

Shell Rimula R4 X



- Triple Protection
- Meets EGR requirements

Shell Rimula

THE ENGINE OIL THAT WORKS AS HARD AS YOU



HARDWORKING TECHNOLOGY

You need to know that your oil will protect your engine under all conditions. No matter how hot, cold, steep, dusty, muddy or extended your operations, you demand protection.

Shell Rimula heavy-duty diesel engine oils provide protection in three critical areas:

1. **Acid control** – protection against corrosion from acids formed as fuel burns
2. **Deposit control** – engine cleanliness for optimum performance and long life
3. **Wear control** – moving metal engine surfaces kept apart for long engine life.

Shell Rimula R4 X technology is designed to adapt and protect under the full range of conditions found in modern engines. From the high-pressure contacts in the valve train to the extreme temperatures of the pistons and rings, Shell Rimula R4 X can help you control your maintenance and operating costs by providing a versatile one-oil solution for modern fleets.

PROTECTIVE POWER

Shell Rimula R4 X contains a specially optimised combination of performance additives and chemicals that is designed to provide the right level of engine cleanliness, wear and oxidation protection under the tough conditions in engines equipped with exhaust gas recirculation (EGR).

The performance of new Shell Rimula R4 X has been clearly demonstrated in industry and original equipment manufacturer specification engine tests and in trials under real-world engine and vehicle operating conditions.

RELATIVE PROTECTION

	Acid/corrosion	Dirt and deposits	Wear
Shell Rimula R5 E ■ Energy saving	✓✓ ¹ / ₂	✓✓✓	✓✓✓
Shell Rimula R4 X ■ Triple Protection ■ Meets EGR requirements	✓✓	✓✓✓	✓✓ ¹ / ₂
Shell Rimula R3 X ■ Protects against wear, deposits and heat	✓✓	✓✓	✓✓

Performance level is a relative indication only.

BETTER PROTECTION FOR ENGINES WITH EGR

Exhaust gas recirculation (EGR) introduces some exhaust gas into the inlet air charge to reduce peak combustion temperatures, which lowers emissions of nitrogen oxides. The exhaust gases contain acids and soot particles that can have a detrimental effect on oil performance in terms of preventing corrosion- and soot-induced wear. EGR also leads to higher oil temperatures, which stress the oil further.

Shell Rimula R4 X has been designed to lubricate in the performance-demanding environment of engines with EGR. Shell Rimula R4 X can help to reduce NOx and particulate emissions in modern engines. It is suitable for all pre-US 2007 engines, most Euro 4 and 5 engines (without diesel particulate filters), as well as earlier engine types.



ACTIVE TECHNOLOGY

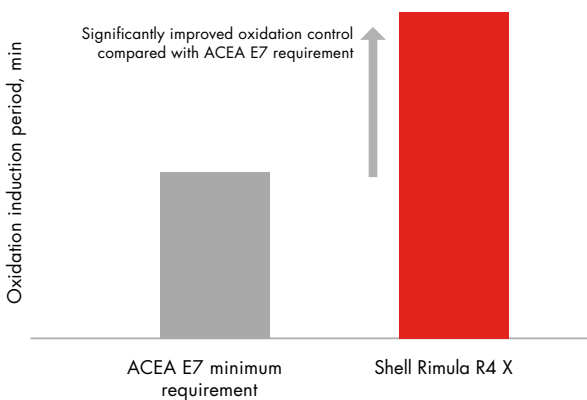
Maintaining cleanliness in an engine is crucial for engine operating efficiency and wear control. Shell Rimula R4 X is formulated with an optimised detergent additive system that is designed to keep pistons clean, and soot dispersants that reduce sludge deposits in heavy-duty diesel engines

OXIDATION CONTROL

Shell Rimula R4 X helps to prevent oil thickening and the formation of harmful deposits in all areas of the engine, including the bulk oil in the sump and the thin oil films at high temperatures in the piston ring belt area.

The product's improved oxidation control is demonstrated in specification engine tests and laboratory rig tests. For example, in the pressure differential scanning calorimetry (PDSC) test, Shell Rimula R4 X shows significantly better oxidation control performance relative to ACEA E7 specification limits.

Longer time to onset of oxidation in PDSC oxidation test



Oxidation induction period = time to onset of oxidation

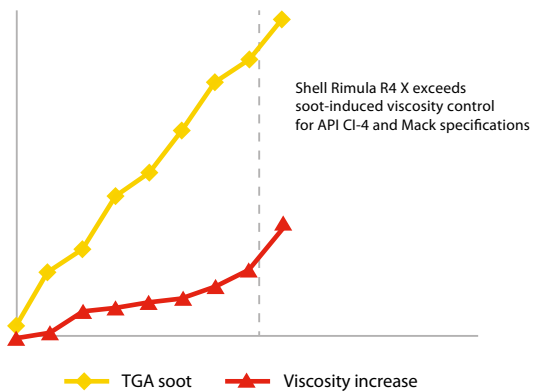
SOOT CONTROL

An essential feature of a good modern diesel oil is to keep soot particles finely dispersed in the oil to prevent excessive oil thickening, engine sludge formation and soot-related engine wear.

Shell Rimula R4 X provides a high level of soot dispersancy through the use of optimised levels of selected dispersant additives and enables protection at higher soot levels (up to 6%), as demonstrated in EGR engine specification tests.

In the Mack T-8E soot control test, for example, Shell Rimula R4 X's strong soot viscosity control performance shows it can keep high levels of soot particles well dispersed to enable smooth start-up at low temperatures and avoid filter plugging and soot-induced wear.

Viscosity increase at high soot levels against the API CI-4 test limit





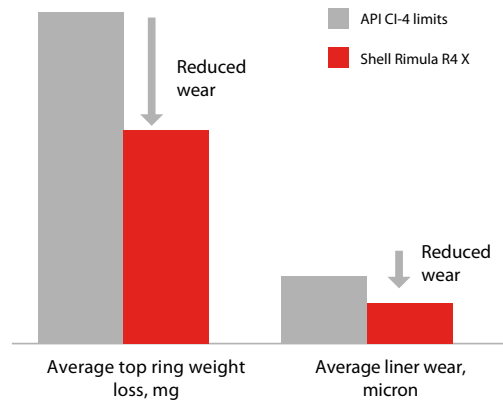
ENGINE WEAR CONTROL

Shell Rimula R4 X offers high levels of engine wear protection in the critical areas of the valve train and the piston ring cylinder liner, which is demonstrated in the specification engine tests for API and ACEA and major original equipment manufacturers.

Shell Rimula R4 X's engine wear protection is achieved through the addition of anti-wear additives that are designed to form protective films in metal-to-metal contacts under different engine operating conditions. In addition, Shell Rimula R4 X contains active soot dispersant additives to keep soot particles finely dispersed and help prevent wear.

In the Mack T-10 engine test, Shell Rimula R4 X demonstrated 30% better wear protection of engine rings and liners than required to meet the API CI-4 specification.

30% improvement in wear protection – piston ring and cylinder liner wear in Mack T-10 test

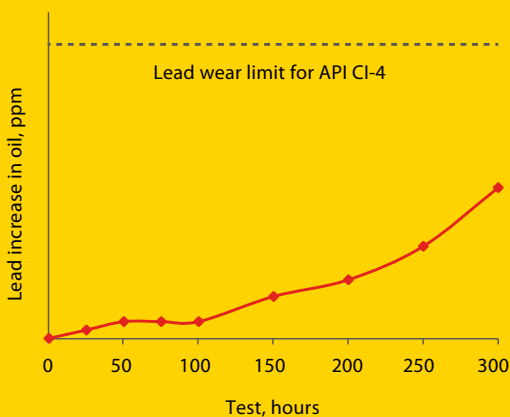


ACID AND CORROSION CONTROL

Combustion gases produce harmful acids that come into contact with oil in the piston ring belt area and pass into the oil sump. These acids are controlled using detergent additives, which neutralise acid and help to prevent piston deposits and the corrosion of metal surfaces.

Shell Rimula R4 X offers excellent control of acids and helps to prevent the chemical corrosion of engine bearings, for example, crankshaft, main and camshaft bearings. This is demonstrated in the performance of Shell Rimula R4 X in the Mack T-12 engine test.

Elemental lead increase in the Mack T-12 engine test for Shell Rimula R4 X



SHELL RIMULA R4 X – APPLICATION GUIDE



With its excellent protection against wear and deposits, Shell Rimula R4 X is suitable for a wide range of high-power, heavy-duty diesel engine applications.



Its wide range of approvals and specifications from many of the world's leading engine makers makes Shell Rimula R4 X an excellent choice for on-highway logistics, general haulage and public transport operators. It is suitable for all pre-US 2007 engines, most Euro 4 and 5 engines (without diesel particulate filters), as well as earlier engine types.



SPECIFICATIONS AND APPROVALS

API: CI-4, CH-4, CG-4, CF-4, CF, SL; ACEA: E7, E5, E3; JASO: DH-1; Global: DHD-1; Caterpillar: ECF-1-A, ECF-2; Cummins: CES 20078, 77, 76, 75, 72, 71; DDC: 93K215; DEUTZ: DQC III-10; Mack: EO-M, EO-M+; MAN: M3275-1; MB Approval: 228.3; MTU: Category 2; Renault Trucks: RLD-2; Volvo: VDS-3.

OUR COMPLEMENTARY RANGE

In addition to the full range of Shell Rimula heavy-duty engine oils, Shell Lubricants also offers a complete portfolio of lubricants for every part of your equipment, including Shell Spirax gear, axle and transmission fluids, and Shell Gadus greases.



HEALTH, SAFETY AND ENVIRONMENT

Health and safety

Shell Rimula R4 X is unlikely to present any significant health or safety hazard when properly used in the recommended application and if good standards of industrial and personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

For further guidance on product health and safety, refer to the appropriate Shell product safety data sheet.

Protect the environment

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

Advice

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

For more information, please contact

The term "Shell Lubricants" collectively refers to Shell Group companies engaged in the lubricants business. They manufacture and blend products for use in a range of applications, from consumer motoring to mining and power generation to commercial transport. Shell's portfolio of lubricant brands includes Pennzoil®, Quaker State®, Shell Rotella®, Shell Helix®, Shell Advance®, Shell Rimula®, Shell Tellus®, Monarch®, and Jiffy Lube®. Shell has leading lubricants research centres in Germany, Japan (joint venture with Showa Shell), UK, and the USA.

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