



TOTAL
COMMITTED TO BETTER ENERGY



Lubrication solutions for industrial applications

Energizing performance. Every day



TOTAL
LUBRICANTS



Total
 is a **global integrated** energy producer
 and provider, a **leading** international oil and gas company,
 a **major player** in low-carbon energies.
 WITH OPERATIONS IN MORE THAN
130 COUNTRIES
 we have **98,000** employees
 who are COMMITTED TO BETTER ENERGY

No.4
 LUBRICANTS
 SUPPLIER
 WORLD WIDE

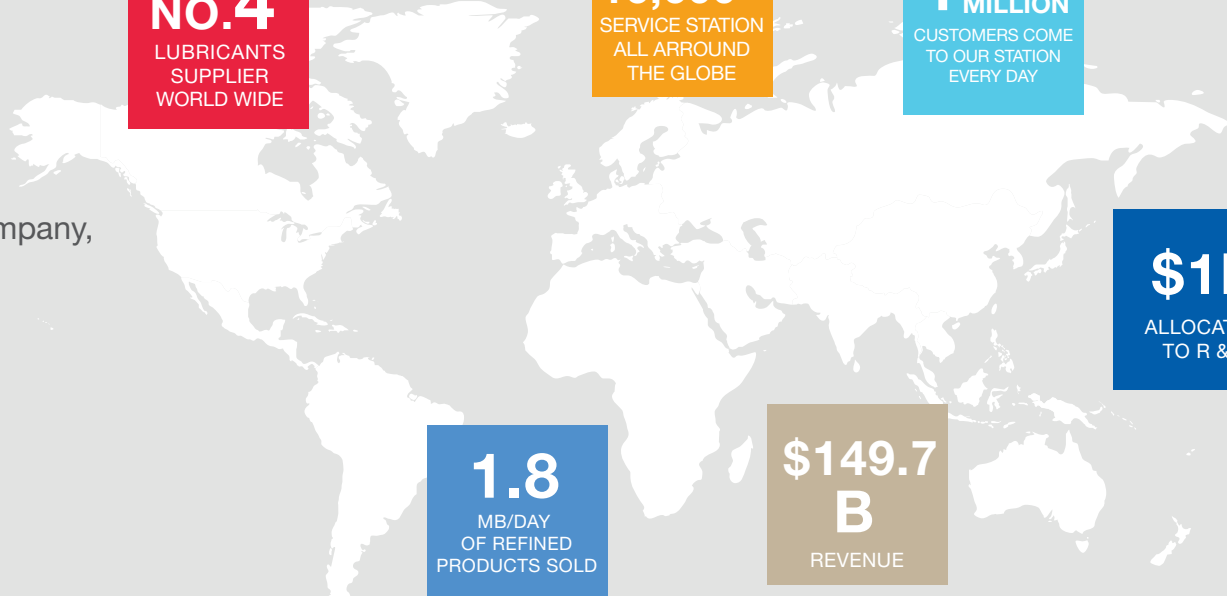
16,600+
 SERVICE STATION
 ALL AROUND
 THE GLOBE

4+ MILLION
 CUSTOMERS COME
 TO OUR STATION
 EVERY DAY

\$1B
 ALLOCATED
 TO R & D

1.8
 MB/DAY
 OF REFINED
 PRODUCTS SOLD

**\$149.7
 B**
 REVENUE








ABOUT PT TOTAL OIL INDONESIA

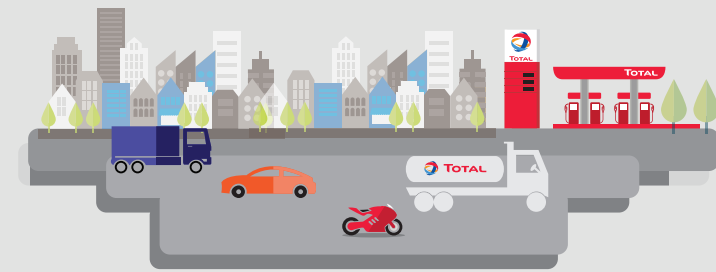
PT Total Oil Indonesia is the principal for all Total and ELF products distributed to all over Indonesia

Lubricants | Energizing performance. Every day



-  Automotive, Passenger car
-  Automotive, Motorcycle
-  Fleet
-  Industry
-  Mining

Fuel | Energizing life. Every day



-  18 Stations
-  Performance Diesel
-  Performance 95
-  Performance 92
-  Performance 90



TOTAL Lubricants: our commitment

DEVELOPING YOUR PRODUCTIVITY

We are at your side to help you get the best of your machinery and to accompany your development at both local and international levels.

SPECIFIC PRODUCTS

Each industrial sector has a specific operating environment. Our knowledge and experience of industrial applications means that our products are suited perfectly to your requirements. TOTAL lubricants offer a comprehensive range of oils, greases and special products for industries such as: Chemicals, Energy, Iron and Steel, Metallurgy, Metalworking, Automotive, Equipment Manufacturers, Mines, Construction Materials, Papermaking and the Food Processing Industry.

INNOVATIVE PRODUCTS

Innovation is priority for us. We have several research centres, where chemical and mechanical engineers and specialists in tribology work together. Our close relations with equipment manufacturers enable the formulation and testing of tomorrow's products, and guarantee optimal performance and protection of your machines.

SAFE AND ENVIRONMENTALLY-FRIENDLY PRODUCTS

We have made a commitment to safety, health and respect for the environment. Our R&D teams integrate from the initial design stage of new products parameters conducive to the reduction of toxicity risks and VOC emissions, biodegradability, recycling or disposal of the products.

HIGH ADDED VALUE SERVICES

We bring our expertise to help you to optimize the productivity of your machinery and improve your competitiveness. You benefit from our specialist knowledge and high-level after-sales services that include: rationalization and organization of lubrication operations, maintenance and laboratory analyses of the fluids in service, training of your personnel.

PROXIMITY AND REACTIVITY

We provide a local sales presence to answer your specific needs. In addition, our integrated organization and supply chain (our own refineries, lubricant blending plants and logistics platforms) ensure your deliveries will be on-time.



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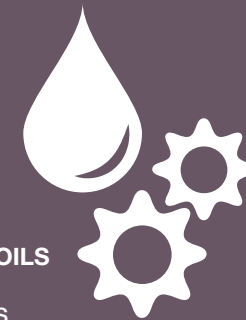
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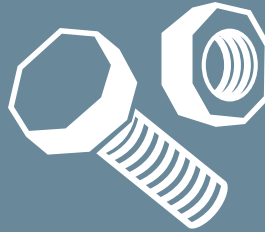
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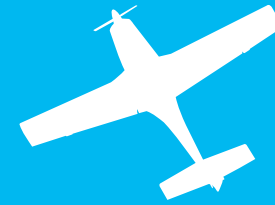
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General Lubrication



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General Lubrication ANTIFREEZE AND COOLANTS



COOLELF are ready-to-use coolants. **GLACELF** are antifreezes for dilution in demineralised water. The antifreeze and coolants protect engines against freezing-up, overheating and corrosion of the cooling circuit metals.

The performances of the products are enhanced due to organic additives.

- Long service life.
- Complete preservation of the anti-corrosion properties due to non-consumption of the additives.
- Absence of any formation of deposit liable to hinder the heat transfer capacity.

COOLELF / GLACELF / WT / TOTAL NEVASTANE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ANTIFREEZE PROTECTION	SPECIFICATIONS
COOLELF SUPRA	Ready-to-use coolants	<ul style="list-style-type: none"> • Diesel industrial engines, gas engines of all sizes. 	<ul style="list-style-type: none"> • Long life. 	-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	Antifreeze concentrate			-20 °C to -69 °C depending on % of dilution	
COOLELF CHP SUPRA	Ready-to-use coolants	<ul style="list-style-type: none"> • Engines of cogeneration plants. • Recommended in countries or conditions where a -7 °C antifreeze protection is sufficient. 	<ul style="list-style-type: none"> • Long life. Higher 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	Antifreeze concentrate			-7 °C to -15 °C depending on % of dilution	
COOLELF SUPRA GF NP	Ready-to-use coolants	<ul style="list-style-type: none"> • Nuclear Power Industry. • Recommended in cold countries. 	<ul style="list-style-type: none"> • Long life. Higher antifreeze 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	Ready-to-use coolants	<ul style="list-style-type: none"> • Agrifood and Pharmaceutical Industries, cogeneration facilities: heat and cold transfer circuits. 	<ul style="list-style-type: none"> • Coolant based on monopropylene glycol. 	-26 °C	AFNOR NF R 15-601 • ASTM D 4656 • BS 6580
GLACELF MPG SUPRA	Antifreeze concentrate			-17 °C to -38 °C depending on % of dilution	AFNOR NF R 15-601 • ASTM D 3306
WT SUPRA	Aqueous concentrate of specific organic corrosion and cavitation inhibitors	<ul style="list-style-type: none"> • Diesel industrial engines and gas engines requiring no antifreeze protection. 	<ul style="list-style-type: none"> • Long life anticorrosion and anticavitation protection. • Optimal heat transfer capacity. Non-polluting components. 	-	MWM (Deutz) • Wärtsilä • Rolls-Royce: Bergen • GE Jenbacher
TOTAL NEVASTANE ANTIFREEZE	MPG based antifreeze	<ul style="list-style-type: none"> • Cooling circuits, including drinks, ice creams and frozen food processing. 	<ul style="list-style-type: none"> • Antifreeze protection: -15 °C to -40 °C depending on % of dilution. • Specific protection of alloys and metal equipment against corrosion. 	-	NSF HT1



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact



General Lubrication CIRCULATION OILS



CIRKAN, CORTIS and **MISOLA** are circulation oils designed for the centralized lubrication of various systems on industrial machines: bearings, gears, etc.
TOTAL offers a wide range, from pure mineral oil for lubrication of weakly loaded systems operating at a moderate temperature, to highly sophisticated products

adapted to the severest operating conditions.
MISOLA oils have been specifically developed for the Pulp and Paper Industry.
The classifications shown for these fluids are those of the ISO 6743-4 and ISO 6743-6 standards in accordance with the performance level and the viscosity grade.

CIRCULATION OILS				CIRKAN / CORTIS	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS	
CIRKAN C	• Total loss or sump lubrication for movements, joints, bearings, chains.	• Severely refined paraffinic mineral oil. High natural viscosity index.	32 to 320	ISO 6743-4 HH • ISO 6743/1 AN	
CIRKAN RO	• Apparatus and hydraulic circuits subjected to temperature constraints.	• Anticorrosion protection of equipment. Oxidation resistance.	32 to 460	ISO 6743-4 HL • ISO 6743-6 CKB • DIN 51517-2 CL • DIN 51524-1HL • AGMA 9005-E2 RO	
CIRKAN ZS	• Apparatus and hydraulic circuits operating under severe temperature and load conditions.	• Very good anti-wear and anticorrosion properties. • Reinforced protection of highly loaded equipment. Oxidation resistance.	220 320	ISO 6743-6 CKB • ISO 12925-1 CKB	
CORTIS MS	• Gears, movements and various mechanical systems requiring anti-wear properties. • For Morgoil-type hydrodynamic bearings, BGV bearings and Danieli ESS.	• Very good anti-wear and anticorrosion properties. Reinforced protection of highly loaded equipment. Formation of deposits prevented due to ashless additives. • Excellent demulsification properties.	100 to 680	ISO 6743-4 HM • ISO 12925-1 CKC Danieli® Standard • Morgoil® Lubricant • Morgoil® Advanced Lubricant	

CIRCULATION OILS FOR PAPERMAKING MACHINES				MISOLA	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
MISOLA AFH	Ashless mineral	• Bearings and gears operating in a warm, moist environment.	• Excellent thermal stability and oxidation resistance. • Reinforced anti-wear protection. • Excellent anticorrosion protection. • Ashless additives limiting the formation of deposits.	150 220	ISO 12925-1 CKD Voith VN 108 • FAG FE8 PM
MISOLA ASC	Ashless mineral	• Equipment operating under high temperature and load conditions. • Bearings and gears operating in a warm, moist environment. • Wet- and dry-end sections of papermaking machines. • Advised when loaded gears form part of the lubrication circuit.	• Excellent load capacity. • Long life oil thanks to very good thermal stability and oxidation resistance. • Very good anticorrosion protection even in the presence of acid process water. • Ashless addition limiting the formation of deposits.	100 to 320	ISO 12925-1 CKD Voith • Metso • SKF • FAG
MISOLA MAP	Ashless semi-synthetic	• Plain or rolling bearings and medium-loaded gears subjected to considerable temperature constraints. • Drying cylinder bearings for papermaking machines. • Hydraulic circuits in variable crown cylinders.	• Able to endure temperatures up to +130 °C. • Excellent anticorrosion protection. • Ashless additives limiting the formation of deposits. Extra long life oil.	150 to 460	ISO 6743-4 HL • ISO 12925-1 CKB SKF Rollen Test
MISOLA MAP SH	Ashless synthetic PAO	• Plain or rolling bearings and medium-loaded gears subjected to considerable temperature constraints. • Recommended for drying cylinder bearings for papermaking machines.	• Able to endure considerable temperature constraints. • Excellent anti-wear and anticorrosion protection. • Ashless additives limiting the formation of deposits. Extra long life oil.	150 to 460	ISO 12925-1 CKS Voith VN108 • Metso • SKF Rollen Test • FAG FE8 PM
MISOLA ZS	Mineral	• Equipment operating under high temperature and load conditions. • Bearings and gears operating in a warm, moist environment. • Wet- and dry-end sections of papermaking machines. • Advised when loaded gears form part of the lubrication circuit. • DthPZn additive technology.	• Excellent load capacity. • Long life oil thanks to very good thermal stability and oxidation resistance. • Very good anticorrosion protection even in the presence of acid process water. • Compatible with the same DthPZn additive technology product.	150 to 320	ISO 12925-1 CKD Voith • Metso • SKF • FAG



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General Lubrication



General Lubrication CIRCULATION OILS



HIGH TEMPERATURE CHAIN OILS			CORTIS / TOTAL NEVASTANE	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
CORTIS SHT 200	<ul style="list-style-type: none"> • Continuous lubrication systems. • Movements, roller chains, rollers of the roller bearings, cams operating in ovens or stoves. • Glass manufacturing machines. • Conveyor chains for continuous hot-pressing machines. 	<ul style="list-style-type: none"> • Synthetic bases limiting oxidation deposits at very high temperatures. • Anti-wear power guaranteed at very high temperatures. • Ensures continuous lubrication of devices at temperatures up to +240 °C. 	200	
CORTIS XHT	<ul style="list-style-type: none"> • Continuous lubrication system. • Movements, roller chains, rollers of the roller bearings, cams operating in ovens or stoves. • Chains and bars in continuous wood panel production lines. • Glass manufacturing machines. • Conveyor chains for continuous hot-pressing machines. 	<ul style="list-style-type: none"> • Synthetic lubricant for continuous lubrication of devices at temperatures up to 280 °C. • Reduce the consumption regarding its very low volatility and oxidation resistance. 	68 245 320	
TOTAL NEVASTANE CHAIN OIL XT	<ul style="list-style-type: none"> • Continuous lubricating oil for conveyor chains operating at very high temperature in the Food Industry. • For very high load, Lubrication of industrial mechanism working at very high temperatures where incidental contact with the food product is possible according to the HACCP assessment. 	<ul style="list-style-type: none"> • Synthetic lubricant for continuous lubrication of devices at temperatures up to 240 °C. • Excellent resistance to bacterial development and moisture ingress. 	220	NSF H1



OILS FOR STEAM CYLINDER ENGINES				CYL	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
CYL	Non-compounded mineral	<ul style="list-style-type: none"> • Steam cylinder engines. 	<ul style="list-style-type: none"> • Severely refined base oils. • High viscosity index. 	460 680 1000	ISO 6743-99 Z
CYL C	Compounded mineral	<ul style="list-style-type: none"> • Steam cylinder engines. 	<ul style="list-style-type: none"> • Severely refined base oils. • High viscosity index. 	460 680	ISO 6743-99 Z

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



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General Lubrication



General Lubrication COMPRESSORS



DACNIS oils are formulated in accordance with manufacturers' requirements to optimise the efficiency of air compressors.

- Oil drain intervals ranging from 2000 hours to as much as 8000 hours, under normal conditions of operation.

- Protection against wear and corrosion.
- Absence of carbonaceous deposits, even at high temperatures.
- Effective oil/air and oil/condensates separation.

AIR COMPRESSORS				DACNIS / TOTAL NEVASTANE	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
DACNIS	Mineral	<ul style="list-style-type: none"> Rotary and reciprocating air compressors. 	<ul style="list-style-type: none"> Oil drain 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	Hydrocracked mineral	<ul style="list-style-type: none"> Rotary screw-type air compressors. 	<ul style="list-style-type: none"> Oil drain 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 PAO	<ul style="list-style-type: none"> Rotary screw-type air compressors. 	<ul style="list-style-type: none"> Oil drain 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 ester	<ul style="list-style-type: none"> High-pressure reciprocating air compressors, rotary compressors and turbocompressors. 	<ul style="list-style-type: none"> 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...
TOTAL NEVASTANE SH	Synthetic PAO	<ul style="list-style-type: none"> Air compressors. Adapted to the severe environment of the Agrifood Industries. 	<ul style="list-style-type: none"> Very high equipment protection level , even under severe conditions. 	32 to 100	NSF H1 • Kosher • Halal ISO 6743-6 CKC • ISO 6743-4 HV • ISO 21469

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



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General Lubrication



General Lubrication COMPRESSORS



Depending on the type of refrigerant, **LUNARIA** and **PLANETELF** fluids are designed to match broad usage conditions.

In all cases, they ensure excellent lubrication performances as well as:

- Anti-wear and anti-foaming properties.
- Low formation of deposits.
- Excellent thermal and chemical stability.
- Return of the lubricant to the compressor.

REFRIGERATING COMPRESSORS					LUNARIA / PLANETELF
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
LUNARIA FR	Naphthenic mineral oil	• Refrigerating compressors using CFC, HCFC and NH3 as a refrigerant.	• Evaporating temperature > -15 °C.	32 to 100	ISO 6743-3 DRA • APV • Bock • Bitzer • Gram • Carrier • Grasso • Howden • J & E Hall • Sabroe • York
LUNARIA NH	Hydrocracked mineral oil	• Refrigerating compressors using NH3/ammonia.	• Evaporating temperature > -30 °C.	46 68	ISO 6743-3 DRA • APV • Gram • Bock • J & E Hall • Grasso • Howden • Sabroe • York
LUNARIA SH	Synthetic PAO	• Refrigerating compressors using NH3/ammonia.	• Evaporating temperature > -50 °C.	46 68	NSF H1 • ISO 6743-3 DRA • APV • Gram • Bock • J & E Hall • Grasso • Howden • Sabroe • York
LUNARIA SK	Synthetic alkyl benzene	• Refrigerating compressors using CFC or HCFC refrigerants.	• Evaporating temperature > -60 °C.	55 to 150	ISO 6743-3 DRE • APV • Bitzer • Bock • Sabroe • York • RefComp
PLANETELF ACD	Synthetic POE	• Refrigerating compressors using HFC refrigerants.	• Evaporating temperature > -60 °C.	32 to 220	ISO 6743-3 DRD • Aerzen • Bock • Frascold • Grasso • Howden • Sabroe • Sulzer • York
PLANETELF PAG	Synthetic PAG	• Car air conditioning compressors using R-134a and/or R-1234yf.	• Good compatibility behaviour and miscibility with R-134a and/or R-1234yf Specific packaging to limit the water absorption.	46,100,130	ISO 6743-3 DRD

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



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General Lubrication



General Lubrication COMPRESSORS



DACNIS LPG and **ORITES** oils are designed for the lubrication of gas compressors and hypercompressor cylinders.

DACNIS LPG meets the constraints relating to the compression of hydrocarbon gases, including refrigeration applications.

ORITES TN 32 is a turbine quality mineral oil adapted to the lubrication of ammonia synthesis.

White oils and synthetic PAG oils provide to these products:

- Excellent solvent power and anti-wear properties.
- Long lining service life.
- Very good high pressure behaviour.
- Very high pump-ability level.

GAS COMPRESSORS					DACNIS / ORITES
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
DACNIS LPG 150	Synthetic PAG	• Hydrocarbon gas compressors.	• Resistant to dilution by hydrocarbon gases. Excellent chemical stability.	150	ISO 6743-3: DGC • Sulzer-Burckhardt • Howden • Aerzen
ORITES TN 32	Mineral	• Ammonia synthesis gas turbo-compressors.	• Excellent resistance to oxidation and air release properties. • Chemically inert to ammonia thus avoiding deposits. • Compatibility with elastomers.	32, 46	Dresser-Rand • Thermodyn • Creusot-Loire • Rateau
ORITES DS 125	Synthetic PAG	• Gas compressor cylinders.	• Resistance to dilution by hydrocarbon gases.	125	ISO 6743-3: DGC • Burckhardt Compression

PV 100 oils are destined for the lubrication of rotary and reciprocating vacuum pumps. Their performance over time is guaranteed by the properties of the fluid:

- Less consumption of fluid due to low volatility.
- Achievement of ultimate vacuum of the pumps, ensured by the low saturating vapour pressure of the lubricant.

- Constant tightness due to the very low variation of viscosity during the entire oil service life.
- Absence of product degradation and residue formation due to excellent oxidation resistance.

VACUUM PUMPS					PV
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
PV 100	Mineral	• Vacuum pump. • Extraction of neutral gas.		125	ISO 6743-3 DVC
PV 100 PLUS	Mineral	• Vacuum pump. • Extraction of moist air.		125	ISO 6743-3 DVC
PV SH 100	Semi-synthetic	• Alternating and rotary vacuum pump. • Extraction of acid or corrosive gases.	• Suitable for incidental food contact.	100	NSF H1 • ISO 6743-3 DVD

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



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General Lubrication



General Lubrication DETERGENTS AND CLEANING FLUIDS



FINASOL products are degreasers for the cleaning of engines and a wide variety of component parts. Their properties make it possible to eliminate greases and separate the insoluble components without affecting the quality of the cleaned elements.

The **FINADET** detergents are designed for the cleaning of production zones, recommended for use in the Agrifood Industry and for the difficult cleaning of all types of soil.

DEGREASERS					FINASOL
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	DENSITY**	SPECIFICATIONS
FINASOL BAC	Rapid evaporation degreaser	<ul style="list-style-type: none"> Degreasing involving mechanical devices: machined parts, chassis, machine tool frames, bearings, pinions, filters, injection moulds. Surface preparation prior to assembly. 	<ul style="list-style-type: none"> Rapid evaporation. Compatible with all metals, most plastics and elastomers. 	785	
FINASOL HD	Special emulsifiable hydrocarbon degreaser	<ul style="list-style-type: none"> Cleaning of all engines: cars, trucks, boats. 	<ul style="list-style-type: none"> Compatible with most plastics and elastomers. 	805	
FINASOL FPI	Synthesis hydrocarbon Benzene-free Aromatic-free	<ul style="list-style-type: none"> Degreaser and cleaner for the Agrifood Industries: machine parts, chassis machine tools, bearings, pinions, filters, chains. 	<ul style="list-style-type: none"> Odorless. Compatible with metals, glass, ceramics, composite materials, most thermoplastics and thermosets insensitive to organic solvents. 	742	NSF K1
FINASOL MF	Emulsifiable degreaser	<ul style="list-style-type: none"> Multipurpose. 	<ul style="list-style-type: none"> Conducive to complete emulsification of oil based soils and separation of the insoluble components. 	809	
FINASOL BIO	Pure or diluted degreasing agent 100% vegetal based VOC free	<ul style="list-style-type: none"> Cleaning of all engines, elimination of fuels and resins, removes tar, bitumen, floor cleaning. 	<ul style="list-style-type: none"> Odorless, biodegradable and non toxic. Not aggressive to elastomers or plastics. 	855	Easily biodegradable according to OECD 301 B test. Fully biodegradable according to OECD 302 C test.

DETERGENTS					FINADET / CLEANER
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	DENSITY**	SPECIFICATIONS
FINADET MF	Overconcentrated detergent	<ul style="list-style-type: none"> Difficult cleaning: metal parts, plastics, conveyor belts, tanks, car bodies, brushing or washing machines, floors. 	<ul style="list-style-type: none"> Highly active on every type of soil: oils, greases, waxes, sludge, and inorganic substrates. 	1089	
FINADET FPI	Special agrifood detergent	<ul style="list-style-type: none"> Degreaser and cleaner for the Agrifood Industries: metal or plastic parts, vehicles designed for transportation of foodstuffs. 	<ul style="list-style-type: none"> Meets the requirements of the Food Industries. 	1086	NSF A1 Menthol perfume
FINADET SW	Special washing machine detergent	<ul style="list-style-type: none"> Special cleaning of parts placed in closed washing machines. 	<ul style="list-style-type: none"> Automatic. Foam free. 	742	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
CLEANER F & V	Detergent additive	<ul style="list-style-type: none"> Cleaning agent for any type of systems: hydraulics, gear, paper machine, heat transfer. 	<ul style="list-style-type: none"> High detergency and dispersancy properties. Recommended for varnish issues. 	52 (F) 173 (V)	

SERVICE PRODUCTS. AZOLLA NET HC: Detergent additive to be added to the hydraulic fluid for cleaning of the hydraulic systems prior to oil drain.

* Typical kinematic viscosity of base oil at 40 °C in mm²/s
** Density at 25 °C in kg/m³



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication



General Lubrication ENGINE OILS



NATERIA lubricants are detergent oils for gas engines and motor-compressors running on all types of fuel, from natural gas to highly corrosive landfill gas. As a result of long experience, the formulation of **NATERIA** lubricants complies with manufacturers' requirements by ensuring maximum engine protection.

- Longer oil drain intervals due to substantial reserve alkalinity.
- Thermal stability, resistance to oxidation and nitration.
- Considerable anti-wear and anticorrosion properties.
- Detergent and dispersant capacities that reduce the formation of deposits.

GAS ENGINES					NATERIA
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	SAE GRADE	SPECIFICATIONS
NATERIA MH 40	Mineral Ash content < 0.5% TBN: 5,5	• Natural gas engines. Can be used in cogeneration.	• Long life oil. • Compatibility with catalytic converters.	40	GE-JENBACHER: TA 1000-1109, Caterpillar: series 3500 • CES/MWM: sulphate ash content up to 0.5 wt.% • Perkins: 4000 • Waukesha: APG 2000/3000 • Wärtsilä: 220 SG • MTU: natural gas • MAN - natural gas
NATERIA MP 40	Mineral Ash content < 0.5% TBN: 4,6	• Natural gas engines, operating under severe conditions.	• Very long life oil. • High-performing under severe conditions.	40	GE-JENBACHER: TA 1000-1109, Caterpillar: series 3500 • CES/MWM: sulphate ash content up to 0.5 wt.% • ROLLS-ROYCE: KG & BV-G • MTU: natural & biogas, BR 400 & 4000 • MAN - natural gas
NATERIA MX 40	Semi-synthetic Ash content < 0.5% TBN: 6,7	• Natural gas engines, operating under very severe conditions.	• Oil Drain interval Extension: 40%. • Strongly improves detergency and reduces varnish at high temperatures.	40	
NATERIA X 405	Synthetic Ash content < 0.5% TBN: 5,2	• Natural gas engines, operating under very severe conditions.	• Extra long life oil. • Increased yield due to very considerable reduction in the formation of deposits on the heat exchanger tubes.	40	Wärtsilä: 220 SG, 25 SG, 28 SG, 34 SG, 32 DF, 50 DF • Waukesha: APG 2000/3000
NATERIA MJ 40	Mineral Ash content < 1% TBN: 8,8	• Natural gas and biogas engines: purification stations, liquid manure, landfill sites.	• Long life oil. • Strengthened detergency.	40	GE-JENBACHER: TA 1000-1109 • CES/MWM: sulphate ash content up to 1 wt.% • MTU biogas • MAN - special gas
NATERIA ML 406	Mineral Ash content < 1% TBN: 6,1	• Landfill gas engines with a controlled H ₂ S content.	• Long life oil. • Neutralization of the acid compounds contained in the gas.	40	GE-JENBACHER: TA 1000-1109
NATERIA V 40	Mineral Ashless	• 2-stroke and 4-stroke gas engines and motor-compressors.	• Compatibility with catalytic converters.	40	MIL-L-2104A Clark • Cooper-Bessemer • Ingersoll-Rand KVS

DIESEL ENGINES FOR STANDBY UNITS					DISOLA
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	SAE GRADE	SPECIFICATIONS
DISOLA SGS 40	Detergent mineral	• Diesel engines for standby units: hospitals, nuclear power plants, off shore units.	• Safe for emergency start-ups at full power. • Excellent internal protection of the engine during shutdown periods due to anticorrosion additives.	40	MIL-L-2104 C • MIL-L-21260 C EDF PMUC



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication



General Lubrication GEARS



CARTER, KASSILA and TOTAL NEVASTANE oils are designed for the lubrication of gears.

Numerous parameters need to be taken into account when choosing a gear lubricant:

- The type of gear: dimensions, metallurgy of the toothing, sliding characteristics and speed reducing ratio, open or closed casing.
- The operating conditions: depending on load, vibration and shock levels, the anti-wear and extreme-pressure properties determine the choice of lubricant.
- The temperature of oil in service: very low, moderate between +20 °C and +80 °C, hot at more than +80 °C, and extreme temperature exceeding +120 °C.

- The impact of the lubricant on the gears environment, in the event of leakage; in the event of leakage: biodegradability properties, suitability for incidental food contact or non-staining are necessary.
- The impact of the environment of the gear on the lubricant: in order to prevent corrosion and shorter fluid life due to humidity, dust or other elements, certain oils offer reinforced anticorrosion properties.
- The conditions of maintenance: a synthetic fluid offering a long oil drain interval and guaranteeing proper operating safety makes significant savings in maintenance costs.

MINERAL GEAR OILS				CARTER / KASSILLA / TOTAL NEVASTANE	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
CARTER EP 68 - 1000	Mineral	• Industrial gears, bearings under high loads and high temperatures.	• Extension of oil drain intervals. • Protection against micropitting.	68 to 1000	ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-E02 EP • U. S. Steel 224 • Flender»
TOTAL NEVASTANE EP	White	• Gears, gear pumps, chains and conveyor belts.	• Superior protection under high loads. • Adapted to a wide range of applications.	100 to 1000	NSF H1 • Kosher • Halal • ISO 6743-6 CKD • ISO 21469
CARTER XEP	Mineral Top tier	• Gears under high loads, high temperatures and difficult environments. • Gears for wind turbines.	• Extended oil service life due to excellent thermal stability. • Reinforcement of anticorrosion protection. • Very good protection of bearings. • Excellent protection of toothing against micropitting.	150 to 680	ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-E02 EP • U. S. Steel 224 • FAG • Flender
KASSILLA GMP	Mineral	• Industrial gears under very high loads and repeated shocks. • Adapted to severe conditions: cement plants, Iron and Steel Industry, mines, crushing...	• Very good thermal stability. • Reinforced protection against corrosion and micropitting. • Contains graphite and molybdenum disulphide.	150 to 1000	ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-E02 EP



SYNTHETIC GEAR OILS				CARTER / TOTAL NEVASTANE	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
CARTER SH	Synthetic PAO	• Gears subjected to very high loads and high temperatures in difficult environments. • Gears for wind turbines.	• Excellent protection against corrosion, wear and micropitting. • Extended oil service life due to excellent thermal stability. • Can operate outdoors thanks to a very low pour point.	150 to 1000	ISO 12925-1 CKD • DIN 51517-3 CLP Flender • FAG • SKF
CARTER BIO	Synthetic ESTER	• Gears offering a risk of incidental discharges into the environment.	• Biodegradable product. • Very good extreme-pressure, anti-wear and anticorrosion properties. Oxidation stability.	68 to 460	Equivalence • ISO 12925-1 CKD • DIN 51517-3 CLP EAL (Environment Acceptable Lubricant)
CARTER SG	Synthetic PAG	• Very high performance synthetic gear lubricant for standard, crown, planetary, and worm gearboxes. • Very high EP performances, high sliding performances. • Non-miscible with mineral oils and certain synthetic lubricants.	• High Efficiency: reduces operating temperatures due to low friction coefficient and increases energy efficiency. • Excellent shear stability and very high viscosity index. • Very high thermal and oxidation stability.	100 to 1000	Equivalence • ISO 12925-1 CKT • DIN 51517-3 CLP PG
TOTAL NEVASTANE XSH	Synthetic PAO	• Severe temperature conditions and high loads. • Gears, slideways, plain bearings and (roller) bearings.	• Excellent level of equipment protection. • Extension of oil drain intervals. Extended equipment service life.	150 to 460	NSF H1 • Kosher • Halal • ISO 6743-6 CKD • ISO 21469
TOTAL NEVASTANE SY	Synthetic PAG	• Severe temperature conditions and high loads. • Oven chains and conveyor belts, bottling equipment, wheels and worm screws. • Non-miscible with mineral oils and certain synthetic lubricants.	• Reinforced extreme-pressure properties. • Very good thermal stability. • Anticorrosion protection.	220 320 460	NSF H1



BIODEGRADABLE



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General Lubrication GEARS



SPECIAL OILS					CARTER
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
CARTER EP 1500, 2200, 3000	Semi-synthetic	<ul style="list-style-type: none"> • Slow gears. • In particular, oven rings and crusher trains. 	<ul style="list-style-type: none"> • Great load capacity thanks to excellent extreme-pressure and anti-wear properties. • Protection against shocks and corrosion. 	1500 2200 3000	ISO 12925 CKC • DIN 51517-3 CLP (grade 1500) • AGMA 9005-E2, NF-F19-809
CARTER MS 100	Very high-viscosity bitumens	<ul style="list-style-type: none"> • Open gears. 	<ul style="list-style-type: none"> • Reinforced extreme-pressure properties. • Superior adhesiveness. • Resistance to water and anticorrosion protection. 	6800	ISO 6743-6 CKJ
CARTER ENS 400	Very high-viscosity bitumens	<ul style="list-style-type: none"> • Open gears or gears in leaky casings rotating at slow speed. • Ring gears, slideways. • Lubrication of cables and metal chains. 	<ul style="list-style-type: none"> • Low viscosity solvent allows possible application at ambient temperatures. 	Kinematic viscosity at 100 °C of the dry extract: 400 mm ² /s	ENS 400: ISO 6743-6 CKH-DIL ENS/EP 700: ISO 6743-6 CKJ-DIL
CARTER ENS/EP 700	Very high-viscosity bitumens	<ul style="list-style-type: none"> • Open gears or gears in leaky casings rotating at slow speed. • Ring gears, slideways. • Lubrication of cables and metal chains. 	<ul style="list-style-type: none"> • Low viscosity solvent allows possible application at ambient temperatures. • CARTER ENS/EP 700 is available as an aerosol. • Reinforced extreme-pressure properties. 	Kinematic viscosity at 100 °C of the dry extract: 700 mm ² /s	ENS 400: ISO 6743-6 CKH-DIL ENS/EP 700: ISO 6743-6 CKJ-DIL
CARTER ALS	Non-staining	<ul style="list-style-type: none"> • Gears in aluminium seam casings: cylindrical gear pairs, bearings and couplings. • Spur gears and worm screws. 	<ul style="list-style-type: none"> • Non-staining of aluminium. • Excellent protection of lubricated parts. • Resistance to corrosion even in the presence of water. 	220 460	
CARTER OGL 1000 M	Very high-viscosity semi-synthetic oil for open gears	<ul style="list-style-type: none"> • Very high load resistant, is particularly adapted to sugarcane mills open gears and bearings. • Does not contain either solvents or bituminous compounds. Bright clear. 	<ul style="list-style-type: none"> • Easily pumpable by automatic spraying equipment. • Excellent behavior in presence of water and of sugar cane juice. • Very high shear stability. • Excellent extreme pressure and anti wear properties. 	Kinematic viscosity at 40°C: 25000 mm ² /s Kinematic viscosity at 100 °C: 1050 mm ² /s	ISO 6743-6 L-CKJ



BIODEGRADABLE



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General Lubrication



General Lubrication HEAT TRANSFER FLUIDS



SERIOLA and **JARYTHERM**® heat transfer fluids cover a wide variety of applications: heating of domestic and industrial premises, manufacturing processes in cement works, paper mills, Chemical and Plastics Processing Industries and installations combining heating and cooling cycles.

Whether they are mineral or synthetic base, **SERIOLA** and **JARYTHERM**® fluids are characterized by:

- Great thermal stability, thereby preventing buildup of deposits and soot in systems.
- High heat exchange capacity which enables energy savings due to the reduced warm-up time of the installations.
- Long service life without degradation of the fluid even at process temperatures rising as high as +350 °C.

SERIOLA / JARYTHERM® / TOTAL NEVASTANE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
SERIOLA 1510	Mineral	<ul style="list-style-type: none"> • Closed circuits without air contact. 	<ul style="list-style-type: none"> • Process temperature < +310 °C (+330 °C in the film). 	30	ISO 6743-12 L-QC
SERIOLA ETA	Mineral	<ul style="list-style-type: none"> • Closed circuits without air contact. 	<ul style="list-style-type: none"> • Process temperature < +310 °C (+350 °C in the film). 	32 100	ISO 6743-12 L-QC
TOTAL NEVASTANE HTF	White mineral	<ul style="list-style-type: none"> • Closed circuits without air contact. • Numerous manufacturing processes in Agrifood Industry: water baths, autoclaves, reactors, ovens, presses and moulds. 	<ul style="list-style-type: none"> • Process temperature < +310 °C (+330 °C in the film). 	32	NSF H1 & HT1 • ISO 6743-12 L-QC • ISO 21469 • Halal, Kosher
SERIOLA DTH	Synthetic detergent	<ul style="list-style-type: none"> • Hot cleaning of heat transfer circuits. • Miscible with mineral-based heat transfer fluids. 	<ul style="list-style-type: none"> • Process temperature ~+270 °C. • Very high thermal stability. 	25	
JARYTHERM ® DBT	Synthetic	<ul style="list-style-type: none"> • Closed circuits without air contact. • Main applications in the Chemical and Plastics Processing Industries. 	<ul style="list-style-type: none"> • Process temperature from 0 °C to +350 °C (+370 °C in the film). 	19	ISO 6743-12 L-QD
JARYTHERM ® BT 06	Synthetic	<ul style="list-style-type: none"> • Closed circuits without air contact. • Primarily for installations combining heating and cooling cycles. 	<ul style="list-style-type: none"> • Process temperature from -30 °C to +280 °C. • Temperature in the pressurized circuits < +350 °C. 	4	ISO 6743-12 L-QE

JARYTHERM® A REGISTERED MARK BY ARKEMA.

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



BIODEGRADABLE



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3H suitable for direct food contact

General Lubrication



General Lubrication HYDRAULIC SYSTEMS



TOTAL hydraulic fluids meet the requirements of international standards and manufacturers' technical specifications.

Our ranges of products correspond to the classifications of the ISO 6743-4 standard:

- HM class: **AZOLLA**. Mineral fluids with good oxidation stability ensuring anticorrosion and anti-wear protection of the equipment.
- HV class: **EQUIVIS** and **HYDROFLO**. HM properties complemented by a high-viscosity index, for use of the fluid over a wide temperature range that permits start-ups at low temperature.

- HETG, HEES classes: **BIOHYDRAN**. Biodegradable fluids recommended for equipment used in sensitive natural areas so as to limit the impact of incidental discharges on the environment.

- HFA, HFC, HFD classes: **HYDRANSAFE**. Fluids specifically developed to limit the risks of a fire spreading in the event of a leak.

The **BLUE CONCENTRATE** is a blue dye to add in hydraulic fluid in order to detect leaks.

TOTAL NEVASTANE hydraulic fluids are available in HM and HV class.

HM HYDRAULIC FLUIDS: FOR HIGH TEMPERATURES AND PRESSURES			AZOLLA / TOTAL NEVASTANE	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
AZOLLA ZS	<ul style="list-style-type: none"> • Hydraulic systems operating in high temperature and pressure conditions. • Bearings and miscellaneous devices. 	<ul style="list-style-type: none"> • Reinforced protection of the equipment thanks to anti-wear and anticorrosion properties. • Considerable service life for the fluid and preventing deposits, ensured by thermal stability and resistance to oxidation. • Filterability even in the presence of water. 	10 to 150	ISO 11158 HM • DIN 51524-2 HLP • Eaton I-286S, M-2950S • Denison HFO, HF1, HF2
AZOLLA AF	<ul style="list-style-type: none"> • Hydraulic systems especially sensitive to the formation of deposits and/or operating in high temperature and pressure conditions. • Bearings and miscellaneous equipment. 	<ul style="list-style-type: none"> • Formation deposits prevented due to ashless additives. • Very good anti-wear and thermal stability performances. • Very good filterability in service even in the presence of water. • Extension of oil drain intervals. TOST = 4000 hours. 	22 to 100	ISO 11158 HM • DIN 51524-2 HLP • Eaton I-286S, M-2950S • Denison HFO, HF1, HF2
AZOLLA DZF	<ul style="list-style-type: none"> • All hydraulic systems, in particular when the presence of water is inevitable and the draining of water impossible. • Miscellaneous devices calling for extreme-pressure properties. 	<ul style="list-style-type: none"> • Excellent hydrolysis stability thanks to ashless additives. • Detergent fluid preventing deposits in the circuits. • Reinforced extreme-pressure properties. 	10 to 68	ISO 11158 HM • ISO 12925 CKC • DIN 51524-2 HLPD • Müller Weingarten • MAN N698 HLPD
AZOLLA AL	<ul style="list-style-type: none"> • Hydraulic systems of aluminium, stainless steel or copper rolling mills. 	<ul style="list-style-type: none"> • Synthetic oil avoids staining rolled metal in the event of a leak in the hydraulic circuit. • Reduction in the formation of deposits. • Anticorrosion protection even in the presence of water. 	15 to 68	
AZOLLA VTR	<ul style="list-style-type: none"> • Hydrokinetic transmissions and couplings. • Specially designed for turbo-transmissions, Voith Turbo gear boxes. 	<ul style="list-style-type: none"> • Dispersant and detergent fluid limiting deposits. • Very good load capacity (FZG>12) and anti-wear protection. • Thermal stability. Very low foaming. 	32	ISO 6743-4 HM • DIN 51524 HLPD Voith Turbo • SNCF
TOTAL NEVASTANE AW	<ul style="list-style-type: none"> • Hydraulic systems operating under severe conditions. 	<ul style="list-style-type: none"> • Very good equipment protection power. • Increased equipment service life. • Miscibility with mineral fluids. 	22 to 68	NSF H1 • Kosher • Halal ISO 6743-4 HM • ISO 21469



BIODEGRADABLE



H1 suitable for incidental food contact


3H suitable for direct food contact

General Lubrication





General Lubrication HYDRAULIC SYSTEMS



HV HYDRAULIC FLUIDS: FOR LOW TEMPERATURES			EQUIVIS / HYDROFLO / TOTAL NEVASTANE	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
EQUIVIS ZS	<ul style="list-style-type: none"> Hydraulic systems operating outdoors. 	<ul style="list-style-type: none"> Extension of oil drain intervals due to very good thermal stability and resistance to oxidation. 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	<ul style="list-style-type: none"> Hydraulic systems operating outdoors. 	<ul style="list-style-type: none"> Extension of oil drain intervals. Improved shear stability. 	32 to 68	ISO 11158 HV • DIN 51524 HVLP
EQUIVIS HE	<ul style="list-style-type: none"> Hydraulic systems operating under high temperature and pressure conditions. Hydraulic systems operating outdoors. 	<ul style="list-style-type: none"> High Efficiency: Energy savings up to 5%. Extension of drain intervals due to a very good thermal stability and resistance to oxidation. Outstanding shear stability. Very good filterability. 	32 46 68	ISO 11158 HV • DIN 51524-3 HVLP • DENISON HF0 
EQUIVIS XV	<ul style="list-style-type: none"> Hydraulic systems operating at low temperatures as far down as -30 °C. 	<ul style="list-style-type: none"> Protection of equipment due to a viscosity index > 250, ensuring limitation of cavitation phenomena in circuits during start-up phases and maintenance of lubricant film thickness at elevated temperatures. 	32 46	
EQUIVIS XLT	<ul style="list-style-type: none"> Hydraulic systems operating at extremely low temperatures as far down as -40 °C. 	<ul style="list-style-type: none"> Enhanced protection due to a viscosity index of 350. Prevention of deposits due to ashless additives. Excellent filtration properties even in the presence of water. Extended service life of the fluid. TOST = 4000 hours. 	15 to 32	
HYDROFLO CT	<ul style="list-style-type: none"> Hydraulic systems operating outdoors. 	<ul style="list-style-type: none"> Enhanced protection and performance of the equipment. Allows extension of oil drain intervals. Blue coloring enabling detection of possible leaks in equipment. 	46	DIN 51524-3 HVLP • Poclair Hydraulics • Denison HF0, HF1, HF2
TOTAL NEVASTANE SH	<ul style="list-style-type: none"> Hydraulic systems and particularly those operating at low temperatures. 	<ul style="list-style-type: none"> High performance product, due to its 100% synthetic composition. Excellent protection of equipment. Extension of oil drain intervals. 	32 to 100	NSF H1 • Kosher • Halal • ISO 6743-4 HV • ISO 21469



BIODEGRADABLE HYDRAULIC FLUIDS			BIOHYDRAN		
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
BIOHYDRAN TMP	Biodegradable Synthetic esters	<ul style="list-style-type: none"> Hydraulic systems operating outdoors. Optimal operating temperatures: -20 °C to +80 °C. 	<ul style="list-style-type: none"> Excellent protection against wear and corrosion. Protection and efficiency 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	<ul style="list-style-type: none"> Hydraulic systems operating outdoors. Operating temperatures likely to exceed +80 °C. 	<ul style="list-style-type: none"> Extension of oil drain intervals due to high 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 



BIODEGRADABLE



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3H suitable for direct food contact

General Lubrication



General Lubrication HYDRAULIC SYSTEMS



FIRE-RESISTANT HYDRAULIC FLUIDS				HYDRANSAFE	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
HYDRANSAFE HFA E3	Concentrate soluble in water	<ul style="list-style-type: none"> Hot pressing machines and systems specially designed for low-viscosity aqueous fluids. Operating temperatures: +5 °C to +55 °C. 	<ul style="list-style-type: none"> Generation of a stable fire resistant emulsion. Good filtration properties. Resistant to bacterial growth. 		ISO 6743-4 HFAE • ISO 12922
HYDRANSAFE HFA S5	Synthetic concentrate soluble in water	<ul style="list-style-type: none"> Hot pressing machines and systems specially designed for low-viscosity aqueous fluids. Operating temperatures: +5 °C to +55 °C. 	<ul style="list-style-type: none"> Generation of a stable fire resistant solution. Excellent filtration properties. High resistant to bacterial growth. 		ISO 6743-4 HFAS • ISO 12922
HYDRANSAFE HFC 146	Water-Glycol based water resistant fluid	<ul style="list-style-type: none"> Operating temperatures: -20 °C to +60 °C. 	<ul style="list-style-type: none"> Fire resistant fluid containing a high proportion of water. Adapted to low temperatures. 	46	ISO 6743-4 HFC • Danieli • Müller Weingarten
HYDRANSAFE HFDU	Esters based fire resistant fluid	<ul style="list-style-type: none"> Recommended in the event of incidental leaks into the environment. Excellent fire resistance. Operating temperature: -10 °C to +70 °C on a continuous basis, +120 °C at peak periods. 	<ul style="list-style-type: none"> Ultimate biodegradability (OECD 301B). Excellent anti-wear properties. Miscible with mineral oils. 	46 68	ISO 6743-4 HFDU • Factory Mutual
HYDRANSAFE HFDU LC 168	Esters based fire resistant fluid	<ul style="list-style-type: none"> Operating temperature: -10 °C to +70 °C on a continuous basis, +120 °C at peak periods. 	<ul style="list-style-type: none"> Excellent fire resistance. Anti-wear properties. 	68	ISO 6743-4 HFDU
HYDRANSAFE FR EHC	Phosphate-esters based fire resistant fluid	<ul style="list-style-type: none"> Operating temperature: -10 °C to +70 °C on a continuous basis, +150 °C at peak periods. Designed for electro hydraulic control system. 	<ul style="list-style-type: none"> Excellent fire resistance. Absence of deposits. Protection against corrosion. 	32 46	ISO 6743-4 HFDR • ISO 12922 • ALSTOM • General Electric • SIEMENS

SERVICE PRODUCTS. BLUE CONCENTRATE: Blue dye for hydraulic fluids and other mineral lubricants, enabling early detection of leaks.



BIODEGRADABLE



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General Lubrication



General Lubrication HYPERCOMPRESSORS



ORITES DS, TW and EDA products are specifically formulated for hyper-compressor cylinders and satisfy the principal regulations in force for the production of polymers.

					ORITES
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
ORITES DS 270	Synthetic PAG	• Lubrication of ethylene (hyper-)compressors cylinders for the production of low density polyethylene.	• Excellent lubricity.	270	NSF H1 • ISO 6743-3: DGC • EU 2011/10/EC • Burckhardt Compression ORITES TW 220 is ISO 21469 certified ORITES EDA 220 is ISO 21469 certified
ORITES DS 270 X		• Lubrication of ethylene (hyper-)compressors cylinders for the production of low density polyethylene and EVA.	• Resistant to corrosion.		
ORITES DS 270 D			• Avoids pre-polymerization issues.		
ORITES TW 220	Thickened White oil	• Lubrication of ethylene (hyper-)compressors cylinders for the production of low density polyethylene.	• Excellent lubricity.	220	
ORITES TW 220 X		• Lubrication of ethylene (hyper-)compressors cylinders for the production of low density polyethylene and EVA.	• Resistant to corrosion.		
ORITES EDA 220		• Hyper-compressor cylinders. • For the production of EDA.	• Excellent lubricity.		



General Lubrication PNEUMATIC SYSTEMS

PNEUMA oils guarantee the performance of pneumatic equipment and enable reduced fluid consumption.

- Adhesiveness and tacky character, preventing pollution by oil mist.

- Excellent resistance to shocks due to the extreme-pressure additives and good anti-wear protection.
- Water-repellent and antirust properties.

					PNEUMA
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
PNEUMA	Mineral	• Pneumatic tools: pneumatic shock engines, line lubricators or pulverisers for hammer drills.	• Possible use in confined atmosphere: galleries, tunnels.	46 to 320	ISO 6743-11 P
PNEUMA SY	Synthetic	• Soundproof pneumatic shock equipment.	• Anti-icing. • Use at very low temperature.	17	

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



BIODEGRADABLE



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General Lubrication



General Lubrication PROCESS OILS



FINAVESTAN white oils are exceptionally highly purified, due to the additional refining processes which include a high technology and high pressure hydrogenation process. Oils of medicinal quality meet the requirements of the Pharmaceutical, Cosmetics and Agrifood Industries in accordance with the national legislation in force.

LYRAN products are technically white oils of high purity. They are used in numerous non-food applications, as of a lubricant, as a plasticizer or as a component.

WHITE OILS AND VASELINES					FINAVESTAN / LYRAN / EMETAN	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS	
FINAVESTAN A 50 B	Medicinal white oil	<ul style="list-style-type: none"> Designed for the following industries: <ul style="list-style-type: none"> - plastics: plasticizer for PS and other polymers, for all packaging intended for food contact, - pharmaceutical: excipient. 	<ul style="list-style-type: none"> Very high purity. Odourless, flavourless, colourless. Does not contain sulphur or aromatic hydrocarbon. 	7,5	The use of these oils depends on the national legislation in force <ul style="list-style-type: none"> • European Pharmacopoeia • US Pharmacopoeia USA FDA: 21 CFR 178.3620 • (a), white mineral oil • NSF H1 	
FINAVESTAN A 80 B				15		
FINAVESTAN A 100 B				23		
FINAVESTAN A 180 B				29		
FINAVESTAN A 210 B				40		
FINAVESTAN A 360 B				70		
FINAVESTAN A 520 B				100		
LYRAN C 80 B	Technical white oil	<ul style="list-style-type: none"> Process oil or raw material for: <ul style="list-style-type: none"> - lubrication of small devices, - manufacturing of plastics, rubbers and pesticides, - component for ink and textile oils. 	<ul style="list-style-type: none"> Very high purity. Odourless, flavourless, colourless. Does not contain sulphur or aromatic hydrocarbon. 	15	FDA, 21 CFR 178-3620 (b)	
EMETAN M	Medicinal vaseline	<ul style="list-style-type: none"> Designed chiefly for the Cosmetics and Pharmaceutical Industries as a lubricant or raw material. 	<ul style="list-style-type: none"> Very high purity. Odourless, flavourless. 		The use of these vaselines depends on the national legislation in force <ul style="list-style-type: none"> • EMETAN M only: European, French, German and US Pharmacopoeia 	
EMETAN T	Vaseline					

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication



General Lubrication PROCESS OILS



VEGETABLE OILS FOR THE AGRIFOOD INDUSTRY					FINATUROL
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
FINATUROL K2	100% vegetable Contains no compound of animal origin GMO-free	• For pastries and industrial baking: for dough dividers and bread slicers.	• Economic vegetable oil. • No taste and odour tainting of the finished product.	35	NSF 3H • Technological food auxiliary approved by the DGCCRF (France)
FINATUROL D			• High performance product. • Reduced oil consumption. • Reduction in the formation of deposits.	35	
FINATUROL HT		• For pastries and industrial baking: high temperature food mould oil.	• Less consumption of product. • Neutral odour and taste does not taint the finished product. • Easy application.	100	NSF 3H



PROCESS OILS					TORILIS
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
TORILIS	Pure mineral	• Process oil in various industries: rubber, plastics, textile (softening), treatment of leather, printing inks. • Anti-caking agent and dust suppressant or anti-dust agent.	• High natural viscosity index. • Perfectly suitable for mixtures.	32 to 500	
TORILIS HC	Hydrocracked mineral oil		• Very high viscosity index. • Enhanced purity in respect to standard mine-ral oils: lower sulphur and aromatic content. • Highly refined oil: better oxydation resistance and higher thermal stability.	14, 32 and 100	

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication



General Lubrication TRANSFORMER OILS



ISOVOLTINE oils are extremely effective in their ability to insulate components of the transformer and ensure efficient cooling in the system. In addition, they enable outstanding protection against oxidation and prevent wear of the core, windings and other insulating materials.

ISOVOLTINE main performances are:

- Superior insulating properties due to: high dielectric breakdown voltage, volume resistivity, interfacial surface tension and absence of polar substances.

- Outstanding resistance to oxidation.
- Very high purity levels minimize power factors and help to prevent temperature rises.
- Excellent cooling properties due to good fluidity and heat transfer capacities.
- Highly refined oil ensures chemical stability and durability in service.
- Ultra efficient protection of equipment due to non corrosive nature and cleaning properties.

ISOVOLTINE					
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
ISOVOLTINE II	Naphthenic mineral (uninhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipment.	<ul style="list-style-type: none"> • High insulating power. • Very high resistance to oxidation enabling a considerable service life. • Excellent cooling properties. 	10	IEC 60296:2012 – Uninhibited
ISOVOLTINE II-T	Naphthenic mineral (trace inhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipments.	<ul style="list-style-type: none"> • High insulating power. • Contains traces of inhibitor to improve oxidation resistance. • Good cooling properties. 	8,2	IEC 60296:2012 – Trace Inhibited • ASTM D 3487 Type I
ISOVOLTINE II X	Naphthenic mineral (inhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipment.	<ul style="list-style-type: none"> • High insulating power. • Contains inhibitor to ensure a better resistance to oxidation. • Good cooling properties. 	10	IEC 60296:2012 – Inhibited
ISOVOLTINE II-TX	Naphthenic mineral (inhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipment.	<ul style="list-style-type: none"> • High insulating power. • Contains inhibitor to ensure a better resistance to oxidation. • Good cooling properties. 	8,4	IEC 60296:2012 – Inhibited • ASTM D 3487: Type II
ISOVOLTINE P1	Paraffinic mineral (trace inhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipment.	<ul style="list-style-type: none"> • Does not contain sulfur • Good oxidation resistance. • Excellent stray gassing performance. 	7,7	IEC 60296: 2012 – Trace Inhibited • ASTM D 3487 Type I fluid
ISOVOLTINE P2	Paraffinic mineral (inhibited)	• For transformers, circuit breakers, contactors and all high-voltage equipment.	<ul style="list-style-type: none"> • Does not contain sulfur • Superior oxidation resistance. • Excellent stray gassing performance. 	7,7	IEC 60296:2012 – Inhibited • ASTM D 3487 Type II fluid
ISOVOLTINE BIO	Synthetic ester	<ul style="list-style-type: none"> • Transformers. • Highly recommended to reduce fire hazards (mining, on-board transformers). 	<ul style="list-style-type: none"> • Biodegradable. • Excellent resistance to fire. • No danger for the aquatic environment. 	26	IEC 61099 • IEC 61039 - K3 Class • OECD 301B • NWG
ISOVOLTINE BIO VE	Vegetable oil	<ul style="list-style-type: none"> • Transformers. • Highly recommended to reduce fire hazards (mining, on-board transformers). 	<ul style="list-style-type: none"> • Readily biodegradable • Optimum fire resistance • Higher Water absorption extending insulating paper lifetime. 	39	IEC 62770 • IEC 61039 - K2 Class • OECD 301B

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication





General Lubrication TURBINES



PRESLIA oils are designed for the lubrication of hydraulic, gas, steam and combined-cycle turbines. Their formulation stems from long experience and meets manufacturers' severest specifications.

- Excellent resistance to oxidation permitting longer oil drain intervals.
- Foaming, air release and demulsification behavior, ensuring proper facility operations.
- Specific anti-wear and extreme-pressure additives that enable the gearing to withstand high loads.

PRESLIA					
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
PRESLIA	Mineral	<ul style="list-style-type: none"> • Hydraulic turbines. • Steam turbines. • Gas turbines. • Centrifugal compressor. 	<ul style="list-style-type: none"> • Very good defoaming, air release and demulse properties. • High level of protection against oxidation. 	32 to 100	ISO 6743-5 THA/THE/TSA/TSE/TGA/TGB/TGE/ TGSE ISO 8068 (ISO VG 32 & 46) - DIN 51515 (ISO VG 32 & 46) - ASTM D 4304 type I & II - JIS K-2213 type 2 w/add - GB 11120-89 L-TSA Alstom HTGD 90117 ALSTOM HYDRO HTWT 600050 <ul style="list-style-type: none"> • General Electric GEK 28143B, GEK 32568G, GEK 27070, GEK 46506E • MAN Diesel & Turbo SPD10000494596 • MAN Turbo SPD 10000242284 • Siemens TLV 901304, TLV 901305 • Solar ES 9-224 W Class II
PRESLIA GT	Hydrocracked mineral	<ul style="list-style-type: none"> • Steam turbines. • Gas turbines. • Combined-cycle turbines. 	<ul style="list-style-type: none"> • Very high resistance to oxidation. Reinforced anti-wear and extreme-pressure additivation. • Longer oil drain intervals. 	32 46	ISO 6743-5 TSA/TSE/TGA/TGB/TGE/TGSB/TGSE ISO 8068 - DIN 51515 - ASTM D 4304 type I & II - JIS K-2213 type 2 w/add - GB 11120-89 L-TSA Alstom HTGD 90117 <ul style="list-style-type: none"> • General Electric GEK 28143B, GEK 32568G, GEK 107395A, GEK 101941A, GEK 27070, GEK 46506 E • MAN Turbo SPD 10000494596 • Siemens TLV 901304, TLV 901305 • Škoda turbíny Plzen • Solar ES 9-224 W Class II
PRESLIA SE JET	Synthetic ester	<ul style="list-style-type: none"> • Aero-derivative gas turbines. 	<ul style="list-style-type: none"> • Excellent resistance at high temperatures. 	25	MIL-PRF-23699F <ul style="list-style-type: none"> • Allison Rolls Royce (USA) • General Electric • Rolls Royce (UK) • Turbomeca
PRESLIA SE HTS	Synthetic ester	<ul style="list-style-type: none"> • Aero-derivative gas turbines. 	<ul style="list-style-type: none"> • Enhanced thermal stability. 	25	SAE AS5780 Class HPC <ul style="list-style-type: none"> • MIL-PRF-23699 F Class HTS • NATO CODE O-154
BIOPRESLIA HT	Saturated synthetic esters	<ul style="list-style-type: none"> • Hydraulic power generation plant (turbines and hydraulic systems). 	<ul style="list-style-type: none"> • Resistance to oxidation. • Very good defoaming, air release and demulse properties. • Good compatibility with elastomers. • Biodegradable. 	22 to 100	  www.ecolabel.eu www.total.com/en/total-ecosolutions

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication

Greases



LITHIUM / CALCIUM
GREASES

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LITHIUM COMPLEX
GREASES

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ALUMINIUM COMPLEX
GREASES

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POLYUREA GREASES

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CALCIUM SULFONATE
COMPLEX GREASES

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CALCIUM GREASES

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SPECIFIC GREASES

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AUTOMATIC
LUBRICATORS

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TOTAL offers a very wide range of lubricating greases for all applications in a variety of sectors: Heavy Industry (cement plants, iron and steel...), agrifood, papermaking, public works, transport, agriculture and marine.

TOTAL lubricating greases can be classified by “Families” depending on the nature of their thickeners.

The thickener provides specific properties to the greases such as mechanical and thermal stability and water resistance.

Within each “Family”, the greases will be classified according to their ranges of applications and specific performances.



Greases

LITHIUM / CALCIUM GREASES



MULTIS and **LICAL** products are a high performance range of multipurpose greases based on Lithium / Calcium thickener. They are available in NLGI grades from 000 to 3, with or without solid additives.

MULTIS and **LICAL** greases are formulated to provide good protection against wear, rust and water wash out. **MULTIS** and **LICAL** greases permit the rationalisation of stocks and the reduction of maintenance cost.

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	MULTIS / LICAL SPECIFICATIONS	
							ISO 6743-9	DIN 51502
MULTIS 2	• Multipurpose grease for automotive and industrial applications.	• Compatible with most conventional soaps.	Lithium / Calcium	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	• Grease for centralized lubrication system and enclosed gears.	• Good pumpability. • Long service life thanks to the good resistance of the lubricating film.	Lithium / Calcium	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-XCCEB 0	MP0K-30
MULTIS EP 1	• Extreme Pressure, multipurpose grease for a wide range of industrial and automotive applications.	• Enables to rationalize stocks and simplify maintenance operations.	Lithium / Calcium	1	150	-30 °C to +120 °C	L-XBCEB 1	KP1K-30
MULTIS EP 2			Lithium / Calcium	2	150	-25 °C to +120 °C	L-XBCEB 2	KP2K-25
MULTIS EP 3			Lithium / Calcium	3	150	-20 °C to +120 °C	L-XBCEB 3	KP3K-20
LICAL EP 2	• Extreme Pressure, multipurpose grease recommended for most type of industrial applications including heavy-duty applications.	• Good resistance to water. • Enables stock rationalization. • Simplifies maintenance operations.	Lithium / Calcium	2	190	-25 °C to +130 °C	L-XBDHB 2	KP2K-25
MULTIS MS 2	• Extreme Pressure, multipurpose grease for applications under load, shocks and vibration.	• Contains 1% of MoS ₂ . • Avoid any jamming or sticking.	Lithium / Calcium	2	150	-25 °C to +130 °C	L-XBCEB 2	MPF2K-25
LICAL MS 2	• Extreme Pressure, multipurpose grease recommended for heavy-duty applications in severe environment (water, dust).	• Contains 3% MoS ₂ . • Very good resistance to high loads and shocks. • Very good adhesiveness on metal surfaces.	Lithium / Calcium	2	210	-20 °C to +120 °C	L-XBCHB 2	KPF2K-20

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

LITHIUM / CALCIUM GREASES



PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	MULTIS / LICAL / BIOMULTIS SPECIFICATIONS	
							ISO 6743-9	DIN 51502
MULTIS XHV 00	<ul style="list-style-type: none"> Extreme Pressure, multipurpose grease for applications under load, at low speed and with the risk of water washout. 	<ul style="list-style-type: none"> Exceptional adhesiveness on metal surfaces. Enables maintenance and shutdown time reduction. 	Lithium / Calcium	00	500	-20 °C to +100 °C	L-XBBHB 00	KP00H-20
MULTIS XHV 2	<ul style="list-style-type: none"> Extreme Pressure, multipurpose grease for applications under high load, at low speeds with the risk of water washout. Suitable as "Fifth wheel" grease in transport applications. 		Lithium / Calcium	2	1300	-20 °C to +120 °C	L-XBCHB 2	KP2K-20
MULTIS ZS 000	<ul style="list-style-type: none"> Synthetic multipurpose grease for centralized lubrication systems when a NLGI 00 or 000 grade is required. Typically for vehicle chassis, trucks or public works machines. 	<ul style="list-style-type: none"> Outstanding pumpability even at very low temperature. MAN - Willy Vogel - MB. 	Lithium / Calcium	00 - 000	42	-45 °C to +120 °C	L-XECFB 00/000	MP00/000K-45
MULTIS XLT 2	<ul style="list-style-type: none"> Very high-performance synthetic grease for very high speed and/or very low temperature applications. 	<ul style="list-style-type: none"> Wide operational temperature range. Reduced power consumption due to low running torque. Enables to achieve very high speed factor. Compatible with plastics. 	Lithium / Calcium	2	18	-60 °C to +120 °C	L-XECEA 2	K2K-60
BIOMULTIS EP 2	<ul style="list-style-type: none"> Biodegradable Extreme Pressure, multipurpose grease for industrial and marine applications requiring environmentally acceptable lubricants (EAL). 	<ul style="list-style-type: none"> Ultimate biodegradability according to OECD 301-B (> 60%). EAL Grease complying with EPA 2013 Vessel General Permit (VGP). Good resistance to water washout. 	Lithium	2	150	-30 °C to +140 °C	L-XCEEB 2	KP2K-30

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

LITHIUM COMPLEX GREASES



MULTIS COMPLEX products are premium quality greases for wide range of heavy-duty application based on Lithium Complex thickener. They are formulated with high performance additives providing outstanding equipment protection.

MULTIS COMPLEX range is an excellent choice to severe operating conditions such as extreme temperatures, heavy loading and contaminated environment (water, dust).

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	MULTIS COMPLEX SPECIFICATIONS	
							ISO 6743-9	DIN 51502
MULTIS COMPLEX EP 2	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose grease suitable for wheel bearings, ball bearings, roller bearings, plain bearings, seal. 	<ul style="list-style-type: none"> • Excellent mechanical and thermal stabilities. • Minimised downtime and maintenance cost. 	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-XBDHB 3	KP3N-20
MULTIS COMPLEX HV 2			<ul style="list-style-type: none"> • Extreme Pressure, multipurpose grease for loaded applications. • For wheel bearings, ball bearings, roller bearings, plain bearings, seals... 	Lithium Complex	2	340	-30 °C to +160 °C	L-XBEHB 2
MULTIS COMPLEX HV 2 MOLY	<ul style="list-style-type: none"> • Extreme Pressure grease for extremely by highly loaded applications and high temperatures. 	<ul style="list-style-type: none"> • Contains 3% MoS₂. • Good resistance to water. • Reduces wear, rust and corrosion. 	Lithium Complex	2	340	-30 °C to +160 °C	L-XCEHB 2	KPF2P-30
MULTIS COMPLEX XHV2 MOLY	<ul style="list-style-type: none"> • Extreme Pressure grease suitable for slow-moving heavily loaded bearings and sliding mechanisms especially in Mining Industry. 	<ul style="list-style-type: none"> • Contains 3% MoS₂. • Reduces wear, rust and corrosion. • Excellent water resistance. • Excellent resistance to shocks and vibration. 	Lithium Complex	2	800	-20 °C to +160 °C	L-XDEHB 2	KPF2P-20
MULTIS COMPLEX SHD 00	<ul style="list-style-type: none"> • High performance, Extreme Pressure synthetic semi-fluid grease for gearbox applications. 	<ul style="list-style-type: none"> • Reduced gear wear due to excellent EP properties. • Long service life even at high operating temperatures. • Reduced power consumption due to low running torque. 	Lithium Complex	00	460	-50 °C to +160 °C	L-XEEHB 00	KP00P-50
MULTIS COMPLEX SHD 32	<ul style="list-style-type: none"> • High performance, Extreme Pressure synthetic grease for bearings operating over a wide range of temperatures. 	<ul style="list-style-type: none"> • Outstanding low and high temperature performances. • Improved mechanical efficiency. • Long service life. 	Lithium Complex	2	32	-50 °C to +160 °C	L-XEEHB 2	KP2P-50
MULTIS COMPLEX SHD 100	<ul style="list-style-type: none"> • Extreme Pressure synthetic grease particularly suited for high speed bearings application such as electric motors. 		Lithium Complex	2	100	-50 °C to +160 °C	L-XEEHB 2	KP2P-50
MULTIS COMPLEX SHD 220	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose grease synthetic grease for heavy duty automotive and industrial applications. 	<ul style="list-style-type: none"> • Outstanding low and high temperature performances. • Improved mechanical efficiency. • Long service life. 	Lithium Complex	2	220	-40 °C to +160 °C	L-XEEHB 2	KP2P-40
MULTIS COMPLEX SHD 460	<ul style="list-style-type: none"> • High performance synthetic grease allowing outstanding protection of slow speed, heavily loaded bearings over a wide temperature range recommended in Paper Industry. 		Lithium Complex	1.5	460	-40 °C to +160 °C	L-XEEHB 1/2	KP1/2P-40

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



Available in Lube-Shuttle cartridges



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

ALUMINIUM COMPLEX GREASES



• **COPAL** products are excellent adhesive greases based on Aluminium Complex thickener.
• They have excellent resistance to water washout.

• **COPAL** range is recommended for slow moving heavy-duty applications where shocks and loads are present.

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
COPAL EP 00	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease, for high temperatures. • Suitable for shock loaded applications, travelling cranes, presses. 	<ul style="list-style-type: none"> • Good adhesiveness on metal surfaces. 	Aluminium Complex	00	165	-20 °C to +150 °C	L-XBDEB 00	KP00N-20
COPAL EP 2	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease, for high temperatures. • Suitable for shock loaded bearings, heavily loaded transmission, assemblies, travelling cranes, presses. 	<ul style="list-style-type: none"> • Good adhesiveness on metal surfaces. 	Aluminium Complex	2	165	-20 °C to +150 °C	L-XBDHB 2	KP2N-20
COPAL MS 2	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease for shock loaded applications with vibrations, over a wide range of temperatures. • Suitable for boundary lubrication. 	<ul style="list-style-type: none"> • Contains 2.5 % MoS₂. • Good adhesiveness on metal surfaces. • Good resistance to water. 	Aluminium Complex	2	165	-20 °C to +150 °C	L-XBDEB 2	KPF2N-20
COPAL GEP 0	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease for heavy loads and high temperatures. • Recommended for the lubrication of open gears, especially during the running-in period. 	<ul style="list-style-type: none"> • Contains 10% Graphite. • Good adhesiveness on metal surfaces. • Extended gear life potential. 	Aluminium Complex	0	750	-20 °C to +150 °C	L-XBDHB 0	OGPF0N-20
COPAL OGL 0	<ul style="list-style-type: none"> • Highly adhesive Extreme Pressure grease, for heavy loads and high temperatures. • Application in cement plants: open gears of kilns and mill drives. • Application in sugar mills: open gears in sugar cane mills. 	<ul style="list-style-type: none"> • Contains 8% Graphite and 1% MoS₂. • Dual solid addition reduces wear particularly near the tooth crest and tooth base, decreasing energy consumption. • Very good water resistance. 	Aluminium Complex	0-00	> 1000	-20 °C to +150 °C	L-XBDHB 0/00	OGPF0/00N-20
COPAL OGL 2	<ul style="list-style-type: none"> • Highly adhesive Extreme Pressure grease, for heavy loads and high temperatures. • Specially developed for lubrication of open gears when a NLGI 2 grade is required. 		Aluminium Complex	2	> 1000	-15 °C to +150 °C	L-XBDHB 2	OGPF2N-15
COPAL SPRAY	<ul style="list-style-type: none"> • Extreme Pressure, adhesive grease for joints, open gears and cables lubrication. 	<ul style="list-style-type: none"> • Contains 10% Graphite. • Enables local application of all surfaces. 	Aluminium Complex	1		-30 °C to +120 °C	Aerosol	

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

ALUMINIUM COMPLEX GREASES



TOTAL NEVASTANE									
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							REGISTRATION	ISO 6743-9	DIN 51502
TOTAL NEVASTANE XMF 00	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease. • Suitable for high to medium speed bearings in Food Processing Industry. • Roller and plain bearings. • Crimping machines. 	<ul style="list-style-type: none"> • Good adhesiveness on metallic surfaces. • Provides excellent corrosion protection and water resistance. 	Aluminium Complex	00	120	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF A00	K00N-20
TOTAL NEVASTANE XMF 0				0				L-XBDF A0	K0N-20
TOTAL NEVASTANE XMF 1				1				L-FXBDF B1	KP1N-20
TOTAL NEVASTANE XMF 2				2				L-XBDF B2	KP2N-20
TOTAL NEVASTANE 2 PLUS	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and very adhesive grease. • Suitable for Food Processing application when high adhesiveness is required. • Roller and plain bearings - high and medium speed. • Crimping machines 	<ul style="list-style-type: none"> • Excellent adhesiveness. • Provide excellent corrosion protection and water resistance. 	Aluminium Complex	2	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL		
TOTAL NEVASTANE HD2T	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose tacky grease for food processing in presence of water. • Suitable for loaded bearings, bottling and crimping machines. 	<ul style="list-style-type: none"> • Contains PTFE additives. • Exceptional adhesiveness on metal surfaces. • Excellence resistance to water washout. Excellent antiwear protection. • Low friction coefficient. 	Aluminium Complex	2	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF B2	KP2N-20

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



Available in Lube-Shuttle cartridges



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

POLYUREA GREASES



ALTIS products are premium quality greases providing long service life even at extreme temperature. They are based on polyurea thickener especially formulated for high speed and high temperature applications.

ALTIS range is suitable for fill for life lubrication or extended relubrication intervals.

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
ALTIS EM 2	<ul style="list-style-type: none"> High performance grease suited for high speed bearings and high temperature applications such as electric motors. 	<ul style="list-style-type: none"> Reduced vibration. Reduced energy consumption. Extended relubrication intervals. 	Polyurea	2	110	-20 °C to +180 °C	L-XBFHA 2	KP2R-20
ALTIS MV 2	<ul style="list-style-type: none"> High performance grease suited for high speed and medium loaded application. Typically used in fan bearings, roller bearings and direction systems in the dry parts of paper mills. 	<ul style="list-style-type: none"> Reduced vibration. Reduced energy consumption. Extended relubrication intervals. Suitable for start and go applications. 	Polyurea	2	160	-20 °C à +160 °C	L-XBEEB 2	KP2P-20
ALTIS SH 2	<ul style="list-style-type: none"> Very high performance synthetic grease suited for high speed bearings such as electric motors, over a wide range of temperatures. Formulated for First Fill applications and long service life. 	<ul style="list-style-type: none"> Reduced vibration. Reduced energy consumption. Extended relubrication intervals. Extreme temperature operations even at high speed. 	Polyurea	2	80	-40 °C to + 180 °C	L-XDFEB 2	KP2R-40
ALTIS HV 1	<ul style="list-style-type: none"> Extreme Pressure grease for moderate loads and high temperature applications. Suitable for the segment zero of continuous casting and pellet press. 	<ul style="list-style-type: none"> Reduced vibration. High temperature performance. 	Polyurea	1	500	-20 °C to + 180 °C	L-XBFEB2	KP2R-20

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

CALCIUM SULFONATE COMPLEX GREASES



CERAN products are high technology greases developed by TOTAL over many years. They are based on Calcium Sulfonate Complex thickener providing their outstanding resistance to water, wear and load and mechanical stability.

CERAN greases are suitable for heavy loaded application over a wide range of temperature.

CERAN range are the products of choice of many industries around the world because of their reputation for exceptional performance, quality and reliability.

MINERAL GREASES							CERAN	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
CERAN XM 100	<ul style="list-style-type: none"> High performance, Extreme Pressure grease for high speed applications over a wide range of temperature. Recommended for high speed bearings in the Paper Industry. Suitable for heavy-duty and off-roof applications in civil engineering and industry. 	<ul style="list-style-type: none"> Excellent water resistance. High speed applications. Extended relubrication intervals. 	Calcium Sulfonate Complex	1.5	100	-30 °C to +180 °C	L-XCFIB 1/2	KP1/2R-30
CERAN XM 220	<ul style="list-style-type: none"> Extreme Pressure, high performance, multipurpose, grease. Recommended for the lubrication of severe industrial applications in extreme conditions (high load, temperature, water, dust) such as continuous castings and rolling mills in steel plants, bearings in wet and dry (felt rolls) sections of paper mills. 	<ul style="list-style-type: none"> Excellent water resistance. Highly load applications. Extended relubrication intervals. Enables inventory rationalization. 	Calcium Sulfonate Complex	1.5	220	-30 °C to +180 °C	LXCFIB 1/2	KP1/2R-30
CERAN XM 220 MOLY	<ul style="list-style-type: none"> Extreme Pressure, high performance, multipurpose grease for heavy-duty automotive and industrial applications such as Mining Industry in temperate and warm areas. Recommended for loaded applications in severe environment (shocks, water, dust). 	<ul style="list-style-type: none"> Contains 5% MoS₂. Highly loaded 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 (ex CERAN PM)	<ul style="list-style-type: none"> Extreme Pressure, high performance, multipurpose grease designed for the lubrication of industrial bearings working under high temperatures and high loads in the wet and dry section of paper machines. 	<ul style="list-style-type: none"> Excellent water resistance. Highly 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
CERAN XM 460	<ul style="list-style-type: none"> Extreme Pressure, very high performance, multipurpose grease for shocks loaded industrial applications at high temperatures. Recommended for the lubrication of bearings in steel plants, in Paper Industry, for the lubrication of hard wood granular presses and in all industrial applications under severe conditions (water, dust). 	<ul style="list-style-type: none"> Excellent water resistance. Highly loaded applications. Extended relubrication 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	<ul style="list-style-type: none"> Extreme Pressure, very high performance, multipurpose grease for heavy loaded industrial applications at high temperatures. Recommended for Heavy duty industrial applications (heavy loads, high temperatures, water, dust). Especially developed for extremely loaded applications such as Steel Industry. 	<ul style="list-style-type: none"> Excellent water resistance. Very highly loaded applications. Extended relubrication intervals. Good anti corrosion properties. 	Calcium Sulfonate Complex	1.5	720	-25 °C to +180 °C	L-XBFHB 1/2	KP1/2R-25

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

Available in Lube-Shuttle cartridges



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

CALCIUM SULFONATE COMPLEX GREASES



SYNTHETIC GREASES							CERAN	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
CERAN XS 80	<ul style="list-style-type: none"> Very high performance, Extreme Pressure, synthetic grease designed for high speed applications over a wide range of temperature. 	<ul style="list-style-type: none"> Very low temperature. Excellent water resistance. Long service life. Reduced energy consumption. 	Calcium Sulfonate Complex	1.5	80	-55 °C to +180 °C	L-XEFFB 1/2	KP1/2R-55
CERAN XS 320	<ul style="list-style-type: none"> Very high performance, Extreme Pressure, synthetic grease designed for loaded applications over a wide range of temperature under severe conditions. 	<ul style="list-style-type: none"> Very low temperature. Excellent water resistance. Long service life. Reduced energy consumption. 	Calcium Sulfonate Complex	1.5	320	-40 °C to +180 °C	L-XDFFB 1/2	KP1/2R-40
CERAN XS 40 MOLY	<ul style="list-style-type: none"> Very high performance, Extreme Pressure, synthetic grease designed for heavy-duty equipment in arctic conditions. Recommended for automotive and industrial applications in Mining Industry. 	<ul style="list-style-type: none"> Contains 5% MoS₂. Outstanding resistance to loads and shocks. Excellent water resistance. Suitable for very low temperatures. 	Calcium Sulfonate Complex	1.5	40	-60 °C to +180 °C	L-XEFFB 1/2	KP1/2R-60

SPECIALITIES							CERAN	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
CERAN CA	<ul style="list-style-type: none"> Semi-fluid and Extreme Pressure adhesive grease for metal cables, rails, winches and chains. 	<ul style="list-style-type: none"> Outstanding resistance to water. Extended life of parts subjected to heavy loads. 	Calcium Sulfonate Complex	0	325	-25 °C to +150 °C	L-XBDIB 0	OGPON-25
CERAN AD PLUS	<ul style="list-style-type: none"> Highly adhesive, Extreme Pressure grease adapted to severe conditions. Recommended for metal cables. Suitable for applications in cement plants, mines, quarries, offshore, marine. 		Calcium Sulfonate Complex	0.5	> 1700	-20 °C to +150 °C	L-XBDIB 0	OGPON-20
CERAN ST 2	<ul style="list-style-type: none"> Highly adhesive, Extreme Pressure grease adapted to the presence of water, high temperatures and heavy loads. Suitable for multi-purpose applications in industry (coiler, rolling mill) and offshore environment (cables, gears, screen eccentric bearing). 	<ul style="list-style-type: none"> Excellent water resistance with no consistency lost. Very adhesive on metal surfaces. Extended relubrication intervals. 	Calcium Sulfonate Complex	2	180	-25 °C to + 180 °C	L-XBFIB 2	KP2R-25
CERAN GEP	<ul style="list-style-type: none"> Adhesive and Extreme Pressure semi-fluid grease, adapted to high temperatures and heavy loaded applications. Recommended for gears, transmissions and open gears of sugar cane mills. 	<ul style="list-style-type: none"> Contains 6.5% Graphite and 1% MoS₂. Good adhesiveness. Extended service life. 	Calcium Sulfonate Complex	0	695	-25 °C to + 180 °C	L-XBFHB 0	OGPF0R-25
CERAN MS	<ul style="list-style-type: none"> Extreme Pressure, multipurpose grease adapted to very loaded industrial application at high temperature. Recommended for shock loading applications with vibration. 	<ul style="list-style-type: none"> Contains 2% MoS₂. Extended service life. Very good adhesiveness. 	Calcium Sulfonate Complex	1.5	650	-20 °C to + 180 °C	L-XBFHB 1/2	KPF1/2R-20

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases




Greases

CALCIUM SULFONATE COMPLEX



The **TOTAL NEVASTANE XS** range is specially designed for the Food Industry. As high performance products, they provide equipment protection and extended service life while securing the production chain.

The **TOTAL NEVASTANE XS** range is NF H1 registered and Kosher and Halal certified. These greases are produced in ISO 21469 certified plants. The **TOTAL NEVASTANE XS** range exists in different based oil viscosities.

CALCIUM SULFONATE COMPLEX GREASES							TOTAL NEVASTANE		
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							REGISTRATION	ISO 6743-9	DIN 51502
 TOTAL NEVASTANE XS 80	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for high speed and very low temperatures applications in Food Processing Industry. • Bearings at low temperatures. Oven turbines. • Sterilisers. Freezing tunnels. 	<ul style="list-style-type: none"> • Very low temperature. • Excellent water resistance. • Long service life. • Reduced energy consumption. 	Calcium Sulfonate Complex	1.5	80	-55 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XEFFB 1/2	KP1/2R-55
 TOTAL NEVASTANE XS 220	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for multipurpose application in Food Processing Industry over a wide range of temperatures. • Bearings under loads and subject to shocks. 		Calcium Sulfonate Complex	1.5	220	-40 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XDDIB 1/2	KP1/2R-40
 TOTAL NEVASTANE XS 320	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for loaded application in Food Processing Industry. • Suitable for pelleting machines. • Bearings under loads and subject to shocks. 		Calcium Sulfonate Complex	1.5	320	-40 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XDFFB 1/2	KP1/2R-40

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



Available in Lube-Shuttle cartridges



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

CALCIUM GREASES



CALCIUM SOAP GREASES							BIOMERKAN / BIOADHESIVE / BIO		
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							ISO 6743-9	DIN 51502	
BIOMERKAN RS	<ul style="list-style-type: none"> Water-resistant biodegradable grease. Recommended for marine uses and agriculture. 	<ul style="list-style-type: none"> Ultimate biodegradability according to OECD 301-B (> 60%). Complies with BLUE ANGEL criteria vertrag n°11273. Good resistance to water washout. 	Calcium	3	32	-20 °C to + 90 °C	L-XBBEA 3	ME3E-20	
BIOADHESIVE PLUS	<ul style="list-style-type: none"> Outstanding adhesiveness, biodegradable grease for industrial and marine applications requiring environmentally acceptable lubricants (EAL). Recommended for applications subjected to water (Galle chains). 	<ul style="list-style-type: none"> Ultimate biodegradability according to OECD 301-B (> 60%). EAL Grease complying with EPA 2013 Vessel General Permit (VGP). Insoluble in water. Excellent anti-corrosion properties even in the presence of sea water. 	Calcium	1	320	-20 °C to + 90 °C	L-XBBIA 1	ME1E-20	
BIO OG PLUS	<ul style="list-style-type: none"> Highly adhesive, Extreme Pressure biodegradable grease for industrial and marine applications requiring environmentally acceptable lubricants (EAL). Especially recommended for open gear lubrication. 	<ul style="list-style-type: none"> Ultimate biodegradability according to OECD 301-B (> 60%). Good resistance to water washout. Excellent anti-corrosion properties even in the presence of sea water. 	Calcium	0.5	1000	-20 °C to + 90 °C	L-XBBIB0/1	0GE0/1E-20	

CALCIUM COMPLEX GREASES							TOTAL NEVASTANE		
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							REGISTRATION	ISO 6743-9	DIN 51502
TOTAL NEVASTANE MP 1.5 (ex AXA GR 1)	<ul style="list-style-type: none"> Extreme Pressure, multipurpose grease for bearings for Food Processing Industry. Suitable for pelleting presses. 	<ul style="list-style-type: none"> Protection against corrosion in the presence of water. Extended life of equipment. Effective in damp environment. 	Calcium Complex	1.5	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDIB 1/2	KP1/2N-20

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Greases

SPECIFIC GREASES AND AUTOMATIC LUBRICATORS



SPECIFIC GREASES		CALORIS / MARSON / SPECIS / AXA / STATERMIC						
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
CALORIS 23	• Grease adapted to high temperatures and low speeds.	• Resistant to acid and alkaline atmospheres.	Clay	2.5	500	-15 °C to +160 °C	L-XAEEA 2/3	M2/3P-15
CALORIS MS 23	• Grease adapted to high temperatures, low speeds, heavy loads and a risk of shocks.	• Contains 1% MoS ₂ . • Resistance to acid and alkaline atmosphere.	Clay	2.5	500	-15 °C to +160 °C	L-XAEEA 2/3	MF2/3P-15
MARSON SY 00	• Synthetic grease adapted to heavy loads. • For worm gear pairs, casing gears or fitted devices.	• Contains PAG base oil. • Low friction coefficient. • Long life service.	Lithium	00	145	-35 °C to +130 °C	L-XCCEB 00	GPGP00K-35
MARSON SY 2	• Synthetic grease adapted to heavy loads. • Recommended for applications in contact with petroleum liquids dispensers.	• Contains PAG base oils. • Resistance hydrocarbon wash out.	Lithium	2	145	-40 °C to +120 °C	L-XDCEA 2	MPPG2K-40
SPECIS CU	• Anti-seizing grease for threaded assembly under severe corrosion conditions, water vapour, gasses.	• Contains Copper additive. • Seizing prevention. • Easy dismantling of components in a moist atmosphere or wet environment.	Clay	1	500	-20 °C to + 300 °C	L-XBGBB 1	MPF1U-20
AXA GA 3	• Packer grease for autoclaves, reactors under pressure or in a vacuum, in the chemicals and other industries.	• Extended life of the equipment. • Contribution to the air tightness of the equipment. • NSF H1.	Calcium	3	69	0 °C to +100 °C	L-XABGA 3	K3G 0
STATERMIC XHT	• Special fluorine compounds-based grease for very high temperatures and medium-to-heavy loads.	• Reduced friction coefficient of most plastics and metals. • Extended life of the lubricated parts.	Fluorine	2	150	-25 °C to + 250 °C	L-XBGDB 2	KFKP2U-25
STATERMIC NR	• Special fluorine compounds-based grease for high temperatures, resistant to powerful acids, halogenated compounds, alcohols, oxidants and radiations.	• Protection of lubricated parts even in the presence of acids, halogenated alcohols, oxidants or in the presence of radiation. • NSF H1.	Fluorine	2	375	-25 °C to + 250 °C	L-XBGDB 2	KFKP2U-25

AUTOMATIC LUBRICATORS								
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
TOTAL AUTOMATIC GREASE SYSTEM Starterpack	• Electro-mechanical automatic lubricator, single point, refillable. • 10 bar ejection pressure.	• Remote up to 2 meters from the lubrication point. • Set up for a lubrication program of 1, 3, 6 or 12 months. • ATEX certification.	To be used with TOTAL AUTOMATIC GREASE SYSTEM 240 cc refills: CERAN XM 220, CERAN FG, NEVASTANE XS 80 and ALTIS SH2.					
TOTAL AUTOMATIC GREASE SYSTEM REFILL ALTIS SH 2	• Very high performance synthetic grease suited for high speed bearings such as electric motors, over a wide range of temperatures. • Specially developed for the lubrication of fans and electric engines with TOTAL AUTOMATIC GREASE SYSTEM.	• Automatic Lubrication with predetermined interval and volume.	Polyurea	2	80	-40 °C to +180 °C	L-XDFEB 2	KP2R-40
TOTAL AUTOMATIC GREASE SYSTEM REFILL CERAN XM 220	• Extreme Pressure, high performance, multipurpose grease. • Suitable for the lubrication of conveyers, rails, chains with TOTAL AUTOMATIC GREASE SYSTEM.		Calcium Sulfonate Complex	1.5	220	-30 °C to +180 °C	LXCFIB1/2	KP1/2R-30
TOTAL AUTOMATIC GREASE SYSTEM REFILL TOTAL NEVASTANE XS 80	• Extreme Pressure, very high performance, synthetic grease designed for high speed applications over a wide range of temperature. • Recommended for the Food Industry and/or very low temperatures, with TOTAL AUTOMATIC GREASE SYSTEM.		Calcium Sulfonate Complex	1.5	80	-55 °C to +180 °C	L-XEFFB1/2	KP1/2R-55

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

Metalworking



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MACHINING
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TOTAL offers a comprehensive range of metalworking fluids that will increase your competitiveness by combining machining quality and reduced production costs.

More than 50 years of field experience enabled us to optimize our formulations.

As a result, our oils provide reduced energy consumption and lengthened tool service life, ensuring reduced operating costs.

The Health, Safety and Environmental impact of our products are priorities for TOTAL:

- The formulation of the products complies with legislations in force. It ensures better working environment for operators.
- Our tailored training programmes offer guidance in best practice for the selection, handling and maintenance of our oils.





Metalworking CUTTING MACHINING GRINDING / NEAT CUTTING OILS



VALONA oils are designed for a wide range of machining, from non-severe to very stringent operations. They guarantee a high performance level while remaining environmentally friendly due to their chlorine-free formulation.

- Very good surface finish with a high standard of dimensions and tolerances.
- Extended service life for cutting tools.
- Minimising the cost of rejected components.
- Convenient use for the operators.

VALONA HC is a complete line of neat cutting oils formulated from hydrocracked base oils. Transparent and odorless, these oils present no objectionable workplace characteristics. The advanced chemistry of Valona HC provides excellent volatility and thermal-oxidative stability which minimizes misting and oil consumption that extends oil life as compared to competitive products. The products' performance levels are indicated by a figure ascending from 1000 to 9000. The ascending numbers following the products' name reflect the machining capacity of the fluid, from non severe to very hard operations.

CUTTING OILS FOR SEVERE MACHINING					VALONA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA MS 5009 HC	Ferrous and non-ferrous	• Precision turning and drilling of copper or aluminium alloys, low-carbon and medium-high-carbon steels.	• Excellent cooling power.	9	ISO-L-MHE
VALONA MS 5020 HC		• Precision turning, gear hobbing and routine machining of copper, aluminium alloys, low-carbon and medium-high-carbon steels.	• Polyvalent product.	21	

CUTTING OILS FOR VERY SEVERE MACHINING					VALONA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA MS 7009 HC	Ferrous and non-ferrous	• Machining of steels ranging as far as stainless, extra-high-carbon, special and refractory steels.	• High efficiency in a wide application range, including biomedical and aeronautical.	10	ISO-L-MHE
VALONA MS 7023 HC				23	
VALONA MS 7116 HC				16	
VALONA ST 9013 HC	Ferrous	• Deep drilling, steel tapping, boring, reaming of alloyed and stainless steels, hobbing and shaving, high-speed (VG 13) and slow-speed (VG 37) broaching.	• Premium oil for the most demanding applications.	13	ISO-L-MHF
VALONA ST 9122 HC				20	
VALONA ST 9037 HC				42	
VALONA BR 9015 HC	Ferrous	• High-speed broaching of highly alloyed steels and all difficult operations.	• Exceptional finish for broaching.	15	ISO-L-MHF

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking CUTTING MACHINING GRINDING / NEAT CUTTING OILS



GRINDING AND LAPPING OILS					VALONA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA GR 3000 HC series	Ferrous and non-ferrous	• Honing and superfinishing of high-carbon steels.	<ul style="list-style-type: none"> • Economic product. • Low odour. • Translucent. • Low volatility. 	3 5 8	ISO-L-MHA
VALONA GR 5000 HC series		• Honing and superfinishing with high detergent properties adapted to carbide silicium honing stones or pinions honing.		5	ISO-L-MHE
VALONA GR 7000 HC series		• Grinding operations like gear grinding (VG 7 or 12) or grinding of highly alloyed steels (VG 22).	• Optimised for demanding grinding operations.	7 12 22	ISO-L-MHF
VALONA GR 9000 HC series		• Flute grinding on drill bits or taps.		18	ISO-L-MHB

MICROLUBRICATION OILS					VALONA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA MQL 3036	Ferrous and non-ferrous	<ul style="list-style-type: none"> • Microspray. • Particularly suited to milling, tapping, drilling, reaming and sawing. 	<ul style="list-style-type: none"> • Cleaner machines and workshops. • Elimination of the costs of rejects. • Improved recovery of cuttings. • Biodegradable. 	36	ISO-L-MHB
VALONA MQL 3046				46	ISO-L-MHB
VALONA MQL 5035	Ferrous and non-ferrous	• Severe and very severe machining of high-carbon and extra high-carbon steels, stainless steels, titanium and tantalum alloys.	<ul style="list-style-type: none"> • Reduced fluid consumption. • Cleaner machines and workshops. • Elimination of the costs of rejects. • Improved recovery of cuttings. 	35	ISO-L-MHE

PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA GLASSCUT	Glass	• Glass machining.	<ul style="list-style-type: none"> • Excellent surface finishing. • Fluid product. Low consumption. • Prolongs tool lifetime. 	2.4	ISO-L-MHA

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking CUTTING MACHINING GRINDING



MULTIPURPOSE CUTTING AND LUBRICATION OILS					VALONA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
VALONA MS 3040 HC	Ferrous and non-ferrous	• Lubrication of cutting operations and machine tools.	• Recommended for free-cutting steels and low-carbon steels.	40	ISO-L-MHE
VALONA MS 5032 HC			• Recommended for gear hobbing. • DIN 51502 HLPD 32 (detergent properties). • ISO/TR 3498-1986 HG 32.	32	
VALONA MS 7046 HC			• Machining of all metals, including refractory steels and titanium. • Recommended for tapping operations.	46	

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



Metalworking CUTTING MACHINING GRINDING / SOLUBLE CUTTING FLUIDS

... TOTAL offers a wide range of soluble fluids: macro-emulsions with **LACTUCA**, micro-emulsions with **SPIRIT** and synthetic fluids with **VULSOL**.
... Their formulation guarantees machining performance for any type of metals and severity of operations:

- Reinforced antiwear properties
- Extended anticorrosion properties
- Outstanding resistance to microorganism development
- Improved antifoaming properties

MACRO-EMULSIONS					LACTUCA
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	SPECIFICATIONS
LACTUCA LT 3000	Ferrous and non-ferrous	• General machining.	• Economic formula. • Does not stain yellow metals.		ISO-L-MAA
LACTUCA WBA 5400	Ferrous and non-ferrous	• General and heavy machining.	• Does not stain yellow metals. • Specifically dedicated to situations with severe HSE constraints.	Amine free	ISO-L-MAF
LACTUCA WBF 9400	Ferrous and non-ferrous	• General and heavy machining.	• Specifically dedicated to difficult machining.		ISO-L-MAF



BIODEGRADABLE



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Metalworking



Metalworking CUTTING MACHINING GRINDING / SOLUBLE CUTTING FLUIDS



MICRO-EMULSIONS - SEMI-SYNTHETICS					SPIRIT
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	SPECIFICATIONS
SPIRIT 3000	Ferrous	<ul style="list-style-type: none"> Grinding and General machining of soft metals. 	<ul style="list-style-type: none"> Economic formula. Specifically dedicated to cast iron machining. Machine cleanliness through detergent action. 		ISO-L-MAE
SPIRIT 5000	Ferrous and non-ferrous	<ul style="list-style-type: none"> Grinding and General machining. 	<ul style="list-style-type: none"> Multipurpose product (metals, machining operations). 		ISO-L-MAF
SPIRIT WBA 5600	Ferrous and non-ferrous	<ul style="list-style-type: none"> General machining. 	<ul style="list-style-type: none"> Multipurpose product (metals, machining operations). Does not stain yellow metals. Specifically dedicated to situations with severe HSE constraints. 	Amine free	ISO-L-MAF
SPIRIT WBF 7200	Ferrous and non-ferrous	<ul style="list-style-type: none"> General and heavy machining. 	<ul style="list-style-type: none"> Multipurpose product (metals, machining operations). Specifically dedicated to difficult machining. 		ISO-L-MAF

SOLUBLE SYNTHETIC FLUIDS					VULSOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	SPECIFICATIONS
VULSOL MSF 5200	Ferrous and non-ferrous	<ul style="list-style-type: none"> Grinding. 	<ul style="list-style-type: none"> "Transparent" product for easier machining conditions. Specifically dedicated to grinding operations. 		ISO-L-MAG
VULSOL MSF 7200	Ferrous and non-ferrous	<ul style="list-style-type: none"> Grinding and general machining. 	<ul style="list-style-type: none"> "Transparent" product for easier machining conditions. Multipurpose product. 		ISO-L-MAH
VULSOL WBF 7219	Ferrous and non-ferrous	<ul style="list-style-type: none"> Grinding and heavy machining. 	<ul style="list-style-type: none"> "Transparent" product for easier machining conditions. Multipurpose product. Specifically dedicated to situations with severe HSE constraints. 		ISO-L-MAH
VULSOL GLASSCUT	Optical glass and plastics	<ul style="list-style-type: none"> Grinding and general machining. 	<ul style="list-style-type: none"> "Transparent" product for easier machining conditions. Multipurpose product. 		ISO-L-MAH

MACROEMULSION FOR HARD MATERIAL SAWING					GRANITCUT
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
GRANITCUT 5000	Mineral concentrate soluble in water	<ul style="list-style-type: none"> Designed for sawing of ceramics, granite with diamond-charged disk, wire or cable and for core sampling of granite blocks. 	<ul style="list-style-type: none"> Rate of use: 2%. 	20	ISO-L-MAB

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking CUTTING MACHINING GRINDING



The **SERADE** range is composed of «Post-treatment additives». Used at the right time, based on the recommendations of your technical advisor, these additives allow you to extend the life of your soluble cutting fluid baths in service.

POST-TREATMENT ADDITIVES				SERADE
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	
SERADE AFM EMULSION	Ferrous and non-ferrous	• Antifoam: efficiently avoids foam due to application. Only recommended for LACTUCA, SPIRIT.	• Reduce foam caused by application (high spraying pressure, continuous flow of fluid in the machine, etc.).	
SERADE AFM SYNTHETIC	Ferrous and non-ferrous	• Antifoam: efficiently avoids foam due to application. Only recommended for VULSOL.		
SERADE WQ PLUS	Ferrous and non-ferrous	• Water quality: efficiently avoids foam due to over-soft water. Caution, the lifetime of this additive is limited.	• Increases water hardness.	
SERADE WQ MINUS	Ferrous and non-ferrous	• Water quality: avoids the formation of white deposits due to over-hard water.	• Decreases water hardness.	
SERADE WQ BUFFER	Ferrous and non-ferrous	• Water quality: avoids pH decrease.	• Increases pH, thus improving the anticorrosion and biostability properties of the product.	
SERADE ACR FERROUS	Ferrous	• Anticorrosion: avoids the corrosion of ferrous parts.	• Increases the anticorrosion property of the fluid for ferrous metals.	
SERADE ACR NON FERROUS	Non-ferrous	• Anticorrosion: avoids the corrosion of non ferrous metal parts.	• Increases the anticorrosion property of the fluid for non-ferrous metals.	
SERADE AW EMULSION	Ferrous and non-ferrous	• Anti-wear: avoids wear by friction of mechanical parts. Only recommended for LACTUCA, SPIRIT.	• Anti-wear additive used to extend the life of tools and obtain better surface finish of machined parts.	
SERADE AW SYNTHETIC	Ferrous and non-ferrous	• Anti-wear: avoids wear by friction of mechanical parts. Only recommended for VULSOL.		
SERADE STAB EMULSION	Ferrous and non-ferrous	• Emulsion stabiliser: only recommended for LACTUCA, SPIRIT, in case of severe contamination by grease and oils.	• Stabilise emulsion by optimising the dispersion of oil in the water.	
SERADE STAB SYNTHETIC	Ferrous and non-ferrous	• Solution stabiliser: only recommended for VULSOL, in case of severe contamination by grease and oils (often caused by tramp oils).	• Improves the separation of oil and water (breaks emulsions that could be formed).	



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking ELECTRICAL DISCHARGE MACHINING



The **DIEL** range of products are particularly well adapted to the electro discharge machining process.

- Narrow distillation intervals.
- Absence of aromatic compounds.
- High flash point.
- Excellent resistance to oxidation.

DIEL electro erosion fluids comply with the European directives concerning the VOC emissions.

The use of these products contributes to the continuous improvement initiatives in regards to Health, Safety and Environment.

CIRCULATION OILS

DIEL

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
DIEL MS 5000	• Preliminary work and semi-finishing.	<ul style="list-style-type: none"> • Fluid product. • Biodegradable. 	3,9	ISO-L-MHA
DIEL MS 7000	• Semi-finishing work and finishing for complex forms and precise dimensions.	<ul style="list-style-type: none"> • Very fluid product, facilitating elimination of metal particles. • Approved for NADCAP Standard (DMP66). • Biodegradable. 	2,35	ISO-L-MHA
DIEL MS 9000	• Finishing for complex forms and precise dimensions.	<ul style="list-style-type: none"> • Biodegradable. 	1,75	ISO-L-MHA

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking FORMING / METAL FORMING OILS



The **MARTOL** range is designed to lubricate cold forming operations on ferrous and non-ferrous metals: die stamping, forming, cutting, drawing, wire drawing, as a function of the products used.
In order to protect the health of users and protect the environment, we propose the following chlorine free formulas.
The characteristics of the products regarding hygiene, health and the environment (HSE) are specified in the tables.

MARTOL oils guarantee a very high level of lubrication and gains in productivity:

- Very good surface finish of stamped parts.
- Reduction of maintenance shutdowns.
- Good anticorrosion properties.
- Easy to remove.

NEAT METAL FORMING OILS - FOR AVERAGE AND DIFFICULT OPERATIONS, CHLORINE FREE							MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS	
MARTOL AL	Non-ferrous	• Deep drawing, wire drawing and tube drawing.	• Optimised for aluminium. • Up to -30% of degreasing time.	Chlorine free	20 60 150	ISO-L-MHF	

NEAT METAL FORMING OILS - FOR THE MOST DIFFICULT OPERATIONS, CHLORINE FREE							MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS	
MARTOL EP CF	All ferrous and aluminium	• For all stringent forming operations: deep drawing, bar drawing, cold heading...	• Very good extreme pressure properties for the most difficult operations. • Large range of viscosities to cover all kinds of forming geometries and all the metal thicknesses.	Chlorine free	5 65 100 235 405	ISO-L-MHF	

NEAT METAL FORMING OILS - FOR THE MOST DIFFICULT OPERATIONS, CHLORINATED FORMULAS							MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS	
MARTOL EP	Steel and stainless steels	• For all stringent forming operations on hard steels and stainless steels.	• Long chain chlorinated paraffins non carcinogenic following the EU directive 67/548, contrary to other products available on the market.	Chlorinated	79 180	ISO-L-MHF	

NEAT METAL FORMING OILS - FOOD GRADE PRODUCTS							MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS	
MARTOL FMO CF	Aluminium	• Food packaging.	• Formulated with NSF 3H ester, suitable for direct food contact.		15 75 235		

NEAT METAL FORMING OILS - SYNTHETIC PRODUCTS - WITHOUT MINERAL OIL							MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS	
MARTOL SPIROLL SE	Steel, titanium, stainless steel, inconel	• Fabricating screws by deformation: thread rolling.	• Increase of tool life. • Excellent thread shaping quality. • Contains no graphite so helps keep the working environment clean.	Without mineral oil.	68 100		

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking FORMING / METAL FORMING OILS



EVANESCENT PRODUCTS						MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS
MARTOL EV 10 CF	Ferrous and non-ferrous	<ul style="list-style-type: none"> Light cutting and die stamping operations. For thicknesses from 0.2 to 0.5 mm. 	<ul style="list-style-type: none"> Odourless. Excellent film coverage. 	Chlorine free Sulphur free	2.2 at 20 °C	ISO-L-MHB
MARTOL EV 40 CF		<ul style="list-style-type: none"> Cutting steel and aluminium strips. More severe die stamping. For thicknesses < 1 mm. 	<ul style="list-style-type: none"> Colourless and odourless. Formula doped for more severe die-stamping. 	Chlorine free	2.05 at 20 °C	ISO-L-MHC
MARTOL EV 45		<ul style="list-style-type: none"> More severe cutting, die-stamping. Suitable for stainless steels. For thicknesses < 1 mm. 	<ul style="list-style-type: none"> Low residue. 	Chlorinated	2.8 at 20 °C	ISO-L-MHF
MARTOL LVG 15 CF	Non-ferrous	<ul style="list-style-type: none"> Fine die-stamping-cutting. For thicknesses < 0.3 mm. 	<ul style="list-style-type: none"> Does not stain aluminium. Elimination of residue by thermal degreasing. Excellent spreading capacity. Odorless. 	Chlorine free Sulphur free No aromatic compound	2.1 at 20 °C	ISO-L-MHB
MARTOL LVG 25 CF	Ferrous and non-ferrous	<ul style="list-style-type: none"> Mild and medium-severe die-stamping operations. For thicknesses < 2 mm. 	<ul style="list-style-type: none"> Does not stain aluminium. Elimination of residue by thermal degreasing. Excellent spreading capacity. Odorless. 	Chlorine free	2.3 at 20 °C	ISO-L-MHF

EVANESCENT PRODUCTS WITHOUT VOC						MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS
MARTOL EV 10 AQ	Aluminium, steel and stainless steel	<ul style="list-style-type: none"> For easy forming operations on low thickness sheets. 	<ul style="list-style-type: none"> VOC free product with high flash point, for better air quality and improved safety in the workshop. 	VOC free. Chlorine free.	3.8 to 20 °C	
MARTOL LVG 25 AQ		<ul style="list-style-type: none"> For easy forming operations for thin thicknesses, needing thermal degreasing. 	<ul style="list-style-type: none"> VOC free product with high flash point, for better air quality and improved safety in the workshop. Especially recommended for forming parts later assembled by brazing. 		4.5 to 20 °C	

SOLUBLE DEFORMATION OILS						MARTOL
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	VISCOSITY*	SPECIFICATIONS
MARTOL SOLUBLE ST	Automotive steels and hard steels and aluminium alloys	<ul style="list-style-type: none"> Die stamping. Cutting. 	<ul style="list-style-type: none"> Allow to adjust the level of lubrication as needed. Rationalisation of lubrication in the workshop. Good performance with hard water. Highly compatible with Zn coated steels. Prevents formations of white rust. 	Chlorine free Formaldehyde free	50	ISO-L-MAD

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking FORMING / PRELUBES



FINAROL					
PRODUCT	NATURE OF THE FILM	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
FINAROL B 5746	Mineral concentrate soluble in water	<ul style="list-style-type: none"> Protection and mid to severe deformation of electrozinc-coated sheet steel. 	<ul style="list-style-type: none"> Multipurpose product, developed for the Car Industry and steelmaking. 	9.75	ISO-L-RC



Metalworking QUENCHING OILS

..... **DRASTA** quench oils match all thermal treatment requirements and all types of installation. Formulated from base oils selected for their exceptional resistance to oxidation, they offer a cost effective means of enhancing the mechanical properties of components.

DRASTA						
SOLUBLE DEFORMATION OILS						
PRODUCT	TYPE OF TREATME	APPLICATIONS	SPECIFIC ADVANTAGES	V _{MAX} DRASTICITY	VISCOSITY*	SPECIFICATIONS
DRASTA C 1022	Cold quenching	<ul style="list-style-type: none"> Hardening of steels possessing good quenchability. Hardening of cemented or carbonitrated steels. 	<ul style="list-style-type: none"> Hydrocracked base oils with high resistance to oxidation and high flash point. No H304 labelling. Less carbonaceous matter and residues. 	53 °C/s at 527 °C	22	ISO-L-UHB
DRASTA C 5022	Semi-rapid cold quenching	<ul style="list-style-type: none"> Hardening of medium-to-good quenchability steels. 		86 °C/s at 574 °C	22	ISO-L-UHA
DRASTA C 7025	Rapid cold quenching	<ul style="list-style-type: none"> Hardening of low quenchability steels with a high Martensite start (Ms). 		102 °C/s at 653 °C	25	ISO-L-UHA
DRASTA C 9022	Rapid cold quenching	<ul style="list-style-type: none"> Hardening of low quenchability steels with a low Martensite start (Ms). 		113 °C/s at 585 °C	22	ISO-L-UHA

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking ROLLING OILS



The **LUBRILAM** range is designed for cold rolling aluminium and covers a wide field of applications, from preliminary work to finishing.

LUBRILAM oils meet international specifications and are characterised by:

- Load carrying capacity.
- Distillation range adapted to requirements.

- High resistance to oxidation.
- Solvent power of the additives.
- Non-staining of aluminium.
- Absence of aromatic compound as regards protection of environment and users' health.

ROLLING BASE OILS					LUBRILAM
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
LUBRILAM S 20 L	Aluminium	• Rolling oil for foil doubling.	• Prevents sticking of the strip. • Low odour.	1.4 at 40 °C	Meets the requirements of the FDA CFR 178.3910
LUBRILAM S 23 L		• Rolling oil for foil operations operations.	• Load carrying capacity.	2.7 at 40 °C	
LUBRILAM S 31 L		• Narrow cut rolling oil for foil operations.	• Low evaporation losses. • Energy savings during annealing operation.	2.85 at 20 °C 1.95 at 40 °C	
LUBRILAM S 40 L		• Rolling oil for sheet operations.	• Load carrying capacity, low odour. • High thermal and UV stability.	3.6 at 20 °C 2.4 at 40 °C	
LUBRILAM S 55 L		• Rolling oil for sheet operations.	• Load carrying capacity, low odour. • High thermal and UV stability. • Extends the life of the rolling oil.	7 at 20 °C 4.1 at 40 °C	
LUBRILAM S 60 L		• Rolling oil for preliminary work operations.	• Load carrying capacity, low odour. • High thermal and UV stability.	11.0 at 20 °C 6.0 at 40 °C	

ADDITIVE CONCENTRATES					LUBRILAM
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
LUBRILAM C3	Aluminium	• Concentrate of alcohol-type performance additives to increase the lubricity of the rolling base.	• Solubilisation capacity. • Ease of application. INS H1	7.7 at 20 °C	Meets the requirements of the FDA CFR 178.3910 FDA 21 CFR 178.3570
LUBRILAM C6		• Concentrate of ester-type performance additives to increase the smoothness of the rolling base.	• Solubilisation capacity. • Ease of application. INS H1	2.3 at 40 °C	
LUBRILAM C10		• Oxidation inhibitor concentrate allowing an extension of the life of the rolling oil in service.	• Solubilisation capacity. • Ease of application. INS H1	2.7 at 40 °C	

SCRUBBING OILS					LUBRILAM
PRODUCT	METALS	APPLICATIONS	SPECIFIC ADVANTAGES	HSE	SPECIFICATIONS
LUBRILAM CLEANER	Aluminium	• Air purification oil.	• Resistance to oxidation. • Solvent recovery power.	30.6 at 40 °C	AIRPURE systems
LUBRILAM CLEANER H1	Aluminium	• Air purification oil.	• Resistance to oxidation. • Solvent recovery power. • Suitable for incidental food contact requirements.	29,8 at 40 °C	AIRPURE systems Meets the requirements of the FDA CFR 178.3570 NSF H1 registered

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking RUST PREVENTIVE



OSYRIS oils are designed to protect parts from the risks of corrosion during storage and transportation. TOTAL offers a wide range of products in accordance with the required properties of the protective film. They can be applied to all ferrous metals, from cast iron to alloyed steels.

All **OSYRIS** products can be applied by dipping, spraying and brush application. They can be removed with the aid of solvents and alkali cleaners.

- Resistance over time: inter-operations protection with water-repellent effect or a longer-lasting protection.
- Nature of the film: oily, waxy or varnish.

PROTECTION OILS				OSYRIS
PRODUCT	NATURE OF THE FILM	LENGTH OF PROTECTION	SPECIFIC ADVANTAGES	SPECIFICATIONS
OSYRIS Y 1000	Oily	< 6 months	• Ease of removal.	ISO-L-RC
OSYRIS Y 4000		6 to 8 months	• Strengthened protection properties.	ISO-L-RD
OSYRIS DWX 3000	Waxy	6 to 8 months	• Quick drying. • Easily removable film.	ISO-L-REE
OSYRIS DWY 4000	Waxy	6 to 8 months	• High flash point to limit the risks of fire.	ISO-L-REE
OSYRIS DWY 6000	Waxy	8 to 12 months	• High flash point to limit the risks of fire.	ISO-L-REE
OSYRIS X 9100	Varnish	> 18 months	• High performance product.	ISO-L-RF
OSYRIS DWL 3550	Oily after evaporation of the solvent	6 to 8 months	• Absence of any odour of solvent.	ISO-L-REE



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking



Metalworking SLIDES GUIDES & WAYS



The **DROSER A** product range is dedicated to the lubrication of machine tools. The various grades of viscosity available allow lubrication of a wide variety of mechanical parts:

- Very high speed spindles (grade 2) and high speed spindles (grades 5 to 22).
- Hydraulic circuits (grades 32 and 46).
- Both horizontal and vertical slides (grades 68 to 220).

DROSER A oils offer the following advantages:

- Multipurpose
- Very good extreme-pressure performances
- Excellent stick-slip properties.
- Low friction coefficient

CIRCULATION OILS				DROSER A
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
DROSER A MS	<ul style="list-style-type: none"> • Multipurpose range for all machine tool parts depending on the viscosity of the lubricant: hydraulic, slideways, gears, spindle movements, feed and gear boxes. 	<ul style="list-style-type: none"> • Wide range of applications. 	2 to 220	Depending on viscosities: ISO 6743-2: FD 2-5-10-15-22 • ISO 6743-4: HG 32-46 • ISO 6743-13: GA 68-100-150-220 • DIN 51502: CGLP 46-68-100-150-220 Cincinnati-Milacron: P-65, P-62, P-47, P-50, P-53, P-45
DROSER A HXE 68	<ul style="list-style-type: none"> • Way lubricant including those lined with synthetic resin, feed and gear boxes. 	<ul style="list-style-type: none"> • Compatibility with cutting fluids, including aqueous based fluids. • Very good adhesiveness. 	68	ISO 6743-13: GB 68 • DIN 51524 Part 2: HLP 68 • DIN 51517 Part 3: CLP 68 • DIN 51502: CGLP 68 • AFNOR E 60203 HM 68, HG 68, G 68 • CETOP RP 91H, HM 68 Cincinnati-Milacron: P-47
DROSER A HXE 220		<ul style="list-style-type: none"> • Compatibility with cutting fluids, even of the aqueous kind. • Very good adhesiveness. 	220	ISO 6743-13: GB 220 • DIN 51502: CGLP 220 • AFNOR E 60203 G 220 Cincinnati-Milacron: P-50

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking

Aviation



PISTON ENGINES
LUBRICANTS

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GEAR OILS

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HYDRAULIC FLUIDS

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ENGINE PROTECTION
LUBRICANTS

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PISTON ENGINES LUBRICANTS			AERO
PRODUCT	APPLICATIONS	SAE GRADE	SPECIFICATIONS
AERO 80	<ul style="list-style-type: none"> Pure mineral oils for the lubrication of piston engines operating under average conditions. Lubrication of vintage aeroplanes (WWI and WWII warplanes). 	40	SAE J 1966 • AIR 3560 • FAA AD 80-04-03 • Continental motors SIL 16-2, M-0
AERO 100		50	
AERO 120		60	SAE J 1899 • AIR 3560 • FAA AD 80-04-03
AERO D 80	<ul style="list-style-type: none"> Ashless dispersive monograde mineral oils for the lubrication of piston engines operating under severe and very severe conditions. 	40	SAE J 1899 • AIR 3570
AERO D 100		50	
AERO D 120		60	
AERO XPD 80	<ul style="list-style-type: none"> New generation ashless dispersive monograde mineral lubricants, specially developed to improve anti-wear and corrosion protection of your highly valued piston aviation engine. These oils already contain an anti-wear additive similar to TEXTRON Lycoming LW 16702. 	40	SAE J 1899 • FAA AD 80-04-03 • Lycoming SI 1014M, SI 1409C, SB 446E, SB 471B • Continental motors SIL 16-2, M-0
AERO XPD 100		50	
AERO XPD 120		60	
AERO DM 15W-50	<ul style="list-style-type: none"> Ashless dispersive multigrade oils for the lubrication of piston engines operating under severe and very severe conditions. Can be used throughout the year in any climate. These oils already contain an anti-wear additive similar to TEXTRON Lycoming LW 16702. 	15W-50	SAE J 1899 • FAA AD 80-04-03 • Lycoming SI 1014M, SI 1409C, SB 446E, SB 471B • Continental motors SIL 16-2, M-0
AERO DM 20W-60		20W-60	SAE J 1899 • Lycoming SI 1014M, SI 1409C, SB 446E, SB 471B



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Aviation



GEAR OILS		AEROGEAR	
PRODUCT	APPLICATIONS	VISCOSITY*	SPECIFICATIONS
AEROGEAR 823	<ul style="list-style-type: none"> Mineral oil for highly stressed gearboxes such as helicopter gearboxes. 	66	FRANCE: DCSEA 255/A • US: MIL-PRF-6086E (medium grade) • UK: DEF STAN 91-112/1 • Joint Service Designation: OEP-70 • NATO code: O-155 • AIRBUS HELICOPTERS approved
AEROGEAR 1032	<ul style="list-style-type: none"> Mineral oil for highly stressed gearboxes such as the latest generation of AIRBUS helicopters gearboxes. 	60	US: MIL-PRF-6086E (medium grade) • UK: DTD 581 C grade OEP-70 • Joint Service Designation: OEP-70 • NATO code: O-155 • AIRBUS HELICOPTERS ECS 2199 approved

HYDRAULIC FLUIDS		AEROHYDRAULIC	
PRODUCT	APPLICATIONS	VISCOSITY*	SPECIFICATIONS
AEROHYDRAULIC 520	<ul style="list-style-type: none"> Hydraulic systems operating under: <ul style="list-style-type: none"> - high pressure, - Extremely low temperatures. 	14	FRANCE: DCSEA 415/A (H-520) • US: MIL-PRF-5606H • UK: DEF STAN 91-48/1, standard grade • Joint Service Designation: OM-18 • NATO Code: H-520

ENGINE PROTECTION LUBRICANTS		AEROPROTECTIVE	
PRODUCT	APPLICATIONS	VISCOSITY*	SPECIFICATIONS
AEROPROTECTIVE 219	<ul style="list-style-type: none"> Internal protective mineral oil for piston engines. 		FRANCE: AIR 1503/B type A • UK: DEF STAN 91-40/2 • Joint Service Designation: PX-27 • NATO code: C-615

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

This product list is non-exhaustive. Please contact us to learn about synthetic turbine engines lubricants, hydraulic fluids and greases.



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Aviation

Textile



CONING

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KNITTING

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CARDING
/COMBING

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NON WOVEN

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WEAVING

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FINISHING

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TOTAL offers a complete range of specialty lubricants and textile auxiliaries that help improve the quality of your production output and contributes to the efficient running of your textile machinery.

TOTAL products have been designed in close cooperation with textile manufacturers and equipment engineers with the aim of satisfying textile lubricant demands in a variety of sectors such as automotive, flooring, clothing, furniture, etc.

All products are produced in line with REACH regulations and are free from any SVHCs (Substances of Very High Concern) such as alkylphenol ethoxylates.





Textile CONING



Yarns need high quality coning oils after throwing in order to be useable in downstream processes such as weaving, knitting, twisting...
LISSOLFIX products will bring real added value to yarns by protecting them against friction (yarn/yarn and yarn/metal) and antistatic charges facilitating your customers' production.

Whatever the requirements, **LISSOLFIX** broad product range meets your needs: Biodegradability, M1 and fogging test compliance, polypropylene compatibility, etc.

CONING OILS FOR YARN TWISTING, COVERING, TEXTURIZING, WINDING

LISSOLFIX

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE
LISSOLFIX APZX 1500	<ul style="list-style-type: none"> Coning oil recommended for high speed yarn transformation. Suitable for medium to high count synthetic, artificial or natural yarn. Suitable for covered yarns containing elastane. Suitable for dyed yarns. Used for winding, twisting, covering, and also ATY (Air Textured Yarn) or DTY (Draw Textured Yarn) processes. Not recommended for polypropylene yarns. 	<ul style="list-style-type: none"> High level anti-splashing performance (AP). High level antistatic performance. Improves regularity of oil pick up on yarns. Shows hardly any effect on dye fastness. Shows good resistance to high temperature downstream processes. Easily removable through conventional washing processes. 	38 – 42 cSt	Mineral
LISSOLFIX APZX 1350	<ul style="list-style-type: none"> Coning oil recommended for high speed yarn transformation. Specially suitable for low count multifilament and microfilament yarns (Polyamide 6 & 66 or Polyester). Suitable for covered yarns containing elastane. Suitable for rayon viscose (dyed or raw white) rewinding. Specially recommended for DTY (Draw Textured Yarn) winding processes. Not recommended for polypropylene yarns. 	<ul style="list-style-type: none"> Improves thin count multifilament yarns' cohesion. Does not provoke Polyamide oxidation when exposed to light or heat treatments. High level anti-splashing performance (AP). High level antistatic performance. Easily removable through conventional washing processes. Biodegradable according to OECD 301-B (highest level > 60%). 	21 – 26 cSt	Semi-synthetic
LISSOLFIX APZX 4800	<ul style="list-style-type: none"> Coning oil recommended for high speed yarn transformation. Suitable for low count multifilament yarns (Polyamide 6 & 66 or Polyester). Suitable for covered yarns containing elastane. Suitable for rayon viscose (dyed or raw white) rewinding. Specially recommended for DTY (Draw Textured Yarn) winding processes. Not recommended for polypropylene yarns. 	<ul style="list-style-type: none"> Improves thin count multifilament yarns' cohesion. Does not provoke Polyamide oxidation when exposed to light or heat treatments. High level anti-splashing performance (AP). High level antistatic performance. Easily removable through conventional washing processes. 	15-17 cSt	Semi-synthetic
LISSOLFIX APZX 255	<ul style="list-style-type: none"> Coning oil recommended for high speed synthetic yarn transformation (Polyamide, Polyester) and for artificial or natural yarns. Used for winding, twisting, covering, and also ATY (Air Textured Yarn) or DTY (Draw Textured Yarn) processes. Recommended for automotive yarn production (low VOC) Strongly adapted for Polypropylene yarn (PP). 	<ul style="list-style-type: none"> Biodegradable according to OECD 301-B (highest level > 60%). Low VOC and fogging. Shows very good resistance to high temperature downstream processes. High level anti-splashing performance (AP). High level antistatic performance. Ensures a very low gliding coefficient. Does not provoke Polyamide oxidation when exposed to light or heat treatments. Easily removable through conventional washing processes. 	28 – 33 cSt	Synthetic
LISSOLFIX APZ 2270	<ul style="list-style-type: none"> Coning oil recommended for middle to high count synthetic, artificial or natural yarn transformation. Suitable for covered yarns containing elastane. Used in DTY (Draw Textured Yarn) winding process. Not recommended for polypropylene yarns. 	<ul style="list-style-type: none"> Shows hardly any effect on dye fastness. High level anti-splashing performance (AP). Easily removable through conventional washing processes. 	28 – 31 cSt	Mineral
LISSOLFIX APZ 2030	<ul style="list-style-type: none"> Coning oil recommended for raw white polyester transformation. Also suitable for polyamide. Used for DTY (Draw Textured Yarn) winding process. Not recommended for covered yarns containing elastane. Not recommended for polypropylene yarns. 	<ul style="list-style-type: none"> High level anti-splashing performance (AP). High level antistatic performance. Easily removable through conventional washing processes. 	26.5 – 29.5 cSt	Mineral
LISSOLFIX APZ 2090	<ul style="list-style-type: none"> Coning oil recommended for high speed raw white Polyester transformation. Use in DTY (Draw Textured Yarn) winding process. 	<ul style="list-style-type: none"> High level anti-splashing performance (AP). High level antistatic performance. Easily removable through conventional washing processes. 	28 – 31 cSt	Mineral



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Textile



Textile KNITTING



• **TIXO** products are needle oils designed to meet today's knitting machinery requirements. Its formulas are based on highly refined base oils and contain ground breaking antiwear technology, maximizing needle, sinkers and tuck cams' shelf life, while being adapted to yarns and knitted fabric's downstream processes.

NEEDLE OILS FOR CIRCULAR AND FLATBED KNITTING				TIXO
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	NATURE
TIXO STAINLESS	<ul style="list-style-type: none"> Needle oils for the lubrication of needles, sinkers, tuck cams and needle cylinders. Suitable for applications in hosiery, large diameter circular and flatbed knitting machines. Appropriate for synthetic, artificial, natural yarns and their blends. Suitable for dyed and raw white yarns. Adapted for knitted fabrics containing elastane. Specially designed for knitting requiring downstream washing before dyeing. 	<ul style="list-style-type: none"> Easily removable through conventional washing processes thanks to its emulsifying technology. Excellent antiwear, anticorrosion properties. Harmless towards machines paints, plastics and seals in usual running conditions. Colorless, odorless. Strong resistance to oxidation. 	22 32 46	Mineral
TIXO SLIDE	<ul style="list-style-type: none"> Needle oils for the lubrication of needles, sinkers, tuck cams and needle cylinders. Specially adapted to knitting that do not require downstream washing. Suitable for raw white or dyed polyester, polyamide, cotton, wool yarns, and their blends. Highly adapted for medical items (tights, socks...) with huge elastane content. Suitable for flat knitting or sewing machine lubrication. Suitable for rings and travelers of spinning frames' lubrication. 	<ul style="list-style-type: none"> Excellent antiwear, anticorrosion properties. Harmless towards machines paints, plastics and seals in usual running conditions. Colorless, odorless. Strong resistance to oxidation. 	22 32 46	Mineral



Textile CARDING/COMBING

• **TEXINOL** are antistatic, lubricating or hydrosoluble agents designed for the protection of fibers and machine metal parts in contact with them during carding and combing processes. **TEXINOL** products will lower static electricity's impact on fibers while reducing friction and reinforcing the cohesion between them.

• **TEXINOL** range has products adapted to all kinds of natural, synthetic and artificial raw materials.

ANTISTATIC LUBRICANTS FOR STAPLE FIBER PREPARATION (CARDING, COMBING)				TEXINOL
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE
TEXINOL CP 209	<ul style="list-style-type: none"> Carding and combing lubricant for crossbred wool, worsted spinning wools and cashmere fiber. Suitable for wool and synthetic blended fiber semi-worsted spinning. Product to be sprayed on fibers. 	<ul style="list-style-type: none"> Non greasy water soluble lubricant without mineral oil. Excellent protection towards card corrosion. Biodegradable according to OECD 301-B (highest level > 60%). 	140 – 180 cSt	Synthetic
TEXINOL FCT 95	<ul style="list-style-type: none"> Carding and combing lubricant for crossbred wool, worsted spinning wools and cashmere fibers. Specially adapted for the processing of wool and its blends with polyamide, polyester, acrylic, cashmere. Specially suitable for non flammable polyester, polypropylene and artificial fur. 	<ul style="list-style-type: none"> Non greasy water soluble lubricant without mineral oil. Excellent protection towards card corrosion. Biodegradable according to OECD 301-B (highest level > 60%). Successfully tested in M1 test for Fire propagation. Successfully tested in DIN 75201 method A for fogging. 	140- 180 cSt	Synthetic
TEXINOL FC 3093	<ul style="list-style-type: none"> Carding lubricant for wool and with acrylic, polyamide, polyester, viscose or cotton blends. Can be used for animal and vegetable origin-material tearing, pure or blended with acrylic, polyamide, polyester or artificial fibers. 	<ul style="list-style-type: none"> Easy to dilute. To be sprayed on fibers. 	54 - 62 cSt	Mineral



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Textile



Textile NON WOVEN



... **ELECTROFIX** are antistatic lubricants that allow to reduce friction during nonwoven processes, increasing the performance and regularity of the card web.

... It helps to reduce the rate of dust, optimizing needle's life and reducing energy consumption of production lines.

ANTISTATIC LUBRICANTS FOR NON WOVENS IN NEEDLE PUNCHING AND TUFTING

ELECTROFIX

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE
ELECTROFIX NT 4820	<ul style="list-style-type: none"> • Antistatic lubricant designed for carding and needling of any kind of material. • Can be used alone or as an additive for lubricating preparations. 	<ul style="list-style-type: none"> • Good antistatic and lubrication performances. 		Synthetic
ELECTROFIX PPA 982	<ul style="list-style-type: none"> • Antistatic lubricant suitable for polypropylene fibers needling used for wall and floor-coverings production (starting from 300g/m²). • Adapted to polyester fiber (PES) needling. 	<ul style="list-style-type: none"> • Good antistatic and lubrication performances. • Provides excellent cohesion to the fibers. 		Synthetic
ELECTROFIX NT 75	<ul style="list-style-type: none"> • Antistatic lubricant for web lapping and needling of polyester, polyamide, polypropylene and blends with wool or jute. • Suitable for natural and synthetic fiber tearing. 	<ul style="list-style-type: none"> • Non greasy water soluble lubricant without mineral oil. • Biodegradable according to OECD 301-B (highest level > 60%). • Successfully tested in M1 test for Fire propagation. • Successfully tested in DIN 75201 method A for fogging. 	140 – 180 cSt	Synthetic
ELECTROFIX FP 37	<ul style="list-style-type: none"> • Antistatic additive for worsted and woolen spinning. • Adapted to non wovens. • Can be used alone or as an additive. 	<ul style="list-style-type: none"> • High antistatic performances. • Water soluble. 		Synthetic



Textile WEAVING

... **PARATEX** range of lubricants offers solutions on both warp sizing and weft yarn preparation.

... They have been developed to cope with weaving constraints (high speeds,

... yarn breakage risks, yarn abrasion...) while guaranteeing high washability for all finishing processes, such as dyeing and coating, where auxiliaries' removal is key to prevent quality problems on finished goods.

OVEROILING LUBRICANTS AND SIZING AGENTS FOR WEAVING, WARPING AND BEAMING

PARATEX

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE
PARATEX 404	<ul style="list-style-type: none"> • Cold sizing or warping lubricant for spun yarns (wool, cotton, flax and blends) but also for flat or textured (DTY, ATY) continuous filaments (dyed or raw white). • Adapted to yarns containing elastane. 	<ul style="list-style-type: none"> • Water soluble product. • Provides high inter filament cohesion. • Decreases spun yarn pilosity. • Strongly improves gliding coefficient. Reduces static charges. • Really easy to wash out. Cold application process. • Biodegradable according to OECD 301-B (highest level > 60%). 	85 - 115	Synthetic
PARATEX ENC 51 Z	<ul style="list-style-type: none"> • Over oiling product for warped yarns sized with synthetic sizing agents (vinyllic, acrylic, soluble polyester). 	<ul style="list-style-type: none"> • Chemically inert towards most sizing agents. 	36 - 41	Mineral
PARATEX 5300 APZX	<ul style="list-style-type: none"> • Warping lubricant for spun yarns (synthetic, cotton, wool, viscose, Kermel...) raw white or dyed and their blends. • Suitable for elastane. 	<ul style="list-style-type: none"> • Improves gliding coefficient. • Good antistatic performances. 	37 - 42	Mineral



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Textile



Textile FINISHING



... TOTAL offers a special range of rinsing bath coning oils: **DETERFIX TB**, to be applied directly in autoclave after bobbin dyeing processes, saving our customers the step of coning oil application through rewinding.

... It has been developed taking into account present environmental regulations on waste water disposal treatments (no alkylphenols ethoxylates, no mineral oil), as well as OEKO-TEX® standard 100.

RINSING BATH CONING OILS FOR BOBBIN DYEING				DETERFIX
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE
DETERFIX TB 660 Z	<ul style="list-style-type: none"> • Rinsing bath (or after-dyeing) lubricant for continuous and discontinuous yarns of polyester, acrylic, wool and their blends. Specially formulated to be applied in autoclave on dyed yarn bobbins. • Allows to use directly bobbins in knitting or weaving processes after dyeing. • Application process from 25 °C to 50 °C, pH 4 – 4.5. 	<ul style="list-style-type: none"> • Eliminates the after-dyeing rewinding process. • Enables a high exhaustion. • Reduces oil consumption and waste station rejection. • Reduces and regularizes unwinding tensions. • Gives good antistatic protection. • Low temperature wash out. Cancels softener. 		Synthetic
DETERFIX TB 6800 Z	<ul style="list-style-type: none"> • Rinsing bath (or after-dyeing) lubricant for continuous and discontinuous polyamide dyed yarns. Specially formulated to be applied in autoclave on dyed yarn bobbins. • Allows to use directly bobbins in knitting or weaving processes after dyeing. • Application process from 25 °C to 50 °C, pH 4 – 4.5. 	<ul style="list-style-type: none"> • Eliminates the after-dyeing rewinding process. • Enables a high exhaustion. • Reduces oil consumption and waste station rejection. • Reduces and regularizes unwinding tensions. • Gives a good antistatic protection. • Low temperature wash out. Cancels softener. 		Mineral
DETERFIX TB 6153	<ul style="list-style-type: none"> • Rinsing bath (or after-dyeing) lubricant for continuous polyester dyed yarns bobbins, designed to be applied after dyeing process. • Suitable for polyester staple fibers or tops and their blends. • Helps to use directly bobbins in knitting or weaving processes. • Application process from 40° C to 70 °C, pH 6.5 – 7.5. 	<ul style="list-style-type: none"> • Eliminates the after-dyeing rewinding process. • Reduces oil consumption and waste station rejection. • Reduces and regularizes unwinding tensions. • Gives a good antistatic protection. • Reduces oligomers deposit. Cancels softener. 		Semi-synthetic



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Textile



Textile FINISHING



For washing operations on finishing processes, TOTAL offers the **DETERFIX** detergent range which efficiently removes from textile the residues left by the use of process oils and lubricants all through the production chain.

DETERGENTS				DETERFIX	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE	
DETERFIX HE 656	<ul style="list-style-type: none"> Detergent designed for woven or knitted fabrics deoiling. Strongly adapted to elastane deoiling with high content of textile lubricants (mineral oils or fatty acid esters). Suitable for continuous or discontinuous washing processes (JET, OVERFLOW, etc). 	<ul style="list-style-type: none"> ~100% active raw material. Approved by INVISTA® laboratory for its good compatibility level with Lycra® fiber and ability to spread silicones in washing bath. Adapted to automotive requirements. 	< 200 cSt	Synthetic	
DETERFIX CR 677	<ul style="list-style-type: none"> Detergent designed to wash out oils (spinning, coning and knitting origin) from hosiery items. Designed to clean elastomer content knitted fabrics, as hosiery, bodies, ribbon, etc. 	<ul style="list-style-type: none"> ~100% active raw material. Approved by INVISTA® laboratory for its good compatibility level with Lycra® fiber and ability to spread silicones in washing bath. 	< 200 cSt	Synthetic	

NEEDLE OILS FOR SEWING MACHINES				TIXO	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY (20°C)	NATURE	
TIXO SEW	<ul style="list-style-type: none"> Needle oils for the lubrication of high speed industrial sewing machines' needle bar, hook race and bobbin case. 	<ul style="list-style-type: none"> Highly refined white oil based. Good oxidation resistance, limiting stains, sludge and sediment formation. Non hazardous. 	32 46 68	Mineral	



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Textile



TOTAL
nevastane
H1 LUBRICANTS

For more than 50 years TOTAL NEVASTANE products and experts are supporting the Food Industry in its technical evolution.

Our products and our plants are ISO 21469 certified guarantying the highest level of Safety, Security and Quality.

By using TOTAL NEVASTANE products you will achieve the utmost reliability and durability while satisfying the performance requirement of your processing equipment.

- 61 OILS
- 62 GREASES
- 63 AEROSOLS
- 63 SPECIFIC PRODUCTS



Nonfood Compounds
Program Listed
ISO 21469 Certified



The **TOTAL NEVASTANE** range is specially designed for the Food Processing Industry and its related activities such as the manufacture of packaging. It is also used in the Pharmaceutical and the Cosmetics Industry.
 All **TOTAL NEVASTANE** products are NSF H1 registered. Their use is essential when a high level of hygiene is required, in compliance with HACCP method.

As high performance products, they provide equipment protection and extended service life while securing the production chain.
 Many products from the **TOTAL NEVASTANE** range are produced in ISO 21469 certified plant, this is an additional proof that TOTAL is applying the highest hygiene standards to produce NSF H1 lubricants.

OILS					TOTAL NEVASTANE
PRODUCT	TYPE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
TOTAL NEVASTANE AW	White Mineral	<ul style="list-style-type: none"> Hydraulic systems. Air-line lubricators. 	<ul style="list-style-type: none"> Excellent anti-wear and corrosion protection. Increase equipment service life. Miscible with mineral fluids. 	22 to 68	NSF H1 • ISO 21469 • ISO 6743-4 HM • KOSHER • HALAL
TOTAL NEVASTANE SH	Synthetic (PAO)	<ul style="list-style-type: none"> Air compressor. Vacuum pumps. Hydraulic systems and especially wthose operating at low temperatures. 	<ul style="list-style-type: none"> Wide temperature range. Excellent equipment protection. Extension of oil drain intervals. High viscosity index. 	32 to 100	NSF H1 • ISO 21469 • ISO 6743-4 HV • KOSHER • HALAL
TOTAL NEVASTANE EP	Semi-synthetic	<ul style="list-style-type: none"> Gears. Plain and roller bearings. Conveyor belts and chains. 	<ul style="list-style-type: none"> Superior protection against high loads. Adapted to a wide range of applications. 	100 to 1 000	NSF H1 • ISO 21469 • ISO 6743-6 CKD • KOSHER • HALAL
TOTAL NEVASTANE XSH	Synthetic (PAO)	<ul style="list-style-type: none"> Gears. Plain and roller bearings. Conveyor belts and chains. Slideways. 	<ul style="list-style-type: none"> Wide temperature range. Low temperature start-up. Excellent equipment protection. Extension of oil drain intervals. High loads. 	150 to 460	NSF H1 • ISO 21469 • ISO 6743-6 CKD • KOSHER • HALAL
TOTAL NEVASTANE SY	Synthetic (PAG)	<ul style="list-style-type: none"> High temperature oven chains. Bottling equipment. Worm gears. 	<ul style="list-style-type: none"> Excellent thermal stability. High loads. Extension of oil drain intervals. Outstanding extreme pressure properties. 	220 to 460	NSF H1
TOTAL NEVASTANE CHAIN OIL XT	Synthetic (Esters)	<ul style="list-style-type: none"> Conveyor belts. Oven chains. Mechanisms that operate at high temperatures. 	<ul style="list-style-type: none"> Very good thermal stability. Low volatility. High lubricating power. Excellent adhesion properties. 	220	NSF H1 • KOSHER • HALAL



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

TOTAL NEVASTANE

GREASES							TOTAL NEVASTANE		
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							REGISTRATION	ISO 6743-9	DIN 51502
TOTAL NEVASTANE XMF 00	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and adhesive grease. • Suitable for high to medium speed bearings in Food Processing Industry. • Roller and plain bearings. • Crimping machines. 	<ul style="list-style-type: none"> • Good adhesiveness on metallic surfaces. • Provides excellent corrosion protection and water resistance. 	Aluminium Complex	00	120	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF A00	K00N-20
TOTAL NEVASTANE XMF 0				0				L-XBDF A0	K0N-20
TOTAL NEVASTANE XMF 1				1				L-FXBDF B1	KP1N-20
TOTAL NEVASTANE XMF 2				2				L-XBDF B2	KP2N-20
TOTAL NEVASTANE 2 PLUS	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose and very adhesive grease. • Suitable for Food Processing application when high adhesiveness is required. • Roller and plain bearings - high and medium speed. • Crimping machines 	<ul style="list-style-type: none"> • Excellent adhesiveness. • Provide excellent corrosion protection and water resistance. 	Aluminium Complex	2	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL		
TOTAL NEVASTANE HD2T	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose tacky grease for food processing in presence of water. • Suitable for loaded bearings, bottling and crimping machines. 	<ul style="list-style-type: none"> • Contains PTFE additives. • Exceptional adhesiveness on metal surfaces. • Excellence resistance to water washout. • Excellent antiwear protection. • Low friction coefficient. 	Aluminium Complex	2	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF B2	KP2N-20
TOTAL NEVASTANE XS 80	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for high speed and very low temperatures applications in Food Processing Industry. • Bearings at low temperatures. Oven turbines. • Sterilisers. Freezing tunnels. 	<ul style="list-style-type: none"> • Very low temperature. • Excellent water resistance. • Long service life. • Reduced energy consumption. 	Calcium Sulfonate Complex	1.5	80	-55 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XEFFB 1/2	KP1/2R-55
TOTAL NEVASTANE XS 220	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for multipurpose application in Food Processing Industry over a wide range of temperatures. • Bearings under loads and subject to shocks. 		Calcium Sulfonate Complex	1.5	220	-40 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XDDIB 1/2	KP1/2R-40
TOTAL NEVASTANE XS 320	<ul style="list-style-type: none"> • Extreme Pressure, very high performances synthetic grease for loaded application in Food Processing Industry. • Suitable for pelleting machines. • Bearings under loads and subject to shocks. 		Calcium Sulfonate Complex	1.5	320	-40 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XDFFB 1/2	KP1/2R-40
TOTAL NEVASTANE MP 1.5 (ex AXA GR 1)	<ul style="list-style-type: none"> • Extreme Pressure, multipurpose grease for bearings for Food Processing Industry. • Suitable for pelleting presses. 	<ul style="list-style-type: none"> • Protection against corrosion in the presence of water. • Extended life of equipment. • Effective in damp environment. 	Calcium Complex	1.5	150	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDIB 1/2	KP1/2N-20

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



Available in Lube-Shuttle cartridges



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

TOTAL NEVASTANE

AEROSOLS

TOTAL NEVASTANE

PRODUCT	TYPE	APPLICATIONS	SPECIFIC ADVANTAGES	TEMPERATURE RANGE	SPECIFICATIONS
TOTAL NEVASTANE LUBE AEROSOL	Multipurpose translucent adhesive oil	<ul style="list-style-type: none"> • Small machines requiring almost daily lubrication. • Conveyors and rails. • Packaging machines. • Plain and roller bearings. 	<ul style="list-style-type: none"> • Exceptional adhesion to metal surfaces. • Resistant to water, steam and weak acid and alkaline atmospheres. • Compatible with most of elastomers and plastics. 	-20 °C to +150 °C	NSF H1
TOTAL NEVASTANE GREASE AEROSOL	Water resistant grease Alu Complex	<ul style="list-style-type: none"> • Bearings, hinges, springs, chains, rails and tools. 	<ul style="list-style-type: none"> • Excellent resistance to water and steam. • Exceptional adhesion to metal surfaces. • Insensitive to detergents. 	-20 °C to +150 °C	NSF H1
TOTAL NEVASTANE SILICONE SAFEGARD	Multipurpose Silicone oil	<ul style="list-style-type: none"> • Small machines and chains subject to extreme temperatures. • Shrink oven chains. • Conveyors and rails. 	<ul style="list-style-type: none"> • Very wide temperature range. • Insulating, anti-rust and anti-corrosion. • Spray without propellant gas (Safeguard technology) for environmental protection. 	-40 °C to +200 °C	NSF H1 • KOSHER

NSF

SPECIFIC PRODUCTS

TOTAL NEVASTANE

PRODUCT	TYPE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
TOTAL NEVASTANE FLUSH OIL	Light viscosity fluid for cleaning and flushing	<ul style="list-style-type: none"> • Cleaning or flushing of hydraulics, gear reducers, chains and other moving components. 	<ul style="list-style-type: none"> • Elimination of deposits and impurities. • Excellent solvent power. • Ideal for changing from standard lubricant to NSF H1 lubricant (except PAG and MPG). 	9.5	NSF H1 • KOSHER • HALAL
TOTAL NEVASTANE SDO	Sugar dissolving oil	<ul style="list-style-type: none"> • Dissolves sugar accumulated on equipment in production and packaging areas. • Application in pure or diluted form. 	<ul style="list-style-type: none"> • Excellent for dissolving accumulated sugar on machine parts. • Dirt removing power. • Reduction of maintenance costs and shutdowns. 		NSF H1
TOTAL NEVASTANE ANTIFREEZE	MPG based antifreeze	<ul style="list-style-type: none"> • Cooling circuits, including drinks, ice creams and frozen food processing. 	<ul style="list-style-type: none"> • Specific protection of alloys and metal equipment against corrosion. 		NSF H1
TOTAL NEVASTANE HTF	White Mineral	<ul style="list-style-type: none"> • Closed circuits without air contact. • Numerous manufacturing processes in Agrifood Industry: water baths, autoclaves, reactors, ovens, presses and moulds. 	<ul style="list-style-type: none"> • Process temperature < +310 °C (+330 °C in the film). 	32	NSF H1 • ISO 21469 • ISO 6743-12 L -QC KOSHER • HALAL

NSF



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

TOTAL NEVASTANE

Services



ANAC INDUS - ANAC SOLUBLE CHECK

Oil analyses to anticipate and diagnose anomalies in the production chain. Oil condition is one of the key indicators to the condition of any machine. For this reason the quality and precision of the **ANAC INDUS** analyses provide tangible benefits as regards productivity gains and reduced maintenance and lubrication costs:

- Machine and lubricant condition monitoring without productivity loss due to unscheduled maintenance and downtime.
- Detection of anomalies: premature wear of a machine part, pollution (water, mixture of products, solid pollutants, dust, ...).
- Optimization of the lubricant use by maximising oil change intervals.

A QUICK AND SECURE ACCESS TO YOUR OIL ANALYSIS

The **ANAC** website offer a personalized and safe access to your oil analysis results:

- Look up the results immediately after the analysis is completed.
- Download of diagnosis history, enables identification of changes in machine performance or condition.
- Transfer directly the results and comments in the TIG XP5 software, in order to effectively plan your maintenance operations.

A PERSONALIZED DIAGNOSIS OF YOUR OILS IN SERVICE

- **ANAC INDUS:** analysis grids adapted to the various families of industrial oils:

- **CLASSIC:** general analysis for industrial oils, hydraulics, bearings, compressors and gears.
- **TURBINE:** turbine oils.
- **FRIGO:** refrigerating machine compressors oils.
- **TRANSFO:** transformer oils.
- **CALO:** heat transfer oils.
- **TREMPE:** quench oils.

- **ANAC:** specific analysis:

- **ANAC EXPERT:** in depth, personalized diagnosis system for engines, gearboxes and other driveline components.
- **ANAC COOLANT:** the diagnosis of cooling liquids.
- **ANAC GAS:** in-depth diagnosis system for the follow up of the behaviour and depletion of the lubricant and the mechanical wear condition of industrial gas engines.

- Optional analyses linked to a grid:

- **VI:** determination of the viscosity index.
- **OPTIC:** microscopic analysis defining the nature and relative size of solid particles.
- **AIR:** determination of the foaming and air release values.
- **LNF Partic:** counting of particles in order to determine class of pollution.

- Analysis of soluble cutting fluids

- **SOLUBLE CHECK**



TRAINING

Programs of discovery and improvement to make good use of industrial lubricants.

Competitiveness, safety of installations, the health of people and respect for the environment are major challenges for all industries.

The lubricant plays a major role in all these fields: when it is properly used, it contributes to the performance and longevity of the production tools, to the safety of goods, to the health of its users and to the protection of the environment.

For this reason TOTAL offers training to users of its lubricants that is specific to each industrial sector.

Topics: the use of industrial lubricants, safety and the environment

- controlling and identifying... means better lubrication,
- knowledge and understanding... means reducing risk,
- applying and choosing... means limiting environmental risks.

TOTAL Lubricants' latest generation **TIG 6** software. **TIG 6** is built on the expertise of our engineers who are in daily contact with maintenance operators. It includes more than 20 years of experience in the field.

TIG 6 is easy to learn and easy to use. It is operational after a short training session for your staff.



TECHNICAL ASSISTANCE

Industrial lubricants cannot give their best performance if not properly selected, put into service, used and monitored.

Dedicated field engineers provide support on lubricants and lubrication related services to assist you in getting the most out of your lubricants.

- Plant audits
- Staff training
- Lubricant selection
- Field tests
- Oil analysis
- TCO approach
- Thermographic inspection
- Open gears inspection



THERMOGRAPHIC INSPECTION

Minimizing failures and maximizing equipment availability are major objectives for maintenance managers and their teams.

Thermographic inspection allows you to monitor your machines and equipments in service and identify abnormal thermal patterns. Hot spots may be linked to lubrication failures, leading to premature wear or equipment failures.

Preventive or corrective actions can be decided on and planned without production stops, thus reducing risk of failures, optimizing equipments availability and reducing maintenance cost.

The functionalities of
TOTAL TIG 6

Organisation of preventive, condition-based and corrective maintenance

- Workload planning.
- Assigning work orders to the operators.
- Tracking history of operations.
- Triggering unscheduled operations.
- Checking points that are critical for the control of quality and safety programmes.

Analysis of maintenance costs

- The cost of lubricants, maintenance products and labour.
- Report exported to Excel®.

Integrated document management

- Products: technical and safety data sheets, etc.
- Documents: internal procedures, instructions, maintenance guides, etc.
- External documents: standards, legislation, etc.
- Supplier contacts.

Management of oil analyses in service

- Triggering of oil sampling.
- Direct import into TIG 6 of the results of analyses made by our labs.
- Archiving of physical and chemical characteristics, diagnostics and comments.
- Graphical monitoring of every measured characteristic.

Monitoring of lubricants and spare parts stocks

- Forecasts and monitoring of the consumption of lubricants and spare parts.
- Order and delivery management.

Customised configuration of the software

- Integration of your data after a feasibility study.
- Simultaneous management of several maintenance plans.
- Data sharing on a network.
- Configurable access rights/ permissions:

	access 1 Administrator	access 2 Operator	access 3 Consultation
• Design of the lubrication plan	🔥		
• Updates	🔥	🔥	
• Calculation of maintenance operations	🔥	🔥	
• Validation	🔥	🔥	🔥
• Consultation of the lubrication plan, history, operations, analyses, etc.			🔥
• Print-outs			🔥

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TECHNICAL DATA					
MEASURING KINEMATIC VISCOSITY					
In the international measurement system, kinematic viscosity is expressed in mm ² per second.					
ISO VG					
The international ISO VG classification allows classification of oils according to viscosity. The ISO VG grade corresponds by convention to the median point of a kinematic viscosity interval in mm ² /s at 40 °C.					
ISO CLASSIFICATION DES LUBRICANTS AS A FUNCTION OF THEIR VISCOSITY (ISO 3448 STANDARD)				NLGI GRADE	
ISO viscosity class	Median kinematic viscosity at 40 °C in mm ² /s	Kinematic viscosity range at 40 °C in mm ² /s		The NLGI (National Lubricating Grease Institute) grade expresses the consistence of greases. Classification is carried out based on « worked penetration » at 25 °C.	
		Mini	Maxi	NLGI grade	Worked penetration at 25 °C (1/10 th mm)
ISO VG 2	2.2	1.98	2.42	000	445 - 475
ISO VG 3	3.2	2.88	3.52	00	400 - 430
ISO VG 5	4.6	4.14	5.06	0	355 - 385
ISO VG 7	6.8	6.12	7.48	1	310 - 340
ISO VG 10	10	9	11	2	265 - 295
ISO VG 15	15	13.5	16.5	3	220 - 250
ISO VG 22	22	19.8	24.2		
ISO VG 32	32	28.8	35.2		
ISO VG 46	46	41.4	50.6		
ISO VG 68	68	61.2	74.8		
ISO VG 100	100	90	110		
ISO VG 150	150	135	165		
ISO VG 220	220	198	242		
ISO VG 320	320	288	352		
ISO VG 460	460	414	506		
ISO VG 680	680	612	748		
ISO VG 1000	1000	900	1100		
ISO VG 1500	1500	1350	1650		
ISO VG 2200	2200	1980	2420		
ISO VG 3200	3200	2880	3520		

ABBREVIATIONS	
• HACCP: "Hazard Analysis and Critical Control Point". A risk analysis and critical control point method, in the Agrifood Industry.	
• HSE: Health, Safety, Environment.	
• FZG: Forschung für ZahnradGetriebe. Method for assessing the extreme pressure properties of lubricants, ISO 14635 standard.	
• PAG: Poly Alkylene Glycols.	
• PAO: Polyalphaolefins.	
• POE: Polyol Esters.	
• TOST: Turbine Oil Stability Test, ASTM D943 standard.	

STORAGE, SAFETY, HEALTH, ENVIRONMENT	
RECOMMENDATIONS FOR STORAGE	
1 - Store the products in a frost-free environment. Special case of soluble oils: storage between 5 °C and 40 °C.	
2 - Store drums and kegs on their side with both bungs in a horizontal position (9h and 15h), to prevent drying-out of seals and admission of air.	
3 - Store packaging on blocks insulating them from the ground. Once a year, turn them over to oil the non-immersed walls.	
4 - If steps 1 and 2 cannot be implemented, store the drums upside down with the bungs at the bottom.	
NEVER STORE PACKAGING UPRIGHT WITH BUNGS AT THE TOP AND OUTSIDE.	
RECOMMENDATIONS FOR USE	
5 - Follow the FIFO system: first in, first out.	
6 - Note opening date on the packaging.	
7 - Wipe the surroundings of the openings.	
8 - Close the packaging after each sampling.	
SAFETY AND HEALTH	
Virtually all the lubricants are non-flammable under ambient conditions. However, they need to be stored at a distance from:	
<ul style="list-style-type: none"> • Oxidizing, corrosive or inflammable substances: chlorine, oxygen, acids, bases, solvents, etc. • Hot surfaces or fire points. • Electric contacts. 	
For access to material safety data sheets please visit www.quickfds.com	
ENVIRONMENT	
The storage areas must permit easy recovery (pumping, absorption) in the event of accidental leaks, with no discharges into the natural environment.	
A tank or a holding facility is recommended, even mandatory, depending on the legislation in force.	



A major player

With our production, supply chain and commercial presence in more than 150 countries, we deliver a full range of lubricants.

Support and partnership

Thanks to local technical presence, we provide a high level of service to optimize your TOTAL cost of Ownership.

References & OEMs

TOTAL Lubricants cooperates with equipment manufacturers to create high-technology products for optimal performance and protection of your machinery.

Quality and environment

TOTAL Lubricants ISO 9001 certification is the guarantee of a long term commitment to quality. From the initial design stage, our R&D teams seek to develop products that minimize toxicity risks and environmental impact.

Innovation & Research

TOTAL invests in biotechnologies to find the most suitable components to reach energy efficiency through formulations designed in our Research Centers.

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