Petro-Canada

TechData

SENTRON™ Natural Gas Engine Oils

Introduction

Petro-Canada SENTRON™ natural gas engine oils (NGEO) are premium performance, long life engine oils specially formulated to lubricate natural gas engines and compressors. SENTRON's extended drain intervals can mean lower maintenance costs, less used oil to dispose of and a more efficient and profitable operation.

SENTRON's exceptional performance is especially important in the severe service conditions common in compression, power generation and combined heat and power applications. Its outstanding anti-wear protection helps to minimize polish and wear of cylinder liners and wear of piston rings, while helping to reduce carbon build-up.

That can mean:

- Longer service intervals
- Cleaner engines with less wear
- Less downtime
- Less backfiring
- Fewer service calls

SENTRON natural gas engine oils are formulated with Petro-Canada's ultra pure HT Severely Hydrocracked base oils and highly advanced additive technology to help deliver a combination of extended oil life, extended drain intervals and excellent control of engine deposits. Offering exceptional protection against wear and corrosion, SENTRON helps provide worry-free operation, increased engine durability and engine life, which can lead to a reduction in overall operating costs.

SENTRON natural gas engine oils span the typical levels of sulphated ash and SAE viscosity grades required by gas engine manufacturers. Moreover, they have a proven track record of successful use under a wide range of operating conditions.

Features and Benefits

- **Longer oil life provides long-lasting equipment protection**
  - Exceptional resistance to breakdown caused by oxidation and nitration.
  - Helps extend engine life by reducing varnish, sludge and carbon deposits.
  - Helps improve engine performance.
- **Extended drain interval can reduce maintenance and provide savings**
  - SENTRON LD 8000 has extended oil change intervals in Caterpillar engines by providing up to 300%* increase in oil life when compared to leading competitive conventional NGEOs. The extended drain interval helps to:
    - Reduce downtime and maximize production availability.
    - Lower operating costs by reducing maintenance costs.
- **Outstanding anti-wear/anti-scuff protection helps to:**
  - Control and minimize valve recession.
  - Reduce wear on piston rings, cylinder liners and bearings, prolonging engine life.
  - Reduce operating and maintenance costs.
- **Keeps engine parts clean by:**
  - Minimizing ring zone and valve stem deposits.
  - Minimizing port blockage in 2-cycle gas engines.
  - Improving engine lubrication by maintaining clean oil-ways.
  - Maximizing the time between major engine overhauls.
  - Preventing corrosion.
- **Extremely low oil volatility helps to:**
  - Improve work environment through absence of oil odour.
  - Minimize oil consumption.

What is the HT difference?

Petro-Canada 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.

Performance results may vary due to factors such as, but not limited to, engine optimization, load, fuel gas quality, proper maintenance, type of engine and application.

Applications

Petro-Canada SENTRON natural gas engine oils are premium performance engine oils specially formulated to lubricate industrial and mobile internal combustion engines running on natural gas. Specific SENTRON oils also meet the more severe operational needs of co-generation, biogas, sewage gas, coal bed methane and halogen landfill gas operations. SENTRON NGEOs can be used in reciprocating compressor crankcases where an OEM allows an SAE 40 oil. SENTRON can also be used in compressor lubricators.

Industry Classification		Petro-Canada SENTRON Natural Gas Engine Oils
Ash Category	Ash Content (wt % ash)	
Ashless	0.04	SENTRON ASHLESS 40
Low Ash	0.1-0.6	SENTRON LD 8000 SENTRON LD 5000 SENTRON LD 3000 SENTRON 590 SENTRON CG 40 PLUS SENTRON VTP 10W-40 SENTRON VTP 0W-30 SENTRON LD SYNTHETIC BLEND
Medium Ash	0.6-1.0	SENTRON CG 40 SENTRON MID ASH 40

SENTRON natural gas engine oils cover the three main levels of sulphated ash required by natural gas engine manufacturers:

Ashless

SENTRON ASHLESS 40 (0.04% wt ash) is recommended primarily for 2-stroke cycle gas engines but may be used in certain 4-stroke cycle gas engines. SENTRON ASHLESS 40 minimizes combustion chamber and spark plug deposits.

Low Ash

SENTRON LD 8000 (0.52% wt ash) is a premium low ash SAE 40 lubricant, suitable for use in 4–stroke engines operating on natural pipeline gas, pre-treated sewage/bio-gas and selective pre-treated process gases. It provides revolutionary performance of up to 300%* longer drain intervals over the leading global conventional competitor. SENTRON LD 8000 contains a specialized additive mix that provides greater TBN retention to help neutralize acids that can attack liner surfaces. SENTRON LD 8000 helps prevent deposits from ash and worn metal parts – deposits that could otherwise result in higher oil consumption.

SENTRON LD 5000 (0.57% wt ash) provides excellent performance for up to 200%* longer drain intervals and exceptional overall engine protection for maximum reliability and savings. Petro-Canada recommends its use in Caterpillar, Waukesha and other turbocharged or naturally aspirated, stoichiometric or lean burn engines that require a low ash natural gas engine oil. SENTRON LD 5000 helps provide reduced valve recession and controls wear of piston rings, cylinder liners and bearings for prolonged engine life vs. competitive oils.

SENTRON LD 3000 (0.47% wt ash) is recommended for most 4-stroke and some 2-stroke gas engines. It is suitable for use in engines fitted with catalytic converters. SENTRON LD 3000 helps provide a high level of performance in high output turbocharged engines that prefer a low ash oil. It provides excellent control of engine deposits, even when there is a need for added high temperature deposit control. It is suitable for severe service applications including high output, turbocharged engines that encounter high exhaust gas temperatures. The result can be significantly less valve sticking for reduced backfiring in these severe applications.

SENTRON 590 (0.59% wt ash) is recommended for most 4-stroke gas engines. It is suitable for use in engines fitted with catalytic converters. SENTRON 590 provides a high level of performance in high output turbocharged engines that prefer a low ash oil. It helps provide excellent control of engine deposits, and is specially formulated for engines that operate in severe nitrating conditions. Combined with Petro-Canada's engine optimization recommendations, and in severe nitrating conditions, SENTRON 590 can deliver up to 200%* longer drain intervals.

SENTRON CG 40 PLUS (0.52% wt ash) is a uniquely designed low ash formula for 4-stroke gas engines running in severe service landfill gas operations. It provides excellent control of deposits and other issues caused by high halogen gas levels produced by landfills. Unlike conventional landfill / biogas / sewer gas engine oils, SENTRON CG 40 PLUS is specifically designed to address current and future engines running in this severe contaminated gas application where higher BMEP engines are used.

SENTRON VTP 10W-40 (0.54% wt ash) is specially formulated to meet the demands of stationary natural gas engines for exceptional cleanliness of the engine through all seasons. It is recommended for use in natural gas fuelled engines that require high zinc for improved valve train wear while providing excellent cold start capability. SENTRON VTP 10W-40 is suitable for use in applications where Cummins CES 20074-2012 is specified.

SENTRON VTP 0W-30 (0.58% wt ash) is a low ash, synthetic blend NGEO formulated specifically as an all season solution for small to mid-sized engines that are difficult to start in severe winter conditions. With a Pour Point of -45°C SENTRON VTP 0W-30 helps provide exceptional performance in extreme winter conditions, presenting opportunities for inventory consolidation. Its excellent cleanliness and control of valve stem deposits offer potential for less downtime and longer service life.

SENTRON LD SYNTHETIC BLEND (0.51% wt ash) is a 15W-40 multigrade extension of the Sentron line, formulated as a synthetic blend to extend drain intervals and give better low temperature performance in comparison to mono-grade SAE 40's. SENTRON LD SYNTHETIC BLEND has low temperature starting capabilities down to -20°C. Field trial results have shown outstanding piston cleanliness which may result in longer equipment life and less downtime.

Medium Ash

SENTRON MID ASH 40 (0.80% wt ash) is recommended for use in high performance, 4-stroke cycle gas engines requiring a medium ash content.

SENTRON CG 40 (0.93% wt ash) is designed specifically for 4-stroke cycle gas engines running in severe service such as co-generation, sewage or sour gas or low halogen landfill gas operations. SENTRON CG 40 gives exceptional performance in turbocharged, naturally aspirated rich and lean burn gas engines as well. As it contains low levels of phosphorus and zinc, it may be suitable for use in engines equipped with certain catalytic converters. Check with your Technical Services Advisor for suitability.

*Performance results may vary due to factors such as, but not limited to, engine optimization, load, fuel gas quality, proper maintenance, type of engine and application.

Petro-Canada Gas Engine Oils Selection Table*

MANUFACTURER	ENGINE TYPE	FUEL GAS	ENGINE Model	MANUFACTURER'S ASH LEVEL REQUIREMENTS	RECOMMENDATIONS
Ajax (Cooper Energy Service)	2-stroke cycle	natural	All - Ashless preferred	<0.1%	SENTRON ASHLESS 40
Cooper Bessemer	2-stroke cycle	natural	All - Ashless preferred	<0.1%	SENTRON ASHLESS 40
(Cooper Energy Service)	4-stroke cycle	natural	All	Low Ash Acceptable	SENTRON LD 3000, 590, LD 5000, LD 8000
Caterpillar	4-stroke cycle	natural	G3300, G3400, G3500,G3600	0.4% - 0.6%	SENTRON LD 3000, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		biogas	All	0.4% - 0.6%	SENTRON LD 5000, LD 8000, 40 PLUS
Superior	4-stroke cycle	natural	All except 1700 & 2400	0.4% - 1.0%	SENTRON LD 3000, MID ASH 40, LD 5000, LD 8000, 590
(Cooper Energy Service)		natural	1700 & 2400 Series	0.4% - 0.6%	SENTRON LD 3000, LD 5000, 590, LD 8000, SYNTHETIC BLEND
Superior (White)	4-stroke cycle	natural	G825	0.4% - 1.0%	SENTRON LD 3000, LD 5000, LD 8000, ASH 40
		natural	GT825	0.4% - 1.0%	SENTRON MID ASH 40, CG 40
Clark Brothers	2-stroke cycle	natural	All	Ashless	SENTRON ASHLESS 40
(Dresser Rand)				Low Ash Acceptable	SENTRON LD 3000, LD 8000
Cummins	4-stroke cycle	natural	L10G, QSK19G, K19G, G19, G38, G50, G28, G855, G14	<0.6%	SENTRON LD 5000, LD 8000, LD SYNTHETIC BLEND
		natural	B, C, G5.9, G8.3	Suitable for CES 20074	SENTRON VTP 10W-40
		natural	All QSV, QSK except 19G	0.4% - 0.6%	SENTRON LD 3000, LD 8000
		natural	All QSV, QSK except 19G	0.4% - 0.6%	SENTRON LD 5000
Detroit Diesel	4-stroke cycle	natural	50G and 60G	<0.8%	SENTRON LD SYNTHETIC BLEND
MWM	4-stroke cycle	natural	All	0.5% max	SENTRON LD 5000, LD 3000, LD 8000
		biogas	All	0.5% - 1.0%	SENTRON CG 40, CG 40 PLUS
Guascor	4-stroke cycle	natural	All	0.9% max	SENTRON LD 3000, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
Iveco	4-stroke cycle	natural	All	0.45% max	SENTRON LD 3000
Ingersoll-Rand (Dresser Ind.)	4-stroke cycle	natural	Category I	Approval based on field performance	SENTRON ASHLESS 40, LD 3000, LD 5000, LD 8000, LD SYNTHETIC BLEND
		natural	Category II - III	Approval based on field performance	SENTRON LD 3000, LD 5000, LD 8000, LD SYNTHETIC BLEND
GE Jenbacher	4-stroke cycle	Class A	2&3	0.4% - 0.6%	SENTRON LD 5000, LD 3000, LD 8000
		Class A	4 (B version or lower) & 6 (E version or older) & 9	0.4% - 0.6%	SENTRON LD 5000, LD 3000, LD 8000
		Class A	6F (or newer) 4 (C version or higher)	0.4% - 0.6%	SENTRON LD 5000, LD 8000
		Class B	2&3	0.4% - 0.6%	SENTRON CG 40, CG 40 PLUS
		Class B	4 & 6 (E version or older)	0.4% - 0.6%	SENTRON LD 5000, LD 3000, LD 8000, CG 40 PLUS
		Class C	2&3	0.4% - 0.6%	SENTRON CG 40, CG 40 PLUS
		Class C	4 & 6 (E version or older)	0.4% - 0.6%	SENTRON CG 40 PLUS
M.E.P., Fairbanks Morse	2-stroke cycle	natural	All	0.2% - 0.5%	SENTRON LD 3000, LD 5000, LD 8000, LD SYNTHETIC BLEND
	4-stroke cycle	natural			
MAN	4-stroke cycle	natural	All	0.4% - 0.7%	SENTRON LD 3000, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		biogas	All	0.4% - 1.0%	SENTRON CG 40, CG 40 PLUS
Perkins	4-stroke cycle	natural	All	0.5% min - 1.0% max	SENTRON LD 3000, LD 5000, LD 8000, 590, CG 40 PLUS
RRMEB	4-stroke cycle	natural	All	0.4% - 0.6%	SENTRON LD 3000, LD 5000, LD 8000
Wärtsilä	4-stroke cycle	natural & periodic LFO	150SG, 175SG, 220SG,	0.6% max 25SG, 28SG, 34SG, 32DF, 34DF, 50DF	SENTRON LD 3000, LD 5000, LD 8000, 590
Waukesha Engine Div. (Dresser Ind.)	4-stroke cycle	natural	VSG F11, G, GSI, GSID	0.35% - 1.0%	SENTRON LD 3000, CG 40 PLUS, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		natural	F817, F1197	0.35% - 1.0%	SENTRON LD 3000, CG 40 PLUS, LD SYNTHETIC BLEND, LD 5000, LD 8000, 590
		natural	Clinton, G2476, L3711, F1850, H884	Ashless preferred	SENTRON ASHLESS 40
		natural	VHP F2895, F3521, L5108, L5790, L7042, P9390, G, GSI	0.35% -1.0%	SENTRON LD 3000, CG 40 PLUS, LD 5000, LD 8000 590, LD SYNTHETIC BLEND
		natural	VHP GL	0.35% -1.0%[1]	SENTRON LD SYNTHETIC BLEND, LD 5000[2], LD 3000, LD 8000
		natural	VGF, F-18, H-24, L-36, P-48, GSI, GSID	0.35% -0.5%[1]	SENTRON LD 3000
		natural	VGF, F-18, H-24, L-36, P-48, G, GL, GLD	0.45% - 0.75%[1]	SENTRON LD 3000, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		natural	AT 25/27GL Series	0.35% -1.0%[1]	SENTRON LD 3000, CG 40 PLUS, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		natural	VHP F3524, L5794, L7044 GSI, L5774, LT (4 series)	0.45% - 0.75%[1]	SENTRON LD 3000, LD 5000, LD 8000, 590, LD SYNTHETIC BLEND
		natural	16V150LTD, 220GL	0.40% - 0.55%	SENTRON LD 3000, LD 5000, LD 8000
MTU	4-stroke cycle	natural	MTU 400/4000 28XX & 30XX	0.4% - 0.6%	SENTRON LD 5000, LD 8000
		biogas	MTU 400/4000 28XX & 30XX	0.4% - 0.6%	SENTRON CG 40, CG 40 PLUS
GM	4-stroke cycle	natural	350	n/a	SENTRON VTP 10W-40, 0W-30
BU Drive	4-stroke cycle	natural	All	n/a	SENTRON LD 5000, LD 8000
		biogas	All	n/a	SENTRON LD 5000, LD 8000, CG 40 PLUS
Schnell	4-stroke cycle	biogas	All	0.4% - 0.6%	SENTRON LD 5000, LD 8000, CG 40 PLUS

[1]0.1% Zn max. is recommended
[2]SENTRON LD 5000 should only be used in high load applications when using VHP GL Type engine
* The above table can be used as a guideline for product selection. Each natural gas engine can have unique characteristics and variations in operating parameters, and therefore, it is recommended to consult with Petro-Canada Technical Services Advisor to ensure the most appropiate lubricant selection is made.

Operational Considerations

SENTRON natural gas engine oil with extended drain interval and oil life as well as excellent control of engine deposits and wear help provide worry-free operation and reduced cost to customers under normal recommended conditions. However, actual oil life is dependent upon system design and operating practices, and should be established by used oil analysis, according to engine manufacturers' recommendations. Petro-Canada's No-Nonsense Lubricants Warranty applies.

Typical Performance Data

PROPERTY	ASTM TEST METHOD	PETRO-CANADA NATURAL GAS ENGINE OILS										
		SENTRON MID ASH 40	SENTRON CG 40	SENTRON LD 8000	SENTRON LD 5000	SENTRON LD 3000	SENTRON LD SYNTHETIC BLEND	SENTRON VTP 10W-40	SENTRON VTP 0W-30	SENTRON 590	SENTRON CG 40 PLUS	SENTRON ASHLESS 40
Ash Type	-	Medium Ash	Medium Ash	Low Ash	Low Ash	Low Ash	Low Ash	Low Ash	Low Ash	Low Ash	Low Ash	Ashless
Sulphated Ash, % wt	D874	0.80	0.93	0.52	0.57	0.47	0.51	0.54	0.58	0.58	0.52	0.04
SAE Grade	-	40	40	40	40	40	15W-40	10W-40	0W-30	40	40	40
Flash Point, COC, °C / °F	D92	269/516	273/524	277/531	272/522	273/524	247/477	245/473	239/462	277/531	283/541	279/534
Kinematic Viscosity	D445											
cSt @ 40°C/SUS @ 100°F		126/582	123/570	121/559	124/575	124/575	106/491	101/469	62.1/289	121/249	118/550	124/631
cSt @ 100°C/SUS @ 210°F		13.9/73.4	13.6/72.1	13.3/71.1	13.4/71.4	13.7/72.5	15.6/79.6	15.1/78.7	11.2/63.4	13.5/72	13.4/71.5	13.7/73
Pour Point, °C / °F	D5950	-33/-27	-27/-17	-27/-17	-30/-22	-27/-17	-42/-44	-42/-44	-45/-49	-30/-22	-27/-17	-24/-11
Total Acid Number	D664	2.0	0.58	0.86	1.1	0.86	1.02	1.9	1.8	0.98	1.53	0.7
Total Base Number	D2896	6.9	8.1	4.6	4.9	3.9	4.7	3.9	4.8	6.0	4.5	1.6

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

Health and Safety

To obtain Material Safety Data Sheets (MSDS), contact one of our TechData Info Lines.

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ISO 9001
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TechData Info Lines

To place an order, please call a Customer Order Management Representative at :

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You can also e-mail us at lubecsr@suncor.com

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North America . . . . . Phone 1-866-335-3369
Europe . . . . . Phone +44 (0) 121-781-7264
Germany . . . . . Phone +49 (0) 201-726-2913
Latin America . . . . . Phone +1-416-730-2369
Asia . . . . . Phone +1-416-730-2372
China . . . . . Phone +86 (21) 6362-0066
E-mail . . . . . sales@suncor.com

Visit us on the web at lubricants.petro-canada.ca

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