

## 15w-40 CJ-4 Product Comparison

	Service Pro Premium Syn Blend CJ-4	Service Pro Premium CJ-4	Shell Rotella T CJ-4	Shell Rimula Super CJ-4	Chevron 400 LE CJ-4
<u>Performance Benefits:</u>					
Meets/Exceeds API CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4/SM, SL, SJ	X	X	X	X	X
Low Sulfur and Ultra Low Sulfur Fuel Compatible	X	X	X	X	X
Extends Life of New and Older Engines	X	X	X	X	X
Performance Qualified By Severe Engine Testing	X	X	X	X	X
Enhances Emission Control System Life	X	X	X	X	X
Provides Deposit, Corrosion and Wear Control	X	X	X	X	X
High TBN Supports Longer Drain Interval Capability	X	X	X	X	X
Fortified With Advanced Detergent/Dispersent Additives	X	X	X	X	X
<u>Latest Specifications and Approvals:</u>					
ACEA E7	X	X	X	X	X
Caterpillar ECF-1,ECF-2,ECF-3	X	X	X	X	X
Cummins CES 20081	X	X	X	X	X
Detroit Diesel 93K218	X	X	X	X	X
Mack EO-O Premium Plus '07	X	X	X	X	X
MAN M3275	X	X	X	X	X
Mercedes Benz 228.3	X	X	X	X	X
MTU Type 2	X	X	X	X	X
Volvo VDS-4	X	X	X	X	X
<u>Typical Physical Characteristics:</u>					
Viscosity @ 40 C, cSt	115	118.2	120	118	125
Viscosity @ 100 C, cSt	15.5	15.4	15.5	15.5	15.7
Viscosity Index	142	130	135	139	131
Pour Point, F	-49	-36	-40	-25	-22
Flash Point, COC, F, min	460	460	400	400	399
Neutralization No., TBN	10	10	10.1	10.6	9.6
Sulfated Ash, % wt	<1.0	1.0	1.0 max	1.0 max	1.0
<b>High Quality, Cost Effective Brand?</b>	<b>X</b>	<b>X</b>			

# SERVICE PRO™

Premium Lubricants

## SERVICE PRO® PREMIUM SYNTHETIC BLEND 15W40 CJ-4 ENGINE OIL

**DESCRIPTION:** SERVICE PRO® Premium 15W0 CJ-4 Synthetic Blend Engine Oil – CJ-4 represents the highest level of engine protection and performance ever built into a new lubricant specification. It was designed for all diesel engine applications, including today's emission controlled engines with EGR and diesel particulate filters using Ultra-Low Sulfur Diesel fuel (<15 PPM Sulfur) (ULSD) and Low Sulfur Diesel (LSD). It is formulated with a blend of synthetic and conventional base oils to provide improved wear protection, deposit and oil consumption control, soot-related viscosity control, prevention of viscosity loss from shearing, used oil low-temperature pumpability and protection from thermal and oxidative breakdown. It also contains a sophisticated additive system that is specifically designed to improve the protection of advanced emission control systems such as diesel particulate filters. It is suitable for use in almost all foreign and domestic diesel engines for both the latest 2007 emission compliant and older engines. Always consult your owner's manual for proper application.

**APPLICATIONS:** SERVICE PRO® Premium 15W-40 CJ-4 Synthetic Blend Engine Oil meets API Service Classification CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH. It has received OEM Approvals for Mack EO-O Premium Plus 07, Volvo VDS-4, DDC Power Guard Oil Specification 93K218, Cummins CES 20081, Renault RLD-3, ACEA E7-04. It is recommended for Caterpillar ECF-1, ECF-2, ECF-3, 20077, 20076, Mack EO-N Premium Plus 03, Mack EO-N Premium Plus, EO-M Plus, EO-M, Mercedes Benz 228.3, Man 3275, DDC/MTU Series 2000/4000 category 1 and 2 engine performance, Volvo VDS-3, DHD-1, ACEA E5 and E3, JASO DH-2.. It can also be used in applications recommending Allison C-4 and Caterpillar TO-2 specifications.

- BENEFITS:**
- Excellent soot-viscosity control
  - Outstanding oxidation stability
  - Synthetic Blend Formulation
  - Universal product for mixed fleet operations
  - Minimizes valve train wear
  - Excellent low temperature properties helps speed cold starts

### TYPICAL PROPERTIES:

## SERVICE PRO® PREMIUM SYNTHETIC BLEND 15W-40 CJ-4

SAE Grade	15W-40
API CJ-4, CI-4 PLUS, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH	X
Caterpillar ECF-1, ECF-2, ECF-3	X
Cummins CES 20081, 20077, 20076	X
Mack EO-O Premium Plus 07, Mack EO-N Premium Plus 03, EO-N Premium Plus, EO-M Plus, EO-M	X
Mercedes Benz 228.3	X
MAN 3275	X
DHD-1, ACEA E7 and E5	X
Volvo VDS-4, VDS-3	X
DDC Power Guard 93 K218	X
DDC/MTU Series 2000/4000 1 and 2 engine performance	X
Allison C-4	X
Global DHD-1	X
JASO DH-2	X
Renault RLD-3	X
<b>Product Data</b>	<b>Test Method</b>
@ 40° C, cST	D445
@ 100°C, cST	D445
Viscosity Index	D2270
Pour Point °C (°F)	D97
Flash Point °C (°F)	D92
Neutralization No., TBN-E	D2896
Sulfated Ash, wt.%	D874
Cold Crank Simulator, cP	D5293
Mini-Rotary Viscometer TP1, cP	D4684
	<b>Typical</b>
	115
	15.5
	142
	-45 (-49)
	238 (460)
	10
	<1.0
	6210/-20°C
	19700/-25°C

Updated: 2/08

SPWN1540SYNB



# SERVICE PRO™

Premium Lubricants

## SERVICE PRO® PREMIUM HEAVY DUTY 15W40 CJ-4 ENGINE OIL

**DESCRIPTION:** SERVICE PRO® Premium Heavy Duty Engine Oil CJ-4 represents the highest level of engine protection and performance ever built into a new lubricant specification. It was designed for all diesel engine applications, including today's emission controlled engines with EGR and diesel particulate filters using Ultra-Low Sulfur Diesel fuel (<15 PPM Sulfur) (ULSD) and Low Sulfur Diesel (LSD). It is formulated to provide improved wear protection, deposit and oil consumption control, soot-related viscosity control, prevention of viscosity loss from shearing, used oil low-temperature pumpability and protection from thermal and oxidative breakdown. It also contains a sophisticated additive system that is specifically designed to improve the protection of advanced emission control systems such as diesel particulate filters. It is suitable for use in almost all foreign and domestic diesel engines for both the latest 2007 emission compliant and older engines. Always consult your owner's manual for proper application.

**APPLICATIONS:** SERVICE PRO® Premium Heavy Duty CJ-4 Engine Oil meets API Service Classification CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH. This is recommended for Caterpillar ECF-2, ECF-3, Cummins CES 20081, 20077, 20076, Mack EO-O Premium Plus 07, Mack EO-N Premium Plus 03, Mack EO-N Premium Plus, EO-M Plus, EO-M, Mercedes Benz 228.3, Man 3275, Volvo VDS-4, VDS-3, DDC Power Guard Oil Specification 93K218, DDC/MTU Series 2000/4000 category 1 and 2 engine performance, DHD-1, ACEA E5 and E3, JASO DH-2. Renault RLD. It can also be used in applications recommending Allison C-4.

- PERFORMANCE BENEFITS:**
- Excellent soot-viscosity control
  - Minimizes valve train wear
  - Outstanding oxidation stability
  - Excellent low temperature properties helps speed cold starts
  - Universal product for mixed fleet operations

### TYPICAL PROPERTIES:

## SERVICE PRO® PREMIUM HEAVY DUTY 15W40 CJ-4 ENGINE OIL

SAE Grade	15W-40	Global DHD-1		
API CJ-4, CI-4 PLUS, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH	X	Global DHD-1		X
Caterpillar ECF-2, ECF-3	X	JASO DH-2		X
Cummins CES 20081, 20077, 20076	X	Renault RLD-3		X
Mack EO-O Premium Plus 07, Mack EO-N Premium Plus 03, EO-N Premium Plus, EO-M Plus, EO-M	X	<b>Product Data</b>	<b>Test Method</b>	<b>Typical</b>
Mercedes Benz 228.3	X	@ 40° C, cST	D445	118.2
MAN 3275	X	@ 100°C, cST	D445	15.4
DHD-1, ACEA E7 and E5	X	Viscosity Index	D2270	130
Volvo VDS-4, VDS-3	X	Pour Point °C (°F)	D97	-36 (-33)
DDC Power Guard 93 K218	X	Flash Point °C (°F)	D92	238 (460)
DDC/MTU Series 2000/4000 1 and 2 engine performance	X	Neutralization No., TBN-E	D2896	10
Allison C-4	X	Sulfated Ash, wt.%	D874	1.0
		Cold Crank Simulator, cP	D5293	6620/-20°C
		Mini-Rotary Viscometer TP1, cP	D4684	23700/-25°C

Updated: 5/07

SPWN1540CJ





# Shell Rotella® T Multigrade

## Heavy duty motor oil with Triple Protection™ technology

Shell Rotella® T motor oil with Triple Protection™ technology is a unique, latest generation premium heavy-duty motor oil that meets or exceeds the service requirements of virtually all diesel engine manufacturers – for both the latest 2007-emission compliant and older engines. It is suitable especially for virtually all on-highway service applications, and is also suitable for off-highway applications.

### Applications

- Heavy-duty diesel engines in all types of over-the-road service, including the latest emission controlled engines with EGR and diesel particulate filters using Ultra-Low Sulfur Diesel fuel (<15 ppm sulfur) (ULSD) and Low Sulfur Diesel (LSD).
- Suitable for diesel powered equipment including those powered by Caterpillar, Cummins, John Deere, Detroit Diesel, Mack, Mercedes-Benz, International, and Volvo engines in all types of service where fuel sulfur levels are below 500 ppm.
- Off-highway applications where a premium quality engine oil is desired, such as construction, mining, logging and agricultural service where fuel sulfur levels are below 500 ppm.
- Hard working diesel and gasoline engines, engines used in pick-up trucks, sport-utility vehicles (SUVs), and mini-vans.
- Suitable for use as a top-off oil in virtually all diesel engine applications.
- Always follow the engine manufacturers' recommendations for motor oil performance, viscosity grade and oil change interval as these may vary depending on ambient temperature, fuel sulfur composition (LSD or ULSD) and vehicle model year.

### Performance Features and Benefits

- Meets or exceeds requirements of today's high-performance, low-emission diesel engines while providing excellent performance in older engines allowing operators use of one oil for many engines.
- Provides significantly improved wear protection, deposit and viscosity control and

oxidation resistance compared to API CI-4 PLUS oils

- Product is covered by a limited warranty and meets virtually all US equipment manufacturers' warranty requirements, helping to minimize operators' risk
- Exceptional protection and durability demonstrated in control of valve train wear and piston ring and liner wear, helping to maximize engine life
- Unique additive chemistry with improved soot control and exclusive detergent system for outstanding engine cleanliness
- Exceptional low-temperature flow properties helps speed cold starts
- Reduced fuel consumption, compared to single-grade oils, can help lower operating costs
- Demonstrated performance reserve throughout the oil drain interval for protection and lubrication throughout the oil drain interval
- A continued heritage of outstanding shear stability for viscosity control

### Specifications and Approvals

API	CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4, CF-4,
API	SM, SL, SJ, SH
ACEA	E7
Caterpillar	ECF-1 <sup>α</sup> , ECF-2, ECF-3
Cummins	CES 20081 <sup>1</sup>
Detroit Diesel	93K218
Mack	EO-O Premium Plus '07 <sup>1</sup> ,
MAN	M3275
MB Approval	228.3 and 228.31 <sup>1</sup>
MTU	Type 2 <sup>1</sup>
Volvo	VDS 4 <sup>1</sup>

<sup>1</sup> Only applicable to SAE 15W-40

**Advice**

Advice on applications not covered in this leaflet may be obtained from your Shell representative.

**Health & Safety**

Guidance on Health and Safety are available on the appropriate Material Safety Data Sheet, which can be obtained from your Shell representative.

**Protect the environment**

Take used oil to an authorized collection point. Do not discharge into drains, soil or water.

**Typical Physical Characteristics**

	Test Method	SAE Grade	
		15W-40	10W-30
Product Code		5070719	5071394
Property			
Viscosity:			
@ 40°C, cSt	D445	120	83
@ 100°C, cSt	D445	15.5	12.1
Viscosity Index	D2270	135	142
Pour Point, °C (°F)	D97	-40 (-40)	-40 (-40)
Flash Point, COC, °C (°F), min	D92	204 (400)	204 (400)
Neutralization No., TBN	D2896	10.1	10.1
Sulfated Ash, % wt	D874	1.0 max	1.0 max
12/1 Quarts		5071356	5071353
6/1 Gallons		5071355	5071351
2/2.5 Gallons		5071352	--
5 Gallon Pail		5071354	--
55 Gallon Drum		5071338	5071335

These characteristics are typical of current production. While future production will conform to Shell's specifications, variations in these characteristics may occur.



# Shell Rimula® Super

Advanced heavy duty fleet motor oil

Shell Rimula® Super oils are advanced high TBN/low-ash heavy duty motor oils for longer oil and engine life in virtually all diesel engines. Designed for fleet and off-highway use, Shell Rimula® Super oils offer the convenience of one oil for use in both the latest low-emission engines with exhaust emissions systems as well as offering excellent performance in pre-'07 engines.

## Performance Benefits

- Multipurpose Formulation**  
 Simplifying inventory needs for fleets
- Extended drain capabilities**  
 Demonstrated by meeting the requirements of API CJ-4, CI-4 PLUS, and Cummins CES 20081, helping engine operators achieve maximum drain flexibility
- Advanced SAE 15W-40 and 10W-30 viscosity grades**  
 Meet the engine oil requirements of low emission DPF/EGR engines as well as older engines reducing the need for additional oils in the fleet
- Excellent shear stability and an enhanced soot control**  
 Additive system provide outstanding viscosity control throughout the drain interval for consistent lubrication and wear protection.
- Limited warranty**  
 Product is covered by a limited warranty and meets virtually all US equipment manufacturer's engine oil warranty requirements minimizing operators risk

- Suitable for North American trucks with the latest emission control systems**  
 Such as diesel particulate filters, and for older EGR and non-EGR models such as trucks manufactured by Freightliner, Kenworth, International, Mack, Peterbilt, Volvo and others.
- Suited for use in heavy construction and mining equipment**  
 From leading makers such as Caterpillar and Komatsu.
- Suitable for leading brands of agricultural equipment**  
 Including John Deere, Case-New Holland and Massey Ferguson

## Applications



## Specification and Approvals

Specifications and Approvals	SAE Viscosity Grade	
	10W-30	15W-40
API: CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4, CF-4, CF	✓	✓
API: SM, SL	✓	✓
ACEA: E7		✓
Caterpillar: ECF-3, ECF-2	✓	✓
Cummins: CES 20081		✓
Detroit Diesel: 93K218		✓
Mack: EO-O Premium Plus		✓
MAN: M3275		✓
MB – Approval: 228.3, 228.31		✓
MTU : Category 2		✓
Volvo: VDS-4		✓

**Advice**

Advice on applications not covered on this datasheet may be obtained from your Shell Representative.

Guidance on Health and Safety are available on the appropriate Material Safety Data Sheet, which can be obtained from your Shell representative.

**Protect the environment**

Take used oil to an authorized collection point. Do not discharge into drains, soil or water

**Health & Safety**

**Typical Physical Characteristics**

Rimula® Super		
SAE Viscosity Grade	10W-30	15W-40
Gravity, °API (D 1298)	29.0	29.2
Kinematic Viscosity (ASTM D 445) @ 40 °C mm <sup>2</sup> /s 100 °C mm <sup>2</sup> /s	80	118
	12	15.5
Viscosity Index (ASTM D 2270)	144	139
Flash Point (COC) °F (ASTM D92)	400min	400min
Pour Point °F (ASTM D 97)	-23	-25
Neutralization No TBN-E (STM D2896)	10.6	10.6
Sulphated Ash % (ASTM D874)	1.0 max	1.0 max

These characteristics are typical of current production. While future production will conform to Shell's specification, variations in these characteristics may occur.



# CHEVRON DELO<sup>®</sup> 400 LE<sup>™</sup>

## SAE 15W-40

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### CUSTOMER BENEFITS

"The Delo<sup>®</sup> Advantage"

Chevron Delo<sup>®</sup> 400 LE<sup>™</sup> SAE 15W-40 is specifically formulated for new low emission engines with ULSD (2007 engines and beyond). It is also fully compatible with previous API Oil Service Categories and engine models. It delivers value through:

- **Reduced operating costs** — Exceptional soot dispersancy and wear control. Cylinders, pistons, rings, and injectors are well protected against wear and corrosion, lasting longer in service and requiring less maintenance. Contributes to maximum vehicle utilization and minimal downtime.
- **Enhanced emission control system life** — Extends Diesel Particulate Filter (DPF) life for less frequent downtime and cleaning. Optimizes the exhaust gas recirculation system life decreasing your maintenance costs.
- **Reduced inventory costs** — Backwards compatible with all previous API Oil Service Categories and engine models. One oil for all services, in four-stroke gasoline and all naturally aspirated turbocharged and modern electronically controlled/low emission diesel engines. One oil that meets the engine performance requirements of North American and European engine manufacturers. One oil that allows users with a wide mix of engine brands to enjoy simplified inventory and dispensing systems that help save money, space, handling time, and avoid product misapplication.
- **Warranty Plus protection** — Bumper-to-bumper warranty protection from the engine to the drive train. Payment for Chevron lubricant-related damage to your equipment, including parts and labor. Problem resolution and technical advice from Chevron's lubrication experts.
- **Access to Chevron's lubrication and industry knowledge** — Improves the bottom line business results of trucking industry professionals.

### FEATURES

Chevron Delo 400 LE SAE 15W-40 is an industry leading, super premium quality engine oil which exceeds industry and engine manufacturers' performance requirements.



It is formulated using the most advanced additive technology available to provide outstanding engine protection for 2007 EPA exhaust particulate emissions standards for on highway diesel trucks, using Ultra Low Sulfur Diesel (ULSD).

Chevron Delo 400 LE SAE 15W-40 is formulated with ISOSYN<sup>®</sup> base stocks, which rival synthetics in critical engine tests, and an optimal blend of the latest technology in dispersant, detergent, oxidation inhibition, antiwear, corrosion inhibition, viscosity improver, and defoaming additives.

Today, Chevron Delo 400 LE SAE 15W-40 meets the most stringent EGR soot control and particulate requirements.

Chevron Delo 400 LE SAE 15W-40 has been specifically designed to meet the demands of EGR engines while at the same time providing the highest level of performance in conventional engines and other engine technologies like Caterpillar ACERT<sup>™</sup>.

### FUNCTIONS

Chevron Delo 400 LE SAE 15W-40 keeps rings clean and free for better combustion pressure and to provide minimal wear. Chevron Delo 400 LE SAE 15W-40 reduces valve and piston crown land deposits, thus lowering oil consumption. Its high level of ashless dispersants keeps fuel soot in suspension and thus avoids filter plugging, heavy cylinder head sludge, abrasive polishing wear, high viscosity increase, and oil gelling. These problems can result in excessive engine wear and bearing failure on startup, without prior indication to the operator.

Specially selected oxidation inhibitors control oxidation, sludge, and undue thickening during oil drain periods. Chevron Delo 400 LE SAE 15W-40's unique blend of extreme pressure antiwear additive protects against valve train wear and scuffing of highly loaded parts operating under boundary lubrication. A specially selected viscosity index improver ensures easy flow at low temperatures and excellent film protection in hot engine areas. A defoaming additive prevents air entrapment.

The combination of premium dispersant additives and ISOSYN technology allows Chevron Delo 400 LE SAE 15W-40 to effectively disperse soot and keep it in suspension. This minimizes the risk of valve train wear, lever polishing, and filter plugging.

## APPLICATIONS

Chevron Delo 400 LE SAE 15W-40 is a mixed fleet motor oil recommended for all naturally aspirated and turbocharged four-stroke diesel engines and four-stroke gasoline engines in which the API CJ-4 grade and SAE 15W-40 viscosity grade are recommended. It is formulated for engines operating under severe service and a wide range of climatic conditions.

Chevron Delo 400 LE SAE 15W-40 is excellent for use in new advanced engines developed in response to 2007 emissions standards and in engines equipped with features like four-valve heads, supercharging, turbo charging, direct injection, shorter piston crowns, higher power density, intercooling, full electronic management of fuel and emissions systems, exhaust gas recirculation, and exhaust particulate traps.

It is formulated for superior performance with Ultra Low Sulfur Diesel but also with both normal and low sulfur diesel fuels.

This product is recommended for use in older engines, as well as in today's most modern low emission designs.

This product is recommended for use in Caterpillar engines in off-highway or construction applications which require an API CJ-4 Service Category after January 1, 2007.

## Chevron Delo 400 LE SAE 15W-40 meets:

- **API Service Categories** CJ-4, CI-4 PLUS, CI-4, CH-4, CF, SM, SL
- **ACEA European Service Categories** E-7
- **major diesel engine manufacturers' requirements**
  - Caterpillar
  - Cummins
  - Detroit Diesel
  - MAC
  - Man
  - Mercedes
  - Volvo
- **engine test performance requirements**
  - **Caterpillar** ECF-3
  - **Cummins** CES 20081
  - **DDC** Power Guard 93K218
  - **Mack** EO-O Premium Plus 07
  - **MAN** 3275
  - **Mercedes Benz** 228.3
  - **Volvo** VDS-4

## TYPICAL TEST DATA

SAE Grade	15W-40
<i>Product Number</i>	222220
<i>MSDS Number</i>	17108
API Gravity	29.1
Viscosity, Kinematic cSt at 40°C cSt at 100°C	125 15.7
Viscosity, Cold Crank, C/Poise	-20/64
Viscosity Index	131
Flash Point, °C(°F)	204(399)
Pour Point, °C(°F)	-30(-22)
Sulfated Ash, wt %	1.0
Base Number, ASTM D 2896	9.6
Phosphorus, wt %	0.12
Sulfur, wt %	0.32
Zinc, wt %	0.13

Typical test data are average values only. Minor variations which do not affect product performance are to be expected in normal manufacturing.