HOW DO YOU BRING OUTSTANDING PERFORMANCE TO YOUR GAS ENGINES?

THE TECHNOLOGY INSIDE

IT’S MORE THAN JUST OIL. IT’S LIQUID ENGINEERING.
CASTROL SOLUTIONS BUILT ON MORE THAN 100 YEARS OF LUBRICANT EXPERTISE ACROSS THE MARINE, INDUSTRIAL AND AUTOMOTIVE INDUSTRIES, CASTROL HAS CREATED THE NEXT GENERATION OF GAS ENGINE OILS. EVOLVED THROUGH INTENSIVE RESEARCH AND DEVELOPMENT, EVERY PRODUCT IS DESIGNED TO DELIVER EXCEPTIONAL RELIABILITY AND FUTURE-PROOF PERFORMANCE.

> **CASTROL DURATEC L**
Quality mineral oil based general purpose lubricant.
**Applications:** a premium low ash gas engine oil for natural gas, mine gas, digester and landfill gas applications.

> **CASTROL DURATEC M**
Quality mineral oil based lubricant.
**Applications:** a premium medium ash product for digester and landfill gas applications. Also suitable for natural and mine gas applications requiring a medium ash product.

> **CASTROL DURATEC MX**
Quality mineral oil based lubricant.
**Applications:** a premium medium ash, zinc free product for severe digester and landfill gas applications.

> **CASTROL DURATEC HPL**
High performance lubricant based on highly refined mineral oils.
**Applications:** a high performance, low ash product for highly demanding, modern applications running on natural and mine gases, digester and landfill gases.

> **CASTROL DURATEC XPL**
Ultra high performance, fully synthetic lubricant.
**Applications:** a fully synthetic, low ash product for ultimate performance in natural gas and mine gas applications.

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KEEPING THE POWER ON

+ IN ALL KINDS OF INDUSTRIES AND BUSINESSES, THE POWER GENERATED BY GAS ENGINES IS OFTEN CRITICAL, ESPECIALLY IN REMOTE AND OFF-GRID LOCATIONS

+ MODERN GAS ENGINES MUST ACHIEVE VERY HIGH LEVELS OF EFFICIENCY, WITH MINIMAL DOWNTIME

+ USERS DEMAND NEAR-PERFECT RELIABILITY, MINIMAL MAINTENANCE, ECONOMICAL OPERATION AND MAXIMUM EFFICIENCY
# CASTROL DURATEC L

**DESCRIPTION** – SAE 40 MINERAL OIL LOW ASH – BN 5  
**ENGINEERED FOR:** NATURAL GAS | MINER GAS | LANDFILL GAS

Premium quality low-ash gas engine oil. Formulated using carefully selected performance additives and high-quality base oils to give high levels of engine cleanliness and protection from wear and corrosion.

## TYPICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>VISCOSITY AT 40°C</th>
<th>VISCOSITY AT 100°C</th>
<th>BASE NUMBER</th>
<th>SULPHATED ASH</th>
<th>SAE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 mm²/s</td>
<td>13.0 mm²/s</td>
<td>5 mg KOH/g</td>
<td>0.45% mass</td>
<td>40</td>
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</tbody>
</table>

**APPROVALS:** GE JENBACHER, MMM (DEUTZ), WÄRTSILÄ, MTU ONSITE ENERGY, ROLLS ROYCE

**MEETS REQUIREMENTS OF:** WAUKESHA, CATERPILLAR

## FEATURES

- High thermal and oxidative stability
- Cleaner burning in combustion chamber
- Excellent antirust characteristics

## CUSTOMER BENEFITS

- Helps keep engines clean and can reduce component wear and life
- Controls deposits to give increased cylinder head and exhaust valve life
- Reduced small and bearing and piston ring wear, helping to extend key component life and reduce the risk of breakdown

## CORE ADVANTAGES

- High thermal stability and resistance to oxidation through careful selection of additives and base oils
- Low component wear, provided by a highly effective antiwear additive system
- Cleaner engine components with reduced combustion chamber deposits, through use of highly efficient detergent and dispersant additives

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# CASTROL DURATEC M

**DESCRIPTION** – SAE 40 MINERAL OIL MEDIUM ASH – BN 7.5  
**ENGINEERED FOR:** NATURAL GAS | MINER GAS | DIGESTER GAS | LANDFILL GAS

Premium quality medium-ash gas engine oil. Formulated using carefully selected performance additives and high-quality base oils to give high levels of engine cleanliness and protection from wear and corrosion.

## TYPICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>VISCOSITY AT 40°C</th>
<th>VISCOSITY AT 100°C</th>
<th>BASE NUMBER</th>
<th>SULPHATED ASH</th>
<th>SAE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 mm²/s</td>
<td>13.0 mm²/s</td>
<td>5 mg KOH/g</td>
<td>0.75% mass</td>
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**APPROVALS:** GE JENBACHER, MMM (DEUTZ), WÄRTSILÄ, MTU ONSITE ENERGY, ROLLS ROYCE

**MEETS REQUIREMENTS OF:** WAUKESHA, CATERPILLAR

## FEATURES

- High thermal and oxidative stability
- Cleaner burning in combustion chamber
- Excellent antirust characteristics

## CUSTOMER BENEFITS

- Helps keep engines clean and can reduce component wear and life
- Controls deposits to give increased cylinder head and exhaust valve life
- Reduced small and bearing and piston ring wear, helping to extend key component life and reduce the risk of breakdown

## CORE ADVANTAGES

- High thermal stability and resistance to oxidation through careful selection of additives and base oils
- Low component wear, provided by a highly effective antiwear additive system
- Cleaner engine components with reduced combustion chamber deposits, through use of highly efficient detergent and dispersant additives

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*See detailed approval sheet*
CASTROL DURATEC HPL

**DESCRIPTION** – SAE 40 HIGHLY REFINED MINERAL OIL LOW ASH – BN 5

ENGINEERED FOR: NATURAL GAS | MINE GAS | LANDFILL GAS | DIGESTER GAS

A low ash, high performance gas engine oil, formulated with highly refined base oils and carefully selected high performance additives. Castrol Duratec HPL is optimised for use in modern gas engines with high mean effective cylinder pressures. It offers an effective alternative to synthetic oils for economical operation in highly demanding applications. The combination of a carefully selected, advanced additive system with highly refined base oils gives a product with high resistance to thermal breakdown. As a result, the operator can expect longer oil lifetimes without the black sludge deposits caused by oxidation and nitration of the oil, a common sight on cylinder head top decks.

**TYPICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>VISCOSITY AT 40°C</th>
<th>VISCOSITY AT 100°C</th>
<th>BASE NUMBER</th>
<th>SULPHATED ASH</th>
<th>SAE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 mm²/s</td>
<td>13.0 mm²/s</td>
<td>5 mg KOH/g</td>
<td>0.45% mass</td>
<td>40</td>
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</tbody>
</table>

**APPROVALS:** MTU ONSITE ENERGY, MAN MEETS REQUIREMENTS OF: WAUKESHA

**FEATURES**

- Exceptional anti-corrosion performance to protect engine from byproducts of acidic fuel gas combustion
- Highly effective detergent/dispersant system to give outstanding engine cleanliness
- High alkaline reserve to effectively neutralise acidic fuel gas combustion by-products

**CUSTOMER BENEFITS**

- Exceptional thermal stability & resistance to oxidation, giving longer oil life to reduce operating costs and provide cleaner engines through superior resistance to oxidation and nitration
- High savings potential compared to synthetic products
- Effective detergency, leading to superior deposit control and potentially increasing spark plug life time
- Low volatility base oils, reducing oil consumption and overall cost of operation

**CASTROL DURATEC Mx**

**DESCRIPTION** – SAE 40 MINERAL OIL MEDIUM ASH – BN 7.5

ENGINEERED FOR: DIGESTER GAS | LANDFILL GAS

Premium medium ash, zinc-free gas engine oil, formulated for use with landfill, sewage and digester gases. Effective acid neutralisation and very high protection against corrosion, provided by a carefully balanced selection of additives and high-quality base oils. Ensures outstanding engine cleanliness, superior corrosion protection and excellent control of wear.

**TYPICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>VISCOSITY AT 40°C</th>
<th>VISCOSITY AT 100°C</th>
<th>BASE NUMBER</th>
<th>SULPHATED ASH</th>
<th>SAE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 mm²/s</td>
<td>13.0 mm²/s</td>
<td>7.5 mg KOH/g</td>
<td>0.75% mass</td>
<td>40</td>
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**APPROVALS:** GE JENBACHER, MAN NUTZFahrZEUGE

**EXPERIENCE WITH:** CATERPILLAR

**CORE ADVANTAGES**

- Exceptional anti-corrosion performance to protect engine from byproducts of acidic fuel gas combustion
- Highly effective detergent/dispersant system to give outstanding engine cleanliness
- High alkaline reserve to effectively neutralise acidic fuel gas combustion by-products

**FEATURES**

- Medium ash: Helps control valve recession / for use in engines where OEM specifies a medium ash product
- High thermal and oxidative stability: Promotes high standard of engine cleanliness and reduces component wear
- Cleaner burning in combustion chamber: Controls deposits to give increased cylinder head and exhaust valve life
- Excellent antitrust characteristics: Reduced small end bearing and piston ring wear
- Higher TBN: Provides superior protection when operating with aggressive fuel gases
- Specifically formulated for use with aggressive fuel gases: Maximum protection for all components from acids and contaminants formed during combustion of landfill and bio gases

**CUSTOMER BENEFITS**

- Medium ash: Helps control valve recession / for use in engines where OEM specifies a medium ash product
- High thermal and oxidative stability: Promotes high standard of engine cleanliness and reduces component wear
- Cleaner burning in combustion chamber: Controls deposits to give increased cylinder head and exhaust valve life
- Excellent antitrust characteristics: Reduced small end bearing and piston ring wear
- Higher TBN: Provides superior protection when operating with aggressive fuel gases
- Specifically formulated for use with aggressive fuel gases: Maximum protection for all components from acids and contaminants formed during combustion of landfill and bio gases

**CASTROL IN ACTION:** PISTON PERFORMANCE (5,000 HOURS BIOGAS INSPECTION USING DURATEC Mx)

- Demonstrates: Outstanding protection of engine components from the corrosive by-products of landfill gas combustion. Excellent control of combustion chamber deposits and valve recession

**CASTROL IN ACTION:** SIGNIFICANTLY LESS DEPOSITS UNDER TESTING

- Demonstrates: In testing Duratec HPL exhibited no detectable deposits of oxidation leaving a clean surface, whereas the competitor exhibited many deposits, leaving an unclean surface.*

*Panel coker test (FTM 6462) – for more information, please contact your local Castrol representative
CASTROL DURATEC XPL

DESCRIPTION – SAE 40 FULLY SYNTHETIC OIL LOW ASH – BN 4.9
ENGINEERED FOR: NATURAL GAS | MINE GAS

A low ash, fully synthetic formula, Castrol Duratec XPL delivers outstanding performance at high thermal loads. Special additives and fully synthetic base oils ensure reliable, low maintenance operation. Castrol Duratec XPL can deliver exceptionally high standards of combustion chamber cleanliness and extended oil lifetimes with excellent control of wear in the most demanding modern natural gas applications.

CASTROL DURATEC XPL CAN POTENTIALLY PROVIDE OPERATORS WITH SIGNIFICANT COST SAVINGS THROUGH INCREASED OIL CHANGE INTERVALS AND EXTENDED COMPONENT LIFE.

TYPICAL CHARACTERISTICS

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<th>SULPHATED ASH</th>
<th>SAE CLASS</th>
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<tr>
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<td>14 mm²/s</td>
<td>4.9 mg KOH/g</td>
<td>0.45% mass</td>
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APPROVALS: MWM (DEUTZ), MTU ONSITE ENERGY, MAN NUTZFAHRZEUGE

CASTROL IN ACTION “SIGNIFICANT BENEFITS FOR CASTROL DURATEC XPL OVER ITS COMPETITORS”

Evaluations of comparable field tests by different manufacturers show significant benefits for Castrol Duratec XPL in comparison to other synthetic gas engine oils. The main benefits are to the oxidation stability and stability of the alkaline reserve.

CORE ADVANTAGES

- Very high thermal stability and resistance to oxidation, giving cleaner engines and longer oil life times
- Advanced additive and base oil technology, giving lower engine component wear rates
- Reduced operating costs through increased oil change intervals and extended component lifetimes

LPG carried out a 12 month evaluation with Castrol Duratec MX gas engine oil on two G3516 Caterpillar generators running on landfill gas, one recently overhauled and the other with over 40,000 running hours. Both were monitored and compared with two other 3516 Caterpillar generators at the same location and similar running hours.

Approx. 8,000 hours of running time, operating on natural gas with Castrol Duratec XPL in two cylinder units of a MAN E2876 E302 engine.

All components almost wear-free, as well as free of oil “varnishing” and show only light traces of deposits from the combustion process.

It was found that the Duratec MX performed well and to our expectations in terms of oil usage and oil life. We were impressed with the professional service offered by Castrol in terms of the technical knowledge, interpretation of the oil analysis report and after sales service. LPG has now converted all our fleet to Duratec MX.”

Dave Veaney, Manager, Generation