

LUBRICANTS FOR DIESEL ENGINES



40% BETTER PROTECTION

55% LESS DEPOSITS

90% LESS SLUDGE BUILD



REPSOL LUBRICANTS

FIELD TRIAL REPORT

INTRODUCTION

When you choose Repsol Lubricants, you get more than what you pay for. In addition to a product of the highest quality, you also get the Repsol guarantee: an integrated global energy company which carries out exploration, production, refining, distribution and marketing activities in more than 90 countries. It provides millions of people and companies all across the world with the most efficient, responsible and innovative energy solutions.

You also choose maximum innovation because Repsol has a Technology Centre at the global forefront of R&D&I, where our technicians and researchers are continuously improving each product to ensure maximum efficiency and the highest level of technical and environmental quality.

In line with our philosophy of constant innovation and improvement, we have expanded our product range and are pleased to present our latest catalogue of Lubricants for Diesel engines.

MAXIMUM QUALITY

Repsol Lubricants exceed quality standards and industry norms; our products having been tested in competitions to guarantee **maximum efficiency and reliability**.

Our lubricants improve the durability of engines and exhaust gas aftertreatment systems, complying with sector regulations. Apart from offering superior protection for the most demanding engines, the lubricants also guarantee fuel economy and reduce CO2 emissions in the most advanced engines.

At Repsol, we evaluate and select the most appropriate base oils, that coupled with the use of the highest-quality additives, offers you products with specific formulations for each manufacturer that give you extra confidence in your engine.



DIESEL TURBO THPD 15W-40

API CH-4/SJ, ACEA E7/E5

Feel the difference using our top tier CI-4 REPSOL THPD MLX 15W-40 product for heavy duty applications. Top High-Performance Diesel (THPD) lubricant is designed to meet the requirements of the most demanding EURO 4 diesel engines. It exceeds traditional performance levels thanks to its highly refined base oils and balanced additives, promoting extended engine life. A product specifically designed for the last generation of vehicles that requires API CI-4 performance lubricants, it is especially suitable for those that must comply with EURO 4 and EURO 3 standards according to manufacturer's specifications. This top high-performance lubricant has been tested in the harshest environment with several field trials to demonstrate the benefit of using Repsol technology.



40% better protection. Repsol THPD has performed excellently in terms of wear control. By ensuring the right performance in the engine and providing the proper lubrication in bearings and in cylinder liners we have tested that the lubricant is able to reduce cylinder liner wear by **40%, more than maximum allowed by API Standard in Mack T12 engine test.**

55% lower piston deposits. THPD is able to maintain a high cleanliness standard in the piston and combustion chamber. It is the key to avoid sticking and engine seizure. This balanced formulation to reach outstanding cleanliness performance has shown **55% better results than the API limit in OM501LA – Piston Cleanliness test.**

90% better sludge control than normal CI-4. Repsol THPD has shown superior oxidation stability, low sludge formation and responsive contact to all engine parts. Its ability to keep the same viscosity along its service life, it can extend oil drain intervals and prolong engine life. The oil has shown about **90% better result than maximum API CI-4 limit in the Cummins ISM test – Filter Pressure drop.**

Key lubricant to deal with latest generation of diesel engines in Heavy Duty industries:

Lower emission regulations, higher power output in the engines and higher pressures in the fuel injectors are creating a very challenging environment for the engine oil. More efficient engine means tighter designs with smaller lubricant sump, resulting in smaller volume of oil to protect and lubricate the whole engine. Because of higher compression ratios to increase the efficiency of the engine, piston rings are located higher on the piston bringing the oil film closer to the combustion chamber where it is hotter. Increased fuel injector pressure also increases engine operating temperatures and soot content. **Repsol Diesel Turbo THPD MLX 15W40** is formulated using highly

APPROVALS AND QUALITY LEVELS :

ACEA E7/E5
MAN 3275
MACK EO-M +
API CI-4/CH-4/SL

RENAULT RLD/RLD-2
CUMMINS 20076/20077/20078
MB 228.3
Deutz DQC II-10

VOLVO VDS-3
CAT ECF-2
Global DHD-1

SAE Grade	Viscosity at 40°C [cSt]	Viscosity at 100°C [cSt]	Viscosity index	Pour point [°C]	Flash point [°C]
15W - 40	108	14.7	137	-27	236

FIELD TEST REPORT

WHAT: Field trials in China, completed to test the suitability of two candidate formulas. Two competing products were used for reference.

WHERE:

- ☒ Qingling/wuyi - Mountainous
- ☒ Yuangui – Highlands
- ☒ Chengkun - Highway
- ☒ Qilian – Mountainous
- ☒ Turpan - Desert



LOADING CHALLENGES: 35%-50% overload.

TEMPERATURE CHALLENGES:

Sichuan: Wet/Cold Yunnan: Wet/Hot West: Dry South: Rainy

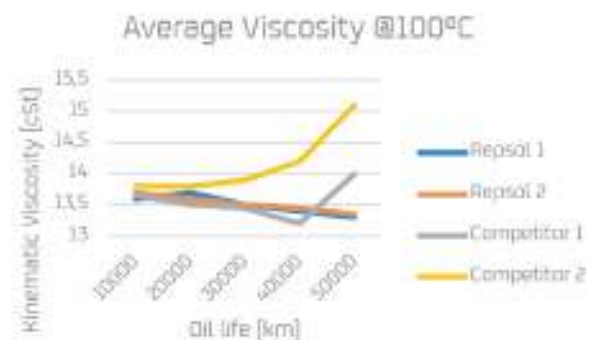
FINDINGS:

It was a very broad -based study where Repsol has considered and negated the different driving conditions. Repsol technology came first in all the criteria measured.

Extremely good viscosity retention:

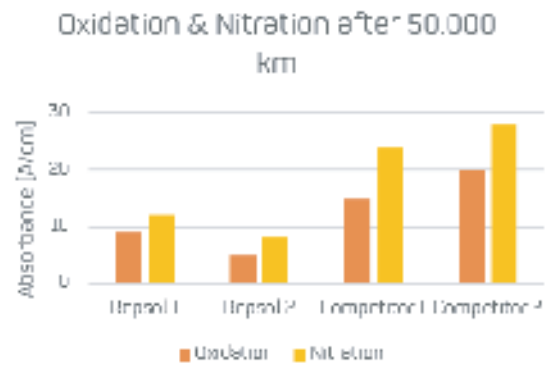
Repsol product stays in grade throughout the whole oil drain interval, providing lasting protection for engines.

At 50,000km, the used oil analysis showed Repsol oil performing up to **80% better** than our competitors in terms of viscosity variation. Competitor samples in the last sample taken at 50,000 km ODI, suffered oil degradation resulting in an increase in oil viscosity. Repsol oils have shown stable performance throughout the field trial.



Extremely good oxidation and nitration resistance:

With test results at under 10 A/cm (extremely low for the test mileage), Repsol technology performed well within the typical range of 30 to 50 units that is usually observed in used oils during field trials. This offers strong evidence of its ability to prolong the life of the engine oil by minimizing sludge and varnish formation which tend to cause engine sticking and seizure



The result shows that Repsol technology can deal with low quality high Sulphur fuels neutralizing the acids generated in the combustion chamber with an **outstanding TBN retention** even at 50,000 km. It is also the most suitable candidate to lubricate an engine running with **Biodiesel** to keep it protected against wear and rust.

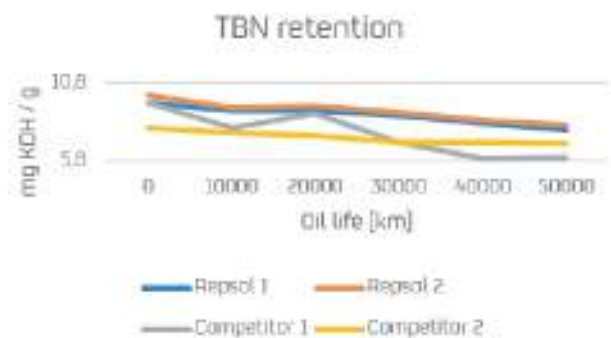


Excellent wear control:

Using **ADOC** used oil analysis results, we noticed that Repsol products have **50% lesser wear** metals present than in competitor products. This indicates good wear protection for the engine.

Excellent TBN retention:

Impressive results throughout the field trial proved that the TBN retention capabilities of Repsol technology starts higher and remain higher than competitors' products.



REPSOL DIESEL ENGINE OIL RANGE

Repsol's current Diesel Engine Oil (DEO) portfolio has the following products to cover all your needs exceeding the API expected performance. The products were developed by adopting the additive technology used to deal with typical fuel qualities of the Asia Pacific region. Repsol's unique formulations also ensure the right performance in engines burning diesel of high biodiesel content.

SUPER TURBO SHPD 15W40

API CH-4/SJ

Multigrade lubricant recommended for all types of diesel engines, both naturally aspirated and forced induction. The oil is formulated with additives that strengthen the detergency and dispersant power to ensure a cleaner engine. It exceeds the requirements of the most demanding engine manufacturers.



APPROVALS AND QUALITY LEVELS :

API CH-4/SJ	MACK EO-M	DEUTZ DQC-II
ACEA E7/E5	CUMMINS 20076/20077	MTU 2.0
MAN 3275	MB 228.3	CAT ECF-1a

SAE GRADE	Viscosity at 40°C	Viscosity at 100°C	Viscosity Index	Pour point [°C]	Flash point [°C]
15W-40	116	14.7	137	-27	236

REPSOL DIESEL MULTI G 15W-40

API CF-4 , ACEA E2

Maximum performance, high-quality multigrade lubricant oil. Recommended for naturally aspirated and turbocharged diesel engines, especially suitable for industrial vehicles (buses, trucks, public works and agriculture). Maximum protection against wear in high mileage engines. Its viscosity maximizes the output power thanks to the improved seal effect in combustion chamber.



SAE Grade	Viscosity at 40°C [cSt]	Viscosity at 100°C [cSt]	Viscosity index	Pour point [°C]	Flash point [°C]
15W - 40	110	14.1	125	-27	215

REPSOL MIXFLEET 20W-50

API CF-4/CF/SG

Multigrade lubricant oil formulated with the most hydrotreated GII base oil stocks, suitable for aspirated or supercharged petrol and diesel engines, even when working in severe conditions and high temperatures. The excellent quality of MIXFLEET makes it versatile and very well suited for use in professional and passenger transport fleets, earth-moving and agricultural machinery. Already tested in the harshest environment keeping the engine protected and clean.



SAE Grade	Viscosity at 40°C [cSt]	Viscosity at 100°C [cSt]	Viscosity index	Pour point [°C]	Flash point [°C]
20W - 50	132.6	17.7	120	-27	215

REPSOL DIESEL SERIE 3 10W

API CF-4/SG

High quality monograde mineral lubricant oil formulated from a very hydrotreated refined base oil. Thanks to the additive technology used, the DIESEL SERIE 10W product reaches outstanding resistance to oxidation, anti wear performance and detergency/dispersance to keep all the equipments clean and protected. It may be used as a hydraulic fluid in public works machinery, and in transmissions in which the manufacturer recommends this viscosity grade.



APPROVALS AND QUALITY LEVELS :

API CF4/SG

CATERPILLAR TO-2

ALLISON C-3

SAE GRADE	Viscosity at 40°C	Viscosity at 100°C	Viscosity Index	Pour point [°C]	Flash point [°C]
10W	39	6.6	110	-27	200

REPSOL DIESEL SERIE 3 30 & 40

API CF/SF , ACEA E2

Monograde mineral lubricant oil to guarantee the protection in high mileage engines with improved detergent and dispersancy power to keep the engine safe and protected. Specially recommended for public works machinery and stationary engines. Also suitable for use in aspirated and slightly supercharged diesel engines working in moderate or severe conditions with normal drain oil intervals.



APPROVALS AND QUALITY LEVELS :

API CF/SF ALLISON C3 ACEA E2 CATERPILLAR T02

SAE Grade	Viscosity at 40°C (cSt)	Viscosity at 100°C (cSt)	Viscosity index	Pour point (°C)	Flash point (°C)
30	105	11.8	100	-24	215
40	148	14.9	100	-21	225

Find the best lubricant for your engine

Use the **REPSOL LUBRICANT SEARCH ENGINE** and find the perfect lubricant for your vehicle.

You can search by **brand, model, or version.**



Take a look:

By scanning this QR code

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