

# Lubrication solutions for industrial applications

Energizing performance. Every day



**TotalEnergies**



# Committed to be better Energy

Oil, natural gas and solar energy  
100,000 women and men



**TotalEnergies**

# TotalEnergies Lubrificants: 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. TotalEnergies 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.

## **TWO WORDS:**

### **ENVIRONMENTALLY FRIENDLY**

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.



**TotalEnergies**

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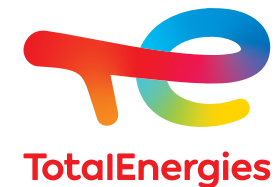
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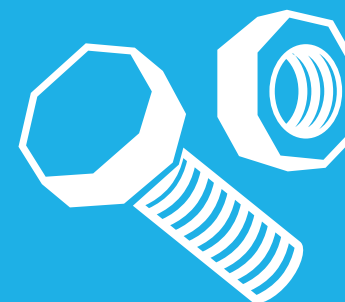
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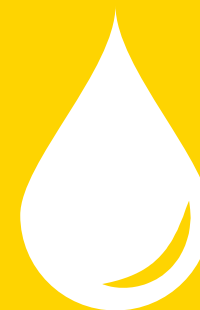
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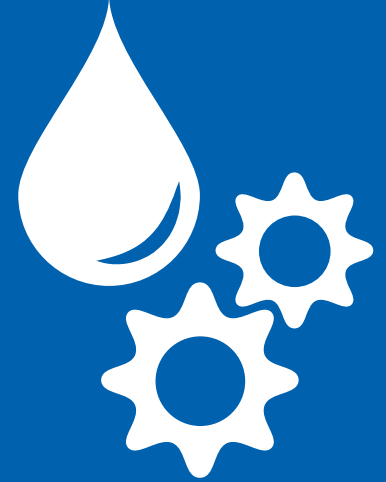
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# General Lubrication




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# General Lubrication CIRCULATION OILS



**CORTIS** and **MISOLA** are circulation oils designed for the centralized lubrication of various systems on industrial machines: bearings, gears, etc. TotalEnergies 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				<b>CIRKAN / CORTIS</b>	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS	
<b>CIRKAN</b> RO	<ul style="list-style-type: none"> <li>Apparatus and hydraulic circuits subjected to temperature constraints.</li> </ul>	<ul style="list-style-type: none"> <li>Anticorrosion protection of equipment. Oxidation resistance.</li> </ul>	100 220	ISO 6743-4 HL • ISO 6743-6 CKB • DIN 51517-2 CL • DIN 51524-1HL • AGMA 9005-E2 RO	
<b>CORTIS</b> MS	<ul style="list-style-type: none"> <li>Gears, movements and various mechanical systems requiring anti-wear properties.</li> <li>For Morgoil-type hydrodynamic bearings, BGV bearings and Danielli ESS.</li> </ul>	<ul style="list-style-type: none"> <li>Very good anti-wear and anticorrosion properties. Reinforced protection of highly loaded equipment. Formation of deposits prevented due to ashless additives.</li> <li>Excellent demulsification properties.</li> </ul>	150 220	ISO 6743-4 HM • ISO 12925-1 CKC Danielli® Standard • Morgoil® Lubricant • Morgoil® Advanced Lubricant	

CIRCULATION OILS FOR PAPERMAKING MACHINES					<b>MISOLA</b>
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>MISOLA</b> MAP SH	Synthetic PAO	<ul style="list-style-type: none"> <li>Plain or rolling bearings and medium-loaded gears subjected to considerable temperature constraints.</li> <li>Recommended for drying cylinder bearings for papermaking machines.</li> </ul>	<ul style="list-style-type: none"> <li>Able to endure considerable temperature constraints.</li> <li>Excellent anti-wear and anticorrosion protection.</li> <li>Ashless additives limiting the formation of deposits. Extra long life oil.</li> </ul>	150 460	ISO 12925-1 CKS Voith VN108 • Metso • SKF Rollen Test • FAG FE8 PM
<b>MISOLA</b> ZS	Mineral	<ul style="list-style-type: none"> <li>Equipment operating under high temperature and load conditions.</li> <li>Bearings and gears operating in a warm, moist environment.</li> <li>Wet- and dry-end sections of papermaking machines.</li> <li>Advised when loaded gears form part of the lubrication circuit.</li> <li>DthPZn additive technology.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent load capacity.</li> <li>Long life oil thanks to very good thermal stability and oxidation resistance.</li> <li>Very good anticorrosion protection even in the presence of acid process water.</li> <li>Compatible with the same DthPZn additive technology product.</li> </ul>	150 220	ISO 12925-1 CKD Voith • Metso • SKF • FAG

OILS FOR STEAM CYLINDER ENGINES					<b>CYL</b>
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>CYL / C</b>	Compounded mineral	<ul style="list-style-type: none"> <li>Steam cylinder engines.</li> </ul>	<ul style="list-style-type: none"> <li>Severely refined base oils.</li> <li>High viscosity index.</li> </ul>	460	ISO 6743/OZ

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE

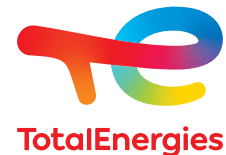


H1 suitable for incidental food contact

3H suitable for direct food contact



# 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 / NEVASTANE	
PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
<b>DACNIS</b>	Mineral	<ul style="list-style-type: none"> <li>Rotary and reciprocating air compressors.</li> </ul>	<ul style="list-style-type: none"> <li>Oil drain interval 2000 hours.</li> </ul>	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...
<b>DACNIS LD</b>	Hydrocracked mineral	<ul style="list-style-type: none"> <li>Rotary screw-type air compressors.</li> </ul>	<ul style="list-style-type: none"> <li>Oil drain interval 4000 hours.</li> <li>Low pour point.</li> </ul>	46	ISO 6743-3 DAJ • ISO DP 6521 • DIN 51 506 VDL Atlas Copco • CompAir • Hydrovane • Dresser-Rand...
<b>DACNIS SH</b>	Synthetic PAO	<ul style="list-style-type: none"> <li>Rotary screw-type air compressors.</li> </ul>	<ul style="list-style-type: none"> <li>Oil drain interval 8000 hours.</li> <li>Very low pour point.</li> </ul>	32 to 100	ISO 6743-3 DAJ • ISO DP 6521 Atlas Copco • Hydrovane • CompAir • Dresser-Rand...
<b>DACNIS SE</b>	Synthetic ester	<ul style="list-style-type: none"> <li>High-pressure reciprocating air compressors, rotary compressors and turbocompressors.</li> </ul>	<ul style="list-style-type: none"> <li>High thermal stability.</li> <li>Low pour point.</li> </ul>	46 to 100	ISO 6743-3 DAJ • DIN 51 506 VDL Atlas Copco • Bauer • CompAir • Dresser-Rand • Sauer & Sohn • Tanabe...
<b>NEVASTANE SH</b>	Synthetic PAO	<ul style="list-style-type: none"> <li>Air compressors.</li> <li>Adapted to the severe environment of the Agrifood Industries.</li> <li>Recommended for use where incidental food contact is possible.</li> </ul>	<ul style="list-style-type: none"> <li>Very high equipment protection level , even under severe conditions.</li> </ul>	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 mm<sup>2</sup>/s



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H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication





# General Lubrication COMPRESSORS



Depending on the type of refrigerant, **LUNARIA** 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

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
LUNARIA NH	Hydrocracked mineral oil	• Refrigerating compressors using NH3/ammonia.	• Evaporating temperature > -30 °C.	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.	68	NSF H1 • ISO 6743-3 DRA • APV • Gram • Bock • J & E Hall • Grasso • Howden • Sabroe • York

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



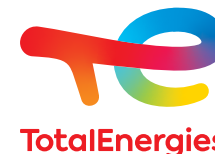
H1 suitable for incidental food contact

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General Lubrication



# General Lubrication GEARS



**CARTER** and **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 / NEVASTANE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>CARTER EP</b>	Mineral	<ul style="list-style-type: none"> <li>• Industrial gears, bearings under high loads and high temperatures.</li> </ul>	<ul style="list-style-type: none"> <li>• Extension of oil drain intervals.</li> <li>• Protection against micropitting.</li> </ul>	68 to 680	<ul style="list-style-type: none"> <li>• DIN 51517 Part III • ISO 12925-1 CKSMP</li> <li>• AGMA 9005 – F 16 Antiscuffing • JIS K2219. 2006 (class 2)</li> <li>• DAVID BROWN S1.53.101 E • AIST 224</li> <li>• FLENDER AS 7300</li> </ul>
<b>NEVASTANE EP</b>	White mineral	<ul style="list-style-type: none"> <li>• Gears, gear pumps, chains and conveyor belts.</li> </ul>	<ul style="list-style-type: none"> <li>• Superior protection under high loads.</li> <li>• Adapted to a wide range of applications.</li> <li>• For use where incidental contact with food may occur.</li> </ul>	100 to 680	<ul style="list-style-type: none"> <li>• DIN 51517 - 3 CLP • ISO 12925-1 CKSMP</li> <li>• AISI 224 • CINCINNATI MILACRON</li> <li>• DAVID BROWN • SIEMENS-FLENDER (VG 150 to VG 680)</li> <li>• USINOR FT 161 • MÜLLER WEINGARTEN</li> <li>• AGMA 9005 - E02</li> </ul>

## SYNTHETIC GEAR OILS

## CARTER / NEVASTANE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>CARTER SH</b>	Synthetic PAO	<ul style="list-style-type: none"> <li>• Gears subjected to very high loads and high temperatures in difficult environments.</li> <li>• Gears for wind turbines.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent protection against corrosion, wear and micropitting.</li> <li>• Extended oil service life due to excellent thermal stability.</li> <li>• Can operate outdoors thanks to a very low pour point.</li> </ul>	150 to 680	<ul style="list-style-type: none"> <li>ISO 12925-1 CKD</li> <li>• DIN 51517-3 CLP Flender • FAG • SKF</li> </ul>
<b>CARTER BIO</b>	Synthetic ESTER	<ul style="list-style-type: none"> <li>• Gears offering a risk of incidental discharges into the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Readily biodegradable product.</li> <li>• Very good extreme-pressure, anti-wear and anticorrosion properties. Oxidation stability.</li> </ul>	150 to 320	<ul style="list-style-type: none"> <li>Equivalence</li> <li>• ISO 12925-1 CKD • DIN 51517-3 CLP</li> <li>EAL (Environment Acceptable Lubricant)</li> </ul>
<b>CARTER SG</b>	Synthetic PAG	<ul style="list-style-type: none"> <li>• Very high performance synthetic gear lubricant for standard, crown, planetary, and worm gearboxes.</li> <li>• Very high EP performances, high sliding performances.</li> <li>• Non-miscible with mineral oils and certain synthetic lubricants.</li> </ul>	<ul style="list-style-type: none"> <li>• High Efficiency: reduces operating temperatures due to low friction coefficient and increases energy efficiency.</li> <li>• Excellent shear stability and very high viscosity index.</li> <li>• Very high thermal and oxidation stability.</li> </ul>	1000	<ul style="list-style-type: none"> <li>Equivalence</li> <li>• ISO 12925-1 CKT • DIN 51517-3 CLP PG</li> </ul>
<b>NEVASTANE XSH</b>	Synthetic PAO	<ul style="list-style-type: none"> <li>• Severe temperature conditions and high loads.</li> <li>• Gears, slideways, plain bearings and (roller) bearings.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent level of equipment protection.</li> <li>• Extension of oil drain intervals. Extended equipment service life.</li> </ul>	150 to 460	<ul style="list-style-type: none"> <li>NSF H1 • Kosher • Halal</li> <li>• ISO 6743-6 CKD • ISO 21469</li> </ul>
<b>NEVASTANE SY</b>	Synthetic PAG	<ul style="list-style-type: none"> <li>• Severe temperature conditions and high loads.</li> <li>• Oven chains and conveyor belts, bottling equipment, wheels and worm screws.</li> <li>• Non-miscible with mineral oils and certain synthetic lubricants.</li> <li>• For use where incidental contact with food may occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforced extreme-pressure properties.</li> <li>• Very good thermal stability.</li> <li>• Anticorrosion protection.</li> </ul>	220 320 460	NSF H1

## SPECIAL OILS

## CARTER

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>CARTER ALS</b>	Non-staining	<ul style="list-style-type: none"> <li>• Gears in aluminium seam casings: cylindrical gear pairs, bearings and couplings.</li> <li>• Spur gears and worm screws.</li> </ul>	<ul style="list-style-type: none"> <li>• Non-staining of aluminium.</li> <li>• Excellent protection of lubricated parts.</li> <li>• Resistance to corrosion even in the presence of water.</li> </ul>	460	



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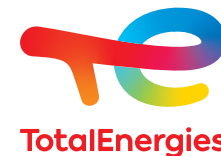
H1 suitable for incidental food contact



3H suitable for direct food contact



# General Lubrication HEAT TRANSFER FLUIDS




**SERIOLA** 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.

**SERIOLA** 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 +325 °C.

## SERIOLA / NEVASTANE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
 NEVASTANE HTF	White mineral	<ul style="list-style-type: none"> <li>• Closed circuits without air contact.</li> <li>• Numerous manufacturing processes in Agrifood Industry: water baths, autoclaves, reactors, ovens, presses and moulds.</li> <li>• Recommended for use where incidental contact with food may occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Process temperature &lt; +310 °C (+330 °C in the film).</li> </ul>	32	NSF H1 & HT1 • ISO 6743-12 L-QC • ISO 21469 • Halal, Kosher
SERIOLA BPV	Mineral detergent	<ul style="list-style-type: none"> <li>• Hot cleaning of heat transfer circuits.</li> <li>• Miscible with mineral-based heat transfer fluids.</li> </ul>	<ul style="list-style-type: none"> <li>• Process temperature ~+200 °C.</li> <li>• Very high thermal stability.</li> </ul>	40	
HTO 21	Mineral	<ul style="list-style-type: none"> <li>• Closed circuits without air contact.</li> <li>• Miscible with mineral-based heat transfer fluids.</li> </ul>	<ul style="list-style-type: none"> <li>• Process temperature &lt; +325 °C.</li> </ul>	43	• ISO 6743-12 L-QB • DIN 51502-L
HTO 51	Mineral	<ul style="list-style-type: none"> <li>• Closed circuits without air contact.</li> <li>• Miscible with mineral-based heat transfer fluids.</li> </ul>	<ul style="list-style-type: none"> <li>• Process temperature &lt; +370 °C.</li> </ul>	113	

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



H1 suitable for incidental food contact

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 **SMG**. 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.

- 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.
  - HFDU classes: **HYDRANSAFE**. Fluids specifically developed to limit the risks of a fire spreading in the event of a leak.
- NEVASTANE** hydraulic fluids are available in HM and HV class.

## HM HYDRAULIC FLUIDS: FOR HIGH TEMPERATURES AND PRESSURES

AZOLLA / NEVASTANE

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>AZOLLA</b> ZS	<ul style="list-style-type: none"> <li>• Hydraulic systems operating in high temperature and pressure conditions.</li> <li>• Bearings and miscellaneous devices.</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforced protection of the equipment thanks to anti-wear and anticorrosion properties.</li> <li>• Considerable service life for the fluid and preventing deposits, ensured by thermal stability and resistance to oxidation.</li> <li>• Filterability even in the presence of water.</li> </ul>	10 to 150	ISO 6743/4 HM • DIN 51524-2 HLP • Eaton I-286S, M-2950S • Denison HFO, HF1, HF2
<b>AZOLLA</b> AF	<ul style="list-style-type: none"> <li>• Hydraulic systems especially sensitive to the formation of deposits and/or operating in high temperature and pressure conditions.</li> <li>• Bearings and miscellaneous equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Formation deposits prevented due to ashless additives.</li> <li>• Very good anti-wear and thermal stability performances.</li> <li>• Very good filterability in service even in the presence of water.</li> <li>• Extension of oil drain intervals. TOST = 4000 hours.</li> </ul>	32, 46, 68	ISO 6743/4 HM • DIN 51524-2 HLP • Eaton I-286S, M-2950S • Denison HFO, HF1, HF2
<b>AZOLLA</b> DZF	<ul style="list-style-type: none"> <li>• All hydraulic systems, in particular when the presence of water is inevitable and the draining of water impossible.</li> <li>• Miscellaneous devices calling for extreme-pressure properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent hydrolysis stability thanks to ashless additives.</li> <li>• Detergent fluid preventing deposits in the circuits.</li> <li>• Reinforced extreme-pressure properties.</li> </ul>	32, 46, 68	ISO 6743/4 HM • ISO 12925 CKC • DIN 51524-2 HLPD • Müller Weingarten • IMAN N698 HLPD
<b>AZOLLA</b> AL	<ul style="list-style-type: none"> <li>• Hydraulic systems of aluminium, stainless steel or copper rolling mills.</li> </ul>	<ul style="list-style-type: none"> <li>• Synthetic oil avoids staining rolled metal in the event of a leak in the hydraulic circuit.</li> <li>• Reduction in the formation of deposits.</li> <li>• Anticorrosion protection even in the presence of water.</li> </ul>	32, 46	
<b>AZOLLA</b> VTR	<ul style="list-style-type: none"> <li>• Hydrokinetic transmissions and couplings.</li> <li>• Specially designed for turbo-transmissions, Voith Turbo gear boxes.</li> </ul>	<ul style="list-style-type: none"> <li>• Dispersant and detergent fluid limiting deposits.</li> <li>• Very good load capacity (FZG&gt;12) and anti-wear protection.</li> <li>• Thermal stability. Very low foaming.</li> </ul>	32	ISO 6743-4 HM • DIN 51524 HLPD Voith Turbo • SNCF
<b>NEVASTANE</b> AW	<ul style="list-style-type: none"> <li>• Hydraulic systems operating under severe conditions.</li> <li>• Recommended for use when incidental food contact may occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Very good equipment protection power.</li> <li>• Increased equipment service life.</li> <li>• Miscibility with mineral fluids.</li> </ul>	22 to 68	NSF H1 • Kosher • Halal ISO 6743-4 HM • ISO 21469



BIODEGRADABLE



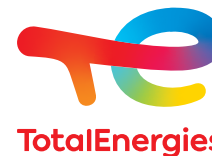
H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication



# General Lubrication HYDRAULIC SYSTEMS



## HV HYDRAULIC FLUIDS: FOR LOW TEMPERATURES

### EQUIVIS / NEVASTANE

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>EQUIVIS ZS</b>	<ul style="list-style-type: none"> <li>Hydraulic systems operating outdoors.</li> </ul>	<ul style="list-style-type: none"> <li>Extension of oil drain intervals due to very good thermal stability and resistance to oxidation.</li> <li>Very good filterability even in the presence of water.</li> </ul>	15 to 68	ISO 11158 HV • DIN 51524-3 HVL P Vickers • Cincinatti-Milacron • P68, P69, P70
<b>EQUIVIS XV</b>	<ul style="list-style-type: none"> <li>Hydraulic systems operating at low temperatures as far down as -30 °C.</li> </ul>	<ul style="list-style-type: none"> <li>Protection of equipment due to a viscosity index &gt; 250, ensuring limitation of cavitation phenomena in circuits during start-up phases and maintenance of lubricant film thickness at elevated temperatures.</li> </ul>	32 46	
<b>SMG</b>	<ul style="list-style-type: none"> <li>Hydraulic systems operating outdoors.</li> </ul>	<ul style="list-style-type: none"> <li>Extension of oil drain intervals.</li> <li>Improved shear stability.</li> <li>Formation deposits prevented due to ashless additives.</li> </ul>	22, 32 and 46	ISO 6743/4 HM • DIN 51524 HVL P
<b>NEVASTANE SH</b>	<ul style="list-style-type: none"> <li>Hydraulic systems and particularly those operating at low temperatures.</li> <li>Recommended for use when incidental food contact may occur.</li> </ul>	<ul style="list-style-type: none"> <li>High performance product, due to its 100% synthetic composition.</li> <li>Excellent protection of equipment.</li> <li>Extension of oil drain intervals.</li> </ul>	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
<b>BIOHYDRAN TMP</b>	Biodegradable Synthetic esters	<ul style="list-style-type: none"> <li>Hydraulic systems operating outdoors.</li> <li>Optimal operating temperatures: -25 °C to +80 °C.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent protection against wear and corrosion.</li> <li>Protection and efficiency of equipment.</li> <li>Miscible with mineral oils.</li> </ul>	46	ISO 15380 HEES • European Ecolabel • Swedish Standard SS 15 54 34
<b>BIOHYDRAN SE</b>	Biodegradable Saturated synthetic esters	<ul style="list-style-type: none"> <li>Hydraulic systems operating outdoors.</li> <li>Operating from -25 to more than + 80 °C.</li> </ul>	<ul style="list-style-type: none"> <li>Extension of oil drain intervals due to high thermal stability.</li> <li>Excellent compatibility with elastomers.</li> </ul>	32, 46	ISO 15380 HEES • European Ecolabel • Swedish Standard SS 15 54 34 • DENISON HF1, HF2, HF6 • Sauer Danfoss



## FIRE-RESISTANT HYDRAULIC FLUIDS

### HYDRANSAFE

PRODUCT	NATURE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
<b>HYDRANSAFE HFDU</b>	Esters based fire resistant fluid	<ul style="list-style-type: none"> <li>Recommended in the event of incidental leaks into the environment. Excellent fire resistance.</li> <li>Operating temperature: -10 °C to +70 °C on a continuous basis, +120 °C at peak periods.</li> </ul>	<ul style="list-style-type: none"> <li>Ultimate biodegradability (OECD 301B).</li> <li>Excellent anti-wear properties.</li> <li>Miscible with mineral oils.</li> </ul>	46	ISO 6743-4 HFDU • Factory Mutual



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"> <li>• Hydraulic turbines.</li> <li>• Steam turbines.</li> <li>• Gas turbines.</li> <li>• Centrifugal compressor.</li> </ul>	<ul style="list-style-type: none"> <li>• Very good defoaming, air release and demulse properties.</li> <li>• High level of protection against oxidation.</li> </ul>	32 to 100	ISO 6743-5 THA/THE/TSA/TSE/TGA/TGB/TGE/TGSB 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"> <li>• General Electric GEK 28143B, GEK 32568G, GEK 27070, GEK 46506E</li> <li>• MAN Diesel &amp; Turbo SPD10000494596</li> <li>• MAN Turbo SPD 10000242284</li> <li>• Siemens TLV 901304, TLV 901305</li> <li>• Solar ES 9-224 W Class II</li> </ul>
 BIOPRESLIA HT	Saturated synthetic esters	<ul style="list-style-type: none"> <li>• Hydraulic power generation plant (turbines and hydraulic systems).</li> </ul>	<ul style="list-style-type: none"> <li>• Resistance to oxidation.</li> <li>• Very good defoaming, air release and demulse properties.</li> <li>• Good compatibility with elastomers.</li> <li>• Biodegradable.</li> </ul>	46	  <a href="http://www.total.com/en/total-ecosolutions">www.total.com/en/total-ecosolutions</a>

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

General Lubrication

# Greases

LITHIUM / CALCIUM

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TotalEnergies 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.

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

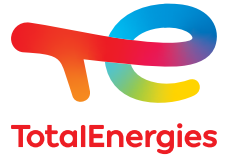
The thickener provides specific properties to the greases such as mechanical and thermal stability and water resistance.

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





# Greases LITHIUM / CALCIUM




**MULTIS** 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** greases are formulated to provide good protection against wear, rust and water wash out. **MULTIS** 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	
							SPECIFICATIONS	
							ISO 6743-9	DIN 51502
MULTIS EP 00	• Grease for centralized lubrication system and enclosed gears.	• Good pumpability. • Long service life thanks to the good resistance of the lubricating film.	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

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s

PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	MULTIS / BIOMULTIS	
							SPECIFICATIONS	
							ISO 6743-9	DIN 51502
MULTIS XHV 2	• 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.	• Exceptional adhesiveness on metal surfaces. • Enables maintenance and shutdown time reduction.	Lithium / Calcium	2	1300	-20 °C to +130 °C	L-XBCHB 2	KP2K-20
 BIOMULTIS EP 2	• Biodegradable Extreme Pressure, multipurpose grease for industrial and marine applications requiring environmentally acceptable lubricants (EAL).	• 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-XCEE 2	KP2K-30

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



H1 suitable for incidental food contact

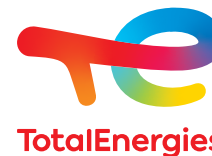
3H suitable for direct food contact

Greases





# Greases LITHIUM COMPLEX



**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
<b>MULTIS COMPLEX EP 2</b>	• Extreme Pressure, multipurpose grease suitable for wheel bearings, ball bearings, roller bearings, plain bearings, seal.	<ul style="list-style-type: none"> <li>• Excellent mechanical and thermal stabilities.</li> <li>• Minimised downtime and maintenance cost.</li> </ul>	Lithium Complex	2	165	-20 °C to +160 °C	L-XBEHB 2	KP2P-20
<b>MULTIS COMPLEX HV 2 MOLY</b>	• Extreme Pressure grease for extremely by highly loaded applications and high temperatures.	<ul style="list-style-type: none"> <li>• Contains 3% MoS<sub>2</sub>.</li> <li>• Good resistance to water.</li> <li>• Reduces wear, rust and corrosion.</li> </ul>	Lithium Complex	2	340	-30 °C to +160 °C	L-XCEHB 2	KPF2P-30
<b>MULTIS COMPLEX XHV2 MOLY</b>	• Extreme Pressure grease suitable for slow-moving heavily loaded bearings and sliding mechanisms especially in Mining Industry.	<ul style="list-style-type: none"> <li>• Contains 3% MoS<sub>2</sub>.</li> <li>• Reduces wear, rust and corrosion.</li> <li>• Excellent water resistance.</li> <li>• Excellent resistance to shocks and vibration.</li> </ul>	Lithium Complex	2	800	-20 °C to +160 °C	L-XDEHB 2	KPF2P-20
<b>MULTIS COMPLEX SHD 100</b>	• Extreme Pressure synthetic grease particularly suited for high speed bearings application such as electric motors.	<ul style="list-style-type: none"> <li>• Outstanding low and high temperature performances.</li> <li>• Improved mechanical efficiency.</li> <li>• Long service life.</li> </ul>	Lithium Complex	2	100	-50 °C to +160 °C	L-XEEHB 2	KP2P-50
<b>MULTIS COMPLEX SHD 220</b>	• Extreme Pressure, multipurpose grease synthetic grease for heavy duty automotive and industrial applications.	<ul style="list-style-type: none"> <li>• Outstanding low and high temperature performances.</li> <li>• Improved mechanical efficiency.</li> <li>• Long service life.</li> </ul>	Lithium Complex	2	220	-40 °C to +160 °C	L-XEEHB 2	KP2P-40
<b>MULTIS COMPLEX SHD 460</b>	• 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 mm<sup>2</sup>/s



BIODEGRADABLE



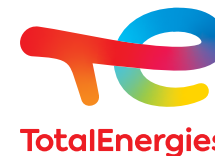
H1 suitable for incidental food contact

3H suitable for direct food contact

Greases



# Greases ALUMINIUM COMPLEX



... **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.

COPAL								
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
<b>COPAL OGL 0</b>	<ul style="list-style-type: none"> <li>Highly adhesive Extreme Pressure grease, for heavy loads and high temperatures.</li> <li>Application in cement plants: open gears of kilns and mill drives.</li> <li>Application in sugar mills: open gears in sugar cane mills.</li> </ul>	<ul style="list-style-type: none"> <li>Contains 8% Graphite and 1% MoS<sub>2</sub>.</li> <li>Dual solid addition reduces wear particularly near the tooth crest and tooth base, decreasing energy consumption.</li> <li>Very good water resistance.</li> </ul>	Aluminium Complex	0-00	> 1000	-20 °C to +150 °C	L-XBDHB 0/00	OGPF0/00N-20
<b>COPAL SPRAY</b>	<ul style="list-style-type: none"> <li>Extreme Pressure, adhesive grease for joins, open gears and cables lubrication.</li> </ul>	<ul style="list-style-type: none"> <li>Contains 10% Graphite.</li> <li>Enables local application of all surfaces.</li> </ul>	Aluminium Complex	1		-30 °C to +120 °C	Aerosol	

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



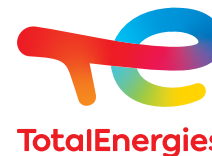
H1 suitable for incidental food contact

3H suitable for direct food contact

Greases



# Greases ALUMINIUM COMPLEX




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

NEVASTANE									
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS		
							REGISTRATION	ISO 6743-9	DIN 51502
NEVASTANE XMF 00	<ul style="list-style-type: none"> <li>• Extreme Pressure, multipurpose and adhesive grease.</li> <li>• Suitable for high to medium speed bearings in Food Processing Industry.</li> <li>• Roller and plain bearings.</li> <li>• Crimping machines.</li> </ul>	<ul style="list-style-type: none"> <li>• Good adhesiveness on metallic surfaces.</li> <li>• Provides excellent corrosion protection and water resistance.</li> </ul>	Aluminium Complex	00	120	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF A00	K00N-20
NEVASTANE XMF 0				0				L-XBDF A0	K0N-20
NEVASTANE XMF 1				1				L-FXBDF A1	KP1N-20
NEVASTANE XMF 2				2				L-XBDF A2	KP2N-20

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



 Available in Lube-Shuttle cartridges

 BIODEGRADABLE

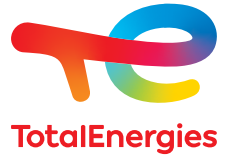
 H1 suitable for incidental food contact

 3H suitable for direct food contact

Greases



# Greases POLYUREA



**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
<b>ALTIS EM 2</b>	<ul style="list-style-type: none"> <li>High performance grease suited for high speed bearings and high temperature applications such as electric motors.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced vibration.</li> <li>Reduced energy consumption.</li> <li>Extended relubrication intervals.</li> </ul>	Polyurea	2	110	-20 °C to +180 °C	L-XBFEA 2	KP2R-20
<b>ALTIS SH 2</b>	<ul style="list-style-type: none"> <li>Very high performance synthetic grease suited for high speed bearings such as electric motors, over a wide range of temperatures.</li> <li>Formulated for First Fill applications and long service life.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced vibration.</li> <li>Reduced energy consumption.</li> <li>Extended relubrication intervals.</li> <li>Extreme temperature operations even at high speed.</li> </ul>	Polyurea	2	80	-40 °C to + 180 °C	L-XDFEB 2	KP2R-40

**ALTIS**

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



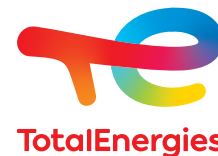
H1 suitable for incidental food contact

3H suitable for direct food contact

Greases





# Greases CALCIUM SULFONATE COMPLEX



**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
<b>CERAN XM 100</b>	<ul style="list-style-type: none"> <li>High performance, Extreme Pressure grease for high speed applications over a wide range of temperature.</li> <li>Recommended for high speed bearings in the Paper Industry.</li> <li>Suitable for heavy-duty and off-roof applications in civil engineering and industry.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent water resistance.</li> <li>High speed applications.</li> <li>Extended relubrication intervals.</li> </ul>	Calcium Sulfonate Complex	1.5	100	-30 °C to +180 °C	L-XCFIB 1/2	KP1/2R-30
 <b>CERAN XM 220</b>	<ul style="list-style-type: none"> <li>Extreme Pressure, high performance, multipurpose, grease.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent water resistance.</li> <li>Highly load applications.</li> <li>Extended relubrication intervals.</li> <li>Enables inventory rationalization.</li> </ul>	Calcium Sulfonate Complex	1.5	220	-30 °C to +180 °C	LXCFIB 1/2	KP1/2R-30
 <b>CERAN XM 220 MOLY</b>	<ul style="list-style-type: none"> <li>Extreme Pressure, high performance, multipurpose grease for heavy-duty automotive and industrial applications such as Mining Industry in temperate and warm areas.</li> <li>Recommended for loaded applications in severe environment (shocks, water, dust).</li> </ul>	<ul style="list-style-type: none"> <li>Contains 5% MoS<sub>2</sub>.</li> <li>Highly loaded applications.</li> <li>Outstanding water resistance.</li> <li>Good anti corrosion properties.</li> </ul>	Calcium Sulfonate Complex	1.5	220	-30 °C to +180 °C	L-XCFIB 1/2	KP1/2R-30
<b>CERAN XM 460</b>	<ul style="list-style-type: none"> <li>Extreme Pressure, very high performance, multipurpose grease for shocks loaded industrial applications at high temperatures.</li> <li>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).</li> </ul>	<ul style="list-style-type: none"> <li>Excellent water resistance.</li> <li>Highly loaded applications.</li> <li>Extended relubrication intervals.</li> <li>Good anti corrosion properties.</li> </ul>	Calcium Sulfonate Complex	1.5	460	-25 °C to +180 °C	L-XBFIB 1/2	KP1/2R-25

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



Available in Lube-Shuttle cartridges



BIODEGRADABLE



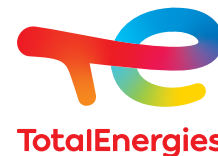
H1 suitable for incidental food contact

3H suitable for direct food contact

Greases



# Greases CALCIUM SULFONATE COMPLEX



SYNTHETIC GREASES							CERAN	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
<b>CERAN XS 40 MOLY</b>	<ul style="list-style-type: none"> <li>Very high performance, Extreme Pressure, synthetic grease designed for heavy-duty equipment in arctic conditions.</li> <li>Recommended for automotive and industrial applications in Mining Industry.</li> </ul>	<ul style="list-style-type: none"> <li>Contains 5% MoS<sub>2</sub>.</li> <li>Outstanding resistance to loads and shocks.</li> <li>Excellent water resistance.</li> <li>Suitable for very low temperatures.</li> </ul>	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
<b>CERAN AD PLUS</b>	<ul style="list-style-type: none"> <li>Highly adhesive, Extreme Pressure grease adapted to severe conditions.</li> <li>Recommended for metal cables.</li> <li>Suitable for applications in cement plants, mines, quarries, offshore, marine.</li> </ul>	<ul style="list-style-type: none"> <li>Outstanding resistance to water.</li> <li>Extended life of parts subjected to heavy loads.</li> </ul>	Calcium Sulfonate Complex	0.5	> 1700	-20 °C to +150 °C	L-XBDIB 0	OGPON-20
<b>CERAN MS</b>	<ul style="list-style-type: none"> <li>Extreme Pressure, multipurpose grease adapted to very loaded industrial application at high temperature.</li> <li>Recommended for shock loading applications with vibration.</li> <li>Recommended for couplings</li> </ul>	<ul style="list-style-type: none"> <li>Contains 2% MoS<sub>2</sub>.</li> <li>Extended service life.</li> <li>Very good adhesiveness.</li> </ul>	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 mm<sup>2</sup>/s



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases



# Greases CALCIUM SULFONATE COMPLEX






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

## CALCIUM SULFONATE COMPLEX

## NEVASTANE

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

 Available in Lube-Shuttle cartridges

 BIODEGRADABLE

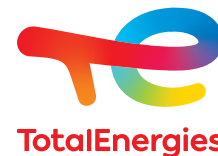
 H1 suitable for incidental food contact

3H suitable for direct food contact

Greases



# Greases CALCIUM GREASES



## CALCIUM SOAP GREASES

## BIOMERKAN / BIOADHESIVE

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



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases





# Greases SPECIALTY GREASES



SPECIFIC GREASES							CALORIS / MARSON	
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS	
							ISO 6743-9	DIN 51502
<b>CALORIS</b> 23	<ul style="list-style-type: none"> <li>Grease adapted to high temperatures and low speeds.</li> </ul>	<ul style="list-style-type: none"> <li>Resistant to acid and alkaline atmospheres.</li> </ul>	Clay	2.5	500	-15 °C to +160 °C	L-XAEEA 2/3	MF2/3P-15
<b>MARSON</b> WAR 2	<ul style="list-style-type: none"> <li>Mineral grease adapted to heavy loads.</li> <li>Recommended for the lubrication of applications operating at medium and slow speed where water is in frequent contact with the grease</li> </ul>	<ul style="list-style-type: none"> <li>Very high base oil viscosity</li> <li>Excellent adhesiveness</li> <li>Outstanding resistance water wash out</li> </ul>	Lithium	2	500	-10 °C to +120 °C	L-XACHB-2	MP2K-10



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Greases

# Waylubes and Slide Ways



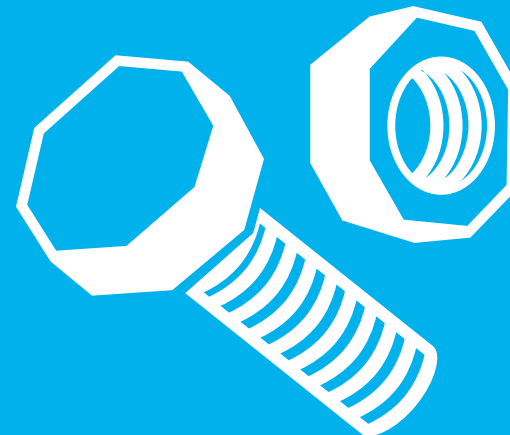
TotalEnergies offers a comprehensive range of metalworking fluids that will increase your competitiveness by combining machining quality and reduced production costs.

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.

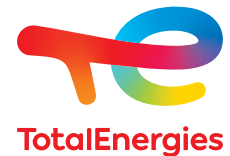
The Health, Safety and Environmental impact of our products are priorities for TotalEnergies:

- 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.





## WAYLUBES AND SLIDE WAYS



The **DROSERA** 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).

**DROSERA** oils offer the following advantages:

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

WAYLUBES AND SLIDE WAYS				DROSERA
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	VISCOSITY*	SPECIFICATIONS
DROSERA NA	<ul style="list-style-type: none"> <li>• Multipurpose range for all machine tool parts depending on the viscosity of the lubricant: hydraulic, slideways, gears, spindle movements, feed and gear boxes.</li> </ul>	<ul style="list-style-type: none"> <li>• Wide range of applications.</li> </ul>	3 to 220	Depending on viscosities: ISO 6743-2: FD 3-6-10-15-22 • 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

\* Typical kinematic viscosity of base oil at 40 °C in mm<sup>2</sup>/s



BIODEGRADABLE



H1 suitable for incidental food contact

3H suitable for direct food contact

Metalworking

For more than 50 years 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 NEVASTANE products you will achieve the utmost reliability and durability while satisfying the performance requirement of your processing equipment.

29 OILS

30 GREASES



Nonfood Compounds  
Program Listed

ISO 21469 Certified

The **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 **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 **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					NEVASTANE
PRODUCT	TYPE	APPLICATIONS	SPECIFIC ADVANTAGES	ISO VG	SPECIFICATIONS
NEVASTANE AW	White Mineral	<ul style="list-style-type: none"> <li>Hydraulic systems.</li> <li>Air-line lubricators.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent anti-wear and corrosion protection.</li> <li>Increase equipment service life.</li> <li>Miscible with mineral fluids.</li> </ul>	22 to 68	NSF H1 • ISO 21469 • ISO 6743-4 HM • KOSHER • HALAL
NEVASTANE SH	Synthetic (PAO)	<ul style="list-style-type: none"> <li>Air compressor.</li> <li>Vacuum pumps.</li> <li>Hydraulic systems and especially wthose operating at low temperatures.</li> </ul>	<ul style="list-style-type: none"> <li>Wide temperature range.</li> <li>Excellent equipment protection.</li> <li>Extension of oil drain intervals.</li> <li>High viscosity index.</li> </ul>	32 to 100	NSF H1 • ISO 21469 • ISO 6743-4 HV • KOSHER • HALAL
NEVASTANE EP	Semi-synthetic	<ul style="list-style-type: none"> <li>Gears.</li> <li>Plain and roller bearings.</li> <li>Conveyor belts and chains.</li> </ul>	<ul style="list-style-type: none"> <li>Superior protection against high loads.</li> <li>Adapted to a wide range of applications.</li> </ul>	100 to 680	NSF H1 • ISO 21469 • ISO 6743-6 CKD • KOSHER • HALAL
NEVASTANE XSH	Synthetic (PAO)	<ul style="list-style-type: none"> <li>Gears.</li> <li>Plain and roller bearings.</li> <li>Conveyor belts and chains.</li> <li>Slideways.</li> </ul>	<ul style="list-style-type: none"> <li>Wide temperature range.</li> <li>Low temperature start-up.</li> <li>Excellent equipment protection.</li> <li>Extension of oil drain intervals.</li> <li>High loads.</li> </ul>	150 to 460	NSF H1 • ISO 21469 • ISO 6743-6 CKD • KOSHER • HALAL
NEVASTANE SY	Synthetic (PAG)	<ul style="list-style-type: none"> <li>High temperature oven chains.</li> <li>Bottling equipment.</li> <li>Worm gears.</li> </ul>	<ul style="list-style-type: none"> <li>Excellent thermal stability.</li> <li>High loads.</li> <li>Extension of oil drain intervals.</li> <li>Outstanding extreme pressure properties.</li> </ul>	220 to 460	NSF H1



BIODEGRADABLE




H1 suitable for incidental food contact

3H suitable for direct food contact

**NEVASTANE**

GREASES							NEVASTANE					
PRODUCT	APPLICATIONS	SPECIFIC ADVANTAGES	THICKENER	NLGI GRADE	BO VISCOSITY*	OPERATING TEMPERATURE RANGE	SPECIFICATIONS					
							REGISTRATION	ISO 6743-9	DIN 51502			
NEVASTANE XMF 00	<ul style="list-style-type: none"> <li>• Extreme Pressure, multipurpose and adhesive grease.</li> <li>• Suitable for high to medium speed bearings in Food Processing Industry.</li> <li>• Roller and plain bearings.</li> <li>• Crimping machines.</li> </ul>	<ul style="list-style-type: none"> <li>• Good adhesiveness on metallic surfaces.</li> <li>• Provides excellent corrosion protection and water resistance.</li> </ul>	Aluminium Complex	00	120	-20 °C to +150 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XBDF A00	K00N-20			
NEVASTANE XMF 0				0				L-XBDF A0	K0N-20			
NEVASTANE XMF 1				1				L-FXBDF A1	KP1N-20			
NEVASTANE XMF 2				2				L-XBDF A2	KP2N-20			
NEVASTANE XS 80	<ul style="list-style-type: none"> <li>• Extreme Pressure, very high performances synthetic grease for high speed and very low temperatures applications in Food Processing Industry.</li> <li>• Bearings at low temperatures. Oven turbines.</li> <li>• Sterilisers. Freezing tunnels.</li> </ul>	<ul style="list-style-type: none"> <li>• Very low temperature.</li> <li>• Excellent water resistance.</li> <li>• Long service life.</li> <li>• Reduced energy consumption.</li> </ul>	Calcium Sulfonate Complex	1.5	80	-55 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XEFFB 1/2	KP1/2R-55			
NEVASTANE XS 220				1.5				220	-40 °C to +180 °C	NSF H1 ISO 21469 KOSHER HALAL	L-XDDIB 1/2	KP1/2R-40
NEVASTANE XS 320				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 mm<sup>2</sup>/s

 Available in Lube-Shuttle cartridges

 BIODEGRADABLE

 H1 suitable for incidental food contact

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**NEVASTANE**

# Services



## 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 TotalEnergies 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.



## TECHNICAL SUPPORT

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.

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# Appendix

TECHNICAL DATA					
MEASURING KINEMATIC VISCOSITY					
In the international measurement system, kinematic viscosity is expressed in mm <sup>2</sup> 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 <sup>2</sup> /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 <sup>2</sup> /s	Kinematic viscosity range at 40 °C in mm <sup>2</sup> /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 <sup>th</sup> 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					
<ul style="list-style-type: none"> <li>• HACCP: "Hazard Analysis and Critical Control Point". A risk analysis and critical control point method, in the Agrifood Industry.</li> <li>• HSE: Health, Safety, Environment.</li> <li>• FZG: Forschung für ZahnradGetriebe. Method for assessing the extreme pressure properties of lubricants, ISO 14635 standard.</li> <li>• PAG: Poly Alkylene Glycols.</li> <li>• PAO: Polyalphaolefins.</li> <li>• POE: Polyol Esters.</li> <li>• TOST: Turbine Oil Stability Test, ASTM D943 standard.</li> </ul>					

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

### **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 TotalEnergies cost of Ownership



### **References & OEMs**

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

### **Quality and environment**

TotalEnergies 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**

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



**TotalEnergies**

**Energizing performance. Every day**