



## VULTREX™ OPEN AND ENCLOSED GEAR LUBRICANTS

### Introduction

Petro-Canada's VULTREX line of grease-based open gear lubricants (OGL) and enclosed gear fluids (EGF) are advanced "Solution Provider" products containing synthetic fluids to provide excellent protection for handling the harshest operating conditions that can be encountered – from severe winter cold to extreme summer heat and from very wet to dusty environments.

VULTREX OGL's ability to extend shovel component life (derived from actual operating data) may provide customers with reduced operating costs and savings. VULTREX OGL Synthetic 2200 outperforms leading competitive products by meeting the strict P&H 520 standard.

VULTREX greases are designed to lubricate large, heavy duty open and enclosed gear drives, as well as bushings and bearings found on mining and off-highway machinery. VULTREX greases are formulated with aluminum complex soaps, taking advantage of their flow and shear properties to protect and extend equipment life. VULTREX OGLs meet the P&H, Caterpillar (BI), Terex O&K, and Komatsu requirements for gear lubricants and are used in the following industries: Mining, Forestry, Pulp and Paper, Construction and General Manufacturing.

### Features and Benefits

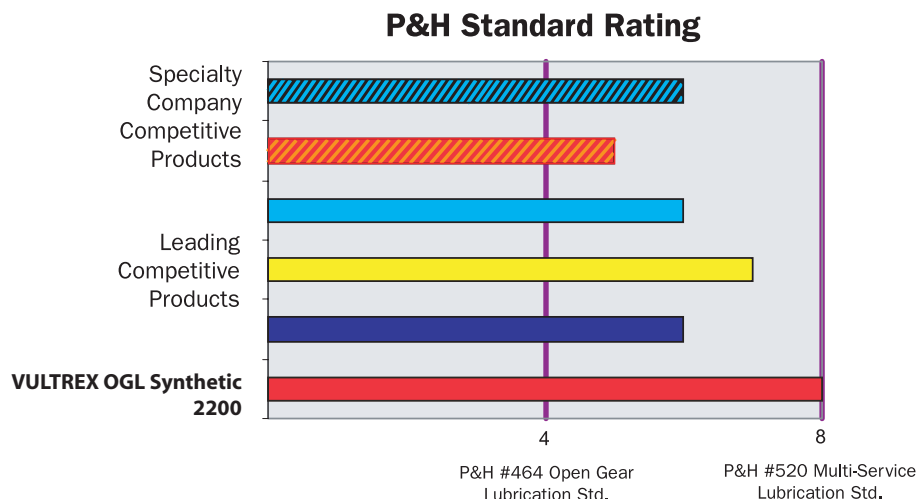
- Extends Shovel Component Life**
  - VULTREX OGL has demonstrated an ability to extend the life of related components (hoist pinion, roller pin, bull and swing gears) ranging from 33% to 100%, representing thousands of hours of extended component life.
  - This means less downtime for maintenance and costly repairs.
  - Field trials were performed on various P&H and Caterpillar (BI and Terex) mining shovels.
- Meets P&H Shovel OGL Requirements (2016 rev)**
  - To meet the P&H 520 standard, a product has to meet a series of ASTM test requirements
  - VULTREX OGL Synthetic 2200 meets the P&H 520 standard, which leading competitive products fail to meet

### What is the HT difference?

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.



### VULTREX OGL Synthetic 2200 Meets P&H 520 Standard



\* The results of four tests (Timken OK Load, Timken Retention, Four Ball Weld and Four Ball Wear) are compared against the P&H 464 and P&H 520 standard. For each test, 1 point is assigned if it meets the requirements of P&H 464, and 2 points if it meets P&H 520.

- **Meets the CATERPILLAR (formerly Bucyrus International) SD4713 specification**
  - VULTREX OGL Synthetic 2200, VULTREX OGL Synthetic All Season 680, VULTREX OGL Synthetic Arctic, and VULTREX OGL Heavy 6200 all meet the SD4713 open gear lubricant specification. VULTREX OGL Heavy 6200 meets the additional requirements of the SD4713 specification for electric mining shovel hoist drum gear lubrication.
- **With the 4 VULTREX OGL products, outstanding protection against wear and surface damage on gears and slides**
  - Continuous lubricating film as there is no solvent to wash off
  - Good spreadability and coverage
  - Surfaces are protected against rust and corrosion
  - Helps prevent against scoring and spalling of gear teeth under heavy loads
  - Formulated with solid lubricants to protect surfaces and minimize gear wear.
- **Wide range of operating temperatures**
  - VULTREX OGL Synthetic All Season 680 has a wide operating temperature of -40°C/-40°F to 25°C/77°F
  - VULTREX OGL Synthetic 2200 has an operating temperature from -15°C/5°F to 40°C/104°F
  - VULTREX OGL Synthetic Arctic has an operating temperature of -40°C/-40°F to 10°C/50°F. It is pumpable down to -50°C/-58°F.
  - VULTREX OGL Heavy 6200 has an operating temperature range from -5°C/23°F to 60°C/140°F.
  - In some climates, VULTREX OGL Synthetic All Season 680 will be the only product required.
- **Outstanding adhesive properties**
  - Highly resistant to water wash-off in rain, snow and sleet conditions
  - Resists being thrown off from rotating parts
  - Adheres tenaciously on surfaces to maintain proper film thickness to lubricate equipment
- **Free of solvents (including citrus and chlorinated solvents), and heavy metals such as lead**
  - Reduced lubricant consumption

## Applications

All VULTREX lubricants are formulated for use in either automated spray systems or by direct application onto gear teeth, slides or other lubricated surfaces. Major applications for VULTREX include:

- Mining and construction shovels
- Draglines
- Ball mill and grinding mill gears
- Kiln drives
- Drills
- Wire ropes
- Large bearings turning at low speeds
- Slides, dipper sticks and racks
- Bushings
- Propel systems

**VULTREX OGL SYNTHETIC 2200** is a solvent-free, synthetic open gear lubricant designed to provide excellent open gear lubrication performance. VULTREX OGL Synthetic 2200 provides excellent wash-off resistance from the shovel stick under all weather conditions and has a lower temperature limit of -15°C/5°F. VULTREX OGL Synthetic 2200 meets the P&H 520 and P&H 464 specifications, and the Caterpillar (formerly BI) SD4713 specification. Approved by Komatsu for lubrication of slew ring gear on Komatsu hydraulic shovels.

**VULTREX OGL SYNTHETIC ALL SEASON 680** is a solvent-free synthetic open gear lubricant suitable for year round use in many climates, with a minimum operating temperature of -40°C/-40°F. VULTREX OGL Synthetic All Season 680 meets the P&H 464 open gear lubricant specification, and the Caterpillar (formerly BI) SD4713 open gear lubricant specification. Approved by Komatsu for lubrication of slew ring gear on Komatsu hydraulic shovels.

**VULTREX OGL SYNTHETIC ARCTIC** is a solvent-free synthetic open gear lubricant. It is intended for use at the very low temperatures encountered in sub-arctic locations during the winter season. It has a proven track record of performance under such conditions, and is recommended for use in these low temperature applications. VULTREX OGL Synthetic Arctic meets the P&H 464 open gear lubricant specification, and the Caterpillar (formerly BI) SD4713 open gear lubricant specification. Approved by Komatsu for lubrication of slew ring gear on Komatsu hydraulic shovels.

**VULTREX OGL HEAVY 6200** (contains synthetic lubricants) is a solvent-free open gear lubricant with a higher viscosity and thicker consistency than other VULTREX OGL lubricants. It is suited for the most demanding open gear lubrication requirements and high temperature conditions where low temperature pumpability is not a requirement. VULTREX OGL Heavy 6200 meets the P&H 464 specification, and the Caterpillar (formerly BI) SD4713 specification, including the special requirements for electric mining shovel hoist gears. VULTREX OGL Heavy 6200 is not intended for the lubrication of bushings or bearings.

**VULTREX EGF-1000** (contains synthetic lubricants) is specifically formulated for heavily loaded enclosed gears on draglines, shovels and excavators. It provides exceptional film strength and excellent anti-wear protection. It is intended for gears where the manufacturer specifies viscosities in excess of 1000 cSt or where a semi-fluid grease is used.

VULTREX EGF-1000 has been used successfully as a lubricant in the enclosed gears of electric mining shovels, underground mining locomotives and many other applications. Due to its exceptional fluidity, film strength and wear resistance, VULTREX EGF-1000 has also been applied as ball mill gear lubricant. It also provides excellent results in with worm gears where “yellow” metals are present and sulphur/phosphorus extreme pressure additives cannot be used.

## **Operational Considerations**

Petro-Canada’s VULTREX line of greases provides long service life under normal operating conditions up to their maximum recommended temperature. However, actual grease life is dependent upon system design and operating practices.

## Typical Performance Data

PROPERTY	TEST METHOD	VULTREX OGL				VULTREX
		Synthetic Arctic	Synthetic All Season 680	Synthetic 2200	HEAVY 6200	EGF 1000
NLGI Grade	D217	—	0/00	0	0	000
Dropping Point, °C/°F	D2265	191/376	223/433	239/462	225/437	205/401
Worked Penetration, 60 strokes	D217	386*	406	384	377	451
Copper Corrosion	D4048	1b	1a	1b	1a	1a
Flash Point, COC, °C/°F (Base Fluid)	D92	164/327	177/351	196/385	333/631	203/397
Base Fluid Viscosity cSt @ 40°C/104°F	D445	765	760	2181	6489	412
Mobility, g/s	PCM 533					
@ 0°C/32°F					0.112	
@ -5°C/23°F					0.073	
@ -10°C/14°F						
@ -20°C/-4°F		—	—	0.050		
@ -25°C/-13°F		—	—	0.022		0.034
@ -30°C/-22°F		—	—	0.010		0.010
@ -35°C/-31°F		—	0.126			
@ -40°C/-40°F		—	0.052			
@ -45°C/-49°F		0.020	0.019			
@ -50°C/-58°F		0.005				
Timken OK Load, Kg/lb	D2509	14/30	14/30	23/50	—	23/50
Four Ball Weld Point, kg	D2596	800****	800****	800	800	400
Four Ball Wear, scar diam, mm	D2266	0.6	0.5	0.7	0.7	0.6
Lowest Dispensing Temp** in a Centralized System, °C/°F		-40/-40	-40/-40	-15/5	-5/23	-30/-22
Recommended Operating Temp. Range, °C/°F		-40 to 10/ -40 to 50	-40 to 25/ -40 to 77	-15 to 50/ 5 to 122	-5 to 60/ 23 to 140	-40 to 100***/ -40 to 212

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

\* Plastic Cone

\*\* Based on pumpability test, but is dependent on the design and type of the dispensing systems, length and diameter of the lines, the mode of application and rate of pressurization.

\*\*\* Once the gear case is filled, the gearing system can operate at temperatures as low as -40°C/-40°F based on actual operation.

\*\*\*\* Measured before the addition of diluent, as per the Bucyrus International SD 4713 specification.

To order product or to learn more about how Petro-Canada Lubricants can help your business visit: [lubricants.petro-canada.com](http://lubricants.petro-canada.com) or contact us at: [lubecsr@petrocanadalsp.com](mailto:lubecsr@petrocanadalsp.com)



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