



TECHNICAL DATA

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#322 BLACK BEAUTY OPEN GEAR LUBE

Black Beauty is a semi-synthetic, diluent type heavy duty extreme pressure lubricant that is recommended for the lubrication of open gearing, ball mills, rod mills, pebble mills, grinding and bowl mills, trunnions, dipper sticks, circle rails, rotary kilns and dryers, pins and bushings, babbit bearings and some type of anti-friction bearings that are common to the mining, steel mills, non ferrous metal mills, construction, cement processing and power plant industries.

Black Beauty Open Gear Lube is compounded from a unique blend of select high viscosity index solvent refined severely hydro-finished paraffin base oils and severely hydro-finished polyalphaolefin (PAO) synthetic base fluids. These base oils and PAO synthetic base fluids were selected for their exceptional physical and chemical stability and serviceability over a wide range of temperatures. These base fluids are further compounded to provide the Black Beauty Open Gear Lube with superior adhesive film forming characteristics. This film-forming characteristic allows the Black Beauty Open Gear Lube to resist "squeeze out" and cling tenaciously, even to gears that are in vertical orientation.

Black Beauty Open Gear Lube also contains a non-chlorinated volatile solvent that allows the Black Beauty Open Gear Lube to stay soft and pliable especially in cold weather over a long period of time. Once Black Beauty Open Gear Lube is applied to the open gearing the non-chlorinated volatile solvent rapidly evaporates leaving behind a flexible, adhesive and high strength wear resistant viscous lubricant film that strongly adheres to the gear teeth. This viscous lubricant film will not harden, chip or flake in cold weather and will not form a hard packed buildup in the roots of the gear teeth.

To further fortify the adhesive viscous lubricant film of the Black Beauty Open Gear Lube, a combination of molybdenum disulfide and various solid lubricants are compounded into the Black Beauty Open Gear Lube. The molybdenum disulfide and the various solid lubricants contribute to the structure of the lubricant film and also improve the anti-wear and extreme pressure and load carrying capabilities of the Black Beauty Open Gear Lube beyond those of conventional open gear lubricants. The load carrying ability of the Black Beauty Open Gear Lube is in excess of 500,000 pounds per square inch.

The combination of molybdenum disulfide and the various solid lubricants also forms a protective layer between the mating surfaces of the gears. This protective layer provides a cushioning effect between the contacting asperities of the gear teeth that minimizes pitting, spalling and cold welding of the mating gear teeth.

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TD-322 (Rev. 4/99)

Black Beauty Open Gear Lube provides the following performance advantages.

1. Formation of an almost indestructible adhesive film that provides a “cushioning” effect even under boundary lubrication conditions and at very low speeds.
2. Resistance to film destruction by contaminating oils or greases migrating from nearby mechanisms.
3. Resistance to rain, snow and the process of water washout.
4. Resistance to the adhesion of dust and dirt.
5. A reduction in contact temperatures.
6. Minimization of cold welding at the contacting asperities.
7. Minimizes the vibration of “stick slip”.
8. Excellent extreme pressure properties to protect the open gearing from excessive wear, premature fatigue, gear scoring, spalling and pitting.
9. Strong adhesion to the gear teeth to resist excessive throw-off.
10. A reduction in lubricant consumption rate.

Black Beauty Open Gear Lube can be applied either manually or by a heavy duty automatic lube systems. Black Beauty Open Gear Lube 300 (Heavy) temperature range is 5° to +100°F/-15° to -38°C. Black Beauty Open Gear Lube 200 (Medium) temperature range is -15° to -50°F/-26° to 10°C. Black Beauty Open Gear Lube 100 (Arctic) temperature range is -45° to -10°F/-43° to -23°C*

* These temperature ranges are based upon a 75:1 dispensing pump ratio.

Caution: Due to the presence of a flammable non-chlorinated solvent Black Beauty Open Gear Lube should not be applied in areas where there is high heat or open flames.

Typical Properties

*Due to the semi-fluid nature of the Winter (Light) grade the work penetration according to ASTM D-217 cannot be accurately ran on this grade.

	300	200	100
	Heavy	Medium	Arctic
Specific Gravity 60°F/15.5°C	1.06	1.05	1.03
Worked Penetration @ 77°F/25°C (ASTM D-217)	350-405	350-400	-----*
Flash Point °F/°C of product, C.O.C (ASTM D-92)	485°/251.67°	445°/229.44°	400°/204.44°
Four Ball EP (ASTM D-2596)			
Weld Point, kgs.	800	800	620
Load Wear Index, kg.	166.1	120	85
Four Ball Wear (ASTM D-2266)			
Scar Diameter, mm	0.68	0.6	0.57
Falex Continuous Load (ASTM D-3233)			
Failure Load, lbs/kg.	+4500/+2045	+4500/+2045	+4500/+2045
FZG DIN 51-354	+13 th Stage	+13 th Stage	13 th Stage
Rust Inhibition Test (ASTM D-1743)	1,1,1	1,1,1	1,1,1
Copper Strip Corrosion Test (ASTM D-4048)	1b	1b	1b
Deleterious Particles (ASTM D-1404)			
# of Scratches	14	15	15
Rating	2	2	2

*Due to the semi-fluid nature of the Arctic (Light) grade the work penetration according to ASTM D-217 can not be accurately ran on this grade.

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Lincoln Vent Meters			
PSI @ 75°F/23.89°C	0	0	0
PSI @ 30°F/-1.11°C	258	0	0
PSI @ 0°F/-17.78°C	1750	700	116
PSI @ -10°F/-12.22°C	-----	1150	370

Base Oil Properties

	300	200	100
Viscosity, SUS @ 40°C (ASTM D-445)	527,754.2	104,577.2	16,819.6
Viscosity, Cst @ 40°C (ASTM D-445)	113,899.4	22,569.75	3,630
Viscosity, SUS @ 100°C (ASTM D-445)	4,086.1	1,632.3	570.20
Viscosity, Cst @ 100°C (ASTM D-445)	876.18	350.00	123.02
Viscosity Index (ASTM D-2270)	110	105	105
Flash Point °F/°C (ASTM D-92)	554°/290°	510°/265.56°	500°/260°

Packaging: #322 Black Beauty Open Gear Lube is available in 450 lb drums, 130 lb kegs and 40 lb. pails.