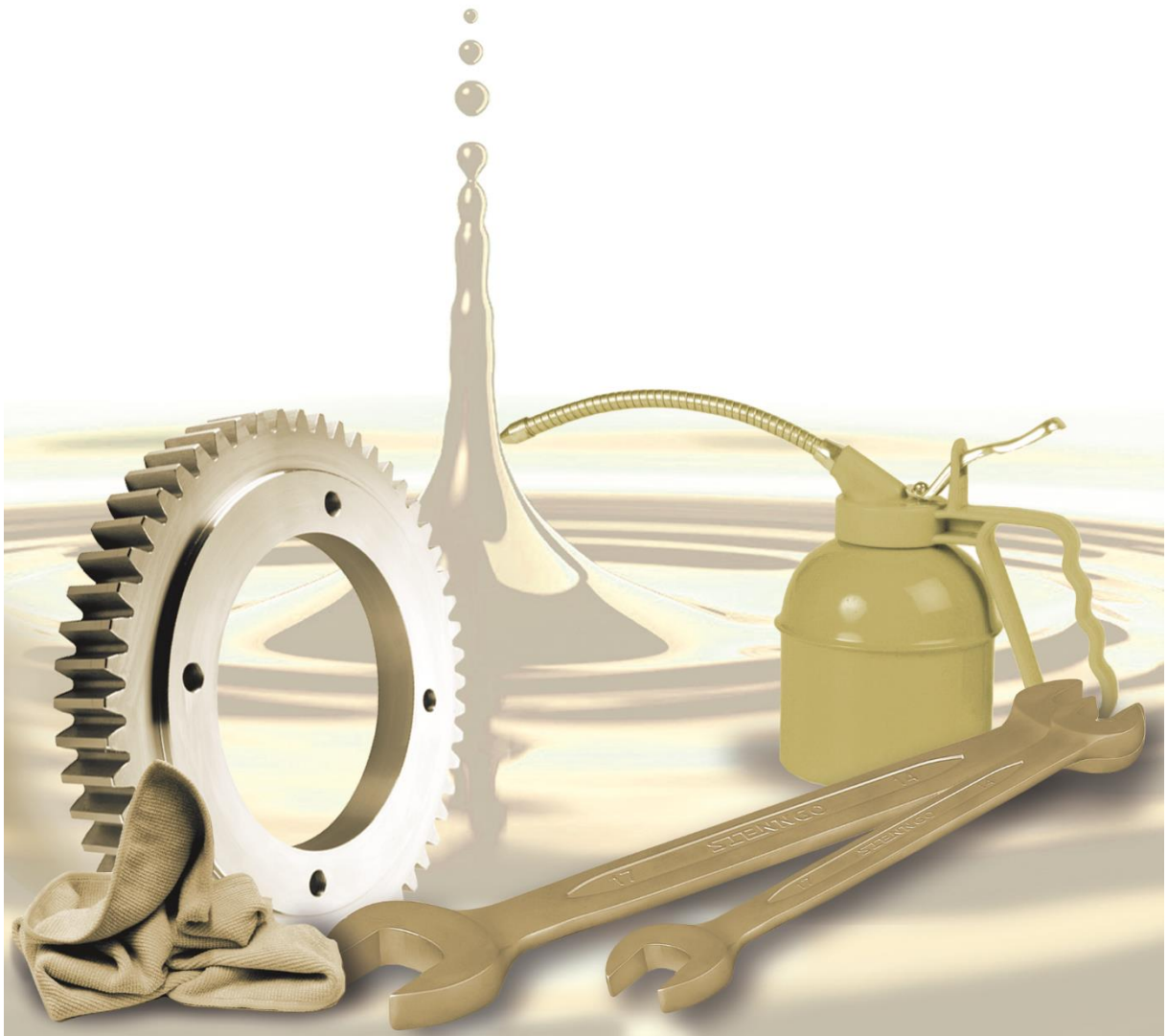


Table of lubricants

of thyssenkrupp Industrial Solutions AG



Issue: 01/2020

- OU Cement Technologies, Münsterland location, Germany
- BU Mining Technologies/
OU Mineral Processing, Münsterland location, Germany
- BU Mining Technologies/
OU Materials Handling, St. Ingbert-Rohrbach, Germany
- BU Mining Technologies/
OU Mining Systems, Essen, Germany

1 Safety instructions

1.1 Safety instructions



WARNING

Contact with lubricants

Contact with lubricants may cause skin irritation and allergies.

- I. Be sure to observe the manufacturer's safety data sheet.
- II. Wear personal protective equipment.
- III. Never inhale vapours. Always ensure that the workplace is sufficiently ventilated.
- IV. Avoid skin contact. If skin contact has occurred, wash the skin thoroughly.
- V. Avoid contact with eyes. If contact with eyes has occurred, thoroughly rinse the eyes with plenty of water and, if necessary, consult a doctor.



CAUTION

Improper handling of lubricants

Lubricants such as greases and oils may contain toxic substances. If lubricants are released into the environment, they may harm humans, animals and plants.

- I. Store, use and dispose of lubricants in an environmentally-friendly manner.
- II. When handling lubricants, be sure to comply with the applicable national regulations for the protection of the environment.



NOTICE

Insufficient lubrication or incorrect lubricant

Insufficient lubrication or incorrect lubricant may cause damage to machine components.

- I. Relubricate the machine with the necessary amount of lubricant at regular intervals.
- II. Be sure to comply with the specifications on the lubricants, quantity of lubricants and lubrication intervals stipulated in the machine manuals of thyssenkrupp Industrial Solutions and in the subsupplier's documentation.
- III. Only use lubricants stipulated in the thyssenkrupp Industrial Solutions table of lubricants.

1.2 Regarding these instructions



Instructions regarding the lubrication points, lubricant quantities, lubrication intervals and lubricant reference numbers can be found in the *Lubrication* chapter of thyssenkrupp Industrial Solutions manuals.

On the basis of the lubricant reference numbers, all manufacturers and lubricants permitted for a machine can be identified in the table of lubricants. It is the responsibility of the lubricant supplier to select appropriate lubricants. thyssenkrupp Industrial Solutions accepts no liability for the correctness of this data. If you wish to use a lubricant that is not listed in the table of lubricants, you have to obtain approval for this from thyssenkrupp Industrial Solutions.

1.3 Storing lubricants

- Store lubricants in a dark, cool and dry place.
- Ensure that drums, canisters, oil cans and grease guns are marked such that an accidental mixing of lubricants can be excluded.
- Carefully close the container immediately after removing lubricant. Store the containers in dry indoor rooms in order to prevent contamination.
- Be sure to observe the lubricant manufacturers' specifications regarding the service life of the lubricants.

1.4 Troubleshooting

- Cleanliness when handling lubricants reduces the number of malfunctions of the machine!
- Mixing of lubricants must always be avoided. Mixing of synthetic (polyethylene glycols) and mineral-oil-based lubricants can lead to direct damage.
- Overlubrication of bearings may result in heating up when the bearings are operated at high speeds.
- Be sure to comply with the stipulated lubricant quantity when regreasing.
- Synthetic lubricants may attack seals and varnishes and may only be used if they are approved in the operating manual or agreed with our division.
- Prevent water ingress as far as possible. The service life of mechanical components could be drastically reduced.

Fault	Cause	Elimination
The oil level is too low		<ul style="list-style-type: none"> ● Top up with lubricant of the same type ● If it is intended to use a different type of oil when topping up: carry out an oil change
The lubricating oil foams strongly	Oil level too high, or dirt or water in the oil	<ul style="list-style-type: none"> ● Check the oil level (without foam) ● Carry out an oil change, including flushing
The lubricating oil is milky	Water in the lubricating oil	<ul style="list-style-type: none"> ● Find and eliminate the cause and carry out an oil change
Wrong type of oil used when topping up		<ul style="list-style-type: none"> ● In case of incompatibility: carry out an oil change, including flushing ● In case of compatible types: have the viscosity and the lubrication properties checked, or replace the oil at the next opportunity
The lubricating oil is dark	Abrasion, contaminants or excessive oil ageing	<ul style="list-style-type: none"> ● Check wear using a magnet and carry out a flow test ● Check for an acidic or a burnt smell in comparison with the fresh oil ● In case of doubt: carry out an oil analysis

Fault	Cause	Elimination
The lubricating oil smells acidic or burnt	The service life of the oil has been exceeded	<ul style="list-style-type: none"> ● Carry out an oil change, including flushing
The lubricating oil is dirty		<ul style="list-style-type: none"> ● When topping up: ensure absolute cleanliness
The lubricating oil contains particles		<ul style="list-style-type: none"> ● Check wear using a magnet and carry out a flow test ● Carry out an oil analysis and, if necessary, carry out an oil change, including flushing
Deposits in the sump or on internal machine components	Deposits can form, for example, from dirt, precipitation from the oil or excessive ageing of the oil filling, with corresponding precipitation of the ageing products	<ul style="list-style-type: none"> ● Carry out an oil analysis ● Carry out an oil change, including flushing
The lubricating grease in the bearing is hard	Increased temperature, high pressure, vibration load or late relubrication	<ul style="list-style-type: none"> ● Remove grease residues ● Compare the grease type, the relubrication intervals and the relubrication quantities with the application conditions
The supply bores and/or piping are clogged		<ul style="list-style-type: none"> ● Heat up the supply bores and/or piping, and flush using low-viscosity oil ● Replace the piping, if necessary
Lubricating grease is leaking from the bearing	The temperature for the type of grease used is too high, or the grease is being mixed with water during use	<ul style="list-style-type: none"> ● Check the grease type – use a more water-resistant/temperature-resistant type

2 Table of lubricants

HLP mineral-oil-based hydraulic oils acc. to DIN 51524 part 2			
Reference number	3	4	5
Viscosity	VG 32	VG 46	VG 68
Minimum temperature range	-25 °C to +80 °C	-25 °C to +80 °C	-20 °C to +80 °C
ARAL	Vitam GF 32	Vitam GF 46	Vitam GF 68
AVIA / BANTLEON	Avia Fluid RSL 32	Avia Fluid RSL 46	Avia Fluid RSL 68
BECHEM	BECHEM Staroil NR 32	BECHEM Staroil NR 46	BECHEM Staroil NR 68
BRUGAROLAS	Fluid Drive HM-32	Fluid Drive HM-46	Fluid Drive HM-68
CASTROL	Hyspin AWS 32	Hyspin AWS 46	Hyspin AWS 68
CASTROL HP	Tribol HM 943/32	Tribol HM 943/46	Tribol HM 943/68
CHEVRON	Rando HD 32	Rando HD 46	Rando HD 68
ENI	OSO 32	OSO 46	OSO 68
FUCHS PETROLUB SE	RENOLIN B 10	RENOLIN B 15	RENOLIN B 20
KLÜBER	Lamora HLP 32	Lamora HLP 46	Lamora HLP 68
KRAFFT	FH – 32 EP	FH – 46 EP	FH – 68 EP
LUKOIL	Geyser ST 32	Geyser ST 46	Geyser ST 68
MOBIL	Mobil DTE 24 Ultra	Mobil DTE 25 Ultra	Mobil DTE 26 Ultra
PETRONAS	Hydraulic 32	Hydraulic 46	Hydraulic 68
PETRO-CANADA	Hydrex AW 32	Hydrex AW 46	Hydrex AW 68
REPSOL	TELEX E 32	TELEX E 46	TELEX E 68
SHELL	Tellus S 2 MX 32	Tellus S2 MX 46	Tellus S 2 MX 68
TOTAL	Azolla ZS 32	Azolla ZS 46	Azolla ZS 68

HLPD mineral-oil-based hydraulic oils with detergent additives, acc. to DIN 51524			
Reference number	12	13	14
Viscosity	VG 32	VG 46	VG 68
Minimum temperature range	-25 °C to +80 °C	-25 °C to +80 °C	-20 °C to +80 °C
ARAL	Vitam DE 32	Vitam DE 46	Vitam DE 68
AVIA / BANTLEON	Avia Fluid HLPD 32	Avia Fluid HLPD 46	Avia Fluid HLPD 68
	Avilub Hydrauliköl HLPD 32	Avilub Hydrauliköl HLPD 46	
BECHEM	BECHEM Hydrostar 32 D	BECHEM Hydrostar 46 D	BECHEM Hydrostar 68 D
BRUGAROLAS	Fluid Drive HM-D 32	Fluid Drive HM-D 46	Fluid Drive HM-D 68
CASTROL	Hyspin DSP 32	Hyspin DSP 46	Hyspin DSP 68
ENI	OSO-D 32	OSO-D 46	OSO-D 68
FUCHS PETROLUB SE	RENOLIN MR 10	RENOLIN MR 15	RENOLIN MR 20
KRAFFT		HIDROP HV - 46	HIDROP HV - 68
LUKOIL	Geyser DZF 32	Geyser DZF 46	Geyser DZF 68
MOBIL	Mobil Hydraulic HLPD 32	Mobil Hydraulic HLPD 46	Mobil Hydraulic HLPD 68
PETRONAS	Hydraulic HLPD 32	Hydraulic HLPD 46	Hydraulic HLPD 68
PETRO-CANADA		Hydrex DT 46	
REPSOL			TELEX HLPD 68
SHELL	Tellus S 2 MA 32	Tellus S 2 MA 46	
TOTAL	Azolla DZF 32	Azolla DZF 46	Azolla DZF 68

HVLP mineral-oil-based hydraulic oils acc. to DIN 51524-3			
Reference number	15	16	17
Viscosity	VG 32	VG 46	VG 68
Minimum temperature range	-25 °C to +80 °C	-25 °C to +80 °C	-20 °C to +80 °C
ARAL	Vitam HF 32	Vitam HF 46	
AVIA / BANTLEON	Avia Fluid HVI 32	Avia Fluid HVI 46	Avia Fluid HVI 68
BECHEM		BECHEM Staroil HVI 46	
BRUGAROLAS	BESLUX DIVOL HV-32	BESLUX DIVOL HV-32	BESLUX DIVOL HV-32
CASTROL	Hyspin AWH-M 32	Hyspin AWH-M 46	Hyspin AWH-M 68
CHEVRON	Rando HDZ 32	Rando HDZ 46	Rando HDZ 68
ENI	Arnica 32	Arnica 46	Arnica 68
FUCHS PETROLUB SE	RENOLIN B 32 HVI	RENOLIN B 46 HVI	RENOLIN B 68 HVI
KRAFFT	FHV 32	FHV 46	FHV 68
LUKOIL	Geyser LT 32	Geyser LT 46	Geyser LT 68
MOBIL	Mobil DTE 10 Excel 32	Mobil DTE 10 Excel 46	Mobil DTE 10 Excel 68
PETRONAS	Hydraulic HV 32	Hydraulic HV 46	Hydraulic HV 68
PETRO-CANADA	Hydrex MV 32	Hydrex MV 46	Hydrex MV 68
REPSOL	TELEX HVLP 32	TELEX HVLP 46	TELEX HVLP 68
SHELL	Tellus S2 VX 32	Tellus S2 VX 46	Tellus S2 VX 68
TEXACO	Hydraulic Oil HDZ 32	Hydraulic Oil HDZ 32	Hydraulic Oil HDZ 32
TOTAL	Equavis ZS 32	Equavis ZS 46	Equavis ZS 68

CLP mineral-oil-based lubricating oils acc. to DIN 51517-3						
Reference number	22	23	24	25	26	27
Viscosity	VG 100	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-20 °C to +80 °C	-20 °C to +80 °C	-15 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C
ADDINOL		Gear Oil 150 F	Gear Oil 220 F	Gear Oil 320 F	Gear Oil 460 F	Gear Oil 680 F
			ECO GEAR 220 M	ECO GEAR 320 M	ECO GEAR 460 M	ECO GEAR 680 M
AEGEAN OIL SA		VALESCO EP ISSO VG 150	VALESCO EP ISSO VG 220	VALESCO EP ISSO VG 320	VALESCO EP ISSO VG 460	
AVIA / BANTLEON		Avilub Gear RSX-F 150	Avilub Gear RSX-F 220	Avilub Gear RSX-F 320	Avilub Gear RSX-F 460	Avilub Gear RSX-F 680
BALMEROL Balmer Lawrie		Balmerol Protogear AM 150	Balmerol Protogear AM 220	Balmerol Protogear AM 320		
BayWa AG		TECTROL GEAR CLP PLUS 150	TECTROL GEAR CLP PLUS 220	TECTROL GEAR CLP PLUS 320	TECTROL GEAR CLP PLUS 460	
BHARAT PETROLEUM			MAK Amocam Plus 220	MAK Amocam Plus 320	MAK Amocam Plus 460	MAK Amocam Plus 680
BRUGAROLAS	Beslux Gear XPM 100	Beslux Gear XPM 150	Beslux Gear XPM 220	Beslux Gear XPM 320	Beslux Gear XPM 460	Beslux Gear XPM 680
CASTROL		Alpha SP 150	Alpha SP 220	Alpha SP 320	Alpha SP 460	Alpha SP 680
		Optigear BM 150	Optigear BM 220	Optigear BM 320	Optigear BM 460	
CEPSA			ENGRANAJES XMP 220	ENGRANAJES XMP 320	ENGRANAJES XMP 460	
				AEROGEAR 320		
CALTEX, Chevron Texaco		Meropa XL 150	Meropa XL 220	Meropa XL 320	Meropa XL 460	Meropa XL 680
		Meropa MG 150	Meropa MG 220			
				Gearlube F 320		
COGELSA			ULTRAGEAR EP 220	ULTRAGEAR EP 320	ULTRAGEAR EP 460	ULTRAGEAR EP 680
ENGEN Petroleum Ltd.		Gengear XEP 150	Gengear XEP 220	Gengear XEP 320	Gengear XEP 460	Gengear XEP 680
ENI S.P.A.		Blasia FMP 150	Blasia FMP 220	Blasia FMP 320	Blasia FMP 460	

CLP mineral-oil-based lubricating oils acc. to DIN 51517-3						
Reference number	22	23	24	25	26	27
Viscosity	VG 100	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-20 °C to +80 °C	-20 °C to +80 °C	-15 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C
FUCHS PETROLUB SE		RENOLIN CLP 150	RENOLIN CLP 220	RENOLIN CLP 320	RENOLIN CLP 460	RENOLIN CLP 680
			RENOLIN HIGHGEAR 220	RENOLIN HIGHGEAR 320	RENOLIN HIGHGEAR 460	RENOLIN HIGHGEAR 680
			RENOLIN CLP VCI 220			
		RENOLIN CLP PLUS 150	RENOLIN CLP PLUS 220	RENOLIN CLP PLUS 320	RENOLIN CLP PLUS 460	RENOLIN CLP PLUS 680
		GEARMASTER CLP 150	GEARMASTER CLP 220	GEARMASTER CLP 320	GEARMASTER CLP 460	GEARMASTER CLP 680
GMERI Guangyan			GMERI (Guangyan) CH Gear oil 220	GMERI (Guangyan) CH Gear oil 320	GMERI (Guangyan) CH Gear oil 460	GMERI (Guangyan) CH Gear oil 680
GULF Oil International			Gulf Gear WT 220	Gulf Gear WT 320	Gulf Gear WT 460	
HINDUSTAN PETROLEUM		PARTHAN ML 150	PARTHAN ML 220	PARTHAN ML 320	PARTHAN ML 460	PARTHAN ML 680
		PARTHAN EP 150 MA	PARTHAN EP 220 MA	PARTHAN EP 320 MA	PARTHAN EP 460 MA	
INDIAN OIL		Servomesh Gold 150	Servomesh Gold 220	Servomesh Gold 320	Servomesh Gold 460	
KLÜBER		Klüberoil GEM 1-150 N	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N
LUKOIL LUBRICANTS		STEELO 150	STEELO 220	STEELO 320	STEELO 460	STEELO 680
			STEELO HST 220	STEELO HST 320	STEELO HST 460	STEELO HST 680
LOTOS OIL			TRANSMIL EXTRA XSP 220	TRANSMIL EXTRA XSP 320	TRANSMIL EXTRA XSP 460	TRANSMIL EXTRA XSP 680
MOBIL	Mobilgear 600 XP 100	Mobilgear 600 XP 150	Mobilgear 600 XP 220	Mobilgear 600 XP 320	Mobilgear 600 XP 460	Mobilgear 600 XP 680
PERTAMINA		MASRI SUPER FLG 150	MASRI SUPER FLG 220	MASRI SUPER FLG 320	MASRI SUPER FLG 460	
		MASRI FLG 150	MASRI FLG 220	MASRI FLG 320	MASRI FLG 460	
GALP PETROGAL		GALP TRANGEAR FA 150	GALP TRANGEAR FA 220	GALP TRANGEAR FA 320	GALP TRANGEAR FA 460	

CLP mineral-oil-based lubricating oils acc. to DIN 51517-3						
Reference number	22	23	24	25	26	27
Viscosity	VG 100	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-20 °C to +80 °C	-20 °C to +80 °C	-15 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C	-10 °C to +80 °C
PETROL OFISI		Gravis MP 150	Gravis MP 220	Gravis MP 320	Gravis MP 460	Gravis MP 680
PETROMIN		Petromin Gear Lube EPF 150	Petromin Gear Lube EPF 220	Petromin Gear Lube EPF 320	Petromin Gear Lube EPF 460	
PETRONAS		Petronas Gear FL 150	Petronas Gear FL 220	Petronas Gear FL 320	Petronas Gear FL 460	Petronas Gear FL 680
OR PTT Oil and Retail		Drivera SF 150	Drivera SF 220	Drivera SF 320	Drivera SF 460	Drivera SF 680
SHANGHAI HITECRUN		HITECSYN MMP 150	HITECSYN MMP 220	HITECSYN MMP 320	HITECSYN MMP 480	HITECSYN MMP 680
SHELL	Omala S2 GX 100	Omala S2 GX 150	Omala S2 GX 220	Omala S2 GX 320	Omala S2 GX 460	Omala S2 GX 680
SINOPEC		Great wall 4407 Heavy-Duty Industrial Gear Oil 150	Great wall 4407 Heavy-Duty Industrial Gear Oil 220	Great wall 4407 Heavy-Duty Industrial Gear Oil 320	Great wall 4407 Heavy-Duty Industrial Gear Oil 460	Great wall 4407 Heavy-Duty Industrial Gear Oil 680
			Great wall AP 220	Great wall AP 320	Great wall AP 460	Great wall AP 680
MONARCH Tongyi Petroleum			Micropitting Resistant Industrial Gear Oil 220	Micropitting Resistant Industrial Gear Oil 320	Micropitting Resistant Industrial Gear Oil 460	
TOTAL		CARTER XEP 150	CARTER XEP 220	CARTER XEP 320	CARTER XEP 460	CARTER XEP 680
		CARTER EP 150	CARTER EP 220	CARTER EP 320	CARTER EP 460	CARTER EP 680
VERKOL		GEAROIL CKC 150	GEAROIL CKC 220	GEAROIL CKC 320	GEAROIL CKC 460	

CLP PG polyethylene-glycol-based lubricating oils acc. to DIN 51517-3					
Reference number	34	35	36	37	38
Viscosity	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-30 °C to +120 °C	-30 °C to +120 °C	-30 °C to +120 °C	-30 °C to +120 °C	-25 °C to +120 °C
BASF	Plurasafe GL PG 150	Plurasafe GL PG 220	Plurasafe GL PG 320	Plurasafe GL G 460	Plurasafe GL PG 680
BayWa		TECTROL GEAR CLP PG 220	TECTROL GEAR CLP PG 320	TECTROL GEAR CLP PG 460	
FUCHS PETROLUB SE	RENOLIN PG 150	RENOLIN PG 220	RENOLIN PG 320	RENOLIN PG 460	RENOLIN PG 680
	GEARMASTER PGP 150	GEARMASTER PGP 220	GEARMASTER PGP 320	GEARMASTER PGP 460	GEARMASTER PGP 680
KLÜBER		Klübersynth GH 6-220	Klübersynth GH 6-320	Klübersynth GH 6-460	Klübersynth GH 6-680
MOTOREX	MOTOREX GEARSYNT PG 150	MOTOREX GEARSYNT PG 220	MOTOREX GEARSYNT PG 320	MOTOREX GEARSYNT PG 460	MOTOREX GEARSYNT PG 680

CLP HC poly-alpha-olefin(PAO)-based lubricating oils acc. to DIN 51517-3					
Reference number	41	42	43	44	45
Viscosity	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-40 °C to +100 °C	-35 °C to +100 °C	-35 °C to +100 °C	-30 °C to +100 °C	-25 °C to +100 °C
ADDINOL			ECO GEAR 320 S	ECO GEAR 460 S	ECO GEAR 680 S
AMSOIL	Synthetic Power Transmission EP Gear Oil 150	Synthetic Power Transmission EP Gear Oil 220	Synthetic Power Transmission EP Gear Oil 320	Synthetic Power Transmission EP Gear Oil 460	
ANDEROL	Anderol 5150 Plus	Anderol 5220 Plus	Anderol 5320 Plus	Anderol 460 Plus	Anderol 5680 Plus
AVIA / BANTLEON		AVIA SYNTOGEAR PE 220	AVIA SYNTOGEAR PE 320	AVIA SYNTOGEAR PE 460	AVIA SYNTOGEAR PE 680
	Avilub Gear SF 150	Avilub Gear SF 220	Avilub Gear SF 320	Avilub Gear SF 460	Avilub Gear SF 680
BASF	Emgard EP XE 150	Emgard EP XE 220	Emgard EP XE 320	Emgard EP XE 460	Emgard EP XE 680
			Emgard Wind P 320		
BayWa AG		TECTROL GEAR CLP SYN 220	TECTROL GEAR CLP SYN 320		
BHARAT PETROLEUM	MAK Syngear 150	MAK Syngear 220	MAK Syngear 320	MAK Syngear 460	MAK Syngear 680
CALTEX, Australia Ltd.		Gearlube SF 220	Gearlube SF 320	Gearlube SF 460	Gearlube SF 680
CASTROL		Alphasyn EP 220	Alphasyn EP 320	Alphasyn EP 460	Alphasyn EP 680
	Optigear Synthetic PD 150 ES	Optigear Synthetic PD 220 ES	Optigear Synthetic PD 320 ES	Optigear Synthetic PD 460 ES	
CEPSA			AEROGEAR SYNT 320		
CHEVRON			Meropa EliteSyn WL 320		Meropa EliteSyn WL 680
COGELSA	ULTRASYN EP 150	ULTRASYN EP 220	ULTRASYN EP 320	ULTRASYN EP 460	ULTRASYN EP 680
ENGEN Petroleum Ltd.		Gengear SPL A-220	Gengear SPL A-320	Gengear SPL A-460	Gengear SPL A-680
FUCHS PETROLUB SE	RENOLIN UNISYN XT 150	RENOLIN UNISYN XT 220	RENOLIN UNISYN XT 320	RENOLIN UNISYN XT 460	RENOLIN UNISYN XT 680
		GEARMASTER SYN 220	GEARMASTER SYN 320	GEARMASTER SYN 460	GEARMASTER SYN 680

CLP HC poly-alpha-olefin(PAO)-based lubricating oils acc. to DIN 51517-3					
Reference number	41	42	43	44	45
Viscosity	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-40 °C to +100 °C	-35 °C to +100 °C	-35 °C to +100 °C	-30 °C to +100 °C	-25 °C to +100 °C
GULF OIL International	Gulf EP Lubricant SY 150	Gulf EP Lubricant SY 220	Gulf EP Lubricant SY 320	Gulf EP Lubricant SY 460	Gulf EP Lubricant SY 680
HINDUSTAN PETROLEUM	Parthan EP SA 150	Parthan EP SA 220	Parthan EP SA 320	Parthan EP SA 460	Parthan EP SA 680
INDIAN OIL	Servosyn gear Plus 150	Servosyn gear Plus 220	Servosyn gear Plus 360	Servosyn gear Plus 460	Servosyn gear Plus 680
KLÜBER	Klübersynth GEM 4-150 N	Klübersynth GEM 4-220 N	Klübersynth GEM 4-320 N	Klübersynth GEM 4-460 N	Klübersynth GEM 4-680 N
LUKOIL	LUKOIL STEELO SYNTH 150	LUKOIL STEELO SYNTH 220	LUKOIL STEELO SYNTH 320	LUKOIL STEELO SYNTH 460	LUKOIL STEELO SYNTH 680
MOBIL	Mobil SHC 629	Mobil SHC 630	Mobil SHC 632	Mobil SHC 634	Mobil SHC 636
	Mobil SHC Elite 150	Mobil SHC Elite 220	Mobil SHC Elite 320	Mobil SHC Elite 460	Mobil SHC Elite 680
	Mobil SHC Gear 150	Mobil SHC Gear 220	Mobil SHC Gear 320	Mobil SHC Gear 460	Mobil SHC Gear 680
PETROL OFISI	Gravis SP 150	Gravis SP 220	Gravis SP 320	Gravis SP 460	Gravis SP 680
PETRO-CANADA	Enduratex Synthetic EP 150	Enduratex Synthetic EP 220	Enduratex Synthetic EP 320	Enduratex Synthetic EP 460	
GALP PETROGAL	TRANSGEAR SY FA 150	TRANSGEAR SY FA 220	TRANSGEAR SY FA 320	TRANSGEAR SY FA 460	
PETRONAS	Petronas Gear Syn PAO 150	Petronas Gear Syn PAO 220	Petronas Gear Syn PAO 320	Petronas Gear Syn PAO 460	Petronas Gear Syn PAO 680
OR PTT Oil and Retail		PTT Drivera Synthetic S220	PTT Drivera Synthetic S320	PTT Drivera Synthetic S460	PTT Drivera Synthetic S680
REPSOL	Super Tauro Sintetico 150	Super Tauro Sintetico 220	Super Tauro Sintetico 320	Super Tauro Sintetico 460	
SHANGHAI HITECRUN	HITECSYN SMP Plus 150	HITECSYN SMP Plus 220	HITECSYN SMP Plus 320	HITECSYN SMP Plus 460	HITECSYN SMP Plus 680
TAIHANG Shanxi Lu'an Taihang Lubricant	Taihang Gear WT 150	Taihang Gear WT 220	Taihang Gear WT 320	Taihang Gear WT 460	Taihang Gear WT 680
SHELL	Omala S4 GXV 150	Omala S4 GXV 220	Omala S4 GXV 320	Omala S4 GXV 460	Omala S4 GXV 680

CLP HC poly-alpha-olefin(PAO)-based lubricating oils acc. to DIN 51517-3					
Reference number	41	42	43	44	45
Viscosity	VG 150	VG 220	VG 320	VG 460	VG 680
Minimum temperature range	-40 °C to +100 °C	-35 °C to +100 °C	-35 °C to +100 °C	-30 °C to +100 °C	-25 °C to +100 °C
SINOPEC	Great Wall AP-S 150	Great Wall AP-S 220	Great Wall AP-S 320	Great Wall AP-S 460	Great Wall AP-S 680
	Great Wall 4408 HD 150	Great Wall 4408 HD 220	Great Wall 4408 HD 320	Great Wall 4408 HD 460	Great Wall 4408 HD 680
	Great Wall WT Gearbox Oil 150	Great Wall WT Gearbox Oil 220	Great Wall WT Gearbox Oil 320		
SYNOLEX		Synolex Omega WD 220	Synolex Omega WD 320		
TOTAL	Carter SH 150	Carter SH 220	Carter SH 320	Carter SH 460	Carter SH 680

Lubricating greases		
Reference number	49	55
Base oil	Mineral oil	Mineral oil/PAO/Mixtures
Saponification agent	Lithium	Lithium
Base oil viscosity mm ² /s at 40 °C	100-220	100-220
Minimum temperature range	-20 °C to +120 °C	-20 °C to +120 °C
Minimum requirements acc. to DIN 51502	KP1K-20 (grease lubrication systems)	KP2K-20
ARAL		Aralub HLP 2
AVIA	AVIALITH 1 EP	AVIALITH 2 EP
BECHEM	BECHEM High-Lub LT 1 EP	BECHEM High-Lub LT 2 EP
BRUGAROLAS	G.A. N.70 EP-1	G.A. N.70 EP-2
CASTROL	Spheerol EPL 1	Spheerol EPL 2
CASTROL HP	Tribol GR 100-1 PD	Tribol GR 100-2 PD
CHEVRON	Multifak EP 1	Multifak EP 2
ENI	GR MU/EP 1	GR MU/EP 2
FUCHS PETROLUB SE	RENOLIT FEP 1	RENOLIT FEP 2
	LAGERMEISTER BF 1	LAGERMEISTER EP 2
KLÜBER	Klüberplex BEM 41-141	Klüberplex BEM 41-132
KRAFFT	KEP 1	KEP 2
LUKOIL	Polyflex EP 1-160	Polyflex EP 2-160
MOBIL	Mobilgrease XHP 221	Mobilith SHC 220
PETRONAS	Grease Li EP 1	Grease Li EP 2
PETRO-CANADA	Precision General Purpose EP 1	Precision General Purpose EP 2
REPSOL	GRASA LÍTICA EP 1	GRASA LÍTICA EP 2
SHELL	Gadus S2 V220 1	Gadus S2 V220 2
TEXACO/ CALTEX		Multifak 142
TOTAL	Multis EP 1	Multis EP 2
Notice: Reference number 50 was deleted from the table of lubricants 12/2017 and replaced by reference number 55.		

Lubricating greases				
Reference number	60	62	63	66
Base oil	Mineral oil	Mineral oil/PAO/ Mixtures	Mineral oil/PAO/ Mixtures	Mineral oil
Saponification agent	Lithium/ Lithium complex	Lithium/ Lithium complex	Lithium/ Lithium complex	Lithium/ Lithium complex
Base oil viscosity mm ² /s at 40 °C	100 to 220	approx. 100	approx. 220	100 to 220
Minimum temperature range	-20 °C to +140 °C	-40 °C to +120 °C	-40 °C to +120 °C	-20 °C to +120 °C
Minimum requirements acc. to DIN 51502	KP2N-20	KP(HC)2K-40	KP(HC)2N-40	GP00K-20
AVIA	LITHOPLEX 2 EP			Lithoplex 00 EP
BECHEM	Beruplex LI EP 2	BECHEM High-Lub LM 2 EP		BECHEM High-Lub LT 0 EP
BRUGAROLAS	G.A. PLEX-2	G. BESLUX PLEX L- 2 EP	G. BESLUX LIPLEX M- 1/2 S	G.A. N.850 EP-00
CASTROL	Spheerol EPLX 200-2		Spheerol SY 2202	Spheerol EPL 00
CASTROL HP	Tribol GR 4020/220- 2 PD		Tribol GR 4747/220-2 HT	Tribol GR-100-00 PD
FUCHS PETROLUB SE	RENOLIT DURAPLEX EP 2	RENOLIT HLT 2	RENOLIT HI-TEMP 220	RENOLIT DURAPLEX EP 00
	LAGERMEISTER LX EP 2	STABYL LT 50		GEARMASTER LI 400
KLÜBER	Klüberplex BEM 41- 132	Klüberplex BEM 41- 132		MICROLUBE GB 00
KRAFFT	KL Complex 150			KEP 00
LUKOIL	Thermoflex EP 2-180	Synthoflex 2-100	Synthoflex 2-220	Polyflex EP 00-160
MOBIL	Mobilith SHC 220	Mobilith SHC 100	Mobilith SHC 220	
PETRONAS	Grease LiX EP 2/170			
PETRO-CANADA	Precision XL EP 2			Precision XL EP 00
REPSOL	GRASA LÍTICA COMPLEJA INDUSTRIA	GRASA COMPLEX SYNT		GRASA LÍTICA CENTRALIZADOS 00
SHELL	Gadus S3 V220 C	Gadus S5 V100 2	Gadus S5 V220 2	Gadus S2 V220 00
TEXACO/ CALTEX	Starplex EP 2			Marfak 00
TOTAL	Multis Complex EP 2			MULTIS EP 00

	Wire rope lubricants	Chain oils	
	External lubricant for ropes	Mineral oil	Ester-based biodegradable oil acc. to OECD 301
Reference number	71	73	74
Viscosity	---	VG 100-150	VG 100-150
ARAL		Deganit B 100	
BECHEM	Beruprotect Rope Dressing	Berulit IKP	
BRUGAROLAS	Beslux Crown H-1/R	BESLUX CAMIN 100 WR	Beslux Hidro-Bio 150
CASTROL HP	Tribol OG 500-0	Tribol CH 1730/100	Performance Bio CH 150 ESU
ENI	Agip FIN 332		
FUCHS PETROLUB SE	CEPLATTYN 300	STABYLAN 2001	STABYLAN ECO 20
KLÜBER	Klüberplex AG 11-462	STRUCTOVIS FHD	Klüberbio CA 2-100
KRAFFT	KGP-2/M		
LUKOIL	Carboflex OG 0-680 HD	Chain Heavy	Biochain Heavy
MOBIL	Mobilarma 798		
PETRO-CANADA	Peerless OG 2	Duratac Chain Oil 150	
REPSOL	GRASA OGL	MULTIUSO EXTRA 40	
SHELL	Gadus S2 OGH		
TOTAL	Copal MS 2		

3 Special lubricants for machines

POLYCOM® high-pressure grinding rolls, QUADROPOL® roller mills, antifriction bearings for the supporting roller stations of rotary kilns

Reference number	BECHEM	FAG	KLÜBER	FUCHS PETROLUB SE	SKF
80	BECHEM High-Lub FA 50 MO	Arcanol LOAD 1000	Klüberlub BE 41-1501	STABYL HD	LGEV 2

High-efficiency separators, disagglomerators, fines coolers, REPOL® coolers

Reference number	BECHEM	KLÜBER	FUCHS PETROLUB SE	MOBIL	SHELL	SKF	TOTAL
81	Berutox M 21 EPK	Klüberplex BEM 41-132	URETHYN MP 2	Unirex EP 2	Gadus S3 V220C	LGHB 2	CERAN XM 460

DOROL®, QUADROPOL®QM² roller mills (grinding rollers, circulating oil lubrication system)

Reference number	BECHEM	FUCHS PETROLUB SE	KLÜBER	MÖLLENBERG & SONNTAG
82 (oil required for operation)	Berusrynth EP 1000	GEARMASTER PGP 1000	Syntheso HT 1000	Molsyn 1000 M-EP
83 (oil required for operation)			Syntheso HT 1500	Molsyn 1500-M
84 (flushing oil)	Berusrynth F 32	GEARMASTER PGP 32	Syntheso D 32	Spülmolsyn-M
Please note that the oil required for operation (reference number 82/83) and flushing oil (reference number 84) must be purchased from the same manufacturer!				

Internal lubrication of loose tyres

Reference number	BECHEM	FUCHS PETROLUB SE	KLÜBER
86	Berulub VPN 13 Ringlub	CEPLATTYN HT	Wolfracoat C Fluid
		CEPLATTYN 24 LR	

Self-aligning pinion

Reference number	FUCHS PETROLUB SE	KLÜBER
88	CEPLATTYN GT 3	Structovis BHD MF

Rotary airlocks (material temperature approx. 450 °C)

Reference number	Lubrication point	BECHEM	FUCHS PETROLUB SE	KLÜBER	KRAFFT
89	Seal	Berulit 443	CEOLATTYN 300	Grafloscon A-G 1 ULTRA	Lubekrafft G paste
Attention: Reference number 89 was previously listed as reference number 90.					

Spray lubrication for mills (girth gear drives)

Reference number		KLÜBER		FUCHS PETROLUB SE	
		SFS	SF	SFS	SF
90	Priming lubricant, manual application using a paintbrush or spatula	Grafloscon A-G 1 ULTRA	Klüberplex AG 11-462	CEPLATTYN 300	CEPLATTYN GT-P
91	Running-in lubricant	Grafloscon B-SG 00 ULTRA	Klüberfluid B-F 2 ULTRA	CEPLATTYN RN	CEPLATTYN GT-RN
92	Operating lubricant	Grafloscon C-SG 0 ULTRA	Klüberfluid C-F 8 ULTRA	CEPLATTYN KG 10 HMF	CEPLATTYN GT 10
93	Operating lubricant from +5 °C to +100 °C	Grafloscon C-SG 1000 ULTRA	Klüberfluid C-F 4 ULTRA	CEPLATTYN KG 10 HMF-1000	
94	Operating lubricant from +15 °C to +120 °C	Grafloscon C-SG 2000 ULTRA	Klüberfluid C-F 3 ULTRA	CEPLATTYN KG 10 HMF-2500	
SFS:		black solid lubricant			
SF:		solids-free = bright = transparent lubricant (also with white solids portions)			

Splash lubrication system and circulating oil lubrication system (open girth gear drives, lubricating pinion)

Reference number		KLÜBER		FUCHS PETROLUB SE	
		SFS	SF	SFS	SF
100	Priming lubricant, manual application using a paintbrush or spatula	Grafloscon A-G 1 Ultra	Klüberplex AG 11-462	CEPLATTYN 300	CEPLATTYN GT P
95	Running-in lubricant	Klüberfluid B-F 1 Ultra	Klüberfluid B-F 2 Ultra	CEPLATTYN RN	CEPLATTYN GT RN
96	Operating lubricant for low ambient temperatures	Klüberfluid C-F 1 Ultra from -15 °C to +60 °C		CEPLATTYN 100 MV from -5 °C to +140 °C	
			Klüberfluid C-F 4 Ultra*	GEARMASTER CLPF 1500	CEPLATTYN GT3*
97	Operating lubricant for higher ambient temperatures	Klüberfluid C-F 2 Ultra from +5 °C to +100 °C		CEPLATTYN 100 HV from 0 °C to +140 °C	
			Klüberfluid C-F 4 Ultra from 0 °C to +110 °C		CEPLATTYN GT 10
			Klüberfluid C-F 3 Ultra		CEPLATTYN SF 30
			Klüberfluid C-F 8 Ultra		

SFS: black solid lubricant
SF: solids-free = bright = transparent lubricant (also with white solids portions)

***POLGUIDE kiln drive:** Operation (96, 97) exclusively with CEPLATTYN GT3 or Klüber fluid C-F 4 Ultra.
(Notice: Do **not** use running-in lubricant (95)!)

Burner, kiln, cyclone preheater

Reference number	Lubrication point	CHEVRON	TRIBO TECHNIK	FUCHS PETROLUB SE	KLÜBER
98	Diverse machine components	Copper Grease 9143	Copaslip	GLEITMO 160 NEU	Klüberpaste HEL 46-450

QUADROPOL® roller mill with self-aligning roller bearings (circulating oil lubrication system)

Reference number	BECEM	CASTROL HP	FUCHS PETROLUB SE
99	Berusynth EP 680	Optigear Synthetic 800/680	GEARMASTER PGP 680

High-temperature technology, shaft kiln

Reference number	Lubrication point	CASTROL HP	FUCHS PETROLUB SE	KLÜBER
105	Bearing assembly, discharge system	Molub-Alloy 100-2 HT	STABYL EHT 2	Klübersynth BH 72-422

High-temperature technology, multiple-hearth furnace

Reference number	Lubrication point	ARAL	BECHEM	CASTROL HP	FUCHS PETROLUB SE
106	Axial bearing assembly	Degol BMB 1200	BECHEM Staroil SMO 1500	Alpha BMB 1200	GEARMASTER CLPF 1500

High-temperature technology, multiple-hearth furnace

Reference number	Lubrication point	KLÜBER
107	Drive sprocket/pinion	UL 91 M

Hydrodynamic couplings (low-temperature applications)

Poly-alpha-olefin(PAO)-based special oils for transmission systems		
Reference number	131	132
Viscosity	VG 32	VG 46
Minimum temperature range	-40 °C to +110 °C	-40 °C to +110 °C
CASTROL	Aircol SR 32	
	Alphasyn T 32	Alphasyn T 46
	Perfecto SN 32	
CHEVRON		Cetus PAO 46
ENI	Agip Dicrea SX 32	
MOBIL	Mobil SHC 524	
	Mobil SHC 824	
FUCHS PETROLUB SE	RENOLIN UNISYN OL 32	RENOLIN UNISYN OL 46
KLÜBER	Summit HySyn FG 32	Summit HySyn FG 46
KUWAIT PETROLEUM INT. LUBRICANTS (Q8 OILS)	Q8 Schumann 32	Q8 Schumann 46
ROYAL PURPLE	Synfilm GT 32	Synfilm GT 46
SHELL	Tellus Oil S4 ME 32	Tellus Oil S4 ME 46
STATOIL	Mereta 32	Mereta 46
TOTAL	Dacnis SH 32	

Hydraulic systems (low-temperature applications)

Hydraulic oils	
Reference number	135
Viscosity	VG 32
Minimum temperature range	-40 °C to +70 °C
CHEVRON	Rando Ashless 8401
FUCHS PETROLUB SE	RENOLIN ZAF 32 MC
PETRO-CANADA	Hydrex Extreme
SHELL	Tellus S4 VX 32
TOTAL	Equivis XLT 32

Rollers and chain links

Lubricating oils		
Reference number	142	143
Viscosity	Motor oil SAE 30	API GL 4 SAE 90 EP
ARAL	Turboral 30	Getriebeöl EP 80W-90
AVIA	Avia Special HDC 30	Avia Gear Oil MZ 90
AVIA BANTLEON	Avia Monograde HD 30	Avia Gear Oil MZ 90
CASTROL	CRB Monograde 30 CF	Manual EP 80W-90
CHEVRON	Ursa Heavy Duty 30	Multigear 80W-90
ENI	i-Sigma monograde 30	Rotra HY 80W-90
FUCHS PETROLUB SE	TITAN UNIVERSAL HD SAE 30	TITAN GEAR MP SAE 90
KRAFFT	Multioil SAE 30/ISO 100	HIDROIL 9
LUKOIL	Avantgarde SAE 30	TM-4 80W-90
MOBIL	Delvac 1630	Mobilube HD-A 85W-90
PETRO-CANADA	Duron Monograde 30	Traxon 80W-90 (APL GL5)
REPSOL	DIESEL SERIE 3 30	CARTAGO EPM 90
SHELL	Rimula R3+ 30	Spirax S2G 80W-90
TEXACO/CALTEX	Delo 400 SAE 30	Multigear EP-5 SAE 80W-90
	Delo Silver SAE 30	Thuban EP SAE 80W-90
TOTAL	Rubia S 30	EP SAE 80W-90

KUBRIA crushers, gyratory crushers and jaw gyratory crushers: spider bearing

Fluid greases		
Reference number	150	151
Base oil	Mineral oil	Mineral oil
Saponification agent	Lithium	Lithium
Base oil viscosity mm ² /s at 40 °C	approx. 220 - 1000	approx. 220 - 1000
Minimum temperature range	-20 °C to +120 °C	-20 °C to +120 °C
Minimum requirements acc. to DIN 51502	GP000K-20 (grease lubrication system)	GP00K-20 (grease lubrication system)
BECHEM		BECHEM High-Lub LT 0 EP
CASTROL		Spheerol EPL 00
CASTROL HP	Tribol GR 3020/1000-000 PD	Tribol GR 3020/1000-00 PD
CHEVRON	Multifak EP 000	
FUCHS PETROLUB SE		RENOLIT DURAPLEX EP 00
		GEARMASTER LI 400
KRAFFT	KEC	KEP 00
LUKOIL	Carboflex OG 000-1500 HD	Polyflex EP00-160
	Carboflex Arctic OG 900 HD	
MOBIL	Mobilux EP 023	
PETRONAS		Grease Li EP 00
SHELL		Gadus S2 V220 00
TOTAL	MULTIS EP 000	MULTIS EP 00

KUBRIA crushers, gyratory crushers and jaw gyratory crushers: spider bearing (low-temperature applications)

Fluid greases		
Reference number	155	156
Base oil	Mineral oil	Mineral oil
Saponification agent	Lithium	Lithium
Base oil viscosity mm ² /s at 40 °C	approx. 220 - 1000	approx. 220 - 1000
Minimum temperature range	-40 °C to +120 °C	-40 °C to +120 °C
Minimum requirements acc. to DIN 51502	GP000K-40 (grease lubrication system)	GP00K-40 (grease lubrication system)
CASTROL HP	Tribol GR 3020/1000-000 PD	Tribol GR 3020/1000-00 PD
CHEVRON	Multifak EP 000	
FUCHS PETROLUB SE		GEARMASTER LI 400
KRAFT	KEC	
LUKOIL	Carboflex OG 000-1500 HD	
	Carboflex Arctic OG 900 HD	
SHELL		Gadus S2 V220 00

Fast-running bearings, high temperature load: transmission bearings, etc.

Lubricating greases	
Reference number	160
Base oil	Poly-alpha-olefin (PAO)
Saponification agent	Bentonite
Base oil viscosity mm ² /s at 40 °C	100
Minimum temperature range	-50 °C to +200 °C
Minimum requirements acc. to DIN 51502	
MOBIL	Mobiltemp SHC 100

Slow-running bearings (low-temperature applications): belt conveyors, apron feeders RKF, upper-trough chain conveyors OTK, etc.

Lubricating greases	
Reference number	161
Base oil	Poly-alpha-olefin (PAO)
Saponification agent	Bentonite
Base oil viscosity mm ² /s at 40 °C	32
Minimum temperature range	-50 °C to +180 °C
Minimum requirements acc. to DIN 51502	KPHC1-2K-50L
MOBIL	Mobiltemp SHC 32