



LUBRICANTS

AN HF SINCLAIR BRAND

# TECH DATA

## PRODURO™ TO-4+ SYNTHETIC ALL SEASON AND XL SYNTHETIC BLEND LOW-TEMP

### INTRODUCTION

PRODURO™ TO-4+ Synthetic All Season and XL Synthetic Blend Low Temp are high quality, premium performance multi-grade fluids designed to maximize durability and equipment protection in severe winter and summer conditions. Seasonal change-outs for hydraulics, wet brakes, drive trains and transmissions can be eliminated without compromising the lubricant performance with PRODURO TO-4+ Synthetic All Season. Component wear which is attributable to both cold start-up conditions and high operating temperatures can also be reduced using PRODURO TO-4+ All Season.

PRODURO TO-4+ Synthetic All Season and Synthetic Blend Low Temp offer multi-grade performance with excellent shear stability, standing up to the toughest operating conditions for mobile equipment. The ultra-pure, high quality base oils combined with high performance additives deliver outstanding equipment protection and longer oil life. Drain intervals can be extended to reduce total maintenance costs.

### FEATURES AND BENEFITS

The following demonstrates how PRODURO TO-4+ Synthetic All Season and XL Synthetic Blend Low Temp can help increase productivity and decrease operating costs:

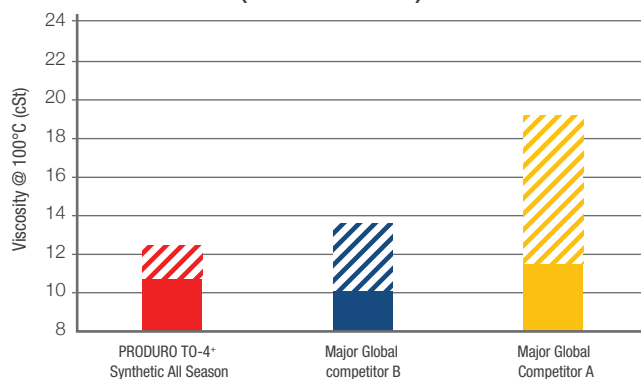
#### High viscosity index ensures consistent performance over a wide temperature range

- Extended component life through better lubricant protection
- Fewer cold start-up problems and reduced wear
- Better protection of wet brakes and hydraulic components at elevated operating temperatures versus TO-4 10W oils

#### Year-round use provides increased efficiencies

- May eliminate seasonal oil changes for the Synthetic All Season
- Extends oil drains

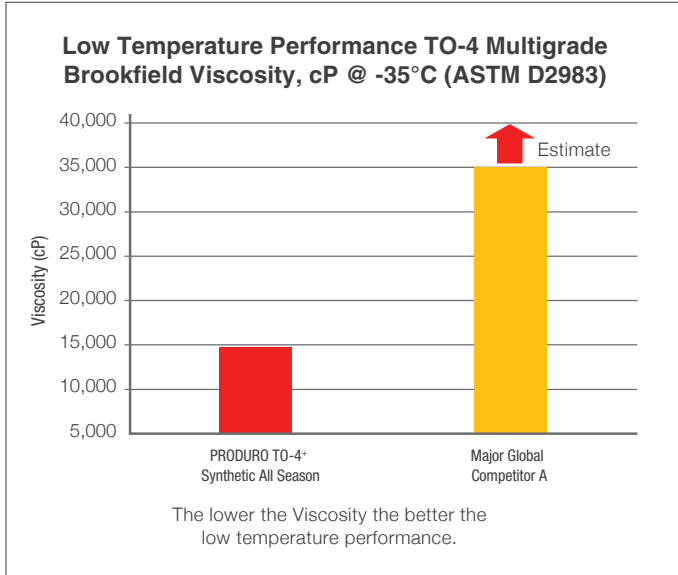
TO-4 Multigrade DKA Oxidation 170°C, 192 hrs, Viscosity, cSt Fresh and After Testing (CEC L-48-B-00)



Solid bars are Fresh Oil viscosity @ 100°C  
Hash marked bars are viscosities @ 100°C after the CEC L-48-B-00 testing

Petro-Canada lubricants, specialty fluids and greases have an advantage in quality and performance. That's because our formulas are created and reviewed by an expert team of Research & Development specialists who ensure our finished products deliver to the specifications we demand and the performance standards our customers need.

- May allow for product consolidation which results in reduced handling costs for Synthetic All Season



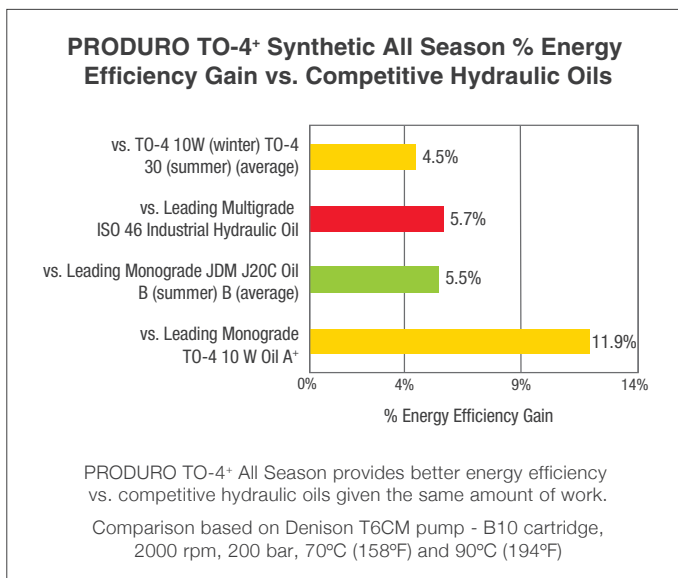
- Less downtime and better performance during the four seasons

**Premium additive package ensures peak performance**

- Carefully balanced lubricity and frictional properties optimize the operation of powershift clutches and wet brakes, eliminating brake chatter and clutch wear
- Minimal deposit build-up on clutch and transmission components
- Outstanding anti-wear protection for hydraulic pumps and transmission systems<sup>1</sup> versus TO-4 10W oils

**Extremely high after shear VI for increased pump efficiency in outdoor applications**

- Lower energy consumption for same amount of work or increased equipment productivity



**APPLICATIONS**

PRODURO™ TO-4+ Synthetic All Season and XL Synthetic Blend Low Temp is intended for use in Caterpillar off-highway vehicles and any mobile equipment where conventional motor oils are acceptable in hydraulics, transmissions, gears and wet brake applications. It is formulated to meet the Caterpillar TO-4 specification, Allison C-4 fluid requirements (obsolete), API Gear Lubricant Service GL-3 for manual transmissions and spiral bevel gears (inactive), API Category CD (obsolete) for diesel engine oils, Komatsu’s KES 07.868.1, ZF transmission oil specification TE-ML 03C (Syn All Season Only) and KOMATSU micro-clutch usage.

PRODURO TO-4+ Synthetic All Season and XL Synthetic Blend Low Temp transmission/drive train oils are recommended for the following Caterpillar or Komatsu vehicle systems:

- Powershift and Hydrostatic Transmissions<sup>1</sup>
- Wet Brake Mechanisms
- Differentials and Final Drives
- Hydraulics

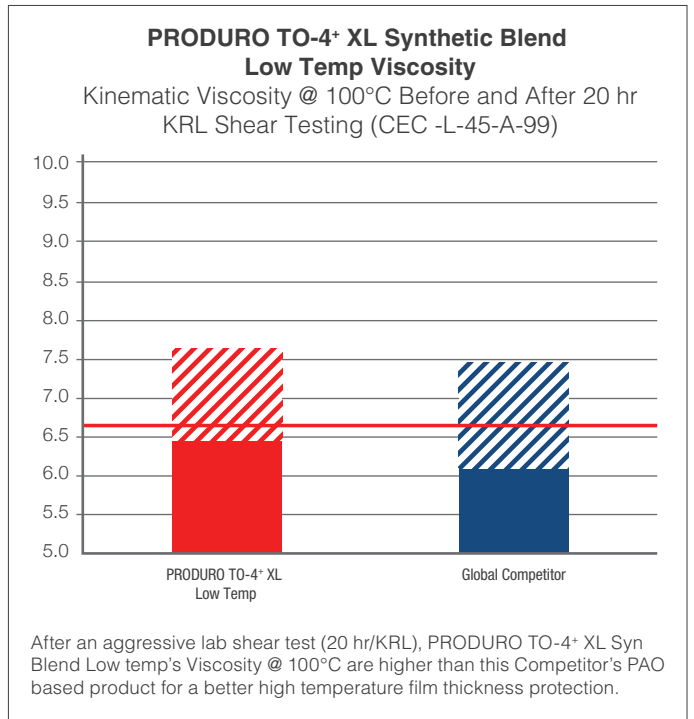
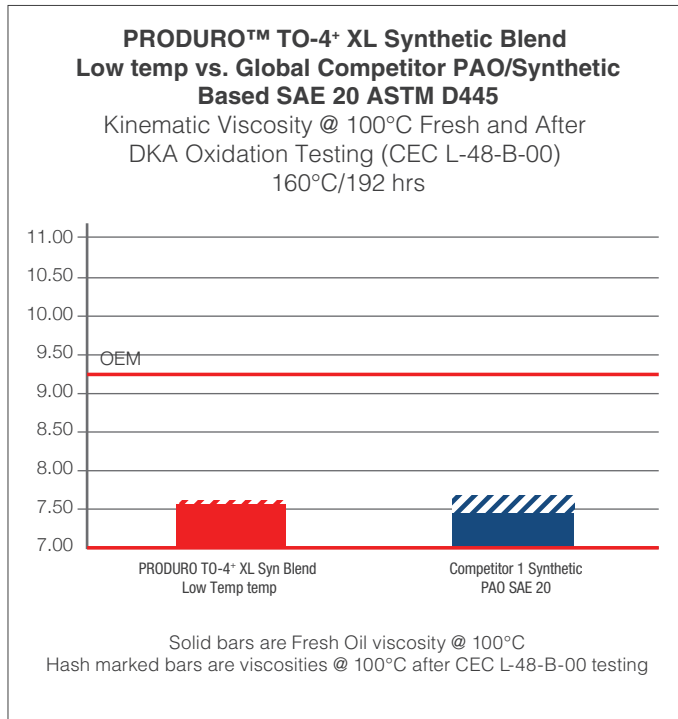
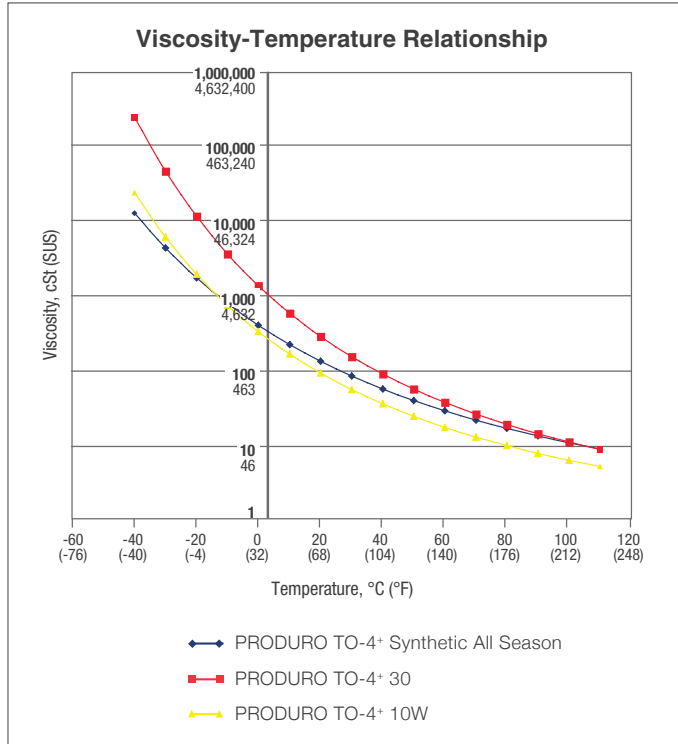
PRODURO™ TO-4+ Synthetic All Season is viscometrically equivalent to SAE 5W-30. It may be recommended for product consolidation of 10W and 30 single grades, reduced energy usage, and extend drain intervals versus conventional TO-4 products.

PRODURO TO-4+ XL Synthetic Blend Low Temp is a multigrade SAE 0W-20 TO-4 fluid for use at colder ambient temperatures. The exceptional low temperature flow characteristics of PRODURO TO-4+ XL Synthetic Blend Low Temp provide effective lubrication at temperatures down to -45°C / -49°F.

For components requiring a Caterpillar FD-1 oil, we recommend the PRODURO FD-1 product line. Consult the latest SEBU 6250 for applicable applications.

## VISCOSITY-TEMPERATURE RELATIONSHIP

Over a wide temperature range, the viscosity-temperature relationship demonstrates the advanced capability of the PRODURO TO-4+ Synthetic All Season at both very low and high temperatures versus SAE 10W and SAE 30 grades.



## GRADE SELECTION<sup>4</sup>

Application	PRODURO TO-4 <sup>+</sup>	
	XL LOW TEMP <sup>4</sup> °C (°F)	SYNTHETIC ALL SEASON °C (°F)
<sup>1</sup> Powershift Transmissions	-43 (-45) to +10 (+50)	-34 (-29) to +30 (+86)
<sup>1</sup> Hydrostatic Transmissions	-43 (-45) to +40 (+104)	-34 (-29) to +45 (+113)
<sup>2</sup> Final Drive On-Highway	-47 (-53) to 0 (+32)	-37 (-35) to +25 (+77)
<sup>3</sup> Final Drive Off-Highway	-47 (-53) to 0 (+32)	-37 (-35) to +15 (+59)
Hydraulics	-43 (-45) to +40 (+104)	-34 (-29) to +50 (+122)
Output Transfer Gears	-40 (-40) to -10 (+14)	-37 (-35) to +35 (+95)
Powershift Transmissions (797)	N/A	-34 (-29) to +30 (+86)
Hydraulic Systems (M Series Motor Graders)	-43 (-45) to +40 (+104)	-18 (0) to +25 (+77)
Track Roller Fram Recoil Spring/Pivot Shaft Bearing	-43 (-45) to +0 (+32)	-37 (-35) to +25 (+77)
Drive Axles (Small/Med)	-45 (-49) to +0 (+32)	-37 (-35) to +30 (+86)
Drive Axles (Large)	-45 (-49) to -10 (+14)	-37 (-35) to +15°C (+59)
Starting Engine Transmissions	-45 (-49) to +40 (+104)	-37 (-35) to +20 (+68)
Variable Pitch Fans	N/A	-34 (-29) to +20 (+68)
Backhoe Loaders (Rear Axles)	N/A	-37 (-35) to +30 (+86)

Note:

<sup>1</sup>Powershift and Hydrostatic transmissions applications may need higher viscosity fluids for added film thickness protection if used in continuous operation or under extreme heavy loading. Refer to SEBU 6250 (most recent) for further details.

<sup>2</sup>Wheeled vehicles (e.g. tractors, loaders, skidders).

<sup>3</sup>Tracked vehicles (e.g. tractors, pipelayers, skidders and loaders).

<sup>4</sup>Refer to "Caterpillar Machine Fluids Recommendations" - SEBU 6250 (most recent) for more specific information.

## TYPICAL PERFORMANCE DATA

Property	Test Method	PRODURO™ TO-4 <sup>+</sup>	
		XL LOW TEMP	SYNTHETIC ALL SEASON
Density @ 15°C, kg/l	D4052	0.852	0.860 (7.16)
Flash Point, °C (°F)	D92	209 (408)	222 (432)
Viscosity cSt @ 40°C (SUS @ 100°F)	D445	35.1 (177.8)	55.8 (132.4)
		cSt @ 100°C (SUS @ 210°F)	7.40 (50.9)
Viscosity Index	D2270	184	187
Brookfield Viscosity, cP @ °C (°F)	D2983	10,140 @ -40 (-40)	14,720 @ -35 (-31)
Cold Cranking Viscosity, cP @ °C (°F)	D5293	4,403 @ -35 (-31)	6,530 @ -30 (-22)
Borderline Pumping Viscosity cP @ °C (°F)	D4684	12,875 @ -40 (-40)	16,135 @ -35 (-31)
Pour Point, °C (°F)	D5950	-51 (-60)	-48 (-54)
Zinc, % wt	D4951	0.12	0.13
Calcium, % wt	D4951	0.30	0.31
Phosphorus, % wt	D4951	0.11	0.11
Sulfated Ash	D874	1.2	1.2
Foaming	D892	1	0/0
		2	40/0
		3	0/0
TBN	D2896	7.70	7.86

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

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Contact us: [lubecsr@hfsinclair.com](mailto:lubecsr@hfsinclair.com)

Committed to the disciplined operation of our business.



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