PETRO-CANADA LUBRICANTS

A HOLLYFRONTIER BUSINESS

TECH DATA
PRECISION™ XL GREASES

INTRODUCTION

Petro-Canada Lubricants' **PRECISION XL** greases are premium performance, long life multi-application greases formulated to reduce operating costs and provide long service protection over a wide range of operating temperatures.

PRECISION XL greases are formulated with Petro-Canada Lubricants hydro-treated base oils and other selected oils, water-resistant adhesive polymers, extreme pressure additives and inhibitors against oxidation and corrosion.

The outstanding performance of **PRECISION XL** results in lower operating costs by reducing the re-greasing frequency, providing longer equipment protection and reducing maintenance costs to the customer.

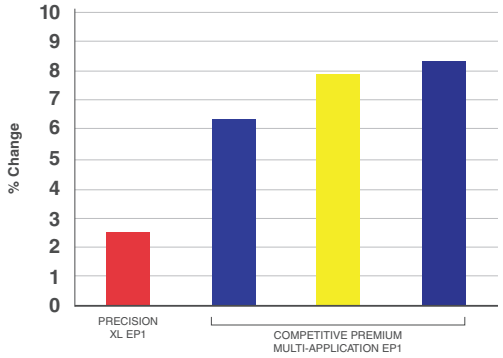
FEATURES AND BENEFITS

Protection Advantage

- Long life under high temperature provides long-lasting equipment protection.
- PRECISION XL EP1 and EP2 perform better than many leading competitive premium multi-application products by lasting 2-3 times longer in the ASTM D3527 life performance test.
- High mechanical stability in severe operating conditions.
- PRECISION XL EP1 and EP2 can also lower maintenance costs as a result of reduced product breakdowns under low to moderately high shear conditions.
- PRECISION XL EP1 and EP2 demonstrate excellent oxidation resistance for longer product life.
- PRECISION XL EP2 provides exceptional lubricating film performance over increasing heavy loads.

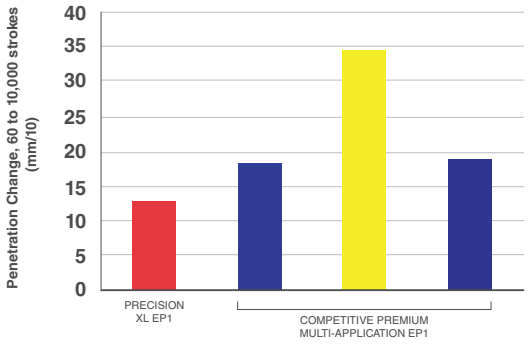
PRECISION XL EP1 WITH THE LOWEST BREAK-DOWN UNDER MODERATE SHEAR CONDITIONS PROVIDES STABILITY AND LONGER SERVICE LIFE FOR CUSTOMERS

ASTM D1831, % Change after two hours



PRECISION XL EP1 WITH THE LOWEST BREAK-DOWN UNDER LOW SHEAR CONDITIONS PROVIDES EXTENDED SERVICE LIFE FOR CUSTOMERS

ASTM D217 at 10,000 strokes, 25°C (77°F)

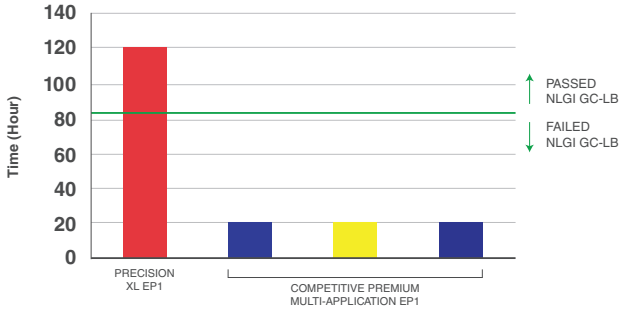


Petro-Canada Lubricants starts with the HT purity process to produce water-white, 99.9% pure base oils. The result is a range of lubricants, specialty fluids and greases that deliver maximum performance for our customers.

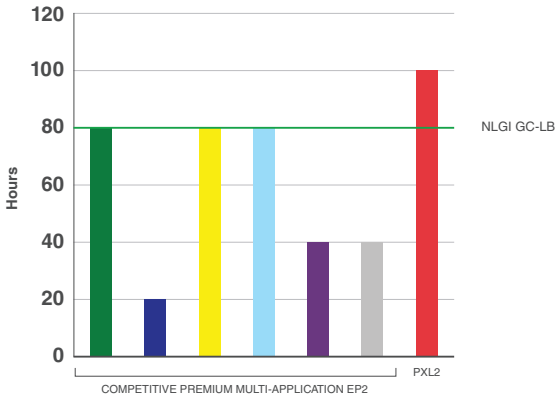
MAXIMUM PERFORMANCE • PERFORMANCE MAXIMALE • HT ™

PRECISION XL EP1's LONG LIFE UNDER HIGH TEMPERATURE PROVIDES LONG-LASTING EQUIPMENT PROTECTION

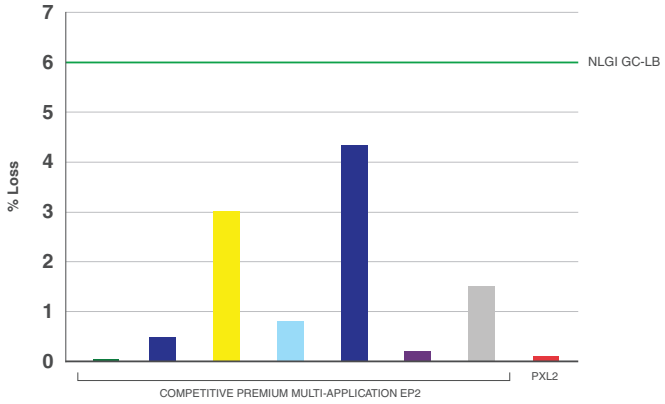
ASTM D3527 Bearing Life Performance Test at 160°C (320°F), 1000 rpm speed and 111 N thrust load



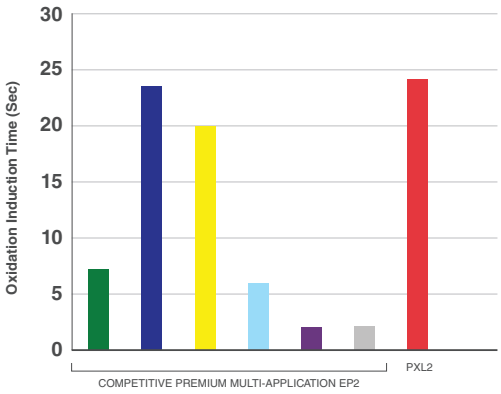
ASTM D3527 LIFE PERFORMANCE



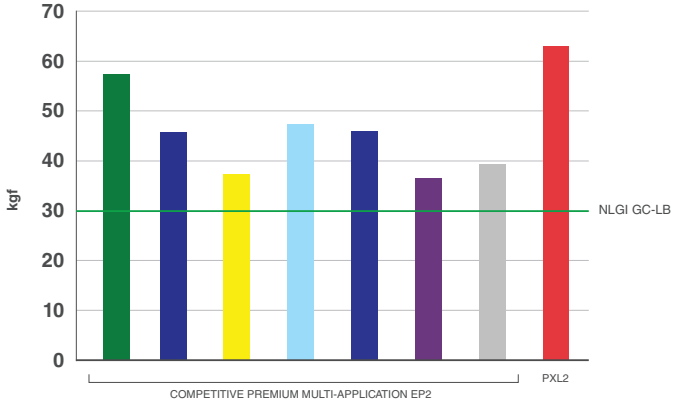
ASTM D1742 OIL SEPARATION



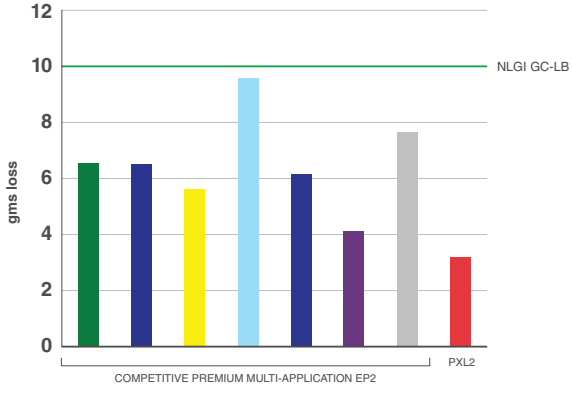
ASTM D5483 PDSC



ASTM D2596 LOAD WEAR INDEX



ASTM D4290 WHEEL BEARING LEAKAGE



STATE OF THE ART FORMULATIONS

- Excellent protection against rust and corrosion
- Prevents scoring or spalling under high loads
- Provides excellent corrosion protection for copper components
- Seals bearings from water and contaminants
- Resists leakage, dripping and throw-off
- Resists change in consistency during service
- Maintains mobility under various conditions
- Excellent storage stability over time

APPLICATIONS

Petro-Canada Lubricants PRECISION XL greases are formulated to provide protection covering a wide range of applications especially where severe operating conditions exist. PRECISION XL greases are recommended for a full range of automotive and industrial applications, including:

- Fleet
- Agriculture
- Mining
- Marine
- General Manufacturing
- Power Generation
- Forestry
- Automotive
- Construction
- Rail Lines
- Pulp & Paper
- Steel Mills

PRECISION XL

PRECISION XL EP1 & EP2 meet the NLGI GC-LB standard for wheel bearing chassis lubrication.

PRECISION XL EP2

PRECISION XL EP2 is recommended for lubricating heavy-duty and general-purpose bearings operating at both low or high speeds. It may be used instead of PRECISION XL EP1 in wet environments due to its thicker consistency. Operating range is –20°C to 160°C (-4°F to 320°F). Specific applications include:

- Wheel bearings including those equipped with disc brakes
- Chassis points, water pumps and steering linkages
- Low-medium speed gear couplings
- Ball mill conveyor and crusher bearings

PRECISION XL EP1

PRECISION XL EP1 is recommended for use in centralized lubrication systems serving both heavy-duty as well as general-purpose bearings. It may be used instead of PRECISION XL EP2 during cold winter weather due to its softer consistency. Specific applications include industrial and mining equipment served by centralized lubrication systems. Operating range is -25°C to 160°C (-13°F to 320°F).

PRECISION XL HEAVY DUTY

PRECISION XL Heavy Duty is recommended for use in steel mills, warehouses and fabrication facilities in the general manufacturing industry. It is particularly well suited for bearings subjected to high loads and shock loading on rolling mills and related equipment. It can also be reliably dispensed through long supply lines within the mill. Operating range -10°C to 160°C (14°F to 320°F).

PRECISION XL EMB

PRECISION XL EMB is a non-EP grease, is recommended for bearing lubrication over a wide temperature range in applications where shock loading is absent. PRECISION XL EMB is specifically designed to lubricate electric motors where no EP additives are allowed due to their detrimental effect upon winding insulation. Specific uses include:

- Bearing on electric motors and generators including high temperature units. Meets CGE specification 6298 for Class B or F insulation
- High speed, anti-friction bearing found on fans
- Operating range is -25°C to 160°C (-13°F to 320°F)

PRECISION XL EP000

PRECISION XL EP000 is an extreme pressure, semifluid lithium grease designed specifically for use in leaky or poorly sealed gear boxes. It has also been used in the gear boxes of continuous miners extracting potash. It is also recommended in leaky speed reducers, chain cases, and bearings in centralized grease systems. Operating range is -25°C to 100°C (-13°F to 212°F).

PRECISION XL EP00

PRECISION XL EP00 is recommended for use in centralized, on-board, truck chassis lubrication systems made by Groeneveld, Robertshaw, Lincoln, Grease Jockey, Interlube, ECOSTAR and Vogel. It is also recommended for use as a gear drive lubricant where a high viscosity gear oil with good low temperature mobility is required. Operating range is -35°C to 100°C (-31°F to 212°F).

PRECISION XL MOLYS

PRECISION XL 3 MOLY EP1

PRECISION XL 3 Moly EP1 contains 3% molybdenum disulphide for protection against vibration and shock loading. It is recommended for use in severe operations such as heavy-duty, shock loaded equipment found in industrial plants such as ball mill conveyor and crusher bearings or in off-highway operations. On the Certified Lubricants Listing for the Bucyrus International MPG – Multi Purpose Grease (SD 4711) specification. Operating range is -25°C to 135°C (-13°F to 275°F).

PRECISION XL 3 MOLY EP2

PRECISION XL 3 Moly EP2 contains 3% molybdenum disulphide for protection against vibration and shock loading. It is recommended for use in severe operations such as heavy-duty, shock loaded equipment found in industrial plants such as ball mill conveyor and crusher bearings or in off-highway operations. On the Certified Lubricants Listing for the Bucyrus International MPG – Multi Purpose Grease (SD 4711) specification. Operating range is -15°C to 135°C (5°F to 275°F).

PRECISION XL 3 MOLY ARCTIC

PRECISION XL 3 Moly Arctic contains 3% molybdenum disulphide for heavy-duty applications particularly where shock loading or vibration is encountered in mining machinery or in off-highway equipment. Operating range is -45°C to 135°C (-49°F to 275°F). PRECISION XL 3 Moly Arctic is particularly suited for very low temperature applications.

PRECISION XL 5 MOLY EP0

PRECISION XL 5 Moly EP0 contains 5% molybdenum disulphide used for protection against vibration and shock loading at lower temperatures. It is suitable for the lubrication requirements of Caterpillar lubricant specifications for 5130 (7TJ & 5ZL), 5230 (7LL) Mining Excavators and 994 (9YF) Wheel Loaders. It is recommended to be used in severe operations such as heavy-duty, shock loaded equipment found in industrial plants or in off-highway operations. On the Certified Lubricants Listing for the Bucyrus International MPG – Multi Purpose Grease (SD 4711) specification. Operating range is -50°C to 120°C (-58°F to 248°F).

PRECISION XL 5 MOLY EP1

PRECISION XL 5 Moly EP1 contains 5% molybdenum disulphide used for protection against vibration and shock loading at moderate temperatures. It is suitable for the lubrication requirements of Caterpillar lubricant specifications for 5130 (7TJ & 5ZL), 5230 (7LL) Mining Excavators and 994 (9YF) Wheel Loaders. It is recommended to be used in severe operations such as heavy-duty, shock loaded equipment found in industrial plants or in off-highway operations. Operating range is -30°C to 135°C (-22°F to 275°F).

PRECISION XL 5 MOLY EP2

PRECISION XL 5 Moly EP2 contains 5% molybdenum disulphide used for protection against vibration and shock loading higher temperatures. It is suitable for the lubrication requirements of Caterpillar lubricant specifications for 5130 (7TJ & 5ZL), 5230 (7LL) Mining Excavators and 994 (9YF) Wheel Loaders. It is recommended to be used in severe operations such as heavy-duty, shock loaded equipment found in industrial plants or in off-highway operations. Operating range is -25°C to 135°C (-13°F to 275°F).

OPERATIONAL CONSIDERATIONS

PRECISION XL Greases with high thermal stability provide long service life under normal operating conditions up to its maximum recommended temperature. However, actual grease life is dependent upon system design and operating practices.

TYPICAL PERFORMANCE DATA

PROPERTY	TEST METHOD	PRECISION XL					
		EP000	EP00	EP1	EP2	EMB	HEAVY DUTY
NLGI Grade	D217	000	00	1	2	2	2
Colour	PCM 264	Dark Amber	Green	Green	Green	Tan	Brown
Texture	PCM 264	Buttery	Buttery	Stringy	Stringy	Buttery	Stringy
Dropping Point, °C/ °F	D2265	193/379	191/376	291/556	302/576	296/565	278/532
Worked Penetration, 60 strokes	D217A	463	414	325	274	291	287
Oxidation Stability 100 hrs, psi drop	D942	4	4	4	4	2	5
Base Oil Viscosity, cSt @ 40°C/SUS @ 100°F cSt @ 100°C/SUS @ 210°F	 D445 D445	 325/1734 23.8/118	 117/608 13.7/74	 220/1168 17.9/91	 220/1168 17.9/91	 112/585 12.1/68	 403/2169 25.6/127
Timken OK Load, Kg/lb	D2509	18/40	18/40	27/60	27/60	-	27/60
Four Ball Weld Point, kg	D2596	250	250	315	315	-	315
Four Ball Wear Scar diam, mm	D2266	0.48	0.46	0.49	0.5	0.53	0.52
Copper Corrosion	D4048	1a	1b	1b	1b	1b	1b
Recommended Operating Temperature Range, °C Temperature Range, °F		 -25 to 100 -13 to 212	 -35 to 100 -31 to 212	 -25 to 160 -13 to 320	 -20 to 160 -4 to 320	 -25 to 160 -13 to 320	 -10 to 160 14 to 320

PROPERTY	TEST METHOD	PRECISION XL MOLY					
		3 MOLY EP1	3 MOLY EP2	3 MOLY ARCTIC	5 MOLY EP0	5 MOLY EP1	5 MOLY EP2
NLGI Grade	D217	1	2	1	0	1	2
Colour	PCM 264	Green Grey	Grey Green	Grey	Grey	Grey	Grey
Texture	PCM 264	Stringy	Stringy	Buttery	Buttery	Buttery	Buttery
Dropping Point, °C/ °F	D2265	220/428	241/466	185/365	214/417	227/441	187/369
Worked Penetration, 60 strokes	D217A	336	287	320	365	331	273
Oxidation Stability 100 hrs, psi drop	D942	3.7	8.5	2.5	7	5	3
Base Oil Viscosity, cSt @ 40°C/SUS @ 100°F cSt @ 100°C/SUS @ 210°F	 D445 D445	 210/1114 17.3	 403/2172 25.1/124	 34/174 6.1/46	 133/697 13.7/74	 159/838 14.9/79	 204/1072 19.4/98
Timken OK Load, Kg/lb	D2509	27/60	27/60	18/40	23/50	23/50	20/45
Four Ball Weld Point, kg	D2596	800	800	250	620	620	620
Four Ball Wear Scar diam, mm	D2266	0.48	0.52	0.47	0.49	0.53	0.46
Copper Corrosion	D4048	1b	1a	1a	1b	1a	1a
Recommended Operating Temperature Range, °C Temperature Range, °F		 -25 to 135 -13 to 275	 -15 to 135 5 to 275	 -45 to 135 -49 to 275	 -50 to 120 -58 to 248	 -30 to 135 -22 to 275	 -25 to 135 -13 to 275

*The values quoted above are typical of normal production. They do not constitute a specification.

Learn more about us: **lubricants.petro-canada.com**
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Committed to the disciplined operation of our business.

CERTIFIED
ISO 9001: 2015
ISO 14001: 2015
IATF 16949: 2016

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