TOTAL RUBIA
HEAVY DUTY
ENGINE OIL

The Right Choice in Lubricants
“TOTAL, a world class oil company, is proud to introduce you to RUBIA, its specially developed range of Heavy Duty Engine Oils.”

Total, being the world’s fifth largest oil and gas integrated company, has a dedicated lubricant research and development centre located in Solaize, France that brings you the latest advancement in lubricant technology.
TOTAL R&D Centre, CENTRE DE RECHERCHE DE SOLAIZE (CRes) performs studies on different aspects of engine developments, from lubrication, combustion to exhaust post-treatment in order to validate new technologies required in lubricants, fuel and additives.

Tapping on the research done at CRes, Total has formulated lubricants for the technologies of the future. We have developed a dedicated range of products marketed under the name of “Rubia” to answer to the various challenging requirements of the heavy duty diesel engines lubrications.

Commercial vehicles and earth moving equipments are exposed to the most extreme operating conditions and as a consequence demand a lubricant to meet and exceed their stringent requirements. At the same time, they also operate in a business environment that demands the lowest operating costs.

TOTAL “Rubia” range has been designed to meet both needs. The “Rubia” range are products that are able to meet the highest performance levels, extend the life of your equipment and also reduce fuel consumption.

TOTAL “Rubia” range also delivers long-term performance, immediate protection from start-up and helps to reduce vehicle pollutant emissions. The more efficiently the engine performs, the less fuel is consumed. The less fuel consumed the less pollutants emitted.

FOR ECO-FRIENDLY ENGINES

- Rubia TIR 8900 FE 10W30
- Rubia TIR 7900 FE 10W30
- Rubia TIR 8900 10W40
- Rubia TIR 7900 15W40

FOR PREMIUM MODERN ENGINES

- Rubia TIR 8600 10W40
- Rubia Polytrafic 10W40
- Rubia TIR 7400 CI-4 PLUS 15W40
- Rubia TIR 7400 15W40
- Rubia Works 1000 15W40

FUEL ECONOMY

- Rubia TIR 7200 FE 15W30
- Rubia FE 20W30

CLASSIC GRADES

- Rubia TIR 6400 15W40
- Rubia XT 20W50
- Rubia XT 15W40
- Rubia D 20W50
- Rubia S 30/40/50
- Rubia S 10W

SUMMARY
RUBIA TIR 8900 FE 10W30

- An eco-friendly high performance long life lubricant for Euro 4 and Euro 5 diesel engines fitted with various post treatment devices such as DPF (Diesel Particulate Filter), EGR, SCR, and SCRT.
- Also suitable for previous version diesel engines and gas engines (homologated MAN M3271-1).

Specifications:
- ACEA E6/E7/E4-99 issue 3
- API CI-4
- JASO DH-2

OEM Approvals:
- MB-APPROVAL 228.51
- MAN M3477/M3277-CRT/M3271-1
- VOLVO VDS-3
- RENAULT TRUCKS RLD-2
- DAF

In the engine, the operation of the piston contributes to linear wear due to friction. The 8900 FE averts liner glazing as demonstrated by the above Mercedes tests on 3 different engines: 8900 FE performs exceedingly well compared to criteria limit set by Mercedes.

The TÜV* attended the tests carried out in 2009 at Millbrook (England) on a MAN TGX 440 has certified that RUBIA TIR 8900 FE 10W30 enables fuel savings of 1.3% when hot and 3% savings when used in combination with a Fuel Economy transmission lubricant.

* The famous German independent certification body.

Specifications:
- ACEA E6/E7/E4-99 issue 3
- API CI-4
- JASO DH-2

OEM Approvals:
- MB-APPROVAL 228.51
- MAN M3477/M3277-CRT/M3271-1
- VOLVO VDS-3
- RENAULT TRUCKS RLD-2
- DAF
**RUBIA TIR 7900 FE 10W30**

- Backward compatible to engines of previous version too.
- Provides both benefits of excellent engine protection and fuel economy.

Specifications:

- ACEA E9/E7
- API CJ-4/SM
- JASO DH-2 [pending]

OEMs Approvals:

- MB-APPROVAL 228.31
- VOLVO VDS-4
- CUMMINS CES 20081
- MACK EQ-O PPD7
- RENAULT TRUCK RLD-3
- CATERPILLAR ECF3 [on meet basis]
- MAN M3575

According to tests conducted by the most famous independent research center in the United States, RUBIA TIR 7900 FE 10W30 enables a **1.28% fuel saving** when running hot.* When used in combination with a 100% Synthetic SAE75W90 transmission fluid, an average saving of **3.27%** has been measured.

*Represents 90% of running time.

**Piston cleanliness test**

Minimum stipulated by MB-Approval 228.31

On OM 501 engine

On OM 611 engine

Piston cleanliness is a perfect indicator of a lubricant’s performance. RUBIA TIR 7900 FE 10W30 exceeds the piston cleanliness required by MAN and Mercedes Benz stipulated in the above tests.

**Cylinder liner glazing test**

Minimum stipulated by MB-Approval 228.31 limit

On OM 611 engine

On OM 646 engine

The use of RUBIA TIR 7900 FE 10W30 avoids friction between the contacting metal parts of the engine and therefore prevents cylinder liner glazing. Mercedes tests, conducted on three different engines, show that the performance of 7900 FE far exceeds the required criteria.
RUBIA TIR 8900 10W40

- A new generation eco friendly lubricant based on latest European low SAPS technology, meeting the demand of extended oil drain requirement (up to 100,000 km depending on manufacturers’ recommendation.)
- Particularly suitable for Euro5 and previous generation engines fitted with DPF or SCR systems.

Specifications:
- ACEA E6/E7
- ACEA E4-99 issue3
- API CI-4

OEMS Approvals:
- MB-Approval 228.5/228.51
- MAN M3477/M3277-CRT
- VOLVO VDS-3
- RENAULT RLD-2
- DAF

Excellent piston cleanliness with RUBIA TIR 8900 10W40 have been demonstrated in both MAN and MB Engine Test.

Effects of Low SAPS oil on DPF

Rubia TIR 8900 and TIR 7900 avoid the clogging of the DPF. Standard lubricants plug the filter and therefore increasing back pressure and reducing fuel economy.*

*DPF: Diesel Particulate Filter

*DPF - Diesel Particulate Filter
RUBIA TIR 7900 15W40

- A very high performance lubricant designed for heavy duty diesel engine configured to meet EPA 2007/2010 and Euro 4/5 emission regulation as well as older requirements.
- Superior wear protection and deposit control to previous generation oil to enable optimum oil drain internal flexibility in fleet operations.
- Suitable for engines used in different operating conditions: transport, deliveries, stop & go, construction, harvesting.

Specifications:
- ACEA E9/E7
- API CJ-4/SM

OEM Approvals:
- MB-Approval 228.31
- MAN M3575
- VOLVO VDS-4
- MACK EO-O PP-07
- CUMMINS CES 20081
- CATERPILLAR ECF3 [meet basis]
- DETROIT DIESEL DDC 93K218

Impact of lubricants on DPF
In the exhaust gas, particulate matters (mainly originated from fuel and lube) are trapped into the DPF before release to the atmosphere.
RUBIA TIR 7900 15W40, formulated with new generation low SAPS technology, avoids clogging and poisoning this after-treatment device. This helps to maintain vehicle emission compliance and engine fuel efficiency.

Mack T-11 simulates soot handling ability in heavy duty diesel engines under stop and go operating conditions.
RUBIA TIR 7900 15W40 has demonstrated good result at 1st pass in Mack T-11 engine test.

Deposit and Wear Test
(Caterpillar C13 and Cummins ISM)

Deposit and wear control are indicators to extend engine life. Caterpillar C13 test evaluates the ability of deposit control and oil consumption of an oil while Cummins ISM Test evaluates soot related wear and sludge control. RUBIA TIR 7900 15W40 has passed both tests with good margin.

Oxidation Sequence IIIIG
Oxidation stability is an important factor to allow extended drain interval. In Sequence IIIIG test, RUBIA TIR 7900 15W40 showed marginal viscosity increase, demonstrating excellent resistance to oil thickening and piston deposits formation under high-temperatures conditions.
RUBIA TIR 8600 10W40

- Ultra High Performance Synthetic Technology Diesel Engine Lubricants for very long oil change interval (up to 100,000Km depending on manufacturers’ recommendation)
- Especially recommended for all Euro 2 & Euro 3 applications and certain Euro 4 & Euro 5 engines without DPF device in post treatment system.
- Handle the most demanding driving conditions for all commercial vehicles.

Specifications:
- ACEA E4/E5/E7
- API-CF

OEM Approvals:
- MB-Approval 228.5
- MAN M3277
- RENAULT RXD/RLD-2
- SCANIA LDF-3/LDF-2
- MTU TYPE 3
- VOLVO VDS-3

Suitable for IVECO applications

The excellent anti-wear performance of RUBIA TIR 8600 10W40 provides optimum protection to engine components and extends engine life. Camshaft wear measurements on OM 611 LA engine demonstrated the exceptional capabilities of this lubricant.

Bore polishing is induced by piston deposits. Therefore the piston cleanliness is visible proof of a lubricant’s performance and anti-wear protection properties.

MB-Approval 228.5 imposes the most stringent standard for extended oil drain interval. RUBIA TIR 8600 10W40 exceeds MB-Approval 228.5 requirements on OM441 LA engine test.
RUBIA POLYTRAFIC 10W40

- Very high performance semi synthetic advanced technology oil for lubrication of all Euro 4 and previous generation Diesel engines.
- Adapted to all service conditions to protect engines of trucks, bus, vans, pick ups and other commercial vehicles.
- Recommended for engines equipped with EGR system as well as satisfying the needs of older engines.

Specifications:
- ACEA A3/B3/B4
- ACEA E5/E7
- API CI-4/CH-4/SL

OEM Approvals:
- MB-APPROVAL 228.3/229.1
- MAN: M3275
- VOLVO VDS-3
- RENAULT TRUCKS RLD/RLD-2

Viscosity at High Temperature[150°C] High Shear (HTHS) simulates the conditions encountered in the bearings of automotive engines in severe services such as frequent stop-and-go conditions, to ensure sufficient oil film thickness for proper bearings lubrication. RUBIA POLYTRAFIC 10W40 has been formulated with a very comfortable safety margin to address this critical criteria in urban operations.

Shear Stability Test (Kurt Orbahn 90-Cycle)

Thanks to specially selected synthetic technology base stocks and polymer with high shear stability, RUBIA POLYTRAFIC 10W40 has passed the Kurt Orbahn 90-Cycle Shear Stability Test as required in API CJ-4 specification. This ensures sustainable oil film strength for proper engine protection in harsh operating conditions such as frequent starts, excessive engine idling and short trips.
RUBIA TIR 7400 CI-4 PLUS 15W40

- Super high performance diesel engine oil for a wide range of heavy duty application in both on road and off road environments.
- The exceptional technology provides maximum protection to the engines and extends the engine life.
- Especially recommended for use in EGR equipped heavy-duty diesel engines in high output service.

Specifications:
- ACEA E7
- API CI-4 PLUS
- API CI-4/SL
- GLOBAL DHD-1

OEMS Specifications:
- MB-Approval 228.3
- MAN M 3275
- VOLVO VDS-3
- CUMMINS CES 20076/77/78
- MACK EO-N PREMIUM PLUS
- DETROIT DIESEL DDC 93K214
- CATERPILLAR ECF-2
- ZF TE-ML 07C/04C

Soot Control Test

Mack T11

<table>
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<tr>
<th>Soot Content @12 cSt Viscosity Increase</th>
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<td>API CI-4 Plus Min. Requirement</td>
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<tr>
<td>Rubia TIR 7400 CI-4 PLUS 15W40</td>
<td>6.4</td>
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Soot handling property of a lubricant greatly impacts oil service life and lubricant performance. Mack T-11 Test simulates high-soot loading and stop-and-go operation of heavy duty diesel engines at field. Engine test results support Rubia TIR 7400 CI-4 Plus 15W40 is able to accommodate high soot loading within a confined viscometric increase.

Wear Protection Test

Mack T10

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<th>Merit Rating</th>
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<td>Excellent cylinder and bearing wear protection</td>
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Proper wear control extends engine service life. Excellent wear protection of RUBIA TIR 7400 CI-4 Plus 15W40 has been supported by Mack T-10 test (cylinder and bearing protection) and Cummins M-11 EGR [valve train wear]

Piston Cleanliness Control

Caterpillar 1-R Test

<table>
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<tr>
<th>Crosshead Weight Loss</th>
<th>Weighted Demerit</th>
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<td>API CI-4 Plus Min. Requirement</td>
<td>Good cleanliness control over steel piston</td>
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<tr>
<td>Rubia TIR 7400 CI-4 PLUS 15W40</td>
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Piston cleanliness is another important indicator for engine oil performance. Caterpillar 1-R evaluates piston deposits and wear control in high speed turbocharged heavy duty diesel engine.
RUBIA TIR 7400 15W40

- Very high performance diesel engine oil adapted to severe technical constraints of low emission engines triggered by EGR device.
- Adapted to most severe servicing condition: transport, construction, tractors.
- Complies with Euro 2, Euro 3, and Euro 4 engine technologies [except Euro 4 MAN and DAF engines].

Specifications:
- ACEA E7/E5
- API CI-4/SL
- GLOBAL DHD-1

OEMs Approvals:
- MB-Approval 228.3
- MAN M 3275
- CUMMINS CES 20078/77/76
- VOLVO VDS 3
- MTU TYPE 2
- MACK EO-M+
- RENAULT TRUCKS RLD/RLD-2
- ZF TE-ML 04C
- CATERPILLAR ECF1a [meet basis]

Rubia TIR 7400 15W40 showed excellent performance in respect, supported by sequence III F test.

Oxidation Test
(Sequence IIIF)

Piston Cleanliness Test
(Caterpillar 1N Test
(Aluminum Piston))

Mack T8E evaluates proper soot handling capacity with regard to viscosity. This ensures consistent reliable performance of RUBIA TIR 7400 15W40 under stop-and-go and high soot loading condition in field services.

Oxidation stability affects useful service life of an engine oil RUBIA TIR 7400 15W40 has excellent performance in this respect, supported by sequence III F test.

Piston cleanliness is a perfect indicator of a lubricant performance. RUBIA TIR 7400 15W40 showed excellent result in Caterpillar 1N and Caterpillar 1R Test.

EGR reduces NOx emission but accelerates soot loading and oxidation degradation of engine oil.
RUBIA WORKS 1000 15W40

- Very high performance lubricant dedicated to both aspirated and turbo charged engines being used in construction and earth moving machinery.
- Adapted to most extreme conditions: dusty and warm, long full load periods, repetitive speeding up and idle phase.
- Specially recommended for recent engines meeting the latest Euro Phase IIIa or US EPA TIER 3 pollution standards.

Specifications:

- JASO DH-1 [APPROVAL NO DO33TOL601]
- ACEA E7
- API CI-4/SL

OEMS Approvals:
- MB-Approval 228.3
- MAN M3275-1
- VOLVO VDS-3
- DEUTZ DGO III -05
- CUMMINS CES 20078
- MTU TYPE 2
- RENAULT RLD-2
- CATERPILLAR ECF-2 (on meet basis)
- KOMATSU EO-DH (on meet basis)

Suitable for engines of HITACHI, ISUZU, MITSUBISHI, DEERE, PERKINS, CASE, NEW-HOLLAND, LIEBHERR, JCB AND ETC.
Specifications:
- ACEA E5/E7
- API CI-4
- GLOBAL DHD-1

OEMs’ Approvals:
- MB-Approval 228.3
- MAN M3275
- CUMMINS CES 20078/77/72/71
- VOLVO VDS-3
- MACK EO-M+
- RENAULT TRUCKS: RLD-2

Rubia TiR 7200 FE 15W30
- A high quality lubricant which offers optimum engine protection and fuel economy benefits (fuel saving up to 1L/100km).
- Best suited for most demanding applications: deliveries, frequent stop, construction sites, harvesting.

Piston is the heart of the engine. Thanks to its excellent detergent and dispersion properties, Rubia TiR 7200 FE 15W30 exceeds the piston cleanliness requirement of ACEA E7 and E4 limits.

Cylinder liner affects engine durability and oil consumption. Constructors impose very stringent liner glazing protection via bore polishing monitoring. Rubia TiR 7200 FE 15W30 has obtained excellent result in comparison to ACEA E7 limit, even surpass ACEA E4 requirement.

Tests conducted at Millbrook have demonstrated that the use of Rubia TiR 7200 FE 15W30 provides an average fuel consumption reduction of 1.7%.

Millbrook is one of Europe’s leading test organization in polluting emission and fuel consumption tests.
RUBIA FE 20W30

- A fuel economy lubricant formulated with Molytech® technology and specifically suited to hot climate constraints.
- Reduce fuel consumption up to 1L/100km when used with Fuel Economy transmission lubricants.
- Suitable to replace all 20W40 or SAE40 engine oils of API CF/CF-4 level in most demanding applications: deliveries frequent stops...

Specifications:
- API CF-4
- API CF

The Molytech® technology acting like a friction modifier, leads to lower friction coefficient when RUBIA FE is in use. Low friction in turn gives better protection against engine wear, supported by superior result in sequence VIA engine test.

Friction reduction improves the wear protection. With Molytech® Technology RUBIA FE 20W30 achieved 74% Wear Protection improvement over the corresponding standard 20W40 and more than 6 times better than the limit stipulated in API SM requirement.

RUBIA FE 20W30 passed Komatsu Hot Tube Test @ 280°C, demonstrating its excellent dispersant and detergent properties at high temperature.
HIGH PERFORMANCE MULTIGRADE OIL

RUBIA TIR 6400 15W40

- High performance multigrade oil for most modern diesel engines fitted on trucks, buses, construction or agricultural machinery with or without turbocompressor, intercoolers or sophisticated injection systems.
- Excellent wear protection to extend engine efficiency and service life.

Specifications:
- ACEA: E5/E3
- API: CH4/SJ

OEMs Approvals:
- MB-Approval 228.3
- MAN M3275
- VOLVO VDS 2
- MTU TYPE 2
- MACK EOM
- CUMMINS CES 20072/71
- ZF TE-ML D4C
- RENAULT TRUCKS RD/RO-2

Thanks to the excellent piston cleanliness properties, RUBIA TIR 6400 15W40 obtained excellent results even in comparison with ACEA E7 standard limits.

Oxidation degradation results in increase of viscosity.

Good oxidation stability of RUBIA TIR 6400 15W40 ensures a clear pass in viscosity requirement.

Good test result in Mack TBE test illustrated excellent soot handling property of RUBIA TIR 6400 15W40

* Max limits in ACEA E7 specification.

Rubia TIR 6400 15W40
**CLASSIC GRADES**

**RUBIA XT 15W40, 20W50**
High performance multigrade oil for diesel engines, for both turbocharged and normally aspirated engines in operation under severe service conditions in all seasons.

Specifications:
- API CF-4/SJ
- ACEA E2 *
- MB-Approval 228.1 *
- MAN 271 *
- VOLVO VDS *
- MIL-L 2104E *

* For RUBIA XT 15W40

**RUBIA D 20W50**
Heavy duty engine oils which provides proven protection to diesel engines operating in a wide range of on and off-roads application such as transport, construction, and agricultural industries.

Specifications:
- API CF/CD/SF

**RUBIA S 30, 40, 50**
Monograde oil for all turbocharged or normally aspirated diesel engines in civil works, machines, trucks, locomotives, and diesel stationary engines (energy production).
Also suitable for gear boxes, torque converters, hydraulic systems when the manufacturer requires an engine oil with an appropriate grade for these applications.

Specifications:
- API CF/SF
- ACEA E2
- MB-Approval 228.0
- MAN 270
- MTU TYPE 1 (30 and 40)
- MIL-L 2104E
- ZF TE-ML 02C/04B (30 and 40)

**RUBIA S10W**
A 10W oil formulated based on engine oil technology for hydraulic application in a wide range of heavy duty equipment used in on and off-road industries including construction, mining, quarry and agriculture activities.

Specifications:
- API CF/SF
- ACEA E2
- MB-Approval 228.0
- MAN 270
- CATERPILLAR TO-2
- ZF TE-ML 03B
- MIL-L 2104E
### SUMMARY CHART

<table>
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<th>MODEL</th>
<th>CONSTRUCTION</th>
<th>CITY DRIVE</th>
<th>LONG HAUL</th>
<th>DPF</th>
<th>EGR</th>
<th>FE</th>
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**Legend:**

- *** - Highly Recommended
- ** - Recommended
- * - Suitable for use
- DPF - Diesel Particulate Filter
- EGR - Exhaust Gas Regulation

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A unique diagnostics system for fleet’s preventive maintenance

THE SERVICE: oil analysis providing a customised diagnosis for engines

ANAC provides information on the wear profile of your vehicles (engines, transmissions, hydraulics) and recommends the early intervention if the wear is excessively high.
ANAC also compares your results to those of hundreds of other engines of the same type to assess the wear profile.

YOUR BENEFITS:

• Reduction of down times and mechanical damage.
• Optimization of your fleet’s maintenance intervals and workshop’s productivity
• Reinforcement of your equipment’s lifetime and reliability.

ANAC’S RELIABILITY IN FIGURES:

• Analysis based on very large database [over 3,000,000 diagnoses - 250,000 performed annually].
• 35 years of experience and 26 countries covered by the service.

For more information visit: www.anac-diagnosis.com

A practical internet tool providing lubrication information and advice

YOUR BENEFITS:

• Optimization of your use of lubricants through a customized lubrication plan [adapted to your equipment, activity and country].
• Simplification and rationalization of your lubricants’ management; savings by reducing the number of product references. (some can cover several requirements.)

IN PRACTICE:

• A convenient and easy-to-use site with a comprehensive range of Total group lubricants.
• Automotive manufacturers’ data updated 4 times a year and available in 8 languages.
• A secure access by personal user ID and password.

Website address: https://www.lubconsult.total.com
Please contact us to create a log-in account.