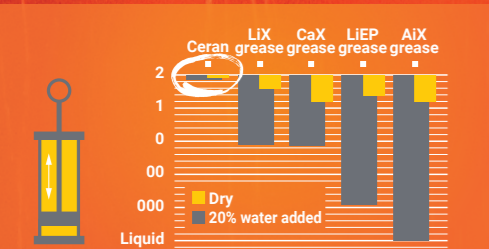


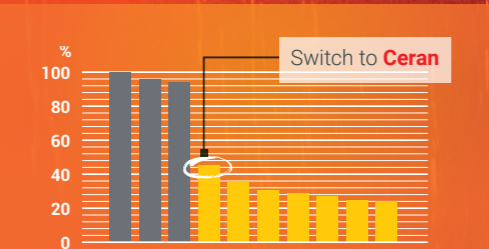
The benefits offered by TotalEnergies Lubrificants

Ceran is a unique solution for Rolling Mills Bearings

- Compared to standard greases, the **Ceran range** has a unique structure, providing outstanding grease properties, especially in regards to mechanical stability, corrosion inhibition, and water resistance.
- Ceran range** protects the friction surfaces from wear and reduces the friction coefficient of bearings. This is done in high temperatures, in the presence of sprayed cooling water. All of this ensures an increased equipment lifetime, along with a reduced downtime.
- This product can boast 40 years of delivering efficient solutions in the steel industry worldwide. It offers up to 4-5 times less bearings consumption when switching from the Li or LiX conventional greases.
- Comparative tests have shown that **Ceran**, when up against other greases, provides higher durability to bearings in the context of decreasing global grease consumption.
- Choosing **Ceran greases** will provide significant reduction in overall consumption, **reducing general maintenance costs!**



Mechanical stability in presence of water (ASTM D217)
NLGI grade change after 100 000 strokes.



Example: grease consumption decrease, KG/Month

TotalEnergies Lubrificants has launched the 5th generation of Ceran and is staying one step ahead of its competitors to meet present and future demands.

A major player
With our production, supply chain and commercial presence in more than 160 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
TotalEnergies Lubrificants cooperates with equipment manufacturers to create high-technology products for optimal performance and production of your machinery.



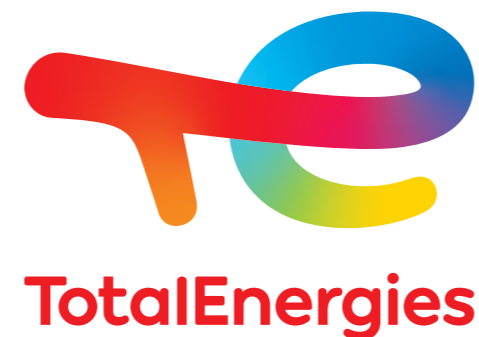
5 good reasons for choosing TotalEnergies Lubrificants

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

Quality and environment
TotalEnergies Lubrificants ISO 9001 and 14001 certifications are the guarantee of a long term commitment to quality and environment. From the initial design stage, our R&D teams seek to develop products that minimize toxicity risks and environmental impact.



Steel rolling mills
High performance industrial lubricants
Dedicated solutions to improve your productivity

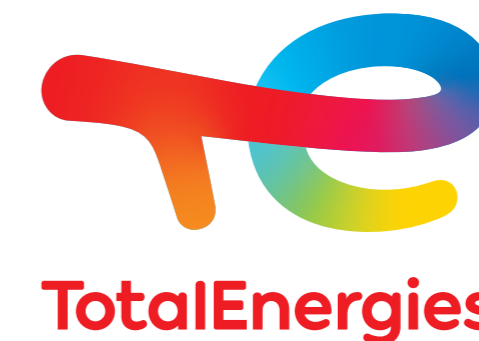


totalenergies.id



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STEEL ROLLING MILLS OFFER

Rolling mills are the key value-adding elements in the steel production process. Best-in-class lubricants by TotalEnergies Lubrificants increase the lifetime of your equipment without compromising the quality of finished products.

TotalEnergies Lubrificants has over 40 years experience in maximizing the economic benefits of its steel industry customers.

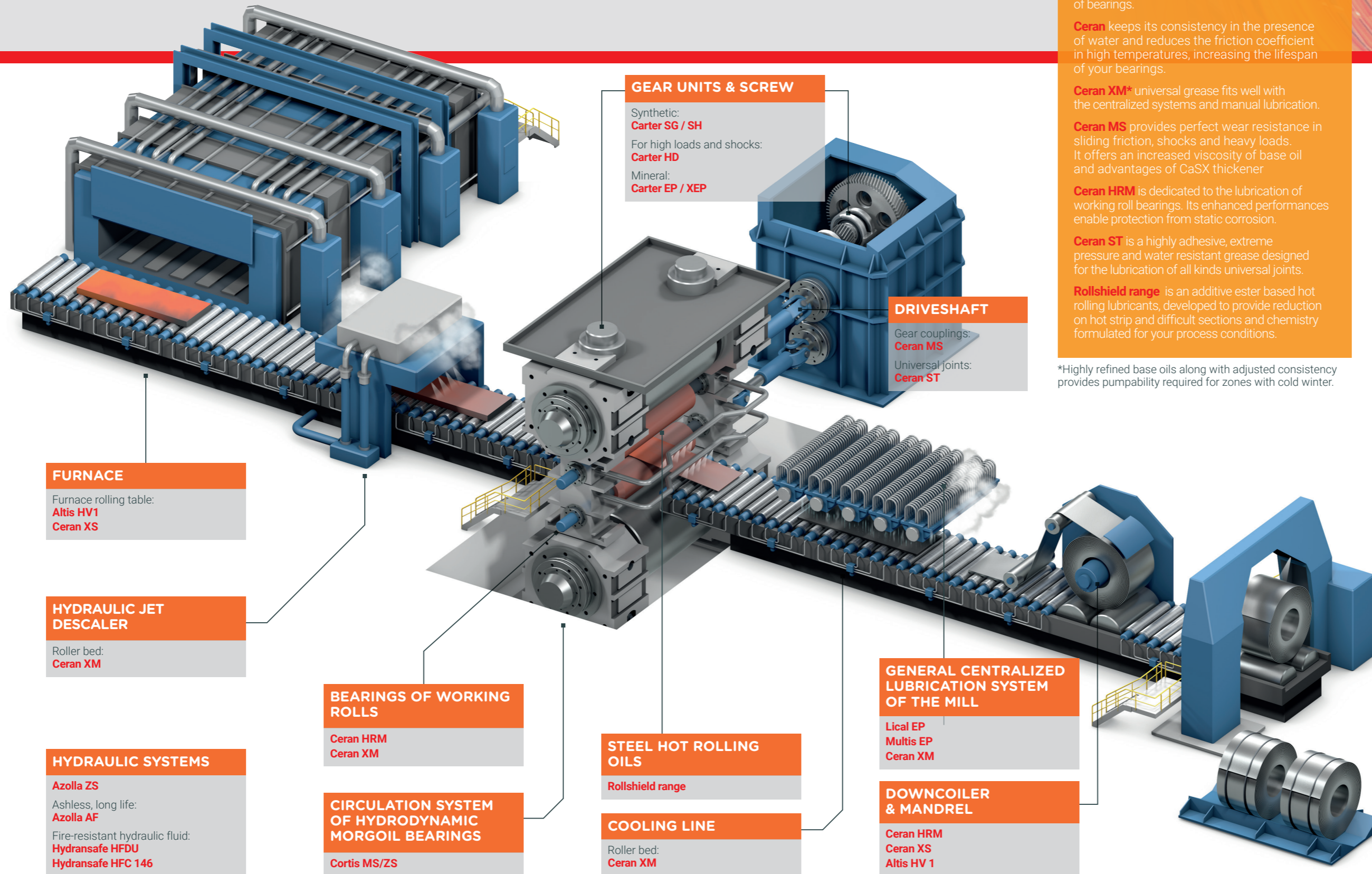
Your challenges

- Reduce downtime
- Decrease the consumption of spare parts
- Minimize lubricant consumption
- Reduce time and cost of maintenance works

Our solutions

Our outstanding products increase:

- Drain and regreasing intervals of your equipment
- Wear resistance of friction pairs
- Operation ratio by improving equipment reliability
- Mean time between failures
- Lubrication efficiency solving problems



FURNACE
Furnace rolling table:
Altis HV1
Ceran XS

HYDRAULIC JET DESCALER
Roller bed:
Ceran XM

HYDRAULIC SYSTEMS
Azolla ZS
Ashless, long life:
Azolla AF
Fire-resistant hydraulic fluid:
Hydransafe HFDU
Hydransafe HFC 146

BEARINGS OF WORKING ROLLS
Ceran HRM
Ceran XM

CIRCULATION SYSTEM OF HYDRODYNAMIC MORGIL BEARINGS
Cortis MS/ZS

STEEL HOT ROLLING OILS
Rollshield range

COOLING LINE
Roller bed:
Ceran XM

GEAR UNITS & SCREW
Synthetic:
Carter SG / SH
For high loads and shocks:
Carter HD
Mineral:
Carter EP / XEP

DRIVESHAFT
Gear couplings:
Ceran MS
Universal joints:
Ceran ST

GENERAL CENTRALIZED LUBRICATION SYSTEM OF THE MILL
Lical EP
Multis EP
Ceran XM

DOWNCOILER & MANDREL
Ceran HRM
Ceran XS
Altis HV 1

Ceran range is a perfectly adapted solution for rolling mills, with resistance to high temperatures (up to 200° C in the short term) and wear protection for the friction surfaces of bearings.

Ceran keeps its consistency in the presence of water and reduces the friction coefficient in high temperatures, increasing the lifespan of your bearings.

Ceran XM universal grease fits well with the centralized systems and manual lubrication.

Ceran MS provides perfect wear resistance in sliding friction, shocks and heavy loads. It offers an increased viscosity of base oil and advantages of CaSX thickener

Ceran HRM is dedicated to the lubrication of working roll bearings. Its enhanced performances enable protection from static corrosion.

Ceran ST is a highly adhesive, extreme pressure and water resistant grease designed for the lubrication of all kinds universal joints.

Rollshield range is an additive ester based hot rolling lubricants, developed to provide reduction on hot strip and difficult sections and chemistry formulated for your process conditions.

*Highly refined base oils along with adjusted consistency provides pumpability required for zones with cold winter.

To ensure the most appropriate application, TotalEnergies Lubrificants works with the major OEM's and has products listed and referenced by Danieli, SMS Group, Primetals, Voestalpine, Siemens, Uralmash.

GREASES

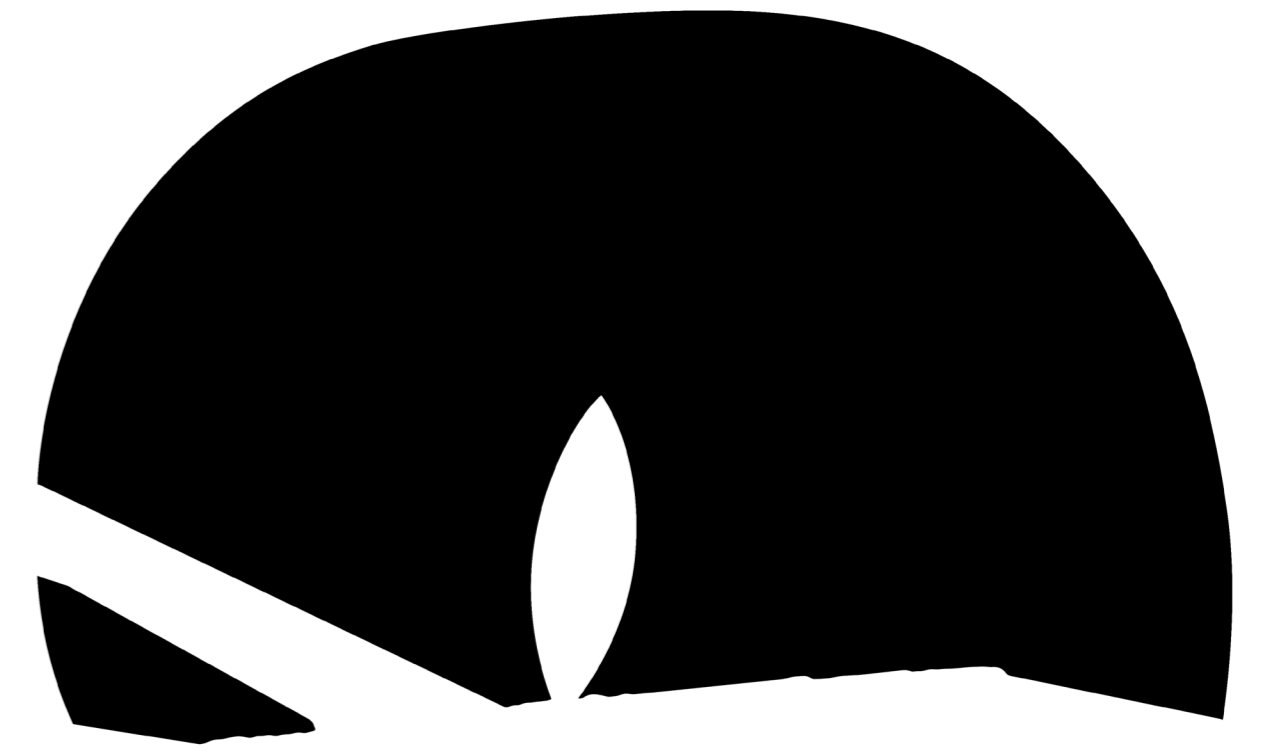
Applications	Product	Working conditions	Specific advantage	Thickener	NLGI grade	BO Viscosity	Operating temperature range	Specifications /DIN 51502
General centralized lubrication system of the mill	Lical EP 2	• High temperatures • Very slow rotation speed • High loads	• Multifunctional grease with reinforced performances: water resistance thanks to the Lica soap, and load resistance thanks to adjusted viscosity	Lithium / Calcium	2	190	-25 °C to 130 °C	KP2K-25
Bearings of work rolls Roughing stands Finishing stands (inc manual lubrication) Coilers mandrels	Ceran HRM	• Shocks • Extremely high loads in the presence of cooling water in bearings • Stand by corrosion effect • Absence of centralized lubrication	• Adjusted viscosity and consistency NLGI grade to cope with the most difficult conditions. • Protects bearings against corrosion when they stored after disassembling. • Provides sealing effect for bearings. • Can be used when bearings have poor seals.	Calcium Sulfonate Complex	2	420	-25 °C to 180 °C	KP2R-25
Coilers mandrels Reheating furnace Roller bed Doors bearings	Altis HV1	• High velocity • High temperature • Very high resistance to oxidation thanks to a non-metallic soap. • Slow rotation speed • High loads • High temperatures	• High resistance to the heat from coiled metal. Does not create deposits in pipelines • Good pumpability • Adapted to high-speed applications • Very high resistance to oxidation thanks to a non-metallic soap. • Ashless soap diminishing the risk of pipe clogging with high temperatures. • Longer lifetime in high temperatures. • High temperatures resistant soap. • High mechanical stability in humid atmospheres.	Polyurea	1	500	-20 °C to 180 °C	KP2R-20
Hydraulic jet descaler Cooling line for microstructure Roller bed Roughing and Finishing Mill Work rolls bearings (inc centralized lubrication)	Ceran XM 220 XM 460 XM 720	• High presence of intensively sprayed cooling water • Heat from the steel • High loads • Aggressive cooling water • Great variety of rotation speeds from rough to finishing stands • Pumpability at wide range of temperatures	• Multipurpose grease for steel industry with high mechanical stability in presence of water inherited due to CaSX thickener • Complete range of greases for wide range of speed and loads. • Excellent water resistance and behavior in high temperatures. • High pumpability due to adjusted consistency. • Provides sealing effect for bearings.	Calcium Sulfonate Complex	1.5	460 720	-25 °C to 180 °C -25 °C to 180 °C	KP1/2R-25 KP1/2R-25
Universal joints bearings of driveshaft	Ceran ST 2	• High loads together with centrifugal forces pushing out the grease	• Specific additive enhances the adhesivity to resist the centrifugal forces.	Calcium Sulfonate Complex	2	180	-25 °C to 180 °C	KP2R-25
Gear couplings of driveshafts Adjusting screws	Ceran MS	• Very high load and sliding friction • High temperature	• Contains solid friction modifiers to protect wearing surfaces from sliding friction. • Fits perfectly to units like screws, sliding bearings, slide ways, joints. • High extreme pressure resistance and weld load.	Calcium Sulfonate Complex	1.5	650	-20 °C to 180 °C	KPF1/2R-20

* The features mentioned above are average values obtained with some variability in production and do not constitute a specification. Above characteristics are mean values given as an information.

OILS

Applications	Product	Nature	Working conditions	Specific advantage	ISO VG	Specifications
Back up rolls Morgoil bearing	Cortis MS/ZS	Mineral	• Pollution of oil by cooling water • High loads at the oil film • High oil filterability requirements	• Quick water separation and good ageing resistance at high temperatures • Provides strong hydrodynamic oil film • Enhanced anti-foam performances • Compatible with main products on the market	220 to 460	• ISO 6743/1 • ISO 6743/2 • ISO 6743/6 • DIN 51536
	Carter EP 68 - 1000	Mineral		• High protection of opinions • Approved by major manufacturers	68 to 1000	• ISO 12925-1 CKD • DIN 51517-3 CLP • AGMA 9005-E02 EP • U.S. Steel 224 • Flender
	Carter HD	Mineral	• Shocks • High temperatures	• Micro-pitting resistance • Themic stability • Longer drain intervals	150 to 680	• DIN 51517-3 CLP • ISO 12925-1 CKD
Gear units Oil mist lubrication	Carter SH	Fully Synthetic - PAO		• Resistant to low or high temperatures • Longer drain intervals.	150 to 1000	• ISO 12925-1 CKD • Flender • FAG • SKF
	Carter SG	Synthetic PAG	• High temperatures • High loads • Low friction • Energy savings	• Very high viscosity index • Longer drain intervals	100 to 1000	• DIN 51517-3 CLP • PG • ISO 12925-CKT

* Typical kinematic viscosity of base oil at 40° C in mm²/s. Above characteristics are mean values given as an information.



**Steel
rolling mills**