



# SPECIAL LUBRICANTS & MAINTENANCE PRODUCTS

Film stretching industry

## BIAXIALLY ORIENTATED POLYMER FILMS

Biaxially orientated polymer films have several advantages over non treated ones like increased toughness, increased stiffness, enhanced clarity, improved resistance against oil and grease and increased barrier properties to water vapor and oxygen.

The biaxial orientation is achieved via treatment of the crude polymer film on specialized machines which perform a stretching in material direction and perpendicular to this (hence biaxial orientation).

Such polymers are used for highly transparent packaging films, multi-layer films, synthetic papers, high-shirk films, labels and more.

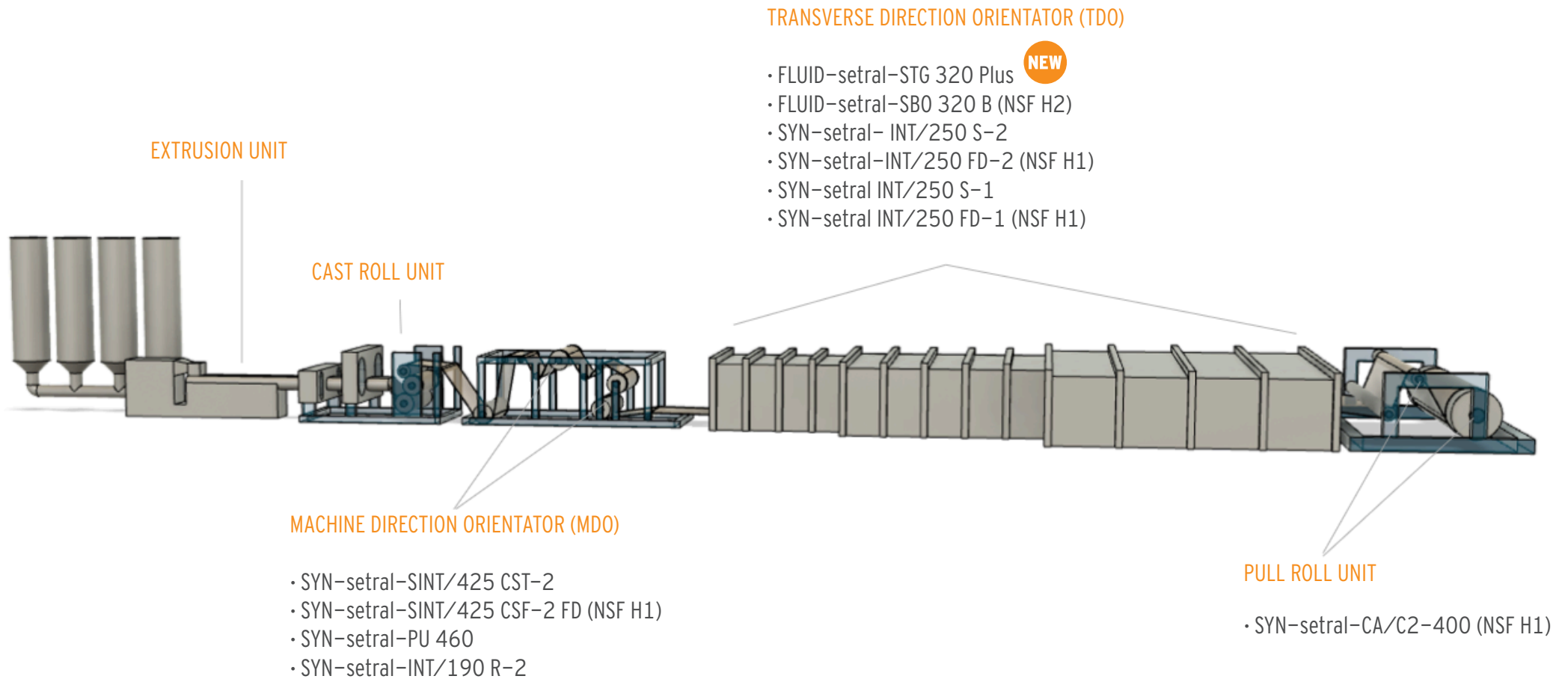
Lubrication of machine parts in film stretching machines like extrusion units, chains and bearings is complicated due to many factors. These are especially thermal loads, extreme pressure properties, external influences like water or chemical vapor, the compatibility with most common plastics and other challenging conditions. Some chain lubricants also lacquer after a certain time and hinder a trouble-free production.

Under the described complex production conditions most of the currently used conventional lubricants are overstrained. This leads to an undesirable lack of lubricant with following results: short maintenance intervals, scuffing, contamination, breaking of the polymer film etc. Furthermore, very often an extensive cleaning becomes necessary.

Therefore, setral offers a range of chemical resistant and high temperature special lubricants, with many other advantages:

- » Minimization of current costs  
(maintenance, operating and energy costs)
- » Reducing friction, wear and downtime
- » Prevent failures and improving film quality
- » Extend oil change intervals and lower lubrication consumption

## APPLICATION OVERVIEW



## Chain Lubrication (OIL)

## Chain Rail Joint (GREASE)

	FLUID-setral-STG 320 Plus <span style="background-color: orange; color: white; border-radius: 50%; padding: 2px 5px; font-weight: bold;">NEW</span>	FLUID-setral-SB0 320 B	SYN-setral-INT/250 S-2
APPLICATION	Especially developed for the lubrication of chain systems in BOPP film stretching equipment, also at high speed. Improved version of FLUID-setral-STG 320 with a better evaporation rate and a higher temperature range.	Especially developed for the lubrication of chain systems in BOPP film stretching equipment, also at high speed. Optimally suited for the production of films for the food industry (NSF H2-registered product).	For long-term lubrication of rolling and plain bearings and all sliding pairs susceptible to wear under extreme conditions. Excellently suited for the lubrication of plastic/plastic and plastic/metal pairings.
PROPERTIES	<ul style="list-style-type: none"> <li>• Extremely low evaporation losses</li> <li>• Adhesive additives prevent dripping and spinning-off</li> <li>• No tearing of the film if contaminated with common film materials</li> <li>• Constant film quality by constant lubrication film</li> <li>• Excellent penetration properties</li> </ul>	<ul style="list-style-type: none"> <li>• H2 registered</li> <li>• Extremely low evaporation losses</li> <li>• Adhesive additives prevent dripping and spinning-off</li> <li>• No tearing of the film if contaminated with common film materials</li> <li>• Constant film quality by constant lubrication film</li> <li>• Excellent penetration properties</li> </ul>	<ul style="list-style-type: none"> <li>• High load carrying ability</li> <li>• Extended relubrication cycles</li> <li>• Extremely low evaporation rate</li> <li>• Resistant against chemicals and aggressive media</li> <li>• Neutral to most plastics and elastomers</li> </ul>
TECHNICAL DATA	<ul style="list-style-type: none"> <li>• <b>Basis</b> Synthetic</li> <li>• <b>V40</b> 350 mm<sup>2</sup>/s</li> <li>• <b>Temperature range</b> -20 to +260°C</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> Synthetic</li> <li>• <b>V40</b> 320 mm<sup>2</sup>/s</li> <li>• <b>Temperature range</b> -20 to +260°C</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> PFPE</li> <li>• <b>V40</b> 480 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> -40 to + 260°C (short 280°C)</li> </ul>

## Chain Rail Joint (GREASE)

## Clips


	SYN-setral-INT/250 FD-2	SYN-setral-INT/250 S-1	SYN-setral-INT/250 FD-1
APPLICATION	For long-term lubrication of rolling and plain bearings and all sliding pairs susceptible to wear under extreme conditions, especially for food and pharmaceutical packaging.	For long-term lubrication of rolling and plain bearings and all sliding pairs susceptible to wear under extreme conditions. Excellently suited for the lubrication of plastic/plastic and plastic/metal pairings.	For long-term lubrication of rolling and plain bearings and all sliding pairs susceptible to wear under extreme conditions, especially for food and pharmaceutical packaging.
PROPERTIES	<ul style="list-style-type: none"> <li>• H1 registered / Kosher and Halal certified</li> <li>• High load carrying ability</li> <li>• Free from animal ingredients</li> <li>• Free from allergens</li> <li>• Resistant against chemicals and aggressive media</li> <li>• Neutral to most plastics and elastomers</li> </ul>	<ul style="list-style-type: none"> <li>• High load carrying ability</li> <li>• Extended relubrication cycles</li> <li>• Extremely low evaporation rate</li> <li>• Resistant against chemicals and aggressive media</li> <li>• Neutral to most plastics and elastomers</li> </ul>	<ul style="list-style-type: none"> <li>• H1 registered / Kosher and Halal certified</li> <li>• High load carrying ability</li> <li>• Free from animal ingredients</li> <li>• Free from allergens</li> <li>• Resistant against chemicals and aggressive media</li> <li>• Neutral to most plastics and elastomers</li> </ul>
TECHNICAL DATA	<ul style="list-style-type: none"> <li>• <b>Basis</b> PFPE</li> <li>• <b>V40</b> 500 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> -40 to + 260°C (short 280°C)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> PFPE</li> <li>• <b>V40</b> 480 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> -40 to + 260°C (short 280°C)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> PFPE</li> <li>• <b>V40</b> 500 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 1</li> <li>• <b>Temperature range</b> -40 to + 260°C (short 280°C)</li> </ul>

## Roller bearings in roatry feed through (GREASE)

	SYN-setral-SINT/425 CST-2	SYN-setral-SINT/425 CSF-2 FD	SYN-setral-PU 460
APPLICATION	For slide and roller bearings at slow speed, slide bars and friction pairings at high temperatures. Especially for the lubrication of friction pairings under extreme conditions and high wear potential, difficult ambience like moisture, acids, alkali etc.	Especially for the lubrication of friction pairings under extreme conditions and high wear potential, difficult ambience like moisture, acids, alkali etc.. For slide and roller bearings at low speed, slide bars and friction pairings at high temperatures also in the food and pharmaceutical industry.	Especially developed for the lubrication of sliding and rolling bearings working under severe conditions like high temperatures, water, high loads and low to medium speed.
PROPERTIES	<ul style="list-style-type: none"> <li>• Miscible with most high-temperature greases based on PFPE/PTFE and PFPE/Ester/PU as well as further combinations</li> <li>• More efficient than common PFPE greases</li> <li>• Highest pressure and temperature stability</li> <li>• Compatible with most plastics and elastomeres</li> <li>• Resistant against water, steam, acids and alkalines</li> </ul>	<ul style="list-style-type: none"> <li>• H1 registered / Kosher and Halal certified</li> <li>• Miscible with most high-temperature greases based on PFPE/PTFE and PFPE/Ester/PU as well as further combinations</li> <li>• Highest pressure and temperature stability</li> <li>• Lower density compared to regular PFPE greases</li> <li>• Compatible with most plastics and elastomeres</li> <li>• Resistant against water, steam, acids and alkalines</li> </ul>	<ul style="list-style-type: none"> <li>• High thermal stability</li> <li>• Excellent load carrying ability</li> <li>• Extended relubrication cycles</li> </ul>
TECHNICAL DATA	<ul style="list-style-type: none"> <li>• <b>Basis</b> Synthetic</li> <li>• <b>V40</b> 425 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> - 20 to + 220°C (short 240°C)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> Synthetic</li> <li>• <b>V40</b> 425 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> - 20 to + 220°C (short 240°C)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Basis</b> PAO</li> <li>• <b>V40</b> 460 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 1-2</li> <li>• <b>Temperature range</b> - 30 to + 180°C (short 200°C)</li> </ul>

## Roller bearings in roatry feed through (GREASE)

## Roller bearings (GREASE)

	SYN-setral-INT/190 R-2		SYN-setral-CA/C2-400 FD
APPLICATION	Especially developed for the lubrication of rolling and plain bearings and other elements in applications with a particularly wide temperature range and/or aggressive ambience.		Best lubricant for excellent wear and corrosion protection in bearing application. This lubricant has great performance in slow speed and high load roller bearings, joints, linear guides and other slide surfaces on machines and equipment in the food and pharma industry.
PROPERTIES	<ul style="list-style-type: none"> <li>• Especially wide temperature application range</li> <li>• Resistant against aggressive media</li> <li>• Long re-lubrication intervalls, even at high temperatures</li> <li>• Insoluble in solvents and acids</li> <li>• Nonflammable</li> <li>• Compatible with most plastics and elastomers</li> </ul>		<ul style="list-style-type: none"> <li>• H1 registered / Kosher and Halal certified, free from allergens</li> <li>• Very high wear and corrosion protection, high load carrying ability</li> <li>• Long re-lubrication intervalls, even at high temperatures</li> <li>• Compatible with common plastics, elastomeres and paints</li> <li>• Very good adhesion property</li> <li>• Highly resistant to cold, hot and salt water</li> <li>• Resistance to load and shock load</li> </ul>
TECHNICAL DATA	<ul style="list-style-type: none"> <li>• <b>Basis</b> PFPE</li> <li>• <b>V40</b> 190 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> - 45 - + 250°C</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Basis</b> PAO</li> <li>• <b>V40</b> 400 mm<sup>2</sup>/s</li> <li>• <b>NLGI</b> 2</li> <li>• <b>Temperature range</b> - 30 - + 170°C</li> </ul>

MACHINE ELEMENT	COMPONENT	PRODUCT	BASE OIL	BASE OIL VISCOSITY AT 40 °C [mm <sup>2</sup> /s]	NLGI	SOILD LUBRCANTS / THICKENER	TEMPERATURE RANGE [°C]	DESCRIPTION
Cast roll unit MDO TDO Pull roll unit	Bearing Cardan joint Adjusting spindle Inlet Guideway	<b>MI-setral-CA/C2-180</b>	Mineral oil	220	1-2	Calcium sulfonate complex	-30 to +160	Media-resistant special grease with excellent wear and corrosion protection
		<b>MI-setral-CA/C2-400</b>	Mineral oil	460	1-2	Calcium sulfonate complex	-25 to +150 (short +180)	
Extrusion unit Cast roll unit MDO TDO Pull roll unit	Motor bearing Service position spindle Bearing Cardan joint Roll adjustment	<b>MI-setral-LI/PD 2</b>	Mineral oil	120	2	Lithium	-30 to +140	High-pressure grease without solids, with EPL additive technology
		<b>MI-setral-LI/PD 2-400</b>	Mineral oil	400	2	Lithium	-20 to +140	
Pull roll unit	Open gear	<b>MI-setral-OG/O-800</b>	Mineral oil	800	0	Organic / Aluminum omplex	-20 to +150 (short +180)	Solid lubricant containing fluid grease for long-term lubrication of open gears
Cast roll unit MDO	Bearing	<b>MI-setral-PU 460</b>	Mineral oil	460	1	Urea	-20 to +180	High-temperature grease
MDO TDO Pull roll unit	Cardan joint Spindle Bearing	<b>SYN-setral-CA/C2 FD</b>	Synthetic	100	2	Calcium sulfonate complex	-25 to +160 (short +180)	Mult-purpose and media-resistant H1 high-temperature grease with high wear and corrosion protection
		<b>SYN-setral-CA/C2-400 FD</b>	Synthetic	400	2	Calcium sulfonate complex	-30 to +170	
		<b>SYN-setral-CA/C2-80</b>	Synthetic	80	1-2	Calcium sulfonate complex	-55 to +150	
Pull roll unit	Fast applicator roller bearing	<b>SYN-setral-HSR</b>	Synthetic	15	2	Lithium	-50 to +120	Semi-synthetic special grease for slide and roller bearings operating at high speed
MDO	Roller bearing in rotary feed through	<b>SYN-setral-INT/190 R-2</b>	PFPE	190	2	PTFE	-45 to +250	Fully synthetic lifetime lubricant with excellent low- and high-temperature properties
TDO	Chain rail joint / inlet chain wheel Adjustment spindle Clip Chain wheel-bearing	<b>SYN-setral-INT/250 FD ...series</b>	PFPE	500	00 0 1 2	PTFE	-40 to +260 (short +280)	H1 high-temperature grease for long-term lubrication in the food and pharmaceutical industry, particularly at high temperatures and aggressive ambience
		<b>SYN-setral-INT/250 S ...series</b>	PFPE	500	1 2 3	PTFE	-40 to +260 (short +280)	Fully synthetic special grease for long-term lubrication, stable at high temperature and aggressive ambience
Extrusion unit MDO TDO MDO	Motor bearing Bearing Roller bearing in rotary feed through	<b>SYN-setral-PU 2</b>	Synthetic	100	2	Urea	-40 to +180	Fully synthetic low and high-temperature grease for long-term lubrication
		<b>SYN-setral-PU 460</b>	Mineral oil	460	1	Urea, withe solid lubricants	-30 to +180 (short +200)	
MDO TDO	Roller bearing in rotary feed through Bearing Adjustments spindle	<b>SYN-setral-SINT/425 CSF-2 FD</b>	Synthetic	425	2	Special	-20 to +220 (short +240)	High-temperature special grease based on an innovative lubrication technology
		<b>SYN-setral-SINT/425 CST-2</b>	Synthetic	425	2	Special	-20 to +220 (short +240)	Synthetic high-temperature special grease based on an innovative lubrication technology

GREASE



MACHINE ELEMENT	COMPONENT	PRODUCT	BASE OIL	BASE OIL VISCOSITY AT 40 °C [mm <sup>2</sup> /s]	NLGI	SOILD LUBRCANTS / THICKENER	TEMPERATURE RANGE [°C]	DESCRIPTION
Pull roll unit	Reciprocating piston compressor	<b>COVA-setral-SE ...series</b>	Synthetic	100 150	-	-	-30 to +200	Fully synthetic compressor and vacuum pump oil
	Air compressor	<b>COVA-setral-SHF FD ... series</b>	Synthetic	32 46 68 100 150	-	-	-25 to +160	Fully synthetic H1-special oil for the application in piston compressors and vacuum pumps
		<b>COVA-setral-SMG ...series</b>	Synthetic	32 46 68	-	-	-35 to +120 (short +150)	Fully synthetic screw compressor oil of the latest generation especially for very long relubrication intervals
TDO	Roller chain	<b>FLUID-setral-INT/220</b>	Synthetic	220	-	-	-40 to +250	High performance PFPE fluid for various applications
	Sliding chain Roller chain	<b>FLUID-setral-STG 320 Plus</b>	Synthetic	350	-	-	-20 to +260	High-temperature chain oil of the latest generation, especially developed for chains in BOPP film stretching equipment
		<b>FLUID-setral-SB0 320 B</b>	Synthetic	320	-	-	-20 to +260	
	Chain	<b>FLUID-setral-SHT 55 S</b>	Synthetic	55	-	-	-25 to +250	Fully synthetic low-viscous high-temperature chain oil with EP-additives
MDO	Feeding chain	<b>FLUID-setral-SHT 100 K</b>	Synthetic	100	-	-	-40 to +250	Fully synthetic oil with modern EP-additives and anti-oxidants for high temperatures
Extrusion unit Cast roll unit	Extruder gear box Cast roller drive	<b>MI-setral-GEAR/EPL ...series</b>	Mineral oil	150 220 320 460 380	-	-	-10 to +120	Mineral oil based high-performance gear oil with selected EPL additive system. Also suitable for the lubrication of oil lubricated bearings
Extrusion unit Cast roll unit TDO Pull roll unit	Gear box Drive system	<b>SYN-setral-GEAR ...FD series</b>	PAO	150 220 320 460 680	-	-	-40 to +140	Fully synthetic H1 high-performance gear oil for the food and pharmaceutical industry
		<b>SYN-setral-GEAR N ...series</b>	PAO	150 220 320 460 680	-	-	-40 to +150 (short +180)	Fully synthetic high performance gear oil with EP additives
Extrusion unit MDO TDO Pull roll unit	Gear box Bearing	<b>SYN-setral-GEAR/PGB ... FD series</b>	PAG	150 220 320 460 680	-	-	-30 to +140 (short +150)	Fully synthetic H1 high performance gear oil based on polyalkylene glycol for the food and pharmaceutical industry. Also suitable for the lubrication of oil lubricated bearings
		<b>SYN-setral-GEAR/PGM ...series</b>	PAG	150 220 320 460 680	-	-	-30 to +180	Fully synthetic high performance gear oil based on polyalkylene glycol
MDO	Heat transfer	<b>FLUID-setral-THERM ...series</b>	Synthetic	550 620 660	-	-	-10 to +315	Heat transfer fluid

	MACHINE ELEMENT	COMPONENT	PRODUCT	BASE OIL	BASE OIL VISCOSITY AT 40 °C [mm <sup>2</sup> /s]	NLGI	SOILD LUBRCANTS / THICKENER	TEMPERATURE RANGE [°C]	DESCRIPTION
PASTE	Extrusion unit	Extruder screw shaft	<b>MI-setral-HPP 1200 S</b>	Mineral oil	490	1-2	Organic	-30 to +1200	Special paste for high thermal and extreme mechanical loads
	Cast roll unit Pull roll unit	Service position spindle Bearings	<b>SYN-setral-6 B</b>	Synthetic	100	2-3	Organic	-30 to +250	White assembly and lubricating paste, especially to avoid fretting corrosion
	MDO	Extruder screw shaft	<b>SYN-setral-FGP</b>	Synthetic	75	2	Inorganic / Organic	-30 to +1200	H1 high-temperature paste for the food and pharmaceutical industry
	TDO Pull roll unit	Adjustment spindle	<b>SYN-setral-WKT</b>	Synthetic	780	1-2	Organic	-30 to +1000	Fully synthetic and metal-free high-temperature paste
	General	General cleaning	<b>CLEAN-setral-AN/U</b>	Synthetic	-	-	-	-40 to +40	High-performance cleaner and degreaser, highly effective and fast evaporating
MAINTENANCE	TDO Pull roll unit	TDO Pull roll unit	<b>DIO-setral-57 N</b>	Synthetic	-	-	-	-200 to +450 (short +500)	Air-drying MoS <sub>2</sub> based dry lubricant
		Rail cleaning	<b>CLEAN-setral-COVA</b>	Synthetic	-	-	-	-30 to +160	Cleaning dilution for screw compressors
	Pull roll unit	Cleaning agent	<b>CLEAN-setral-INT/648</b>	Synthetic	-	-	-	-20 to +70	H1-Special cleaner/thinner on PFPE basis
		Release agent	<b>SI-setral-5 X</b>	Silicone oil	-	-	-	-40 to +200	Fully synthetic and transparent H1 release agent based on silicone oil
		Release agent	<b>PRO-setral-KS</b>	Synthetic	-	-	-	-40 to +80	Low-viscous special fluid for corrosion protection of metallic surfaces
	Extrusion unit Pull roll unit	Corrosion protection	<b>PRO-setral-PL 941 (Spray)</b>	Synthetic	-	-	-	-20 to +120	Grease with anti-corrosion properties for temporary protection

Successful in more than 80 countries with satisfied customers



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