alloy 860/220 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.**

ADVANTAGES

Molub-Alloy lubricating solids permit extending the lubrication interval while providing an extra measure of antiwear protection. Molub-Alloy 860/220 ES stays in the bearing. Molub-Alloy 860/220 ES is formulated to withstand extreme pressures and heavy shock loads.

The grease does not thin despite prolonged shearing, nor does it melt at temperatures up to 260°C/500°F.

Molub-Alloy 860/220 ES offers excellent oxidation resistance and resists washing out, even when exposed to the action of hot process water. 860/220 ES Greases pass (zero rating) the tough Emcor Rust Test (see Typical Properties below) and can provide protection from corrosive process waters.

NOTES

For lower temperatures and/or higher speeds, a lighter base oil viscosity may be desired. 860/150 ES Greases are available with a base oil viscosity of ISO VG 150. For higher temperatures and/or slower speeds 860/460-2 ES Grease is available with a base oil viscosity of ISO VG 460.

Molub-Alloy 860/220 ES is not compatible with sodium or inorganic base greases.

For specific terms, conditions, warranty, and availability, refer to the Castrol Performance Lubricants' Price List in effect at time of purchase.

TYPICAL PROPERTIES

	860/220-0 ES	860/220-1 ES	860/220-2 ES
NLGI Grade	0	1	2
Thickener Type	Lithium Complex	Lithium Complex	Lithium Complex
Worked Penetration, ASTM D217, mm/10	355-385	310-340	265-295
Dropping Point, ASTM D2265, °C/°F	N/A	260+/500+	260+/500+
Base Oil Properties			
Viscosity, ASTM D445, ASTM D2161			
@ 40°C cSt	213	213	213
@100°C, cSt	16.6	16.6	16.6
@100°F, cSt/SUS	245/1135	245/1135	245/1135
@210°F, cSt/SUS	17.1/86	17.1/86	17.1/86
Flash Point, ASTM D92, °C/°F	232/450	232/450	232/450
Pour Point, ASTM D97, °C/°F	-15/+5	-15/+5	-15/+5
Water Washout, ASTM D1264			
@ 79°C/175°F, % loss	N/A	6.2	2.6
Rust Prevention Properties,			
ASTM D1743, rating	Pass	Pass	Pass
Emcor Rust Test, DIN 51802, IP 220/85	No. 0 (Pass)	No. 0 (Pass)	No. 0 (Pass)
Roll Stability, ASTM D1831, % change	5	2	5
Timken EP Test, ASTM D2509			
OK Value, kg/lbs	23/50	23/50	23/50
Four Ball EP Test, ASTM D2596:			
Load Wear Index, kg	60	60	60
Weld Load, kg	500	500	500
Molub-Alloy Solids, Grade Classification	Multipurpose	Multipurpose	Multipurpose

Subject to Usual Manufacturing Tolerances.