



Solutions of **lubrication** for cement industry

Enter



TotalEnergies



Our commitment

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lubrication
for cement
industry
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DEVELOP YOUR PRODUCTIVITY

Our teams are committed to helping you get the most out of your production facilities and supporting your local and international expansion.

TARGETED PRODUCTS

Each industry has its own production constraints. Thanks to our knowledge of industrial processes, our products are perfectly adapted to your environment. TotalEnergies lubricants include oils, greases, and specialty products for each sector: chemicals, energy, steel, metallurgy, metalworking, automotive and equipment manufacturing, building materials, wood, paper, food, and textiles.

INNOVATIVE PRODUCTS

Innovation is our priority. We rely on several Research & Development centers that bring together chemical and mechanical engineers, as well as tribology specialists. Our close relationships with manufacturers allow us to formulate and test the products of tomorrow to optimize the efficiency and availability of your industrial equipment.

SAFE AND RESPECTFUL PRODUCTS

We are committed to safety, hygiene, and environmental protection. From the design stage of new products, our R&D teams integrate parameters that promote the reduction of toxicity risks and VOC emissions, biodegradability, recycling, and disposal.

HIGH VALUE-ADDED SERVICES

Customized recommendations, inventory rationalization, maintenance and lubrication organization, in-service fluid analysis and results monitoring, and team training: we offer a comprehensive range of services to optimize the productivity of your facilities.

LOCAL SALES TEAMS AND RESPONSIVE LOGISTICS

We ensure a local sales presence to specifically meet your needs. Our integrated organization, with our own production plants and state-of-the-art logistics platform, guarantees you timely supplies.



Coverage across the entire cement market

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TotalEnergies present:

● Direct presence ● Distribution ○ No presence



150
countries in which
our lubricants are
sold



47 lubricant factories
worldwide
10 grease
plants



2 research center
and a technical
center



**> than
5,800**
employees



**> than
312**
researchers



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TotalEnergies hydraulic fluids meet the requirements of international standards and manufacturers' technical specifications. Our product lines match the ISO 6743-4 standard classifications:

- ◆ HM class: **Azolla** line. Mineral fluids with good oxidation stability, protecting equipment against corrosion and wear.
- ◆ HV class: **Equivis** and Hydroflo lines. Fluids with HM class properties supplemented by a high viscosity index, allowing use at low temperatures.
- ◆ HETG, HEES classes: **Biohydran** line. Biodegradable fluids recommended for equipment operating outdoors, to minimize the environmental impact of accidental releases.
- ◆ HFA, HFC, HFD classes: **Hydransafe** line. Fluids specially developed to reduce the risk of fire spreading in the event of leakage. **Blue Concentrate**: blue dye for hydraulic fluids and other mineral lubricants, allowing early detection of leaks. **Nevastane** hydraulic fluids are available in classes HM and HV.

HM antiwear hydraulic oil

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Azolla ZS	- Hydraulic systems operating at high temperatures and pressures - Bearings and various mechanisms	- Enhanced protection of equipment thanks to anti-wear and anti-corrosion properties - Good thermal stability and resistance to oxidation, ensuring the fluid has a long service lifespan and preventing the formation of deposits - Good filterability, even in the presence of water	10 to 150	- ISO 11158 HM - DIN 51524-2 HLP - Eaton I-286S, M-2950S - Denison HF0, HF1, HF2
Azolla AF	- Hydraulic systems that are particularly sensitive to the formation of deposits and/or operate at high temperatures and pressures - Bearings and various mechanisms	- Ash-free additives prevent formation of deposits - Very good anti-wear and thermal stability performance - Very good filterability in service, even in the presence of water - Extended draining intervals. TOST = 4,000 hours	22 to 100	- ISO 11158 HM - DIN 51524-2 HLP - Eaton I-286S, M-2950S - Denison HF0, HF1, HF2
Azolla DZF	- All hydraulic systems, especially when the presence of water is unavoidable and blow-off is impossible - Various mechanisms requiring extreme-pressure properties	- Excellent hydrolysis stability through ash-free addition - Detergent fluid to prevent formation of deposits in circuits - Enhanced extreme pressure properties	10 to 68	- ISO 11158 HM - ISO 12925 CKC - DIN 51524-2 HLPD - Müller Weingarten - MAN N698 HLPD

High viscosity hydraulic oil

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Equivis ZS	Hydraulic systems operating outdoors	- Extended draining intervals due to very good thermal stability and oxidation resistance - Very good filterability, even in the presence of water	15 to 100	- ISO 11158 HV - DIN 51524-3 HVLP - Vickers - Cincinnati-Milacron P68, P69, P70
Equivis AF	Hydraulic systems operating outdoors	- Extended draining intervals - Enhanced shear stability	32 to 68	- ISO 11158 HV - DIN 51524-3 HVLP
Equivis HE	- Hydraulic systems operating at high temperatures and pressures - Hydraulic systems operating outdoors	- High efficiency: up to 5 % energy savings - Extended draining intervals due to excellent thermal stability and oxidation resistance - Excellent shear stability Excellent filterability	32 46 68	- ISO 11158 HV - DIN 51524-3 HVLP - Denison HF0
Equivis XV	Hydraulic systems operating at temperatures up to -30 °C	Viscosity index > 250 for enhanced machinery protection, limiting cavitation phenomena in circuits during start-up phases and maintaining the thickness of the oil film when hot	32 46	- ISO 11158 HV - ISO 6743-4HV
Equivis XLT	Hydraulic systems operating at temperatures up to -40 °C	- Viscosity index of 350 for enhanced protection - Ash-free additives prevent formation of deposits - Very good filterability, even in the presence of water - Extended fluid service life TOST = 4,000 hours	15 to 32	- ISO 11158 HV - ISO 6743-4 HV



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General
lubricants

Hydraulic
systems

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HEES Biodegradable hydraulic fluids

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Biohydran TMP	• Biodegradable • Synthetic esters	• Hydraulic systems operating outdoors • Optimal operating temperatures: -20 °C to +80 °C	• Excellent protection against wear and corrosion • Protection and efficacy of equipment • Miscible with mineral oils	32 to 100	• ISO 15380 HEES • European Ecolabel • Swedish Standard SS 15 54 34
Biohydran SE	• Biodegradable • Saturated synthetic esters	• Hydraulic systems operating outdoors • Operating temperatures in excess of +80 °C	• Extended draining intervals thanks to enhanced thermal stability • Excellent compatibility with elastomers	32 to 68	• ISO 15380 HEES • European Ecolabel • Swedish Standard SS 15 54 34 • Denison HF1, HF2, HF6 • Sauer Danfoss

Additives

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*
Blue Concentrate	• Blue dye	• Dose varies according to requirements, from 0.2 to 1 % in hydraulic oil	• Can be used in all hydraulic systems • Adding this dye to a mineral oil gives it a blue color	30
Azolla NET HC	• Synthetic detergent	• Apply to 5 % of oil circuits to be cleaned	• High-quality detergent product with effective cleaning power	23,6
Cleaner F & V	• Detergent additive	• Cleaning agent for all types of systems: hydraulic systems, gear trains, paper machines, heat transfer systems	• High detergent and dispersant capacity • Recommended for removal of varnish deposits	52 (F) 173 (V)

*Typical kinematic viscosity at 40°C in mm²/s



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General lubricants

Gearbox

Carter, Kassilla and Nevastane oils are designed for gearbox lubrication. There are many factors to take into account when choosing a gearbox lubricant:

- ◆ Type of gearbox: dimensions, form of gear teeth, slip characteristics, reduction ratio, open or enclosed housing.
- ◆ Operating conditions: depending on levels of load, vibration and shock, the choice of lubricant is determined by anti-wear and EP (Extreme Pressure) properties.
- ◆ Service temperature of oil: very low, moderate between +20 °C and +80 °C, warm to over +80 °C, and extreme in excess of +120 °C.
- ◆ Possible impact of the gearbox environment on the lubricant: some oils have enhanced anticorrosion-resistant properties to avoid corrosion and reduced fluid service life caused by moisture, dust or other agents.
- ◆ Possible impact of the lubricant on the gearbox environment in the event of leakage: biodegradability, suitability for incidental food contact and non-staining properties are required.
- ◆ Maintenance conditions: a synthetic fluid with extended draining intervals and good operating safety for significant savings in maintenance costs.

Mineral oils

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Carter EP	• Mineral oil	• Industrial gear trains, bearings subjected to heavy loads and high temperatures	• Extended draining intervals • Good protection against micropitting	68 to 1000	• ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-F16 AS • Flender
Carter EP 1500, 2200, 3000	• Semi-synthetic oil	• Slow gears • In particular, kiln girth gears and crusher backing	• High load capacity thanks to excellent anti-wear properties and performance under extreme pressure • Impact and corrosion protection	1500 2200 3000	• ISO 12925 CKC • DIN 51517-3 CLP (grade 1500) • AGMA 9005-F16 AS
Carter XEP	• Mineral oil	• Gear trains subjected to heavy loads, high temperatures and harsh environments	• Extended draining intervals due to very good thermal stability • Enhanced anticorrosion protection • Very good protection of bearings • Excellent protection of gear teeth against micropitting	150 to 680	• ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-F16 AS • Flender
Carter HD	• Next-generation high-performance mineral oil for gear trains	• Ultra-heavy duty gear trains	• Excellent performance at high pressure • Excellent oxidation resistance and corrosion protection • Reduced maintenance costs and extended service life of installation	220 320	• DIN 51517 Part 3 - CLP • ISO 12925-1 category CKD • AGMA 9005-F16 AS
Kassilla GMP	• Mineral oil	• Industrial gear trains subjected to very high load and repeated shocks • Suitable for harsh conditions: cement plants, iron and steel, mining, crushing	• Very good thermal stability • Enhanced corrosion and micropitting protection • Contains graphite and molybdenum disulfide	150 to 1000	• ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-F16 AS



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General
lubricants

Gearbox

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Synthetic oils

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Carter SH	• Synthetic oil (PAO)	• Gearboxes subjected to very high loads, high temperatures and harsh environments	• Excellent protection against corrosion, wear and micropitting • Extended service life of oil due to excellent thermal stability • Can be used outdoors thanks to a very low pour point	150 to 1000	• ISO 12925-1 CKD • DIN 51517-3 CLP • Flender
Carter SH Energy	Synthetic oil (New hydrocarbon Technology)	• Gearboxes subjected to very high loads, high temperatures and harsh environments	• Energy Efficiency • Excellent protection against corrosion, wear and micropitting • Outstanding service life of oil due to excellent thermal stability • Excellent cold properties	150 to 680	• ISO 12925-1 CKD • DIN 51517-3 CLP • Flender
Carter Bio	• Synthetic oil (ester)	• Gearboxes at risk of accidental releases to the environment	• Biodegradable product • Very good performance under extreme pressure and anti-wear and anti-corrosion properties. Oxidation stability	68 to 320	Equivalence: • ISO 12925-1 CKD • DIN 51517-3 CLP EAL (Environmentally Acceptable Lubricant)
Carter SY	• Synthetic oil (PAG)	• Lubrication of worm and wheel gears under the most severe operating conditions (heavy load, shocks, extreme temperatures, corrosive atmosphere)	• Very high viscosity index: mechanical shear stability • Low friction coefficient: for better protection of non-ferrous components, such as the bronze crown gear in parallel gear trains • Excellent thermal stability: extended oil service life • Excellent EP and anti-wear properties • Very good static and dynamic anticorrosion properties • Excellent anti-foaming properties in service	150 220 320 460 680	• DIN 51515 deel 3 - CLP • ISO 12925-1 CKE • David Brown, CMD
Carter SG	• Synthetic oil (PAG)	• High performance synthetic lubricant for gearboxes with parallel, planet and worm and wheel gears • Very high EP performance, high friction performance • Not miscible with mineral oils or certain synthetic lubricants	• High performance: reduces operating temperatures thanks to a reduced friction coefficient and enhanced energy efficiency • Excellent shear stability and very high viscosity index • Very high thermal and oxidation stability	100 to 1000	Equivalence: • ISO 12925-1 CKE • DIN 51517-3 CLP PG

The Dacnis line is formulated according to manufacturers' requirements to optimize the operating efficiency of air compressors.

- ◆ Draining intervals from 2000 to 8000 hours under normal operating conditions.
- ◆ Protection against wear and corrosion.
- ◆ No carbon residue even at high temperatures.
- ◆ Efficient oil/air and oil/condensate separation.

Air compressors

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*	SPECIFICATIONS
Dacnis	• Mineral oil	• Rotary and reciprocating air compressors	• Draining interval 2000 hours	32 to 150	Grades 32 to 68: • ISO 6743-3 DAH • ISO DP 6521 Grades 100 and 150: • ISO 6743-3 DAB • DIN 51 506 VDL • Bauer • CompAir • Dresser-Rand • Sauer & Sohn • Sulzer Burckhardt
Dacnis LD	• Mineral oil, hydrocracked	• Lubricated screw air compressors	• Draining interval 4000 hours • Low pour point	32 to 68	• ISO 6743-3 DAJ • ISO DP 6521 • DIN 51 506 VDL • Atlas Copco • CompAir • Hydrovane • Dresser-Rand...
Dacnis SH	• Synthetic oil (PAO)	• Rotary screw air compressors	• Draining interval 8000 hours • Very low pour point	32 to 100	• ISO 6743-3 DAJ • ISO DP 6521 • Atlas Copco • Hydrovane • CompAir • Dresser-Rand...
Dacnis SE	• Synthetic oil (ester)	• High-pressure reciprocating and rotary air compressors, turbochargers	• High thermal stability • Low pour point	46 to 100	• ISO 6743-3 DAJ • DIN 51 506 VDL • Atlas Copco • Bauer • CompAir • Dresser-Rand • Sauer & Sohn • Tanabe...

*Typical kinematic viscosity at 40°C in mm²/s

Preslia oils are used for lubricating hydraulic, steam, gas and combined cycle turbines. Their formulation is the result of long experience and meets the most stringent specifications of manufacturers.

- ◆ Excellent oxidation resistance for extended draining intervals.
- ◆ Resistant to foaming, deaeration and demulsibility, guaranteeing that equipment will operate smoothly.
- ◆ Anti-wear and extreme pressure additive allowing gear trains to withstand high loads.

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*	SPECIFICATIONS
Preslia	• Mineral oil	• Hydraulic turbines • Steam turbines • Gas turbines • Centrifugal compressors	• Very good foaming, deaeration, demulsibility properties • Excellent oxidation resistance	32 to 100	• ISO 6743-5 THA/THE/TSA/TSE/TGA/TGB/TGE/TGSB • ISO 8068 (ISO VG 32 & 46) • ASTM D 4304 - type I & II • DIN 51515 Parts I & II • JIS K2213 type 2 w/add • China National Standard GB 11120-2011 L-TSA • ALSTOM HTGD 90 117 • ALSTOM HYDRO HTWT 600050 • GENERAL ELECTRIC GEK 27070/28143/46506/101941/32568/107395 • SIEMENS TLV 901304 & TLV 901305 • SIEMENS TURBO AB MAT 812101/02/06/07/08/09 • SIEMENS TURBOMACHINERY 1CW0047915 • SOLAR ES 9-224W Class II • ANSALDO TG02-0171 • SKODA, TURBINY PLZEN • FUJII ELECTRIC Steam turbine • TOSHIBA Steam turbine
Preslia GT	• Mineral oil, hydrocracked	• Steam turbines • Gas turbines • Combined cycle turbines	• Very high oxidation resistance and enhanced anti-wear and extreme pressure properties • Extended draining intervals	32 46	• ISO 6743-5 TSA/TSE/TGA/TGB/TGE/TGSB/TGSE • ASTM D 4304 Type I & II • DIN 51515 Parts I & II • ISO 8068 • JIS K-2213 Type 2 • China National Standard GB 11120-2011 L-TSA • ALSTOM HTGD 90117 • ANSALDO TG02-0171 • GENERAL ELECTRIC GEK 27070, 28143, 46506, 32568, 107395, 101941 • SIEMENS TLV 901304/05 • SIEMENS INDUSTRIAL TURBO AB MAT 812101/02/06/07/08/09 • SIEMENS TURBOMACHINERY 1CW0047915 • SOLAR ES 9-224 Class II • DOOSAN SKODA, TURBINY PLZEN • BAKER HUGHES ITN 52220.01/02/03/06
Preslia Evo	• Mineral oil, hydrocracked	• Oil for advanced turbines with very high resistance to varnish and deposit formation • Developed for use in modern steam and gas turbines, combined cycle turbines and turbochargers subject to high loads and severe thermal stresses • Suited to the harsh operating conditions of flexible turbines	• Very high thermal stability • High resistance to undesirable formations of detritus caused by high temperature peaks • Formulated with innovative additives to prevent the accumulation of varnishes and deposits • Remarkable oxidation resistance due to high-quality base oil and antioxidants	32 46	• ISO 8068 • DIN 51515 Parts 1 & 2 • ISO 6743-5 TSA/ TSE/TGA/TGB/TGE/TGSB/TGSE • ASTM D 4304, type I/II/III • JIS K 2213 • GE GEK 2707, 46506, 28143, 101941, 32568, 107395 • SIEMENS TLV 9013 04 & 05 • ANSALDO TG02-0171 • SIEMENS Finspang MAT 812101/02/06/07/08/09 • MAN-ES TED 10000494596- Rev.03 • SOLAR ES9-224 Class II
Biopreslia HT	• Saturated synthetic esters	• Hydroelectric plants (turbines and hydraulic circuits)	• Oxidation resistance • Very good foaming, deaeration, demulsibility properties • Good compatibility with elastomers • Biodegradable	22 to 100	ecosolutions.totalenergies.com

*Typical kinematic viscosity at 40°C in mm²/s



Special applications

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- Pneumatic oils

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- White oils and petroleum jellies

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Special applications

Special applications

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Full synthetic oils for chains at high temperature

All **Estar® range** consists of full synthetic ester oils specially developed for the lubrication of chains subjected to high operating temperature in any industry. Specific additive packages are used in their formulation to stabilize the lubricating film on chains and to enhance anti-wear, anticorrosion, antioxidants properties.

Estar Super Plus® is our Premium line which has been completely designed to ensure a low evaporation rate at temperature up to 290 °C. This contributes to improve chain lubrication efficiency over time and extend cleaning intervals. They can be used in any high temperature and steam manufacturing process like in dryers, ovens, overhead conveyors, and any other similar production machines.

Pneuma oils enhance the performance of pneumatic equipment and reduce fluid consumption.

- ◆ Excellent impact resistance thanks to extreme pressure additives and very good protection against wear.
- ◆ Water-repellent and anti-rust properties.
- ◆ Good adhesion and hold, avoiding environmental pollution by oil mist.

Oils for high-temperature chains

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	SPECIFICATIONS
Estar SHT 200	• Continuous greasing systems • Movements, roller chains, rollers, conveyors, cams operating in kilns or ovens • IS glass manufacturing machines • Conveyor chains for continuous hot presses	• Synthetic bases limiting oxidation deposits at very high temperatures • Guaranteed power even at very high temperatures • Ensures continuous lubrication of apparatus at temperatures up to +240 °C	200	• ISO 6743-4 HH • ISO 11158 HH
Estar XHT	• Continuous lubrication system • Movements, roller chains, rollers, conveyors, cams operating in kilns • Chains and bars in continuous panel presses for timber production • IS glass manufacturing machines • Conveyor chains for continuous hot presses	• Synthetic base lubricant for mechanisms operating at max. temperature of 280 °C • Reduced consumption due to its very low volatility and oxidation resistance	68 245	• ISO 6743-4 HL • ISO 6743-6 CKB • ISO 11158 HL • ISO 12925-1 CKB
Estar 250 Super Plus	• Continuous pressure chains and rollers for the production of panels • Chains and kiln bearings for glass wool production, dryers and polymerization tunnels	• Synthetic ester oil with high stability at very high temperature • Contains anti-wear, anti-oxidation and anti-corrosion additives • Detergent properties • Very good penetration thanks to low surface tension • Very low evaporation and leaves no coke residues at temperatures up to 280 °C	255	• ISO 6743-6 CKB • ISO 12925-1 CKB
Nevastane Chain Oil XT	• Lubrication of conveyor chains subjected to very high temperatures in the agri-food industry • Suitable for heavy loads, allows lubrication of any industrial mechanism working at high temperatures where incidental contact with food products is permissible under HACCP	• Synthetic base lubricant for mechanisms operating at max. temperature of 240°C • Excellent resistance to bacteria and mold development	220	• ISO 6743-4 HM • ISO 12925-1 KCC Danieli® Standard • Morgoil® Lubricant • Morgoil® Advanced Lubricant

Pneumatic oils

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*	SPECIFICATIONS
Pneuma	• Mineral oil	• Pneumatic perforators/pneumatic impact equipment, line greasers or atomizers for hammer drills	• Can be used in confined atmospheres: galleries, tunnels • Protection against tool wear • Anti-corrosion properties	46 to 150	• ISO 6743-11 P • ISO-L-PAB class

*Typical kinematic viscosity at 40°C in mm²/s



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Special applications

Process oils

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Finavestan white oils are produced by advanced refining processes that give them very high purity.

As medicinal-grade oils, they meet the requirements of the pharmaceutical, cosmetic and agri-food industries depending on national legislation.

Lyan products are technical white oils of very high purity. They are used in numerous non-food applications such as lubricants, plasticizers or as components.

White oils and petroleum jellies

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*	SPECIFICATIONS
Finavestan					
A 50 B	• White oil, medicinal	For the following industries: • Plastics: plasticizer for PS and other polymers used in packaging intended for food contact • Pharmaceutical: excipient	• Very high purity • Odorless, flavorless, colorless • Does not contain sulfur or aromatic hydrocarbons	7.5	• The use of these oils is subject to applicable national legislation • European pharmacopeia • American pharmacopeia • USA FDA: 21 CFR 178.3620 (a) • White mineral oil • NSF H1
A 80 B				15	
A 100 B				23	
A 180 B				29	
A 210 B				40	
A 300 B				62	
A 360 B				70	
A 520 B				100	

*Typical kinematic viscosity at 40°C in mm²/s



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Special applications

Insulating oils

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Isovoltine oils are extremely effective at insulating transformer components and ensuring efficient system cooling. They also offer remarkable protection against oxidation and prevent wear of the core, windings and other insulating materials.

The key properties of **Isovoltine** are:

- ◆ Enhanced insulation properties due to high dielectric breakdown voltage, resistance, interface surface tension and absence of polar substances. Outstanding oxidation resistance.
- ◆ Very high purity levels minimize power factors and help prevent temperature increases.
- ◆ Excellent cooling properties thanks to good fluidity and heat transfer capacity.
- ◆ A highly-refined oil with guaranteed chemical stability and service durability.
- ◆ Very effective protection of materials due to non-corrosive and cleansing properties.

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY*	SPECIFICATIONS
Isovoltine II	• Mineral oil, naphthenic (non-inhibited)	• For transformers, circuit breakers and other high voltage equipment	• High insulating power • Very high resistance to oxidation, offering prolonged service life • Excellent cooling properties	10	• IEC 60296:2012 • Non-inhibited
Isovoltine II X	• Mineral oil, naphthenic (inhibited)	• For transformers, circuit breakers and other high voltage equipment	• High insulating power • Contains an inhibitor for improved oxidation resistance • Good cooling properties	10	• IEC 60296:2012 • Inhibited
Isovoltine Bio	• Synthetic oil (ester)	• Transformers • Strongly recommended for reducing fire risks (mines, integrated transformers)	• Biodegradable • Excellent fire resistance • No danger to the aquatic environment	26	• IEC 61099 • IEC 61039 - Class K3 • OECD 301 B • NWG
Isovoltine Bio VE	• Vegetable oil	• Transformers • Strongly recommended for reducing fire risks (mines, integrated transformers)	• Readily biodegradable • Optimal fire resistance • Increased water absorption for the entire life of the insulating paper	39	• IEC 62770 • IEC 61039 - Class K2 • OECD 301 B

*Typical kinematic viscosity at 40°C in mm²/s



2

Special applications

Solvents & detergents

The **Finasol** range of degreasers is ideal for cleaning engines and a wide range of machine parts. They eliminate grease and detach insoluble deposits without impairing the quality of the cleaned components.

Finadet detergents are designed for cleaning production areas. They can be used in the agri-food industry and for difficult pollution elimination tasks.

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Grease solvents

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	DENSITY*	SPECIFICATIONS
Finasol MF	• Emulsifiable grease solvent	• Multi-purpose	• Allows full emulsification of oil fouling and separation of insoluble components	809	
Finasol Bio	• Pure or diluted degreasing agent • 100 % plant-based • VOC-free	• For cleaning all engine types, removing fuels and resins, eliminating tar and bitumen, cleaning floors	• Odorless, biodegradable and non-toxic • Non-aggressive to elastomers and plastics	855	• Readily biodegradable per OECD test 301 B • Totally biodegradable per OECD test 302 C

Detergents

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	DENSITY*	SPECIFICATIONS
Finasol MF	• Super-concentrated detergent	• Difficult cleaning tasks: metal parts, plastics, conveyor belts, tanks, bodywork, brushing and washing machines, floors	• Efficiently eliminates all types of soiling: oils, greases, waxes, sludge and inorganic substrates	1089	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	VISCOSITY**	SPECIFICATIONS
Cleaner F & V	• Detergent additive	• Cleaning of lubricating circuits: hydraulic, heat transfer, paper machines, etc.	• High detergent and dispersant action for efficient circuit cleaning • Recommended for elimination of varnishes	52 (F) 173 (V)	

*Typical density at 25 °C in kg/m³ **Typical kinematic viscosity at 40°C in mm²/s

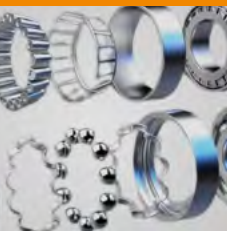
Coolelf is a line of ready-to-use cooling fluids. **Glacelf** anti-freeze must be diluted in water that meets the specifications of the manufacturers.

TotalEnergies cooling fluids protect engines against frost and the corrosion of metal cooling system components.

Using organic additives from the **Supra** line improves the performance of these products.

- ◆ Very long product life.
- ◆ Zero deterioration in anti-corrosion properties thanks to non-wasting additives.
- ◆ No formation of deposits that can impair heat transfer capacity.

PRODUCT	NATURE	APPLICATIONS	SPECIFIC BENEFITS	ANTI-FREEZE PROTECTION	SPECIFICATIONS
Coolelf Supra	• Monoethylene glycol (MEG)-base anti-freeze • Organic corrosion inhibitors	• Industrial diesel engines, gas engines of all sizes	• Ready-to-use cooling fluid • Long lifespan	-26 °C	• AFNOR NF R 15-601 • ASTM D 3306, D 4656, D 4985 • BS 6580 • SAE J 1034 MWM (Deutz) • GE Jenbacher • Rolls-Royce • MTU
Glacelf Supra			• Anti-freeze concentrate • Long lifespan	-20 °C to -69 °C depending on dilution percentage	
Coolelf CHP Supra	• Monoethylene glycol (MEG)-base anti-freeze • Organic corrosion inhibitors	• Engines for cogeneration • Recommended for countries where anti-freeze protection down to -7 °C is sufficient	• Ready-to-use cooling fluid • Long lifespan • Enhanced heat transfer capacity	-7 °C	• AFNOR NF R 15-601 • ASTM D 3306, D 4985 • BS 6580, BS 5117 • SAE J 1034 MWM (Deutz) • GE Jenbacher
Glacelf CHP Supra			• Anti-freeze concentrate • Long lifespan • Enhanced heat transfer capacity	-7 °C to -15 °C depending on dilution percentage	
Coolelf Supra GF NP	• Monoethylene glycol (MEG)-base coolant fluid • Organic corrosion inhibitors	• Nuclear industry • Recommended for cold countries	• Ready-to-use cooling fluid • Long lifespan • Increased anti-freeze protection	-37 °C	• AFNOR NF R 15-601 • ASTM D 3306, D 4656, D 4985, D 5345 • BS 6580, BS 5117 • SAE J 1034, EDF, PMUC • MTU
Coolelf MPG Supra	• Monopropylene glycol (MPG)-base anti-freeze • Organic corrosion inhibitors	• Agri-food and pharmaceutical industries, cogeneration plants: heat and cold transfer circuits	• Ready-to-use cooling fluid • Guaranteed good heat transfer	-26 °C	• AFNOR NF R 15-601 • ASTM D 4656 • BS 6580
Glacelf MPG Supra			• Anti-freeze concentrate • Guaranteed good heat transfer	-17 °C to -38 °C depending on dilution percentage	• AFNOR NF R 15-601 • ASTM D 3306
WT Supra	• Aqueous concentrate of special organic inhibitors for corrosion and cavitation	• Industrial diesel engines and gas engines not requiring anti-freeze protection	• Extended corrosion and cavitation protection • Optimal heat transfer capacity.		• MWM (Deutz) • Wärtsilä • Rolls-Royce: Bergen • GE Jenbacher



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Greases

Lithium/calcium greases

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Multis and **Lical** are lines of high-performance multi-purpose greases based on lithium/calcium soaps. They are available in NLGI grades 000 to 3, with or without solid additives.

Multis and **Lical** greases are formulated to provide good protection against wear, rust and water washout. **Multis** and **Lical** greases make it easier to streamline inventories and reduce maintenance costs.

Mineral range

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Multis 2	• Multi-purpose grease for automotive and industrial applications	• Compatible with most conventional	lithium/calcium soaps	2	120	-25 °C to +120 °C	L-XBCEA 2	K2K-25
Multis 3			Lithium/calcium	3	120	-20 °C to +120 °C	L-XBCEA 3	K3K-20
Multis EP 000	• For centralized greasing systems, gearboxes	• Good pumpability • Extended service lifespan thanks to the good resistance of the lubricating film	Lithium	000	150	-30 °C to +100 °C	L-XCBEB 000	GP000G-30
Multis EP 00			Lithium/calcium	00	150	-30 °C to +100 °C	L-XCBEB 00	GP00G-30
Multis EP 0			Lithium/calcium	0	150	-30 °C to +120 °C	L-XCBEB 0	MP0K-30
Multis EP 1	• Extreme-pressure multi-purpose grease for a wide range of industrial and automotive applications	• Simpler inventories and maintenance operations	Lithium/calcium	1	150	-30 °C to +120 °C	L-XCBEB 1	KP1K-30
Multis EP 2			Lithium/calcium	2	150	-25 °C to +120 °C	L-XCBEB 2	KP2K-25
Multis EP 3			Lithium/calcium	3	150	-20 °C to +120 °C	L-XCBEB 3	KP3K-20
Multis MS 2	• Extreme-pressure multi-purpose grease for heavy loads applications subject to shock and vibration	• Contains 1 % MoS ₂ (molybdenum disulfide) • Prevents jamming and seizing	Lithium/calcium	2	150	-25 °C to +130 °C	L-XBCEB 2	MPF2K-25
Multis HP 2 Moly	• High Pumpability Grease with outstanding Extreme Pressure properties	• Contrains 3 % of MoS ₂	Lithium/Calcium	2	460	-35 °C to +120 °C	L-XCCEB 2	KP2K-35
Multis HP 2 Moly Extra	• High Pumpability Grease with outstanding Extreme Pressure properties	• Contrains 3 % of MoS ₂	Lithium/calcium	2	680	-30 °C to +120 °C	L-XCCEB 2	KP2K-30
Multis Mine OGL 1	• Extreme-Pressure Grease dedicated to Heavy-loaded Open-Gear Lubrication	• Contrains 3 % of MoS ₂ and 6 % of Graphite	Lithium	1	680	-20 °C to +120 °C	L-XBCHB 1	KPF2K-20

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Lithium/calcium greases

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Mineral & synthetic ranges

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Multis XHV 00	Extreme-pressure multi-purpose grease for high-load, low-speed applications where a water washout risk exists		Lithium/calcium	00	500	-20 °C to +100 °C	L-XBBHB 00	KP00H-20
Multis XHV 2	- Extreme-pressure multi-purpose grease for very high-load, low-speed applications where a water washout risk exists - Recommended for fifth wheel couplings in the transportation sector	- Exceptional grip on metal surfaces - Reduces maintenance and downtime	Lithium/calcium	2	1300	-20 °C to +120 °C	L-XBBHB 2	KP2K-20
Multis XHV 2 Moly	Extreme-pressure multi-purpose grease for very high-load, low-speed applications where a water washout risk exists, consisting of 3 % of MoS₂	- Recommended for fifth wheel couplings in the transportation sector - Exceptional grip on metal surfaces - Reduces maintenance and downtime	Lithium/Calcium	2	1300	-20 °C to +120 °C	L-XBBHB 2	KP2K-20
Multis ZS 000	- Multi-purpose synthetic grease for centralized lubrication systems requiring NLGI 00 or 000 - Generally indicated for vehicle chassis, trucks and construction machinery	- Impressive pumpability even at very low temperatures - Recommended for centralized lubrication systems by MAN, Willy Vogel, Mercedes-Benz	Lithium/calcium	00 - 000	42	-45 °C to +120 °C	L-XECFB 00/000	MP00/000K-45
Multis XLT 2	Very high-performance synthetic grease for very high-speed and/or very low-temperature applications	- Extended range of operating temperatures - Reduced power consumption due to reduced operating torque - Achieves a very high speed factor - Compatible with plastics	Lithium/calcium	2	18	-60 °C to +120 °C	L-XECEA 2	K2K-60
Lical MS 2	Extreme-pressure multi-purpose grease recommended for heavy-duty applications in harsh environments (water, dust)	- Contains 3 % MoS₂ (molybdenum disulfide) - Very good resistance to heavy loads and impact - Very good adhesion to metal surfaces	Lithium/calcium	2	210	-20 °C to +120 °C	L-XBCHB 2	KPF2K-20
Lical WR EP 2	Extreme-pressure grease recommended for most industrial applications, including wet and heavy-duty applications	- Very good water resistance - Useful for streamlining inventories - Simplifies maintenance operations	Lithium/calcium	2	110	-25 °C to +120 °C	L-XBCHB 2	KP2K-25
Lical EP 2	Extreme-pressure multi-purpose grease recommended for most industrial applications, including heavy-duty	- Good water resistance - Useful for streamlining inventories - Simplifies maintenance operations	Lithium/calcium	2	220	-25 °C to +130 °C	L-XBCHB 2	KP2K-25

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Lithium/calcium greases

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Bio range

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEM- PERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Biomultis EP 0	• Extreme-pressure biodegradable universal grease for applications requiring very soft, environmentally friendly lubricants (NLGI grade 0)	• Ecolabel TLL (Total Loss Lubrication) • Fully biodegradable under OECD standard 301-B (> 80 %) • Classified as an environmentally-acceptable lubricant (EAL) under the 2013 Vessels General Permit (VGP) issued by the US Environmental Protection Agency (EPA)w • Synthetic base oil for enhanced performance at low temperatures	Lithium	0	150	-50 °C to +140 °C	L-XEDEB 0	KP0N -50
Biomultis EP 1	• Extreme-pressure biodegradable universal grease for applications requiring environmentally friendly lubricants and grease in NLGI grade 1	• Ecolabel TLL (Total Loss Lubrication) • Fully biodegradable under OECD standard 301-B (> 80 %) • Classified as an environmentally-acceptable lubricant (EAL) under the 2013 Vessels General Permit (VGP) issued by the US Environmental Protection Agency (EPA) • Synthetic base oil for enhanced performance at low temperatures	Lithium	1	150	-50 °C to +140 °C	L-XEDEB 1	KP1N -50
Biomultis EP 2	• Extreme-pressure biodegradable multi-purpose grease for industrial and marine applications requiring environmentally-acceptable lubricants (EAL)	• Ecolabel TLL (Total Loss Lubrication) • Synthetic base oil for enhances performance at low temperatures • Excellent biodegradability per OECD 301-B (> 60 %) • Classified as an environmentally-acceptable lubricant (EAL) under the 2013 Vessels General Permit (VGP) issued by the US Environmental Protection Agency (EPA) • Good resistance to water washout	Lithium	2	150	-45 °C to +160 °C	L-XEEEB 2	KP2P-45
Biomultis XHV 2	• Specialty biodegradable grease for extreme load applications and applications requiring a biodegradable product	• Excellent biodegradability per OECD 301-B (> 60 %) • Classified as an environmentally acceptable lubricant (EAL) under the 2013 Vessels General Permit (VGP) issued by the US Environmental Protection Agency (EPA) • Good resistance to water washout • Ecolabel TLL (Total Loss Lubrication) • Synthetic base oil for enhances performance at low temperatures	Lithium	2	680	-45 °C to +140 °C	L-XEDHB 2	KP2N-45

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Lithium complex

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Multis Complex complex lithium soap greases are premium-quality products for a wide range of applications requiring intensive use. They are formulated with high-performance additives offering impressive substrate protection.

The **Multis Complex** line is an excellent choice for harsh operating conditions such as extreme temperatures, heavy loads and contaminated environments (water, dust).

Mineral range

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKE- NER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS ISO 6743-9 DIN 51502	
Multis Complex EP 2	• Extreme-pressure multi-purpose grease suitable for wheel bearings, ball and roller bearings, plain bearings, seals	• Excellent mechanical and thermal stability • Reduced downtime and maintenance costs	Lithium complex	2	165	-20 °C to +160 °C	L-XBEHB 2	KP2P-20
Multis Complex EP 3			Lithium complex	3	165	-20 °C to +160 °C	L-XBEHB 3	KP3P-20
Multis Complex MHD 220	• Extreme Pressure grease for Heavy-Duty application	• Excellent mechanical and thermal stability • Excellent resistance to heavy load	Lithium complex	2	220	-25 °C to +160 °C	L-XBEHB 2	KP2P-25
Multis Complex HV 2	• Extreme-pressure multi-purpose grease for heavy-duty applications • For wheel bearings, ball bearings, roller bearings, plain bearings, seals, etc.	• Excellent mechanical and thermal stability • Reduced downtime and maintenance costs	Lithium complex	2	340	-30 °C to +160 °C	L-XCEHB 2	KP2P-30
Multis Complex HV 2 Moly	• Grease for applications with extreme loads and high temperatures	• Contains 3 % MoS ₂ (molybdenum disulfide) • Good water resistance • Reduces wear, rust and corrosion	Lithium complex	2	340	-30 °C to +160 °C	L-XCEHB 2	KPF2P-30
Multis Complex XHV2 Moly	• Extreme-pressure grease suitable for slow, heavy-load bearings and sliding mechanisms, especially in the mining industry	• Contains 3 % MoS ₂ (molybdenum disulfide) • Reduces wear, rust and corrosion • Excellent water resistance • Excellent shock and vibration resistance	Lithium complex	2	800	-20 °C to +160 °C	L-XBEHB 2	KPF2P-20
Multis Complex S2A	• Semi-synthetic grease for general lubrication, suitable for heavy-duty applications, especially at high temperatures where an ordinary grease is not sufficient	• Outstanding lubrication performance at low and high temperature • Improved mechanical efficiency	Lithium complex	2	120	-25 °C to +160 °C	L-XBEHB 2	KP2P-25

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Synthetic / Semi-synthetic ranges

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Multis Complex S2A	• Semi-synthetic grease for general lubrication, suitable for heavy-duty applications, especially at high temperatures where an ordinary grease is not sufficient	• Outstanding lubrication performance at low and high temperature • Improved mechanical efficiency	Lithium complex	2	120	-25 °C to +160 °C	L-XBEHB 2	KP2P-25

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Multis Complex SHD 00	• Extreme-pressure, high-performance, semi-fluid synthetic grease suitable for transmissions	• Reduces wear in gear trains due to excellent EP properties • Extended service lifespan even at high operating temperatures • Reduced power consumption due to reduced operating torque	Lithium complex	00	460	-50 °C to +160 °C	L-XEEHB 00	KP00P-50
Multis Complex SHD 32	• High-performance synthetic grease for bearings operating across an extended temperature range	• Outstanding performance at low and high temperature • Improved mechanical efficiency • Long service lifespan	Lithium complex	2	32	-50 °C to +160 °C	L-XEEHB 2	KP2P-50
Multis Complex SHD 100	• Extreme-pressure synthetic grease particularly suitable for applications with high-speed bearings such as electric motors		Lithium complex	2	100	-50 °C to +160 °C	L-XEEHB 2	KP2P-50
Multis Complex SHD 220	• Extreme-pressure multi-purpose synthetic grease for intensive-use applications in the automotive and industrial sectors	• Outstanding performance at low and high temperature • Improved mechanical efficiency • Extended service life	Lithium complex	2	220	-45 °C to +160 °C	L-XEEHB 2	KP2P-45
Multis Complex SHD 460	• High performance synthetic grease for outstanding protection of low-speed bearings subjected to heavy loads over an extended range of temperatures, recommended for the pulp and paper industry		Lithium complex	1,5	460	-40 °C to +160 °C	L-XEEHB 1/2	KP1/2P-40

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s

Lithium complex

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Greases

Polyurea

The **Altis** line of premium quality greases provides extended service lifespan even at extreme temperatures. These greases are based on a polyurea thickener specially formulated for high-speed, high-temperature applications.

Altis greases are suitable for lifetime and long-term lubrication.

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS ISO 6743-9 DIN 51502	
Altis EM 2	High-performance greases suitable for high-speed bearings and high-temperature applications such as electric motors	- Reduced vibration - Lower energy consumption - Extended re-lubrication intervals	Polyurea	2	110	-20 °C to +180 °C	L-XBFHA 2	KP2R-20
Altis MV 2	- High-performance grease for high-speed and medium-load applications - Extensively used in fan bearings, roller bearings and guidance systems in dry areas of paper mills	- Reduced vibration - Lower energy consumption - Extended re-lubrication intervals - Suitable for fast-start applications	Polyurea	2	160	-20 °C to +160 °C	L-XBEEB 2	KP2P-20
Altis SH 2	- Very high-performance synthetic grease, suitable for high-speed bearings such as electric motors over an extended range of temperatures - Formulated for initial fill applications with extended service lifespan	- Reduced vibration - Lower energy consumption - Extended re-lubrication intervals - Suitable for extreme temperature operations, even at high speed	Polyurea	2	80	-40 °C à +180 °C	L-XDFEB 2	KP2R-40
Altis HV 1	- Extreme-pressure grease for applications subject to moderate loads and high temperatures - Recommended for the zero segment of continuous casting, pellet presses	- Reduced vibration - Maintains performance at high temperature	Polyurea	1	500	-20 °C to +180 °C	L-XBFEB 1	KP1R-20

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Calcium sulfonate complex

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Ceran greases are high-tech products that TotalEnergies has perfected over a number of years.

They are based on a calcium complex sulfonate soap formula that offers outstanding resistance to water, wear and loading, as well as good mechanical stability. **Ceran** products are suitable for heavy loads applications across an extended range of temperatures.

The **Ceran** line includes products that are the lubricants of choice for many industries around the world due to their reputation for outstanding performance, quality and reliability.

Mineral greases

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS ISO 6743-9 DIN 51502	
Ceran XM 100	• Extreme-pressure, high-performance greases for high-speed applications over an extended temperature range • Recommended for high-speed bearings in the pulp and paper sector • Suitable for intensive and off-road applications in civil engineering and industry	• Excellent water resistance • High-speed applications • Extended re-lubrication intervals	Calcium sulfonate complex	1,5	100	-30 °C to +180 °C	L-XCFIB 1/2	KP1/2R-30
Ceran XM 220	• Extreme-pressure, high-performance multi-purpose grease • Recommended for lubrication in difficult industrial applications with extreme conditions (high load, temperature, water, dust) such as continuous casting and rolling mills in steel plants, bearings in wet and dry zones (felt rollers) in paper mills	• Excellent water resistance • High load applications • Extended re-lubrication intervals • Useful for streamlining inventories	Calcium sulfonate complex	1,5	220	-30 °C to +180 °C	LXCFIB 1/2	KP1/2R-30
Ceran XM 220 Moly	• Extreme-pressure, high-performance multi-purpose grease for intensive automotive and industrial applications such as mining in temperate and hot zones • Recommended for applications subject to heavy loads in harsh environments (shock, water, dust)	• Contains 5 % MoS₂ (molybdenum disulfide) • High load applications • Outstanding water resistance • Good anti-corrosion properties	Calcium sulfonate complex	1,5	220	-30 °C to +180 °C	L-XCFIB 1/2	KP1/2R-30
Ceran XM 320	• Extreme-pressure, high-performance multi-purpose grease designed for the lubrication of industrial bearings operating at high temperatures and loads in wet and dry zones of paper machines	• Excellent water resistance • High load applications • Excellent anti-oxidation and anti-corrosion properties	Calcium sulfonate complex	1,5	320	-25 °C to +180 °C	L-XBFIB 1/2	KP1/2R-25

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Calcium sulfonate
complex

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Mineral greases

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Ceran XM 460	• Extreme-pressure, very high-performance multi-purpose grease for industrial applications subject to shock and high temperatures • Recommended for the lubrication of bearings in steel mills, pulp and paper production, hardwood pellet presses and all industrial applications exposed to harsh conditions (water, dust)	• Excellent water resistance • High load applications • Extended re-lubrication intervals • Good anti-corrosion properties	Calcium sulfonate complex	1,5	460	-25 °C to +180 °C	L-XBFIB 1/2	KP1/2R-25
Ceran XM 460 Moly	• Extreme-pressure, very high-performance, multi-purpose grease for intensive industrial applications (high loads, shock, high temperatures, water) • Recommended for the lubrication of bearings in severe applications (cement, steel, paper and mines)	• Contains 3 % MoS₂ (molybdenum disulfite) • Excellent water and temperature resistance • High load applications • Extended re-lubrication intervals • Good anti-corrosion properties	Calcium sulfonate complex	1,5	460	-25 °C to +180 °C	L-XBFIB 1/2	KP1/2R-25
Ceran XM 720	• Extreme-pressure, very high-performance multi-purpose grease for industrial applications subject to high loads and temperatures • Recommended for intensive industrial applications (heavy loads, high temperatures, water, dust) • Specially developed for applications subject to very heavy loads, particularly in the steel industry	• Excellent water resistance • Applications subject to very heavy loads • Extended re-lubrication intervals • Good anti-corrosion properties	Calcium sulfonate complex	1,5	720	-25 °C to +180 °C	L-XBFHB 1/2	KP1/2R-25

Synthetic greases

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Ceran XS 80	• Extreme-pressure, very high-performance synthetic grease designed for high-speed applications across an extended temperature range	• Very low temperature • Excellent water resistance • Long service lifespan • Lower energy consumption	Calcium sulfonate complex	1,5	80	-55 °C to +180 °C	L-XEFFB 1/2	KP1/2R-55
Ceran XS 320	• Extreme-pressure, very high-performance synthetic grease designed for high-load applications across an extended temperature range in harsh conditions	• Outstanding loading and shock resistance • Excellent water resistance • Suitable for very low temperatures	Calcium sulfonate complex	1,5	320	-40 °C to +180 °C	L-XDFFB 1/2	KP1/2R-40
Ceran XS 40 Moly	• Extreme-pressure, very high-performance synthetic grease designed for intensive-use equipment in arctic conditions • Recommended for automotive and industrial (mining) applications	• Contains 5 % MoS₂ (molybdenum disulfide) • Outstanding loading and shock resistance • Excellent water resistance • Suitable for very low temperatures	Calcium sulfonate complex	1,5	40	-50 °C to +180 °C	L-XEFFB 1/2	KP1/2R-50

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Calcium sulfonate
complex

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Special products

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Ceran CA	• Extreme-pressure semi-fluid adhesive grease for metal cables, rails, winches and chains		Calcium sulfonate complex	0	325	-25 °C to +150 °C	L-XBDIB 0	OGPON-25
Ceran AD Plus	• Extreme-pressure, high-adhesion grease suitable for harsh conditions • Recommended for steel cables • Suitable for applications in cement plants, mines, quarries, offshore, marine	• Outstanding water resistance • Extended service life of parts subjected to heavy loads	Calcium sulfonate complex	0,5	>1700	-20 °C to +150 °C	L-XBDIB 0	OGPON-20
Ceran HRM 460	• Multi-purpose water-resistant grease for heavy-load applications • Specially designed for the steel industry	• Multi-purpose grease • Heavy loads • Water resistant • High temperatures • Protection against corrosion	Calcium sulfonate complex	2	460	-25 °C to +180 °C	L-XBFIB 2	KP2R-25
Ceran ST 2	• Extreme-pressure, high-adhesion grease, suitable for high temperatures, heavy loads and environments in which water is present • Suitable for multi-purpose applications in industry (coilers, rolling mills) and the offshore environment (cables, gear trains, eccentric bearings)	• Excellent water resistance without loss of consistency • Very good adhesion to metal surfaces • Extended re-lubrication intervals	Calcium sulfonate complex	2	180	-25 °C to +180 °C	L-XBFIB 2	KP2R-25
Ceran GEP	• Extreme-pressure semi-fluid adhesive grease, suitable for high temperatures and applications with heavy loads • Recommended for gear trains, drive trains and exposed gears in sugar cane crushers	• Contains 6.5 % graphite and 1 % MoS ₂ (molybdenum disulfide) • Good adhesion • Extended service lifespan	Calcium sulfonate complex	0	695	-25 °C to +180 °C	L-XBFHB 0	OGPF0R-25
Ceran MS	• Extreme-pressure multi-purpose grease suitable for industrial applications subject to heavy loads and high temperatures • Recommended for applications exposed to shock with vibrations	• Contains 2 % MoS ₂ (molybdenum disulfide) • Extended service lifespan • Very good adhesion	Calcium sulfonate complex	1,5	650	-20 °C to +180 °C	L-XBFHB 1/2	KPF1/2R-20

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



Calcium greases

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Biomerkan EP 0	Recommended for applications in frequent contact with water, where a fluid lubricant (NLGI grade 0) is required	- Extreme-pressure biodegradable vegetable oil-based fluid grease - Good mechanical stability and water resistance - Excellent anti-corrosion properties	Calcium	0	25	-35 °C to +100 °C	L-XCBEB 0	KP0G-35
Biomerkan EP 2	Multi-purpose grease recommended for applications in frequent contact with water	- Extreme-pressure biodegradable vegetable oil-based grease - Good mechanical stability and water resistance - Excellent anti-corrosion properties	Calcium	2	32	-30 °C to +100 °C	L-XCBHB 2	KP2G-30
Biomerkan RS	- Biodegradable water-resistant grease - Recommended for marine and agricultural uses	- Excellent biodegradability per OECD 301-B (> 60 %) - Complies with BLUE ANGEL criteria Vertrag no. 11273 - Good resistance to water washout	Calcium	3	32	-20 °C to +90 °C	L-XBBEA 3	ME3E-20
Bioadhesive Plus	- Biodegradable grease with outstanding adhesion for industrial and marine applications requiring environmentally acceptable lubricants (EALs) - Recommended for waterborne applications (Galle chains)	- Excellent biodegradability per OECD 301-B (> 60 %) - EAL grease compliant with EPA 2013 Vessels General Permit (VGP) - Insoluble in water - Excellent anti-corrosion properties even in the presence of seawater	Calcium	1	320	-50 °C to +90 °C	L-XEBIA 1	ME1E-50
Bio OG Plus	- Extreme-pressure, high-adhesion biodegradable grease for industrial and marine applications requiring environmentally acceptable lubricants (EALs) - Specially recommended for lubrication of open gear trains	- Excellent biodegradability per OECD 301-B (> 60 %) - Good resistance to water washout - Excellent anti-corrosion properties even in the presence of seawater	Calcium	0,5	1000	-40 °C to +90 °C	L-XDBIB 0/1	OGP1E-40

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



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Greases

Special-purpose greases

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PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	THICKENER	NLGI GRADE	VISCOSITY* HDB	OPERATING TEMPERATURES	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
Caloris 23	• Grease suitable for high temperatures and low speeds	• Resistant to acidic and alkaline atmospheres	Bentone	2,5	500	-15 °C to +160 °C	L-XAEEA 2/3	M2/3P-15
Caloris MS 23	• Grease suitable for high temperatures, low speeds, heavy loads and shock-prone environments	• Contains 1 % MoS ₂ (molybdenum disulfide) • Resistant to acidic and alkaline atmospheres	Bentone	2,5	500	-15 °C to +160 °C	L-XAEEA 2/3	MF2/3P-15
Marson SY 00	• Synthetic grease suitable for heavy loads applications • For worm gears, enclosed gear trains and recessed mechanisms	• Contains PAG base oil • Low friction coefficient • Long service lifespan	Lithium	00	145	-35 °C to +130 °C	L-XCCEB 00	GPGP00K-35
Marson SY 2	• Synthetic grease suitable for heavy loads applications • Recommended for applications in contact with liquid petroleum distributors	• Contains PAG base oils • Resistant to hydrocarbon washout	Lithium	2	145	-40 °C to +120 °C	L-XDCEA 2	MPPG2K-40
Specis CU	• Anti-seize grease for threaded assemblies subject to severe corrosion conditions, water vapour, gases	• Contains a copper additive • Anti-seize properties • Easy disassembly of components in a wet or humid atmosphere	Bentone	1	500	-20 °C to +300 °C	L-XBGBB 1	MPF1U-20

*Typical kinematic viscosity of the base oil at 40 °C in mm²/s



Lubrication for open gear

Aluminum complex grease
with black solid additives 32

High viscous transparent oils ...33

High viscosity compounds
with white solid additives
/ Cleaning solution 34

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lubrication
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4



4

Lubrication
for open
gear

Aluminum complex grease

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lubrication
for cement
industry
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Grafolog is a line of greases containing an aluminum complex thickener and black solid additives which provide:

- An outstanding load-carrying capacity
- Reliable protection of gear set's active flanks under high load and temperature
- Outstanding adhesivity

PRODUCT	TYPE OF PRODUCT	APPLICATIONS	VISCOSITY 40 °C (mm ² /sec)	NLGI GRADE	METHOD OF APPLICATION
Grafolog H1	• Aluminum complex grease with black solid additives	• Priming: evaluation of the drive's load pattern	1000	1	By brush
Grafolog H00 R	• Aluminum complex grease with black solid additives	• Running-in: to increase the effective contact pattern of tooth flanks for new gear set or after repair.	320	0	Spray
Grafolog R fluid	• Aluminum complex grease with black solid additives	• Running-in	2000	0	Bath & Circulation
Grafolog H00 LT	• Aluminum complex grease with black solid additives	• Operational Lubricant	130	0	Spray lubrication for cold temperature
Grafolog H0	• Aluminum complex grease with black solid additives		750	0	Spray
Grafolog H0+	• Aluminum complex grease with black solid additives		1100	0 - 1	Spray
Grafolog H2200	• Aluminum complex grease with black solid additives		2200	0 - 00	Spray
Grafolog M Fluid	• Aluminum complex grease with black solid additives		3000		Bath & Circulation
Grafolog H6000	• Aluminum complex grease with black solid additives		6000	0 - 00	Spray
Grafolog MT fluid	• Aluminum complex grease with black solid additives		7500		Bath & Circulation
Grafolog H 10 K	• Aluminum complex grease with black solid additives		10000	0 - 00	Spray

All our Grafolog products are without heavy metals and bitumen.



4

Lubrication
for open
gear

High viscous transparent oils

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lubrication
for cement
industry
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Gear Fluid is a range of high viscosity transparent oils.

These oils provide:

- High film thickness formation
- Clean environment and immediate teeth inspection during operations
- Lower quantity requested

PRODUCT	TYPE OF PRODUCT	APPLICATIONS	VISCOSITY 40 °C - 100 °C (mm ² /sec)	METHOD OF APPLICATION
Gear Fluid P	• High viscosity semi-synthetic oil for priming operation	• Priming: to evaluate the drive's load pattern	25 000 / 1000	By brush
Gear Fluid R	• High viscosity semi-synthetic oil for running-in operation	• Running in: to increase the effective contact pattern of tooth flanks for new gear set or after repair	680 / 41	Spray / Bath & circulation
Gear Fluid 180	• High viscosity semi-synthetic oil	• Operational Lubricant	4600 / 180	Spray / Bath & circulation
Gear Fluid 300	• High viscosity semi-synthetic oil		9000 / 300	Spray / Bath
Gear Fluid 550	• High viscosity semi-synthetic oil		17 000 / 550	Spray / Bath
Gear Fluid 550 D	• High viscosity semi-synthetic oil • Solvent based solution		17 000*/ 550*	Spray
Gear Fluid 1000	• High viscosity semi-synthetic oil		25 000 / 1000	Bath
Gear Fluid 1000 D	• High viscosity semi-synthetic oil • Solvent based solution		25 000* / 1000*	Spray

Every product of the Gearlog range contains a flame retardant reducing the risks of fire. All our Gear Fluid products are without heavy metals and bitumen.

* After solvent evaporation.



4

Lubrication
for open
gear

High-viscosity /
Cleaning solutions

Solutions of
lubrication
for cement
industry
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Gearlog is a line of high viscosity compounds with white solid additives.

It provides:

- An outstanding load-carrying capacity
- Excellent wear protection under high load and temperature
- A clean environment & possibility of visual inspection during operations

PRODUCT	TYPE OF PRODUCT	APPLICATIONS	VISCOSITY 40 °C - 100 °C (mm ² /sec)	METHOD OF APPLICATION
Gearlog P	• High viscosity synthetic oil with solid additives	• Priming: <i>to evaluate the drive's load pattern</i>	25 000 / 1000	By brush
Gearlog R	• High viscosity synthetic oil with solid additives	• Running in: <i>to increase the effective contact pattern of tooth flanks for new gear set or after repair</i>	680	Spray / Bath & Circulation
Gearlog 200	• High viscosity synthetic oil with solid additives	• Operational Lubricant	5700 / 200	Spray / Bath & circulation
Gearlog 500	• High viscosity synthetic oil with solid additives		15 000 / 500	Spray / Bath
Gearlog 500 D	• High viscosity synthetic oil with solid additives • Solvent based solution		15 000* / 550*	Spray
Gearlog 1000	• High viscosity synthetic oil with solid additives		25 000 / 1000	Bath
Gearlog 1000 D	• High viscosity synthetic oil with solid additives • Solvent based solution		25 000* / 1000*	Spray

Every product of the Gearlog range contains a flame retardant reducing the risks of fire. All our Gear Fluid products are without heavy metals and bitumen.

* After solvent evaporation.

Cleaning

PRODUCT	APPLICATIONS	SPECIFIC BENEFITS	ISO VG	METHOD OF APPLICATION
Lubriclean EP	Suitable for cleaning open gear trains, chains, cables etc. even during service	• Solvent-based cleaning agent • After application, the product slowly evaporates and leaves a lubricating film with extreme pressure properties	3	High pressure spray



Lubrication of quarry machinery

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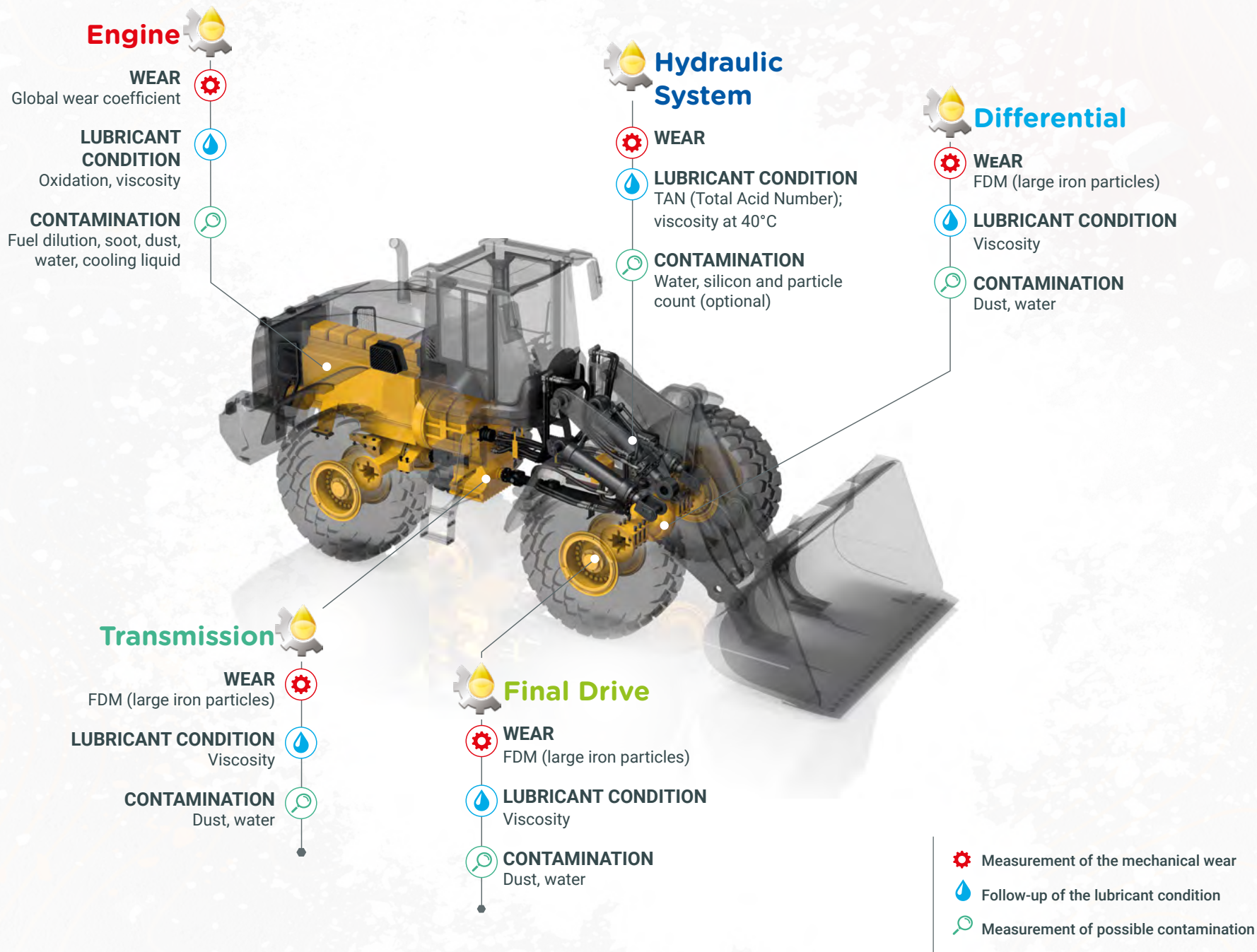


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Lubrication
of quarry
machinery

Heavy Duty lubrication

Solutions of
lubrication
for cement
industry
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5

Lubrication
of quarry
machinery

Engines

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lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF	RECOMMENDED FOR	SUITABLE FOR
Rubia Works 5000 10W-40	• ACEA E6, E7, E8, E9, E11 • API CK-4/ CJ-4/ CI-4 plus/ CI-4/ CH-4 • JASO DH-2	• DEUTZ DQC IV-18 LA • RENAULT RLD-3 • MTU Category 3.1 • MAN M 3775 • MACK EOS 4.5 • DTFR 15C120 (228.52)* • DTFR 15C110 (228.51)* • DTFR 15C100 (228.31)* • VOLVO VDS-4.5 • CUMMINS CES 20086	• CATERPILLAR ECF-3/ ECF-2/ ECF-1-a • LIEBHERR LH-01 ENG LA/ LH-01		• IVECO FPT TLS E9 • IVECO FPT TLS CK-4 • MAN M 3477 • KOMATSU • WIRTGEN • VOGELE, etc.
Rubia Works 5000 FE 5W-30	• ACEA E4, E6, E7, E8, E9, E11 • API CK-4/ CJ-4/ CI-4 plus/ CI-4/ CH-4 • JASO DH-2	• DEUTZ DQC IV-18 LA • MTU Category 3.1 • MAN M 3677/ M 3775/ M 3777 • DTFR 15C110 (228.51)* • DTFR 15C120 (228.52)* • DTFR 15C100 (228.31)* • VOLVO VDS-4.5 • MACK EOS 4.5 • RENAULT RLD-3 • SCANIA LDF-4 • CUMMINS CES 20086	• CATERPILLAR ECF-3/ ECF-2/ ECF-1-a • LIEBHERR LH 01 ENG LA/ LH-01 • DAF • DEUTZ TTCD		• KOMATSU • HITACHI • ISUZU • MITSUBISHI • CUMMINS • PERKINS • CASE • JCB • NEW- HOLLAND • IVECO FPT TLS E6 • MAN M 3477 • BELL • WIRTGEN • VOGELE, etc.
Rubia Works 4000 15W-40	• ACEA E7, E9, E11 • API CK-4/ CJ-4/ CI-4 plus/ CI-4/ CH-4/ SN • JASO DH-2	• DEUTZ DQC III-18 LA • VOLVO VDS-4.5 • MTU Category 2.1 • RENAULT RLD-3 • MACK EO-S 4.5 • DTFR 15C100 (228.31)** • CUMMINS CES 20086 • MAN M 3775 • ALLISON TES 439 • ISUZU Recommended Lubricant (2020)	• CATERPILLAR ECF-3/ ECF-2/ ECF-1-a • FORD WSS-M2C171-F1 • DETROIT DIESEL DFS 93K222		• KOMATSU • HITACHI • ISUZU • KOBELCO • IVECO FPT TLS OFV • JCB • CASE NEW-HOLLAND, etc.
Rubia Works 4000 10W-40	• ACEA E7, E9, E11 • API CK-4/ CJ-4/ CI-4 plus/ CI-4/ CH-4/ SN • JASO DH-2	• DEUTZ DQC III-18 LA • VOLVO VDS-4.5 • MTU Category 2.1 • RENAULT TRUCKS RLD-3 • MACK EO-S 4.5 • DTFR 15C100 (228.31)** • CUMMINS CES 20086 • MAN M 3775	• CATERPILLAR ECF-3/ ECF-2/ ECF-1-a • DETROIT DIESEL DFS 93K222		• HITACHI • MITSUBISHI • DEERE • PERKINS • CASE NEW- HOLLAND • LIEBHERR • JCB • IVECO FPT TLS E9 • KOBELCO • DOOSAN • JOHN DEERE, etc.
Rubia Works 4000 FE 10W-30	• ACEA E7, E9, E11 • API CK-4/ CJ-4/ CI-4 plus/ CI-4/ CH-4/ SN • JASO DH-2	• DEUTZ DQC III-18 LA • VOLVO VDS-4.5 • MTU Category 2.1 • RENAULT VI RLD-3 • MACK EO-S 4.5 • DTFR 15C100 (228.31)** • CUMMINS CES 20086 • MAN M 3775 • ISUZU Recommended Lubricant (2020)	• CATERPILLAR ECF-3/ ECF-2/ ECF-1-a • DETROIT DIESEL DFS 93K222		• HITACHI • MITSUBISHI • DEERE • PERKINS • CASE NEW-HOLLAND • LIEBHERR • JCB • KOBELCO • DOOSAN • JOHN DEERE, etc.
Rubia Works 1000 Plus 15W-40	• ACEA E7 • JASO DH-1 • API CI-4 Plus/ CI-4/ CH-4/ SL • Global DHD-1	• CUMMINS CES 20078 • RENAULT VI RLD-2 • DEUTZ DQC III-18 • MACK EO-N • MTU Category 2 • DETROIT DIESEL DFS 93K214 • DTFR 15B110 (228.3)** • VOLVO VDS -3	• CATERPILLAR ECF-2, ECF-1-a • MAN M 3275	• IVECO FPT T2 E7 • KOMATSU • HITACHI • SCANIA • MITSUBISHI • DEERE • PERKINS • CASE • DAF • KUBOTA • NEW-HOLLAND • LIEBHERR • JCB, etc.	
Rubia Works 1000 15W-40	• ACEA E7 • JASO DH-1 • API CI-4/ CH-4/ CF/ SL	• CUMMINS CES 20078/ 20077/ 20076 • RENAULT VI RLD-2 • DEUTZ DQC III-18 • MACK EO-N • MTU Category 2 • DETROIT DIESEL DDC 93K215 • DTFR 15B110 (228.3)** • VOLVO VDS -3 • ALLISON TES 439	• CATERPILLAR ECF-2, ECF-1-a • MAN M 3275	• IVECO FPT T2 E7 • KOMATSU • HITACHI • SCANIA • MITSUBISHI • DEERE • PERKINS • CASE • DAF • KUBOTA • NEW-HOLLAND • LIEBHERR • JCB, etc.	
Rubia Works 1000 FE 10W-30	• ACEA E7 • JASO DH-1 • API CI-4/ CH-4 • Global DHD-1	• CUMMINS CES 20078 • RENAULT VI RLD-2 • DEUTZ DQC III-18 • MACK EO-N • MTU Category 2 • DTFR 15B110 (228.3)** • VOLVO VDS -3	• CATERPILLAR ECF-2, ECF-1-a • MAN M 3275		• KOMATSU • HITACHI • SCANIA • IVECO • MITSUBISHI • DEERE • PERKINS • CASE • DAF • KUBOTA • NEW-HOLLAND • LIEBHERR • JCB, etc.

* New Daimler update, previously known as MB-Approval 228.52, MB-Approval 228.51, MB-Approval 228.31

** New Daimler update, previously known as MB-Approval 228.31



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Lubrication
of quarry
machinery

Powershift transmission fluids

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lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF	RECOMMENDED FOR	SUITABLE FOR
Dynatrans AC / ACX 0W-20			• ALLISON C4 • CATERPILLAR TO-4 • KOMATSU Micro-clutch Test (JCMAS)	• CAT HYDO Advanced 10W and 20	• CAT • KOMATSU • ZF • DANA • EATON-FULLER • ROCKWELL • etc.
Dynatrans ACX 5W-30	• API GL-4/ API CF		• CATERPILLAR TO-4 • KOMATSU Micro-clutch Test (JCMAS) • ZF TE-ML 03C		• DANA • EATON-FULLER • ROCKWELL • JCB • ALLISON • KOMATSU • HITACHI • ZF • etc.
Dynatrans AC / ACX 10W-30	• API GL-4/ API CF		• CATERPILLAR TO-4 • KOMATSU Micro-clutch Test (JCMAS) • ZF TE-ML 03C		• DANA • EATON-FULLER • ROCKWELL • JCB • ALLISON • KOMATSU • HITACHI • ZF • etc.
Dynatrans AC / ACX 10W	• ZF TE ML 03C		• API GL-4/ CF • CATERPILLAR TO-4 • ALLISON TES 439 • ALLISON C4 (Obsolete) • KOMATSU Micro Clutch test (JCMAS)		• CATERPILLAR • KOMATSU • DANA • EATON-FULLER • ROCKWELL • JCB • etc.
Dynatrans AC / ACX 30	• ZF TE ML 03C • ZF TE ML 07F		• API GL-4/ CF • CATERPILLAR TO-4 • ALLISON TES 439 • ALLISON C4 (Obsolete) • KOMATSU Micro Clutch test (JCMAS)		• CATERPILLAR • KOMATSU • DANA • EATON-FULLER • ROCKWELL • JCB • etc.
Dynatrans AC / ACX 50			• API GL-4/ CF • CATERPILLAR TO-4 • KOMATSU Micro Clutch test (JCMAS)		• CATERPILLAR • KOMATSU • DANA • EATON-FULLER • ROCKWELL • JCB • etc.
Dynatrans AC / ACX 60			• CATERPILLAR TO-4 • KOMATSU Micro Clutch test (JCMAS)		• CATERPILLAR • KOMATSU • DANA • EATON-FULLER • ROCKWELL • JCB • etc.
Dynatrans VX FE	• API GL-4				• MASSEY F. CMS M1145/ M1143 • JOHN DEERE JDM J20D • KUBOTA S-UDT • AGCO/ ALLIS 821 XL • ALTRA G2-08 • CLAAS/ RENAULT AGRICULTURE • Mc CORMICK HTX • CASE MS 1206/ 1207/ 1209 • NEW HOLLAND NH 410B/ NH 410C • CNH MAT 3505/ 3509/ 3525/ 3526/ 3540 • FORD M2C 134D/ FNHA 2C 201.00
Dynatrans MPX	• API GL-4	• ALTRA G2-08 • VOLVO CE WB 101 • ZF TE-ML 03E/ 05F/ 06D/ 06K/ 06N/ 06R/ 17E/ 21F • DANA-OHTM-UTTO (Approval ID 21K-0007)	• JOHN DEERE JDM J20C • MASSEY FERGUSON CMS M1145/ M1143 • FORD M2C134-D/ FNHA 2C 201.00 • Mc CORMICK HTX • CLAAS/ RENAULT AGRICULTURE		• CASE MS1206/ MS1207/ MS1209 • CNH MAT 3505/ 3509/ 3525/ 3526/ 3540 • NEW HOLLAND NH 410C/ NH 410B • KOMATSU AXO 80 • MASSEY FERGUSON CMS M1135/ M1141 • KUBOTA UDT • AGCO: ALLIS 821 XL • ALLISON C-4 • CATERPILLAR TO-2 • JCB STANDARD 4000/ 2000
Dynatrans LS 20W-40	• API GL-4	• ZF TE-ML 05F/ 06K/ 17E/ 21F	• CASE: MS 1317 • HANOMAG • HITACHI • KOMATSU AXO 80 • KOMATSU • etc.		



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Lubrication
of quarry
machinery

Automatic transmission fluids

Solutions of
lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF	RECOMMENDED FOR
Fluidmatic D3		• DTFR 13C170 (236.9)* • ZF TE-ML 04D/ 14B/ 16L/ 20B/ 25B • VOITH H55.6336.xx/ H55 6335.xx • MAN 339 Type V1/ V2/ Z2/ Z11 • Volvo 97341 • DANA-OHTM-ATF (Approval ID 23C-0004)	• GM Dexron IIIIG/ IIIH • Ford Mercon	• Allison C4
Fluidmatic XLD FE		• ZF TE-ML 04D/ 14B/ 16L/ 20B/ 25B • VOITH H55.6336.xx/ H55 6335.xx • MAN 339 Type V1/ V2/ Z2/ Z11 • Volvo 97341 • DANA-OHTM-ATF (Approval ID 23C-0004)	• DTFR 13C170 (236.9)* • ALLISON C4 TES-228 • FORD Mercon V • GM Dexron IIIIG/ IIIH • Mercedes-Benz: MB 236.6 • JASO M315-1A	• ZF TE-ML 11B • Nissan: AT-Matic D, J, K



* New Daimler update, previously known as MB-Approval 236.9



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Lubrication
of quarry
machinery

Manual transmission and axle fluids

Solutions of
lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF	RECOMMENDED FOR	SUITABLE FOR
Traxium Dual 9 FE 75W-90	• API GL-4 • API GL-5 • API MT-1 • MIL-PRF-2105E • MIL-L-2105D • SAE J2360	• DTFR 12B140 (235.8)* • MAN 341 Typ Z2 • MAN 342 Typ S1 • SCANIA STO 1:0 • VOLVO 97312 • ZF TE-ML 02B/ 05A/ 12L/ 12N/ 16F/ 17B/ 19C/ 21A • MERITOR 076-N			• EATON-FULLER
Dynatrans DAX 80W-90	• API GL-5 LS • MIL-L-2105D	• ZF TE-ML 05N • ZF TE-ML 21N • VOLVO 97321			
Dynatrans DA 80W-90 / 85W-140	• API GL-4 • API GL-5 • API MT-1 • MIL-PRF-2105E • MIL-L-2105D • SAE J2360	80W-90 • ZF TE-ML 05C/ 12C/ 21C 85W-140 • ZF TE-ML 05C/ 12C/ 16E	80W-90 Equipment: • LIEBHERR • TEREX • VOLVO • CASE • JCB etc. Agricultural tractors: • CLAAS-RENAULT • NEW-HOLLAND (NH-520B/ 520C) • DEUTZ • STEYR • FORD (M2C 104A) Wheel drive passenger cars and road vehicles: • NISSAN • TOYOTA • GM • etc. 85W-140 • CASE • JCB • LIEBHERR • TEREX • VOLVO • VAN-HOOL • etc.		
Traxium Axle 7 80W-90 / 85W-90 / 85W-140	• API GL-5 • MIL-L-2105D	80W-90 • ZF TE-ML 12E, 17B, 19B • MAN 342 type M-1 85W-90 • MAN 342 type M-1 • ZF TE-ML 16C/ 17B/ 19B/ 21A • DTFR 12B100 (235.0)** 85W-140 • ZF TE-ML 05A/ 12E/ 16D/ 21A	80W-90 ZF and MAN hypoid gears, with standard drain interval. 85W-90 MAN, MERCEDES and ZF hypoid axles, according to the recommended oil change interval. 85W-140 Lubrication ZF manual transmission with drain interval based on OEM recommendations.		
Dynatrans FD-1 50 / 60	• Caterpillar FD-1		• Caterpillar FD-1 specification	• Axles and final drives of machines without friction discs working under severe conditions of heavy load and high temperature.	
Dynatrans GEA 680	• DIN 51 517-3: CLP • ISO 6743-6: CKD		• D50E35E: General Electric (GE) Transportation System specification • GEK-30375N: Wabtec Lubrication Specification – Off-Highway Equipment		• Spur, helical, bevel and most types of industrial hypoid gearing. Also suitable for ball, roller and other types of antifriction bearings.

* New Daimler update, previously known as MB-Approval 235.8

** New Daimler update, previously known as MB-Approval 235.0



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Lubrication
of quarry
machinery

Antifreeze and liquid coolants

Solutions of
lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF
Coolelf Auto Supra -37°C	• AFNOR NFR 15-601 • ASTM D6210 • SAE J1034 • ASTM D3306 • BS 6580 • NATO S-759 • ASTM D4656 • JASO M325 • ASTM D4985	• VW SEAT AUDI SKODA PORSCHE: VW TL 774 D/ F (G12/ G12+) • DTFR 29D110 (326.3)* • FORD WSS-M97B44 • MAZDA MEZ MN 121 D • JAGUAR LAND-ROVER STJLR651.5003 • MAN 324 Typ SNF • DEUTZ DQC CB-14 • GM 6277M • GMW 3420 • GE Jenbacher TA1000-0201 • MWM2091/ 11 • CAT2091/ 11 • CUMMINS IS series u N14 • KOMATSU 07892 (2009) • LIEBHERR MD1-36-130 • MTU MTL 5048 • DAF 74002	• RENAULT 41-01-001/ S Type D • SAAB • LEYLAND TRUCKS • SCANIA • FENDT; VALTRA • CASE; NEW HOLLAND MAT3624 • CUMMINS CES 14439 • CUMMINS CES 14603 • WARTSILLA32-9011 • CAT EC
Coolelf Auto Supra -26°C	• AFNOR NFR 15-601 • ASTM D6210 • SAE J1034 • ASTM D3306 • BS 6580 • NATO S-759 • ASTM D4656 • JASO M325 • ASTM D4985	• VW SEAT AUDI SKODA PORSCHE: VW TL 774 D/ F (G12/ G12+) • DAIMLER • FORD WSS-M97B44 • MAZDA MEZ MN 121 D • JAGUAR LAND-ROVER STJLR651.5003 • MAN 324 Typ SNF • DEUTZ DQC CB-14 • GM 6277M • GMW 3420 • GE Jenbacher TA1000-0201 • MWM2091/ 11 • CAT2091/ 11 • CUMMINS IS series u N14 • KOMATSU 07892 (2009) • LIEBHERR MD1-36-130 • MTU MTL 5048 • DAF 74002	• RENAULT 41-01-001/ S Type D • SAAB • LEYLAND TRUCKS • SCANIA • FENDT; VALTRA • CASE; NEW HOLLAND MAT3624 • CUMMINS CES 14439 • CUMMINS CES 14603 • WARTSILLA32-9011 • CAT EC
Glacelf Auto Supra	• AFNOR NFR 15-601 • ASTM D3306 • ASTM D4656 • ASTM D4985 • ASTMD6210 • BS 6580 • JASO M325 • SAE J1034 • NATO S-759	• VW SEAT AUDI SKODA PORSCHE: VW TL 774 D/ F (G12/ G12+) • DTFR 29D100 (326.3)* • FORD WSS-M97B44 • MAZDA MEZ MN 121 D • JAGUAR LAND-ROVER STJLR651.5003 • MAN 324 Typ SNF • DEUTZ DQC CB-14 • GM 6277M • GMW 3420 • GE Jenbacher TA1000-0201 • MWM2091/ 11 • CAT2091/ 11 • CUMMINS IS series u N14 • KOMATSU 07892 (2009) • LIEBHERR MD1-36-130 • MTU MTL 5048 • DAF 74002	• RENAULT 41-01-001/ S Type D • SAAB • LEYLAND TRUCKS • SCANIA • FENDT; VALTRA • CASE; NEW HOLLAND MAT3624 • CUMMINS CES 14439 • CUMMINS CES 14603 • WARTSILLA32-9011 • CAT EC
Glacelf Eco BS	• BS 6580		• BS 6580:1992 • BS 6580:2010



* New Daimler update, previously known as MB-Approval 326.3



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Lubrication
of quarry
machinery

Fuel Economy

Solutions of
lubrication
for cement
industry
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Top fuel efficiency guaranteed

As fuel represents a significant part of construction and mining fleet operating costs, even the smallest reduction in fuel consumption can significantly improve the company profitability. Engine oils can provide Fuel Economy (FE) gains by providing viscosity control and friction reduction.

With the goal of formulating the best FE products for earthmoving and mining, TotalEnergies has developed the lubricants for engines operating under the most extreme conditions (full load, long periods, dusty and hot atmosphere).

Our lubricants have been tested and approved by independent testing organisations such as TUV, Millbrook, UTAC and Danielson.

Rubia Works FE lubricants have been designed and fully-approved to reduce and keep consistent the fuel consumption of off-highway machinery without compromising product performance. The Rubia Works range has been certified by the independent Danielson Laboratory (France) for producing excellent FE results.

Measurement on Engine Oils

REFERENCE OIL	FUEL CONSUMPTION (kg/h)	CO2 EMISSION (g/h)	
Rubia Works 1000 15W-40	9.254	29.337	

TEST RESULT	FUEL SAVING (kg/h)	EMISSION SAVING (G CO2/H)	FUEL SAVING (%)
Rubia Works 4000 FE 10W-30	0.175	0.555	-1.89%
Rubia Works 3000 FE 5W-30*	0.171	0.541	-1.84%

Excellent repeatability (made on Rubia Works 1000 15W-40):
in "transportation" mode: delta start/end = 0.070%
in "loading + transp." mode: delta start/end = 0.055%

Note: FE calculations are made relatively to the average values of fuel consumption.

FUEL ECONOMY CERTIFICATE
issued by Danielson Services



* Rubia Works 3000 range is upgraded to Rubia Works 5000.



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Lubrication
of quarry
machinery

Biodegradable
Products

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TotalEnergies Cost of Ownership:

- Our Partners,
- Our Planet,
- Our Promise

We are driven to fulfil both our environmental commitment and our promise to partners to deliver the most performance- and cost-efficient lubricants. TotalEnergies products help you keep your competitive edge through efficiency and improved equipment service life.

When you work with TotalEnergies, experience a reduction in the number of oil changes, downtime and expensive repairs, and keep equipment working at peak efficiency for longer. Our research team in Lyon has conducted several in-house oxidation tests to develop robust lubricants that withstand harsh mining environments without compromising lubricant and machine performance. For instance, Rubia Works products lower downtime and improve service lengths. With proper use and application of the LubAnac oil condition monitoring service, drain intervals can go up to an astonishing 2000 working hours for

certain applications. We have over 2000 different types and pack sizes of lubricants for an expansive range of needs, from reducing energy and fuel consumption, to prolonging oil life, to extending machine life while reducing maintenance cost. Our experts will assess your needs thoroughly to find the most suitable lubricant for you to reach maximum productivity.

As a major global player in the oil industry, TotalEnergies has a duty in keeping our earth green. To us, health, safety and environmental issues are paramount. Our team of experts is constantly working towards developing the best range of biodegradable lubricants and eco-friendly products. We also help our partners to reduce Total Cost of Ownership (TCO) by introducing energy efficient and fuel-saving lubricants, implementing new lubrication procedures, and changing storage infrastructure and logistics.





5

Lubrication
of quarry
machinery

Biodegradable Products

Solutions of
lubrication
for cement
industry
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PRODUCT	INTERNATIONAL STANDARDS	SPECIFIC BENEFITS	MEETS THE REQUIREMENTS OF	RECOMMENDED FOR	SUITABLE FOR
Biohydran SE 46 / 68	Standards • ISO 15380: HEES • DIN 51524 (for mineral oils): except DIN 51587 and ISO 13357. OEM • DENISON : HF1, HF2 & HF6 approved. European • Registration number: FR/ 27/ 02 AFNOR CERTIFICATION.		• Swedish Standard SS 15 54 34 • JCMA HKB (VG 32 & VG 46)		
Biohydran TMP 46 / 68	Specification • ISO 15380: HEES European • Registration number: FR/ 27/ 02 AFNOR CERTIFICATION.		• Swedish Standard SS 15 54 34 • Specification CAT BF-2		
Biomultis EP2	• Environmentally Acceptable Lubricant (EAL) for the 2013 Vessel General Permit (VGP) • ISO 6743-9: L-XEEEB 2 • DIN 51502: KP2P-45				
Biotraffic 5000 FE 10W-30	• ACEA E4, E6, E7, E8, E9, E11 • API CK-4/ CJ-4/ CI-4 PLUS/ CI-4/ CH -4		• DEUTZ DQC IV-18 LA • DEUTZ TTCD 7.8/ 6.1 L6 • MTU Category 3.1 • MAN M 3477/ M 3677/ M 3775 • DTFR 15C120 (228.52)* • DTFR 15C110 (228.51)* • DTFR 15C100 (228.31)* • VOLVO VDS-4.5 • MACK EO-O Premium Plus • RENAULT VI RLD-3 • CATERPILLAR ECF 3/ ECF 2/ ECF 1a • SCANIA LDF-4 • LIEBHERR LH 01 ENG LA • CUMMINS CES 20086 • IVECO TLS E6 • DAF • JASO DH-2 • CNH MAT 3571/ 3521	• KOMATSU • ISUZU • KUBOTA • MITSUBISHI	• FPT-Iveco • SISU • VALMET • PERKINS • FORD • etc.
Biotrans FX	• API GL-4 • ISO 15380 HEES	• MF: CMS M1145/ M1143 • ZF TE-ML 06P	• CLAAS/ RENAULT AGRICULTURE		• JCB • VOLVO • KOMATSU • CASE • FENDT • FORD • MAC-CORMICK • MASSEY-FERGUSON • JOHN DEERE
Biotrans LS FE 75W-90	• API GL-5 (LS)				• LIEBHERR • VOLVO CE • TEREX • CASE NEW HOLLAND • JCB • CLAAS-RENAULT • STEYR • DEUTZ • SAME • VALTRA etc.
Isovoltine Bio	• IEC 61099 • IEC 61039 - K3 class • Biodegradable according to OECD 301B • NWG (Nicht Wasser Gefarhende - without danger for water)				

* New Daimler update, previously known as MB-Approval 228.52, MB-Approval 228.51, MB-Approval 228.31



5

Lubrication of quarry machinery

LubAnac off road

Solutions of lubrication for cement industry
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From the refinery to the site, TotalEnergies is with you, every step of the way.

Depending on your needs, TotalEnergies has a range of cascading servicing and support structures to assist you where fuel and lubricants are used:

- ◆ Fluid analysis for predictive and proactive maintenance LubAnac.
- ◆ Specialized mining experts in our affiliates all over the world.
- ◆ Training programs on fuel, lubricants and safety.
- ◆ **Optimizer** is an energy monitoring solution developed by TotalEnergies, to help mining company to manage all their sources of energy consumption.
- ◆ To know more about our complete integrated mining solutions, please visit our website: miningsolutions.totalenergies.com



LubAnac off road

Procedure for switching your equipment over to **BIO**

- ▶ **Controlled cost of switching over to BIO**
- ▶ **Reduced immobilisation of your equipments**





5

Lubrication
of quarry
machinery

LubAnac
off road

Be Absolutely Assured of Exceptional Performance

LubAnac is a preventive and curative oil analysis service that gives your company competitive edge by optimising your fleet operation.

TotalEnergies uses our lubricant expertise to conduct a range of lube oil analyses. From a simple oil sampling, LubAnac can draw up a thorough diagnostic of all mechanical parts of your equipment. Being completely aware of your machine's performances, the service is both preventive and curative. Reduce cost savings on maintenance and repair by reinforcing longevity and reliability of your fleet, LubAnac can provide a real leading advantage for your company.

A Customised Diagnosis You Can Trust

LubAnac off road is a tailor-made diagnostic system for engines and transmission components of construction and mining machinery fleets, based on the scientific interpretation of oil analysis.

Its measured parameters and advanced interpretation rules provide more relevant and personalised diagnoses for each machinery. LubAnac off road is recommended for the systematic monitoring of the lubricant behaviour and the wear of the mechanical parts. Measured characteristics in each analysis are presented in graphs for easy understanding.

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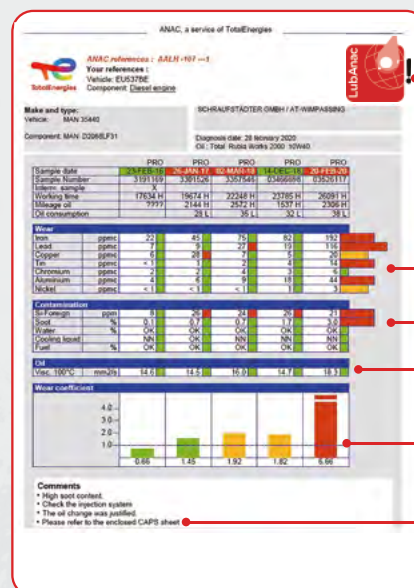
LubAnac off road

→ 45 Years
of Experience

→ 1,000,000
Mechanical Components Monitored

→ 8,500,000
Diagnostic Assessments Carried Out

Example of LubAnac Analysis Report



Couleur globale
de la carte

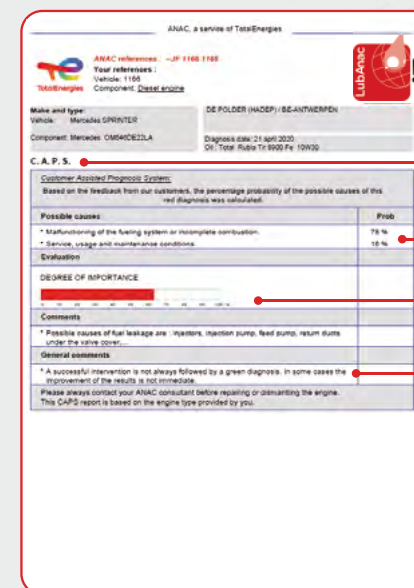
Éléments
d'usure

Contamination

Viscosité

Coefficient d'usure
générale (GWC):
1 chiffre pour indiquer
l'usure

CAPS=
Système de Pronostic
Assistance Client



Couleur globale
de la carte

CAPS=
Système de Pronostic
Assistance Client

Causes potentielles,
y compris le pourcentage
de probabilité

Degré d'urgence

Remarques générales



Services

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6

Services

Dedicated for entire cinematic chain of major equipment

- Primary, secondary crusher
- Vertical Roller Mill
- Central drive Mill
- Lateral gear driven Mill
- Kiln & associated mechanical components
- High pressure Roller Press

Valuable outcomes

- Inventory of current lubrication & application: OEM /volume / Oil analysis etc
- Better appreciation of conditions & equipment surroundings

Recommendation for each lubrication point:

- Optimize lubrication & use of lubricants
- Identify & create sales opportunities

All document are available on the share point – Tec Club 4.0.

Inspections & equipment audits

Solutions of lubrication for cement industry
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Mill Equipment Inspection Report

Customer name
Name of the site

Company Logo

Visit date:
Country

Done by name of affiliate's lubricant engineer

Summary lubrication chart of the current visit

EQUIPMENT	COMPONENT PART	TE LUBRICANTS SA RECOMMENDATION		ADVANTAGE
		STANDARD	ADVANCED	
Vertical Roller Mill VRM (raw material)	Gearbox	Carter EP 320	Carter SH 320	Better lifetime and better resistance to the oxidation. High load capacity Potential energy efficiency
	Grinder	Carter EP 320	Carter SH 320	More robust film thickness at higher temperature
	Hydraulic cylinder	Azolla ZS 68	Equivis ZS 68	Enlarge the operating temperature
Kiln lin 2	Floating tyres	Lubrilog Grakote Fluid		
	Support Roller Bearing	Carter EP 460	Carter SH 460	Better oxidation resistance. Better lubrication at higher temperature
	Gearbox	Carter EP 320	Carter SH 320	Better lifetime and better resistance to the oxidation. High load capacity Potential energy efficiency
Horizontal Mill (central drive)	Open Gear	Grafolog H 2200	Gearlog 200	Use white solid additive allow to have a better visibility on active flanks. Both product have solid additive
	Gearbox	Carter EP 320	Carter SH 320	Better lifetime and better resistance to the oxidation. High load capacity Potential energy efficiency
	Shoe Bearing	Carter EP 460 Carter EP 220	Carter SH 460 Carter SH 220	Better lifetime and better resistance to the oxidation. High load capacity Potential energy efficiency



6

Services

Inspections & equipment audits

Solutions of lubrication for cement industry
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TECHNICAL INSPECTION SERVICES FOR OPEN GEAR DRIVES

Dedicated for strategic rotating tubes for various industries:

- Cement Industry
- Mining Industry
- Fertilizer Industry
- Lime Manufacturing
- Chemical, Paper, Thermal Power Plant, Environment recycling Industry

Valuable outcomes

A complete technical report is written by an internal open gear expert.

Inside:

- Technical information (OG set & Lubrication)
- Working flanks condition (Pinion and Girth Gear)
- Lubrication quality (Spray patterns)
- Right product, right viscosity recommendations
- Quantities & Spraying cycles guidelines

Objectives:

- To optimize lubricant consumption
- To detect & predict potential failures
- To increase reliability: Conclusions & Technical advices

LUBRILOG
LUBRICATION ENGINEERING

TotalEnergies

Customer Name:

Site Name:

Visit date:

Inspector:



Checked machine
MOLINO 1



Current status

LUBRILOG S.A.S.

Z.I. des Chasses, 18, Rue Nicolas Appert
26106 Romans sur Isère - France

Jean-Philippe MERLO - Technical Manager
jp.merlo@lubrilog.fr - +33 6 81 92 33 73

**OPEN GEAR DRIVES
LUBRICATION**

REPORT
TE2024119MO1JPM

COMPANY:

Location:

Country:

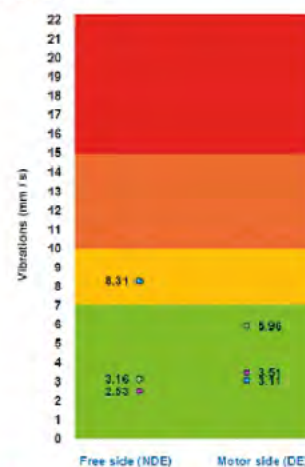
**OPEN GEAR DRIVE OF ROTARY DRUM
CHECKING FORM**

Equipment: **Molino 1**

3 - PINION BEARINGS VIBRATIONS (SINGLE DRIVE GEAR SET)

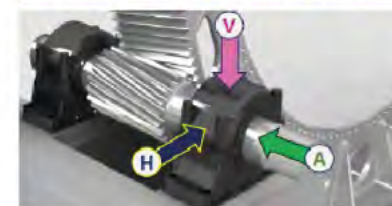
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Pinion (lifting pinion)



Very dangerous area (upper to 15 mm/s)
Dangerous area (between 10 and 15 mm/s)
Limit area (between 7 and 10 mm/s)
Normal level

Pinion bearings vibrations (mm/s)					
Free side (NDE)			Motor side (DE)		
Axial	Vertical	Horizontal	Horizontal	Vertical	Axial
3.16	2.53	8.31	3.11	3.51	5.96



CURRENT STATUS



Comments:
Although one value has increased since our last visit, the other vibrations have decreased. The situation is good for an old girth gear.

LUBRILOG
LUBRICATION ENGINEERING

Z.I. des Chasses, 18, rue Nicolas Appert,
Romans sur Isère, France

TotalEnergies

Date of inspection:
Inspectors:

Date:
By:
Reference:



6

Services

Lubriclean EP Cleaning

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for cement
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LUBRICLEAN EP KIT

It contains

- 3 drums of Lubriclean EP
- High pressure pump
- PPE for 2 operators

Lubriclean EP is a special cleaning solvent developed from vegetable chemistry with well adapted EP protection.

Lubriclean EP is certified to be chlorine free. After application on the surfaces that have been cleaned, Lubriclean EP evaporates slowly at ambient temperature leaving a thin oily film with extreme pressure properties.

Lubriclean EP can be used whilst the equipment is operating by using an average pressure spray gun on the metallic parts which are to be treated whilst in the temperature range 20 to 80 °C.

* The quantity applied should be adjusted depending on the size of the gear set, adhesiveness of the open-gear lubricant and the level of contamination and dirt on the gear set.



1 HIGH PRESSURE PUMP

 Box 1/2

Model	15 / 200
Max. pressure (bar / psi)	200 / 2900
Capacity (lt / mn)	15
Motor power (kW)	5,5
Voltage (V - Hz)	380 - 50
Dimensions L x P x H (cm)	55 x 55 x 70
Net weight (kg)	60





A CRUCIAL OPERATION: OPEN GEAR CLEANING AND FLUSHING

Contamination, a major issue
on pinion and girth gear.

Problems caused by
contaminated lubricant
(high viscous oil and grease):

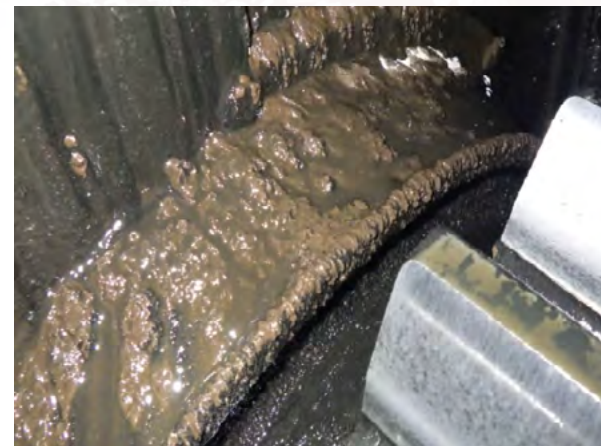
- Abrasive wear on gear teeth
(++ pinion and girth gear)
- Excessive and premature wear
(Plastic deformation)
- Excessive active flank damage
(Cracking, Fracture)
- Corrosion attack on surface

Corrective & preventive -
gear cleaning:

- Cleaning is a **fundamental aspect**
of the maintenance
- Control and **limit the risk of**
contamination
- Ensure the **security and reliability**
- Keep an **optimal meshing features**
- Control the **wear evolution**
- Prior to stand still inspection /
prior a mechanical intervention



Example of a massive abrasion



External pollution



6

Services

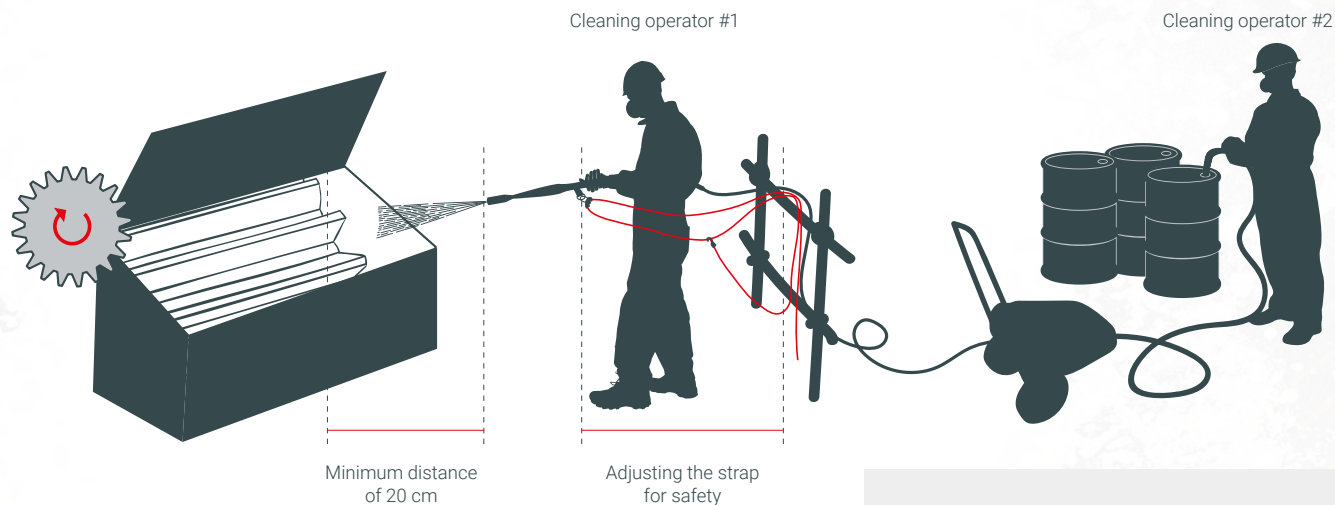
Lubriclean EP Cleaning

A SERVICE INCLUDING A COMPLETE PROCEDURE & SAFETY REQUIREMENTS

The designated operator for spraying should be equipped with standard P.P.E. (Personal Protective Equipment) and also protected against intense projections of Lubriclean EP (particularly when the cleaning is carried out on the Pinion Gear/Drive); Facial mask, gloves, glasses and an impermeable combination are required.



ATTENTION
Machine under operation



ATTENTION
Pump and drums must be at the same floor level

Note:

The processed load, in the case of a mill, will be reduced for the duration of the cleaning intervention.
The cleaning operation will be completed through the inspection door of the inward pinion (IN pinion) for double drive gear sets and through the inspection door of the outward pinion (OUT pinion) for single drive gear sets.



6

Services

Lubriclean EP
Cleaning

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A SERVICE INCLUDING A COMPLETE PROCEDURE & SAFETY REQUIREMENTS

Available procedure for all lubrication types:

- A fully described procedure: step by step approach
- A Lubriclean EP brochure
- All safety PPE listed

Risk analysis > prior all Lubriclean EP works:

- **Mandatory:** perform our own Risk Analysis on site
- Assistance by the dedicated Field Engineer at HQ Level
- Explanation & Signature of the documentation at customer site
- Common approach: sign also the work of permit from customer

All document are available on the share point – Tec Club 4.0.

Flushing & Cleaning Procedure – Risk analysis

BASE LINE DATA		DETAILS	
		HOT PROCESSING EQUIPMENT	COLD PROCESSING EQUIPMENT
Risk Analysis		Exchange with the customer about the document before the operation Each parties must sign the document Minimum of 2 people are requested	
Prerequisite		• Temperature of the drum : < 100 °C (only during shutdown period) • Pinion's speed: < 5 rpm • Open the hatch to have a wide access • Stop the lubrication system • Look at the housing and drain system if it's free of grease • Temperature of the drum : room temperature • Pinion's speed: < 5 rpm • Open the hatch to have access • Reduce the load into the mill • Stop the lubrication system • Look at the housing and drain system if it's free of grease	
Preparation phase (45 min to 1h30)		• Take time to cover the cleaning aera with plastic covering and tape (don't hesitate to cover a wide surface around the hatch) • Think to take a wrench and a utility knife to cut plastic protection and open drums • Delimit the working aera with security band • Bring the requested Lubriclean EP drums and the high-pressure pump too on the platform • Make sure to have the right pinion speed. • Make sure you have the proper visibility: bring headlamp or torch with • Install the waste collector : IBC or drum • Last security check once the set up is in place before to start	
Cleaning Phase (40 min to 1h10)		• All people in the working aera must wear the PPE • (10 – 15 min) Start by impregnate the pinion : if it's double drive start at first with the IN Pinion otherwise on the OUT Pinion • Control the waste collection and leakages if any. • (20 – 30 min) Clean from left to right with high pressure from 180 to 200 bars (breaks can be done to better visualise the job) • (10 – 15 min) Finish the cleaning on the gear and housing's edges and the spray nozzles if they are reachable. • Have a final visual check with the customer • Cleaning distance not closer than 20 cm. • Clean gear flanks from left to right as well as cleaning the inside edges of the gear housing.	



**Risk Analysis document
Operation on site**

Mission: ...xxx
Date: ...xxx
Rev: ...xxx

Company: **TotalEnergies Lubrificants SA or subcontractor**
Address: ...xxx

Person to contact:

	Name	Phone	Email
Team Leader (TotalEnergies)			
Team Member (TotalEnergies)			
Subcontractor (if any)			

- Arrival date: xxx-xx-xx
- Estimated duration of work: ...xx days
- Predictable number of employees assigned to the operation: ...xx people
- Working hours: daytime or posted hours (depending on the production at site)
- Person in charge of directing the intervention on site: xxx
- Qualification / position (Team leader): ...xxx
- Person who receives delegation from the team leader: ...xxx

Company Name (Social Reason)	Address – phone.	Work description on site
...xxx	...xxx	...xxx

TotalEnergies Lubrificants SA must be informed by the customer of any exposures to a chemical, biological, bacteriological or physical risk (noise, vibration, radiation, etc.) to which the personnel under its responsibility may be exposed.
If so: We ask you to inform us of the precise nature of these exposures, of the mapping carried out, of the corresponding SDS and of the conditions for carrying out the special medical surveillance if required. You will also inform us of the specific means of prevention required and the measures planned to ensure safety.

TotalEnergies Lubrificants SA Classification: Restricted Distribution
TotalEnergies Lubrificants SA - All rights reserved



HIGHLY VISIBLE RESULTS

- Excellent powerful cleaning effect
- Making the cleaning safer for users
- Time saving – Quick result
- Protect the gearing with EP additive

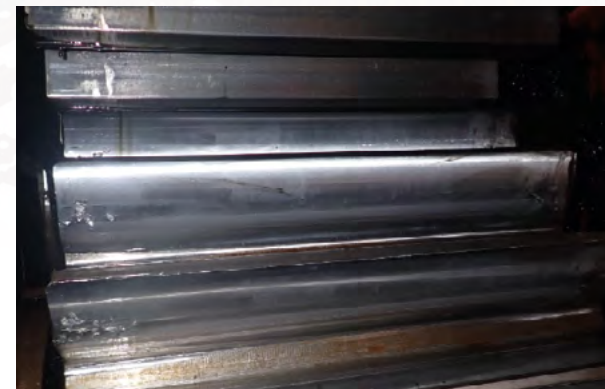
Lubriclean EP is non-toxic, safeguarding:

- Operators
- The environment from chlorine, aromatics and volatile organic compounds (VOCs)

Before



After





OFFERS FULL OR PARTIAL OIL CHANGE SERVICES FOR YOUR EQUIPMENT

Key benefits:

- ◆ All follow-up and communication is done through a designated point of contact.
- ◆ Local subcontractors recommended by TotalEnergies.
- ◆ Understanding of the needs and challenges of users (safety, procedures, responsibilities, timing). Other advantages
- ◆ Managed by a team of TotalEnergies experts.
- ◆ End-to-end management of production and lubricant know-how.
- ◆ A high-performance ISO-certified oil diagnostics and analysis system: LubAnac.
- ◆ Collaboration with trusted partners.
- ◆ Full project management with progress reports through to billing.
- ◆ Customer advice in best practices and maintenance.

TOTALENERGIES FLUID MANAGEMENT

Filtration

Our specialized partner is responsible for filtering at the delivery point until it meets the customers requirements.

Filling

Delivery of new oil to the facility.



Oil change

The used lubricating oil is removed by a local approved operator. It is eliminated and treated in accordance with prevailing environmental regulations.

Cleaning

A team of professionals flushes the tank and pipework to prevent any risk that the new product could become contaminated.



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Services

LubAnac
industry

Solutions of
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LubAnac industry

Oil analysis expertise to optimize your operations

The essential tool for optimizing your operating costs. The oil within your equipment contains vital information on its working conditions.

Every maintenance manager wants to avoid:

- ◆ Unscheduled shutdowns
- ◆ Unplanned interventions
- ◆ Financial losses





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Services

LubAnac
industrySolutions of
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Anticipate to save

A tailored analysis program can help you move from reactive to predictive maintenance. Plan your production shutdowns to perform maintenance operations at the optimal time. Extend the lifetime of components and lubricants to the maximum. Improve equipment productivity while minimizing maintenance costs.

Choose reliability

LubAnac industry analysis are carried out in our own laboratories, benefiting from close to 40 years' expertise in industrial oil diagnostics. We know the formulation of the lubricants you use, so we master how to assess their performance.

As each industrial process is unique, our specialists advise on the most suitable analysis program for your equipment and its running conditions.

Field proven efficiency

We provide a full analysis kit including sampling bottles, registration labels and pre-printed mailing envelopes. Complete your analysis, then view your diagnosis on a secure extranet. The results are also emailed to you. The LubInsight maintenance planner program automatically transfers the results of analysis into the LubInsight maintenance planner database to enable the monitoring of analysis history and schedule maintenance operations.

An easy-to-use service!

LubAnac industry diagnoses in 12 languages.

The results and comments are available in German, English, French, Italian, Dutch, Portuguese, Spanish, Turkish, Chinese, Korean, Hungarian, Czech.

How to proceed

- 1 Collect the sample under identical conditions, if possible with the machine running.
- 2 Collect the product directly in a clean LubAnac industry bottle to avoid pollution of the sample.
- 3 Identify as quickly as possible the bottle with the LubAnac industry stickers.
- 4 Send the analysis kit (bottle, form and identification stickers) to the laboratory with the envelope provided.
- 5 Get your result and expert recommendation by email and 24/7 online extranet.

Machine and component reference (machinery and equipment database)

Comments made by our industrial lubricants experts

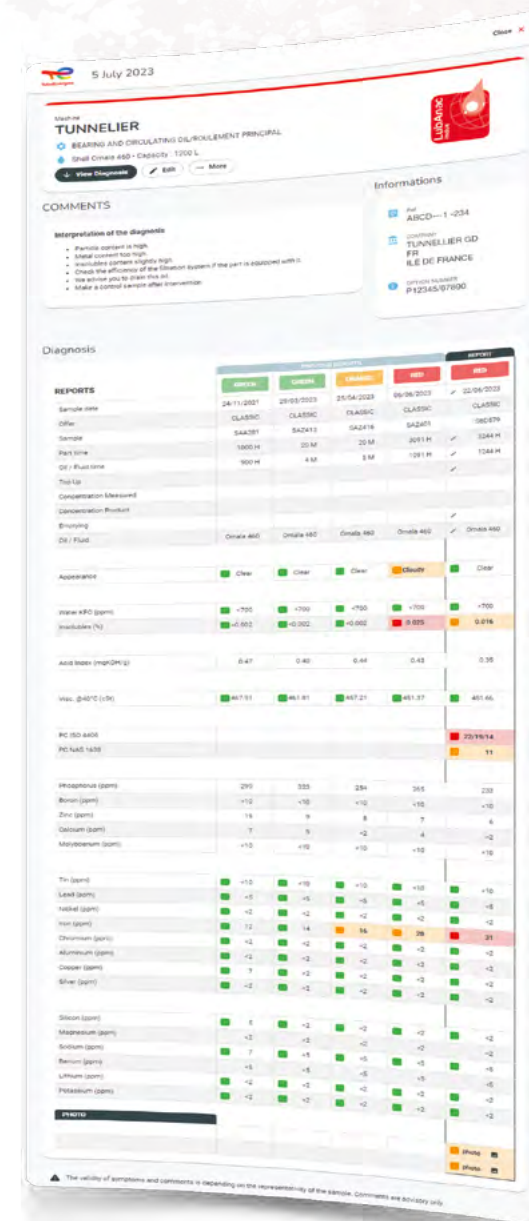
Sample references

General characteristics

Additive elements

Wear elements

Pollutant elements



Overall diagnosis

Analyzed lubricant

Customer references

Historical results

Easy to read color alerting

LubAnac industry
Satisfying diagnostic

LubAnac industry
Slight deviations

LubAnac industry
Anomaly observed

LubAnac industry
Dangerous situation



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Services

LubAnac
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Your benefits with LubAnac industry



Anticipation and scheduling
of maintenance operations enables
optimal timing of interventions



Optimization of drain intervals
and extension of the lifetime
of your machines



Maximum reliability and performance
of your assets



Reduction of the operating costs

Comprehensive range of oil analysis

A solution for all of your industrial applications.

			Basic	Standard	Premium
LubAnac industry		Diagnostic system for the monitoring of the evolution of the industrial oil conditions during use for all applications .	●	●	
LubAnac soluble		In-depth diagnostic system for water-based cutting fluids used in metalworking . It is offered in 2 sets (Standard and Premium) to perfectly match your needs and extend sump life.		●	●
LubAnac turbine		In-depth diagnostic system for the monitoring of the evolution of the state of the turbine lubricant during use and as an assessment of the operating conditions of the machines, supported by expert recommendation and graphs.		●	●
LubAnac calo		In-depth diagnostic system for the monitoring of the evolution of the state of heat transfer fluids during use and as an assessment of the operating conditions of the systems, supported by expert recommendation and graphs.		●	●
LubAnac frigo		In-depth diagnostic system for the monitoring of the evolution of the state of the refrigerating compressor lubricant during use and as an assessment of the operating conditions of the machines, supported by expert recommendation and graphs.		●	●
LubAnac gas		Diagnostic system. Through a simple used oil analysis, LubAnac Gas gives a follow-up of the behavior and depletion of the lubricant and the mechanical wear of industrial gas engines .		●	
LubAnac trempe		In-depth diagnostic system for the monitoring of the evolution of the state of quenching oils during use and as an assessment of the operating conditions of the systems, supported by expert recommendation and graphs.			●
LubAnac hydraulic		In-depth diagnostic system for the monitoring of the evolution of the state of the hydraulic lubricant during use and as an assessment of the operating conditions of the system, supported by expert recommendation and graphs.			●
LubAnac gear		In-depth diagnostic system for the monitoring of the evolution of the state of the gear lubricant during use and as an assessment of the operating conditions of the machines, supported by expert recommendation and graphs.			●
LubAnac compressor		In-depth diagnostic system for the monitoring of the evolution of the state of the compressor lubricant during use and as an assessment of the operating conditions of the machines, supported by expert recommendation and graphs.			●
LubAnac wind		In-depth diagnostic system for the follow-up of specific wind turbine transmissions operating in severe service conditions, supported by expert recommendation and graphs.			●
LubAnac coolant		In-depth diagnosis for the follow-up of cooling liquids and cooling systems. LubAnac coolant ensures: • A detailed monitoring of the coolant behavior and cooling system condition • A rigorous compliance check of the cooling liquid properties in use.		●	●



6

Services

Lubrication

Technical training in lubrication

- Introductory and advanced programs on the proper use of an industrial lubricant.
- Technical assistance on call to assist and advise customers at all times.



Environment and Safety

- As part of its environmental policy, TotalEnergies offers a service for the collection of empty barrels and the disposal of used oils.
- Up-to-date safety data sheets available at all times.

Proximity

- TotalEnergies offers a personalized, people-oriented customer sales service combined with responsive logistics.
- Support for our customers' local and international growth.
- Rapid supply guaranteed (3 to 5 working days) thanks to our integrated structure (own production plants, ultra-modern logistics hub).





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lubrication
for cement
industry

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Meet us:



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TotalEnergies HQ - Paris

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Grégoire ROUX

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TotalEnergies HQ - Paris

Email: gregoire.roux@totalenergies.com
Phone: +33 (0)6 98 17 49 58

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TotalEnergies Industry Solutions