

Food Machinery Grease

NLGI 2

Product Description

Anglomoil Food Machinery grease is a high performance grease utilising pharmaceutical base oil and a complex calcium sulphonate thickener. Calcium sulphonate has been long used as a detergent/rust protective/anti-wear additive in general lubricants but its use in greases is a comparatively recent and rapidly expanding development. In a standard grease, the thickener or soap holds the oil like a sponge whilst the oil performs the lubrication. The Calcium Sulphonate used in Anglomoil's Food Machinery Grease becomes a part of the grease, and plays an important role in the lubrication process, by increasing the lubricating film thickness over that of the base oil alone.

Comparison of Soap Properties					
		Al Complex	Ca Complex	Li Complex	Ca Sulphonate Complex
Dropping Point	The temperature at which grease becomes soft enough to form a drop and fall.	+260°C	+260°C	+260°C	+300°C
Rust Protection		Good to Poor	Fair to Good	Fair to Good	Excellent
Water Resistance (water washout)	The resistance of a lubricating grease to adverse effects due to the addition of water to the lubricant system.	Good to excellent	Fair to Excellent	Good to Excellent	Good to Excellent
Oxidisation Stability	Resistance of a petroleum product to oxidation and, therefore, a measure of its potential service or storage life.	Fair to excellent	Poor to good	Fair to excellent	Excellent
Other Properties	EP: That property of a grease that, under high applied loads, reduces scuffing, scoring and seizure of contacting surfaces. AW: Additives which form thin, tenacious films on highly loaded parts to prevent metal-to-metal contact.	EP grades available	EP & AW inherent	EP grades available	EP & AW inherent

Anglomoil's Food Machinery Grease is simply technically superior.

- **Water Washout.** Anglomoil FMG offers very high resistance to removal by water spray in Food Manufacturing's aggressive environment.
- **High Dropping Point.** Anglomoil FMG retains its integrity at higher operating temperatures.
- **High Load Resistance.** Anglomoil FMG protects equipment under high applied loads by reducing scuffing, scoring and seizure of contacting surfaces.

Anglomoil Food Machinery Grease					Values don't constitute a specification.				
NLGI Grade	ASTM	D217	2	Rust Test	rating	ASTM	D1743	Pass	
Colour	Visual		Cream	Salt Fog Corrosion, 1 mil dff	Hours	ASTM	B117	>300	
Texture	Visual		Smooth	Copper corrosion	rating	ASTM	D4048	1B	
Dropping Point	°C	ASTM	D2265	300	Wheel Bearing Leakage	grams	ASTM	D4290	4.0
Consistency, 60 strokes, mm/10	mm/10	ASTM	D217	280	Bearing Life Performance	hours	ASTM	D3627	120
Mechanical Stability, 100,000 strokes, % change	% change	ASTM	D217	2.5	Bomb Oxidation, psi drop after 1,000 hours.	psi drop, >1000h	ASTM	D942	9.0
Roll Stability, 50% water	% change in pen	ASTM	D1831	3.1	Water Washout at 80C	% lost	ASTM	D1264	3.5
Timken OK Load	kg	ASTM	D2509	27	Oil Separation,	% lost	ASTM	D1742	0.2
4-Ball EP		ASTM	D2596		Low Temperature Torque, -18°C N-m	g-cm	ASTM	D1478	
LWI	kgf		62	- At Start				1404	
Weld Point	kg		500	- After 60 Min				247	
4-Ball Wear	mm	ASTM	D2266	0.38	Mobility @ 150 psi, -18C	g/min	US Steel	19.3	

Lubricants suitable for use in the food industry fall into two broad categories:

- 1) Those which are permitted “incidental food contact”, with a maximum contamination of 10ppm.
- 2) Those which are suitable for use in a food plant, but not allowed any food contact.

Dealing with the second category first, lubricants which are non-toxic, non-hazardous or do not possess offensive odours would be generally acceptable for this category, which under the US FDA regulation (now obsolete) were identified as H2.

Incidental food contact lubricants were controlled and classified for many years by the US Food and Drug Administration under Regulation 21 CFR 178.3570 for greases and 21 CFR 178.3530/3620 for oils.

Lubricants meeting the FDA requirements for “incidental food contact” were identified as H1. Although this service was discontinued in 1999, lubricants which had earned this classification from the FDA continue to use it.

Since 1999, new products are evaluated by an American body, the National Sanitation Foundation (NSF), or in Australia by the Australian Quarantine and Inspection Service (AQIS).

Food Greases

Materials used in the manufacture of grease fall into three groups, lubricating oil, thickener, additives. Approval for food contact is limited to certain selected materials in each group, ie:

Oils approved for H1 greases	Pharmaceutical quality white oils, synthetic hydrocarbons (Poly-alpha-olefins), silicone oils (some)
Thickeners approved for H1 greases:	Aluminium complex, bentonite (clay), polyurea, and most recently calcium sulphonate
Additives for H1 greases	Anti-oxidants, anti-corrosion, anti-wear.

How to choose oils

The synthetic hydrocarbons (PAO) are the most effective lubricants but have the disadvantage of a very high price. Silicone oils are also expensive but for most applications are poor lubricants. Pharmaceutical white oils have the advantage of a much lower cost, but are not as good a lubricant as PAO.

How to choose a thickener

Aluminium complex soaps possess high melting point and excellent water resistance, Polyurea thickeners or soaps possess similar properties, Bentonite or clay thickeners are cheaper and have high temperature properties, but may be intolerant of some performance enhancing additives.

The most recent addition to the range of soaps is CALCIUM SULPHONATE, which has a range of properties superior to any other thickener, ie. Very high melt point, excellent water resistance, corrosion protection, high load capacity and long term stability.

How greases work

The traditional explanation for a grease has been to picture it as a sponge soaked in oil. The thickener, or “soap” as it is usually called acts as the sponge whilst the oil performs the task of lubricating. The very expensive “synthetic greases”, using PAO as the lubricant are excellent, but greases incorporating silicone oil or pharmaceutical white oil together with the traditional soaps provide inadequate lubrication as evidenced by high wear rates in food machinery.

Why is Calcium Sulphonate better?

Now, for the first time, we have a thickener which actually contributes to the lubricating action. Calcium sulphonate has been used for decades as a performance additive in engine oils and gear oils. It provides extreme pressure properties, corrosion protection and water resistance. Calcium sulphonate is not used as an additive in the grease, it IS the grease, and provides all its inherent properties without the need for additional additives – a factor which ensures long life and stability.

So a calcium sulphonate food grease allied with pharmaceutical white oil provides the mechanical properties of a high performance engineering grease.

Properties

Anglomoil FOOD MACHINERY GREASE is a state of the art, high performance grease, consisting of calcium sulphonate thickener and white mineral oil. The grease is outstanding for its exceptional mechanical stability, very high load carrying properties, excellent thermal stability and particularly for its excellent resistance to water and corrosion.

It complies with the former US FDA Regulation CFR 21 178.3570 for incidental food contact, known as H1.

Typical Characteristics

NLGI Grade	2
Colour	White
Consistency – worked penetration	280
Drop Point	300 ° C
Timken OK Load	27 kg
4 Ball EP, load wear index	62 kg f
4 Ball EP, weld point	500 kg f
4 Ball Wear, scar diameter	0.38 mm
Oil separation	0.2% mass
Wheel bearing leakage	4.0 grams
Rust test rating	Pass
Salt fog – hours to failure	> 300
Bearing life	120 hours
Bomb oxidation – psi drop after 1000 hours	9.0
Worked stability - % change after 100000 strokes	2.5%

50/50 water mixture after 10000 strokes	8.0%
Shell roll - % change	3.1%
Water wash-out @ 79 ° C	3.5% loss
Low temperature torque @ -40 °	10 N-m

Technical Data Sheet

Master Item# 2410
Pack Size Availability: 12 x 450g, 20kg, 180kg

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