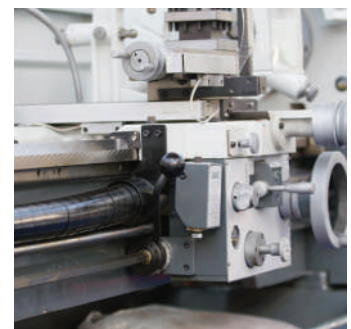
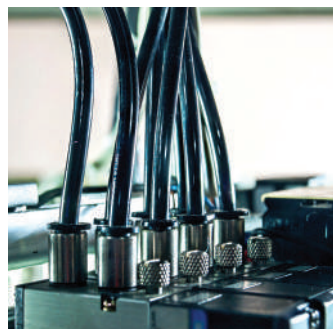
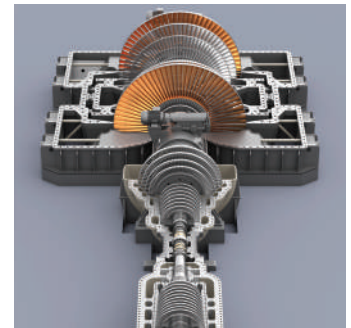
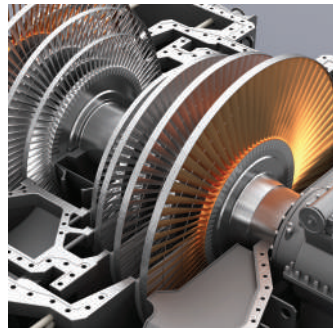


# INDUSTRIAL LUBRICANTS CATALOG



# LUKOIL GROUP



**LUKOIL**

**ONE OF THE LARGEST PUBLICLY TRADED,  
VERTICALLY INTEGRATED OIL AND GAS  
COMPANIES IN THE WORLD.**

- EXPLORATION AND PRODUCTION  
IN 14 COUNTRIES OF THE WORLD
- 5 005 FUEL STATIONS IN 19 COUNTRIES
- MORE THAN 100 THOUSAND EMPLOYEES

# 1%

**OF THE WORLD'S  
PROVEN  
RESERVES**

# 2%

**OF THE GLOBAL OIL  
PRODUCTION**



**LUKOIL IS ONE OF THE  
LEADING MANUFACTURERS  
OF OILS, GREASES AND  
OTHER TECHNICAL FLUIDS**

**MORE THAN 800 THOUSAND TONS  
ANNUAL LUBRICANTS PRODUCTION VOLUME**

**THE COMPANY IS ENGAGED IN THE  
DEVELOPMENT, PRODUCTION AND  
DISTRIBUTION OF LUBRICANTS**

**THE LUBRICANTS PORTFOLIO INCLUDES**

**MORE THAN 800 PRODUCTS**

**LUKOIL LUBRICANTS ARE USED  
IN ALL INDUSTRIAL FIELDS,  
AGRICULTURE, TRANSPORT,  
IN MARINE AND RIVER VESSELS**



# COMPANY'S HISTORY

● The Company enters global marine lubricants market by creating LUKOIL Marine Lubricants.

● The Company acquires blending plant in Turkey and launches LUKOIL Lubricants Middle East.

● LUKOIL GENESIS, a new brand in engine oils market, launched in Europe.

● The Company starts cooperation with international OEMs. The Company commences deliveries of first fill oils to foreign car assembly plants.

● LUKOIL Lubricants Central Asia set up in Kazakhstan.

● LUKOIL Lubricants Austria established.

2006  
2007

2008  
2010

2010  
2011

2012  
2013

2014  
2015

● Romania-based LUKOIL Lubricants East Europe created for lubricants production and sales in Eastern Europe.

● LUKOIL Lubricants O.Y. launched in Finland on the basis of the former Teboil plant.

● LUKOIL products receive approvals from leading global OEMs.

● 100-millionth can of LUKOIL engine oil produced.



- LLK-International takes up responsibility for LUKOIL bituminous business.
- OEM Cooperation Development Strategy on joint product development and supplies was approved.

**2016**  
**2017**

**2018**  
**2019**

**2020**  
**2022**

- LUKOIL Lubricants Africa was registered in Morocco.
- Kazakhstan-based plant put into operation.
- R&D center for bituminous materials opened.
- The Company starts digital-transformation strategy implementation.

- The Company acquires lubricants plant in Austria.
- 500-millionth can of LUKOIL engine oil produced.



**LLK MARINE**  
**REFERENCE LUBRICANTS**  
**FOR THE WORLD MARINE FLEET**

# PRODUCTION FACILITIES



## LUKOIL LUBRICANTS EUROPE FINNISH BRANCH

Hamina, Finland

35

100

## LUKOIL LUBRICANTS CENTRAL ASIA

Almaty Region, Kazakhstan

80

## LUKOIL LUBRICANTS EUROPE

Vienna, Austria

40

## LUKOIL LUBRICANTS EAST EUROPE

Ploiești, Romania

85

## LUKOIL LUBRICANTS MIDDLE EAST

Izmir, Turkey



# CERTIFICATES

## LUKOIL LUBRICANTS – VIENNA

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- IATF 16949 : 2016
- ISO 9001 : 2015
- VDA 6.3
- Renault ASES 2.0
- VW Formel Q level A

## LUKOIL LUBRICANTS – HAMINA

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- IATF 16949 : 2016
- ISO 9001 : 2015
- GM, VW

## LUKOIL LUBRICANTS – PLOIESTI

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- IATF 16949 : 2016
- ISO 9001 : 2015

## LUKOIL LUBRICANTS – İZMİR

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- IATF 16949 : 2016
- ISO 9001 : 2015

## LUKOIL LUBRICANTS – ALMATY

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- IATF 16949 : 2016
- ISO 9001 : 2015

**01**

Hydraulic system oils

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**02**

Industrial gear oils

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**03**

Turbine and compressor oils

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**04**

Gas-powered engine oils

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**05**

Metal working and forming oils

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**06**

Chain and slideway oils

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**07**

Pneumatic and circulating oils

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**08**

Heat transfer and transformer oils

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**09**

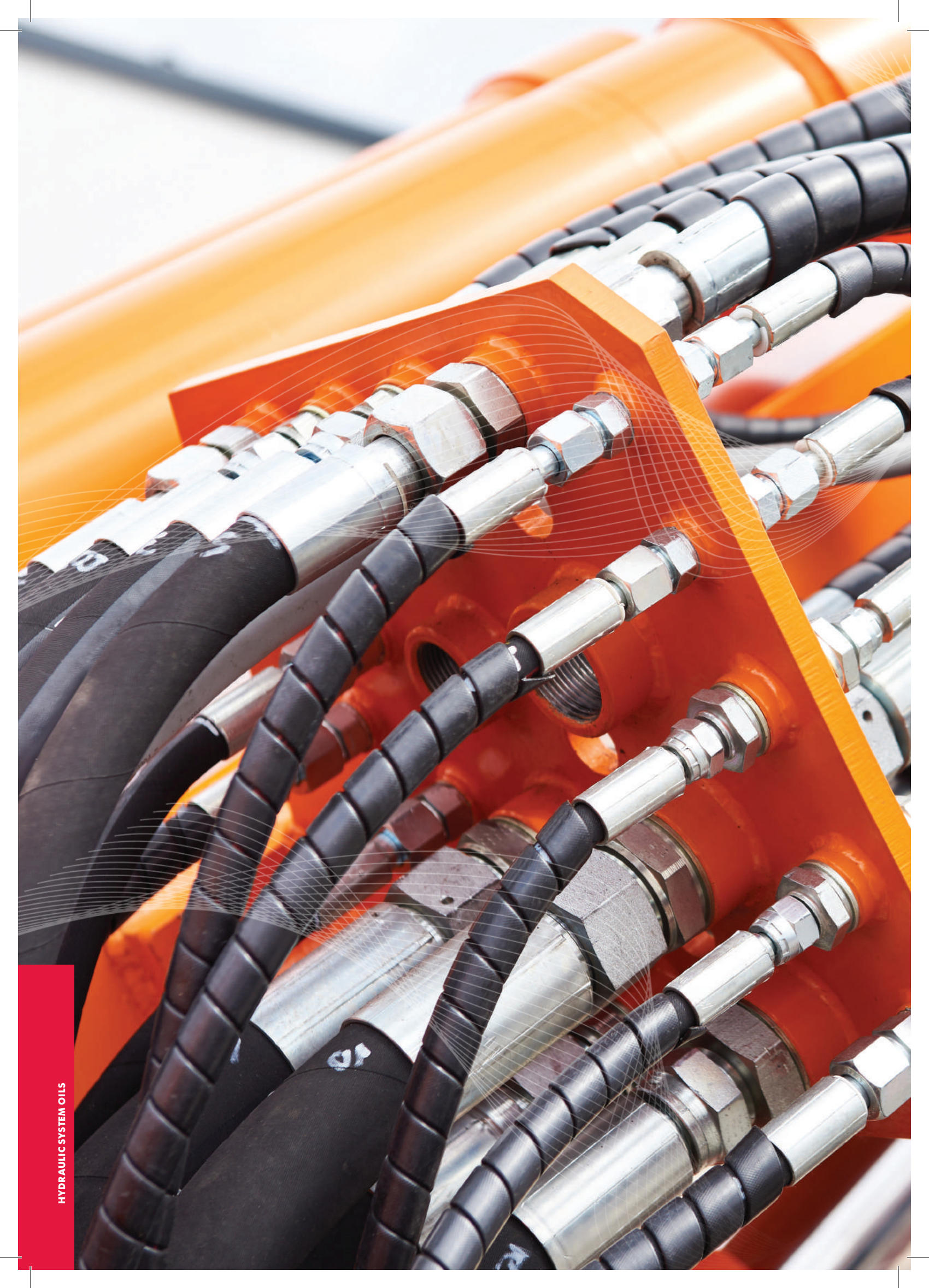
Mold release and rust preventive oils

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**10**

Greases

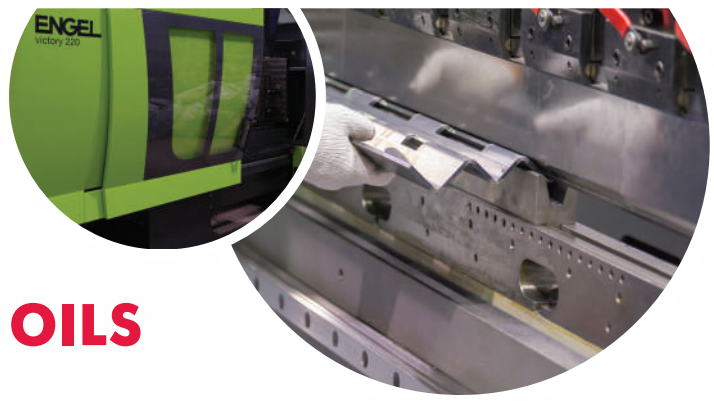
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**HYDRAULIC  
SYSTEM OILS**



# MINERAL BASED HYDRAULIC SYSTEM OILS

LUKOIL GEYSER ST Series are high-performance hydraulic system oils with excellent filterability, anti-wear and air repellency. It is designed in close collaboration with the world's leading manufacturers of additives and hydraulic equipment and meets the performance requirements demanded by hydraulic system manufacturers. It can be produced as NAS 5 upon request.



Product name	Viscosity 40°C mm²/s	Viscosity 100°C mm²/s	Flash Point °C	Pour Point °C	Density 15°C kg/m³	Approvals and Performances
LUKOIL GEYSER ST 10	10	2,7	>140	<-39	843	DANIELI, DIN 51524-2 HLP; ISO 6743-4-HM; ISO 11158-HM ; SAE MS 1004; AIST 126, 127; ASTM D6158-HM; Eaton E-FDGN-TB002-E; Parker DENISON HF-0, HF-1, HF-2; SEB 181222; VDMA 24318-HLP
LUKOIL GEYSER ST 22	22	4,8	232	<-36	842	SMS group SN 180-2, DIN 51524-2 (HLP); ISO 11158 (HM; GM LS-2, AFNOR NF E 48603 (HM); SAE MS 1004; Eaton Vickers E-FDGN-TB002-E; Parker DENISON HF-0, HF-1, HF-2
LUKOIL GEYSER ST 32	32	44352	>230	<-42	857	Bosch-Rexroth RDE 90235; Denison HF-0, HF-1, HF-2; Eaton Vickers E-FDGN-TB002-E; ThyssenKrupp Industrial Solutions; TMT, SMS Group SN 180-2; VOITH Turbo, Duplomatic; SMT Scharf, Palfinger, Sulzer Pumps; FURUKAWA UNIC, WOJIN SELEX; OOO "Severyanka", PJSC "Severstal"; PJSC "Volgogradneftemash"; PJSC "AVTOVAZ", PJSC Gydosila; OSCI "Shakhty factory Hidroprivop"; PJSC "TYAZHPRESSMASH"; PJSC "Nizhnevartivskkremservice", DIN 51524 Part 2 (HLP); Fives Cincinnati P-68); Eaton Vickers I-286-S/ M2950-S); AGMA 9005 E-02(EP)); Kopex Machinery); ISO 11158 (HM)); SAE MS 1004); AIST 126/127); JCMAS HK); GM LS-2); ISO 6743-4(HM))
LUKOIL GEYSER ST 46	46	7,2	236	<-39	868	Bosch-Rexroth RDE 90235; Danieli 0.000.001, Eaton Vickers E-FDGN-TB002-E; Denison HF-0, HF-1, HF-2; Sumitomo (SHI) Demag; HYDAC International; ALTA, Palfinger Duplomatic; Sulzer Pumps; FELUWA Pumpen; SMT Scharf; Automa; Krauss Maffei Berstroff; Eickhoff; TMT; VOITH Turbo; Kopex Machinery; Engel; Ferrit; SMS Siemag; HUSKY HS 207; LOESCHE; Battenfeld; Arburg; ThyssenKrupp Industrial Solutions; Avermann; Haitian; LAEIS UNILOU MALACRON; PJSC "TYAZHPRESSMASH"; JSC "CMP" PJSC "Severstal"; OOO "Severyanka"; PJSC "AVTOVAZ" PJSC "Nizhnevartivskkremservice"; PJSC "Volgogradneftemash"; OSCI "Shakhty factory Hidroprivop"; LLC "Pumps PPD"; DIN 51524 Part 2 (HLP); Fives Cincinnati P-70; ISO 6743-4(HM); ISO 11158 (HM); SAE MS 1004; ASTM D6158 (HM); AIST 126/127; Eaton Vickers I-286-S / M2950-S; GM LS-2; JCMAS HK; Stork IMM
LUKOIL GEYSER ST 68	68	9.0	>240	<-33	875	Bosch-Rexroth RDE 90235; Danieli 0.000.001; Denison HF-0, HF-1, HF-2; Eaton Vickers E-FDGN-TB002-E; Palfinger; Duplomatic Sulzer Pumps; FELUWA Pumpen; Krauss Maffei Berstroff Eickhoff; TMT; Kopex Machinery; LOESCHE; ThyssenKrupp Industrial Solutions; PJSC "TYAZHPRESSMASH"; PJSC "AVTOVAZ"; PJSC "Volgogradneftemash"; JSC "Turbonasos"; DIN 51524 Part 2 (HLP); Fives Cincinnati P-70; ISO 6743-4(HM); ISO 11158 (HM); SAE MS 1004; ASTM D6158 (HM); AIST 126/127; Eaton Vickers I-286-S / M2950-S; GM LS-2; JCMAS HK; Stork IMM
LUKOIL GEYSER ST 100	100	11.0	>250	<-18	889	Palfinger; Duplomatic; PJSC «Volgogradneftemash»; TMT; PJSC «TYAZHPRESSMASH»bonasos»; Denison HF-0/HF-1/HF-2; AGMA 9005-E02 (EP); ISO 11158 (HM); SAE MS 1004; AIST 126/127; DIN 51524-2 (HLP); Eaton Vickers E-FDGN-TB002-E; ASTM D6158 HM; GM LS-2

### SPECIAL APPLICATIONS

- LUKOIL GEYSER ZF
- LUKOIL GEYSER MZF
- LUKOIL GEYSER POLAR
- LUKOIL GEYSER LT ZF

### AUTOMOTIVE

- LUKOIL GEYSER ST
- LUKOIL GEYSER M
- LUKOIL GEYSER LT
- LUKOIL GEYSER LT ZF

- ### HIGH-PERFORMANCE EXTENDED OIL CHANGE
- LUKOIL GEYSER S
  - LUKOIL GEYSER SZF

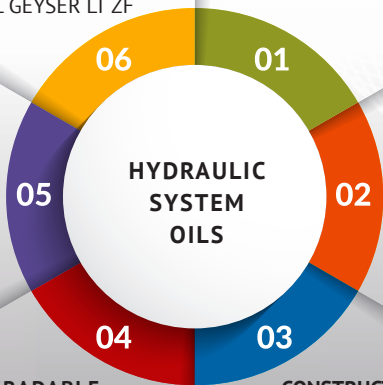
### AGRICULTURE

- LUKOIL GEYSER ST
- LUKOIL GEYSER M
- LUKOIL GEYSER MD
- LUKOIL GEYSER
- LUKOIL GEYSER LT
- LUKOIL GEYSER LT ZF

- ### BIODEGRADABLE
- LUKOIL GEYSER BIO S

### CONSTRUCTION

- LUKOIL GEYSER ST
- LUKOIL GEYSER DZF
- LUKOIL GEYSER M
- LUKOIL GEYSER MD
- LUKOIL GEYSER BIO S
- LUKOIL GEYSER LT
- LUKOIL GEYSER LT ZF



# HIGH VISCOSITY INDEX HYDRAULIC SYSTEM OILS



LUKOIL GEYSER LT Series, Group I and Group II base with excellent flow properties at low temperatures is HVI hydraulic system oil produced using oil and advanced additive package. It can be produced as NAS 5 upon request.

LUKOIL GEYSER LT Series covers moving equipment, forest machinery, road machinery, forklifts and cranes recommended for use as service oil in modern hydraulic systems.

LUKOIL GEYSER LT Series is also suitable for hydraulic systems of stationary equipment used outdoors or in chambers that are not heated throughout the year, where stable viscosity-temperature characteristics are required. It is particularly effective in hydraulic systems that allow only negligible viscosity changes within wide operating temperatures.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER LT 15	15,4	3,94	-	>150	-	Bornemann, ASTM D6158 HV; DIN 51524-3 (HVL); ISO 11158 (HV); SAE MS 1004
LUKOIL GEYSER LT 22	22	4,7	>175	<-54	850	BELAZ; Dressta; Mantsinen; Sennebogen; Sulzer Pumps, DIN 51524-3 HVL; ISO 6743-4 HV; ISO 11158 (HM); ISO 11158 (HV); AGMA 9005-E02 (EP); ASTM D6158 HM; ASTM D6158 HV; Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S; M-2950-S; GM LS-2 PALFINGER SAE MS 1004; Swedish Standard SS 15 54 34;
LUKOIL GEYSER LT 32	32	6,6	>220	<-48	857	Bosch Rexroth RDE 90235; Denison HF-0, HF-1, HF-2; ThyssenKrupp Industrial Solutions; Palfinger, Eaton Vickers 35VQ25 Kopex Machinery, Amco Veba; SMT Scharf, Sulzer Pumps; Metso, LLC "Chaika-NN"; PJSC "Volgogradneftemash"; DIN 51524-3 (HVL); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV), Mantsinen; AGMA 9005-E02 (EP); Fives Cincinnati P-68; SAE MS 1004, GM LS-2, AIST 126/127; ASTM D6158 (HV);
LUKOIL GEYSER LT 46	46	9,1	>224	<-51	861	Bosch Rexroth RDE 90235; Denison HF-0, HF-1, HF-2; ThyssenKrupp Industrial Solutions, Ferrit; Palfinger, Kopex Machinery, Siemens; SMT Scharf, Sulzer Pumps; Joy Mining Machinery, Haeusler; PJSC "Volgogradneftemash"; FURUKAWA UNIC, MECHEL; DIN 51524-3 (HVL); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV), Mantsinen; AGMA 9005-E02 (EP); Fives Cincinnati P-70; SAE MS 1004, GM LS-2, AIST 126/127; ASTM D6158 (HV)
LUKOIL GEYSER LT 68	68	11,9	>228	<-48	868	Bosch Rexroth RDE 90235; Denison HF-0, HF-1, HF-2; ThyssenKrupp Industrial Solutions; Palfinger, Kopex Machinery, Siemens; Sulzer Pumps; Joy Mining Machinery; PJSC "Volgogradneftemash"; "DIN 51524-3 (HVL); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV); AGMA 9005-E02 (EP); Fives Cincinnati P-69, ASTM D6158 (HV); SAE MS 1004, GM LS-2, AIST 126/127

## ZINC-FREE HYDRAULIC SYSTEM OILS

LUKOIL GEYSER ZF Series are superior performance hydraulic system oils with extremely high purity that provide wear protection developed for industrial and automotive hydraulic systems.

LUKOIL GEYSER ZF Series is produced with high-tech zinc-free and chlorine-free additives to ensure high performance in a variety of applications. Thanks to the use of modern technologies, it provides superior performance and is suitable for ultrafiltration systems with fine filters down to 3-5 microns. It ensures the reliable and effective operation of hydraulic systems, components and equipment under severe operating conditions.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER ZF 32	32	5,2	>175	<-18	807	DANIELI; DIN 51524-2 HLP; ISO 6743-4-HM; ISO 11158-HM ; SAE MS 1004; AIST 126, 127; ASTM D6158-HM; Eaton E-FDGN-TB002-E; Parker DENISON HF-0, HF-1, HF-2; SEB 181222; VDMA 24318-HLP
LUKOIL GEYSER ZF 46	46	6,8	>226	<-30	865	SMS group SN 180-2; DIN 51524-2 (HLP); ISO 11158 (HM; GM LS-2, AFNOR NF E 48603 (HM); SAE MS 1004; Eaton Vickers E-FDGN-TB002-E; Parker DENISON HF-0, HF-1, HF-2
LUKOIL GEYSER ZF 68	68	8,7	>230	<-27	881	Bosch-Rexroth RDE 90235; Denison HF-0, HF-1, HF-2; Eaton Vickers E-FDGN-TB002-E; ThyssenKrupp Industrial Solutions; TMT, SMS Group SN 180-2; VOITH Turbo, Duplomatic; SMT Scharf, Palfinger, Sulzer Pumps; FURUKAWA UNIC, WOOJIN SELEX; OOO "Severyanka"; PJSC "Severstal"; PJSC "Volgogradneftemash"; PJSC "AVTOVAZ"; PJSC Gydosila; OSCI "Shakhty factory Hidroprivop"; PJSC "TYAZH-PRESSMASH"; PJSC "Nizhnevartovskkremsservice"; DIN 51524 Part 2 (HLP); Fives Cincinnati P-68; Eaton Vickers I-286-S/ M2950-S); AGMA 9005 E-02(EP); Kopex Machinery); ISO 11158 (HM)); SAE MS 1004); AIST 126/127); JCMAS HK); GM LS-2); ISO 6743-4 (HM))

## HIGH VISCOSITY INDEX ZINC-FREE HYDRAULIC SYSTEM OILS

LUKOIL GEYSER LT ZF Series is HVI hydraulic system oil with excellent flow characteristics at low temperatures, manufactured using Group I and Group II base oil and advanced additive package. Its technology is based on highly refined mineral base oils, carefully selected ash-free wear inhibitors and viscosity additives.

Thanks to the zinc-free additive package, LUKOIL GEYSER LT ZF Series provides excellent performance and protection over a wide temperature range, with minimal deposit formation and outstanding advantages especially in hydraulic systems, despite water increase.

LUKOIL GEYSER LT ZF Series can be used in modern high-performance hydraulic systems and gear drives of industrial, automotive, marine equipment and small gap servo valves of stationary equipment systems. Yield high performance at low temperatures. It ensures the safe and effective operation of hydraulic systems components and equipment under severe operating conditions.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER LT ZF 32	31,1	6,31	228	-39	0,845	DIN 51524-3 (HVLP) ISO 6743-4 (HVI) 11158 (HVI)
LUKOIL GEYSER LT ZF 46	48,3	8,7	223	-39	0,856	DIN 51524-3 (HVLP) ISO 6743-4 (HVI) 11158 (HVI)
LUKOIL GEYSER LT ZF 68	66,84	11,17	220	-39	0,862	DIN 51524-3 (HVLP) ISO 6743-4 (HVI) 11158 (HVI)

## MULTI GRADE, ZINC-FREE HYDRAULIC SYSTEM OILS



LUKOIL GEYSER MZF 15 is a high-quality, zinc-free mineral multi-grade hydraulic oil with advanced additive technology. This product is ideal for use in hydraulic systems where ash-free hydraulic oils are prescribed according to the manufacturer's instructions. The stable, low ash formulation offers optimum wear and corrosion protection, and low foaming.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER MZF 15	15,5	3,8	>160	<-33	829	DIN 51524-3 HVLP; VDMA 24318 – HVLP; ISO 6743-4 HV; SEB 181 222-66;

## MINERAL HYDRAULIC SYSTEM OILS

LUKOIL GEYSER Series are high-performance industrial hydraulic oils with excellent filterability and separation from air.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER 22	22	4,4	190	-33	866	DIN 51524-2 HLP; ISO 11158 HM; ASTM D6158 HM
LUKOIL GEYSER 32	32	-	218	-33	845	DIN 51524-2 HLP; ISO 11158 HM; ASTM D6158 HM
LUKOIL GEYSER 46	46	6,8	>232	<-30	866	DIN 51524-2 HLP; ISO 11158 HM; ASTM D6158 HM
LUKOIL GEYSER 68	68	8,9	238	-33	878	DIN 51524-2 HLP; ISO 11158 HM; ASTM D6158 HM

LUKOIL GEYSER MLT Series is HVI hydraulic system oil with excellent flow characteristics at low temperatures, manufactured using Group I and Group II base oil and advanced additive package.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER MLT 15	15	3,75	204	-48	-	DIN 51524-3 (HVLP); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV), Mantsinen; AGMA 9005-E02 (EP); Fives Cincinnati P-68; SAE MS 1004, GM LS-2, AIST 126/127; ASTM D6158 (HV);
LUKOIL GEYSER MLT 32	32	6,5	>226	<-42	854	
LUKOIL GEYSER MLT 46	46	8,1	>228	<-42	862	DIN 51524-3 (HVLP); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV), Mantsinen; AGMA 9005-E02 (EP); Fives Cincinnati P-70; SAE MS 1004, GM LS-2, AIST 126/127; ASTM D6158 (HV)
LUKOIL GEYSER MLT 68	68	9,8	>238	<-33	871	DIN 51524-3 (HVLP); Eaton Vickers E-FDGN-TB002-E; Eaton Vickers I-286-S, M-2950-S; ISO 11158 (HV); AGMA 9005-E02 (EP); Fives Cincinnati P-69, ASTM D6158 (HV); SAE MS 1004, GM LS-2, AIST 126/127;

## DETERGENT ADDITIVE, MULTI GRADE HYDRAULIC SYSTEM OILS

LUKOIL GEYSER MD 46 is a high-quality mineral multi-grade hydraulic oil with advanced additive technology for heavy duty applications. Thanks to its detergent properties, this product is ideal for use according to the manufacturer's instructions in highly contaminated hydraulic systems such as construction machinery, commercial vehicles, shears and presses. The stable formulation offers optimum wear and corrosion protection, and low foaming. Detergent properties effectively prevent system contamination and deposits.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER MD 46	45	7,8	>200	<-36	880	DIN 51502-HVLPD

## SYNTHETIC HYDRAULIC SYSTEM OILS

LUKOIL GEYSER S 46 is a high-performance hydraulic oil made from top quality fully synthetic base oils. It provides excellent aging resistance and high thermal stability, combined with very fast air separation and low dependence on viscosity-temperature. In addition, LUKOIL GEYSER S 46 is absolutely stable against shearing, effective wear protection and offers superior foaming properties along with high clean-keeping ability. It is suitable for higher operating temperatures and can be blended with mineral oils.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER S 46	46	7,9	>230	<-24	848	ARBURG; DIN 51524-2 (HLP-HC); DIN 51524-2 (HLPD); ISO 6743-4 (HS); PAL-FINGER; SEB 181222-66; VDMA 24318 (HLP)

## SYNTHETIC, ZINC-FREE HYDRAULIC SYSTEM OILS

LUKOIL GEYSER SZF 46 is a high-quality synthetic hydraulic oil with zinc-free advanced additive technology. This product is ideal for use in hydraulic drives, lifting units, presses in accordance with the instructions of the manufacturers. Thanks to its stable, low ash formulation, it provides optimum wear and corrosion protection, and low foaming, allowing maximum service intervals.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER SZF 46	46	7,8	>250	<-12	847	DIN 51524-2 HLP; ISO 6743-4 HS; SEB 181222-66; VDMA 24318 - HLP; ON C 2027-3; SALVAGNINI

# BIODEGRADABLE HYDRAULIC SYSTEM OILS



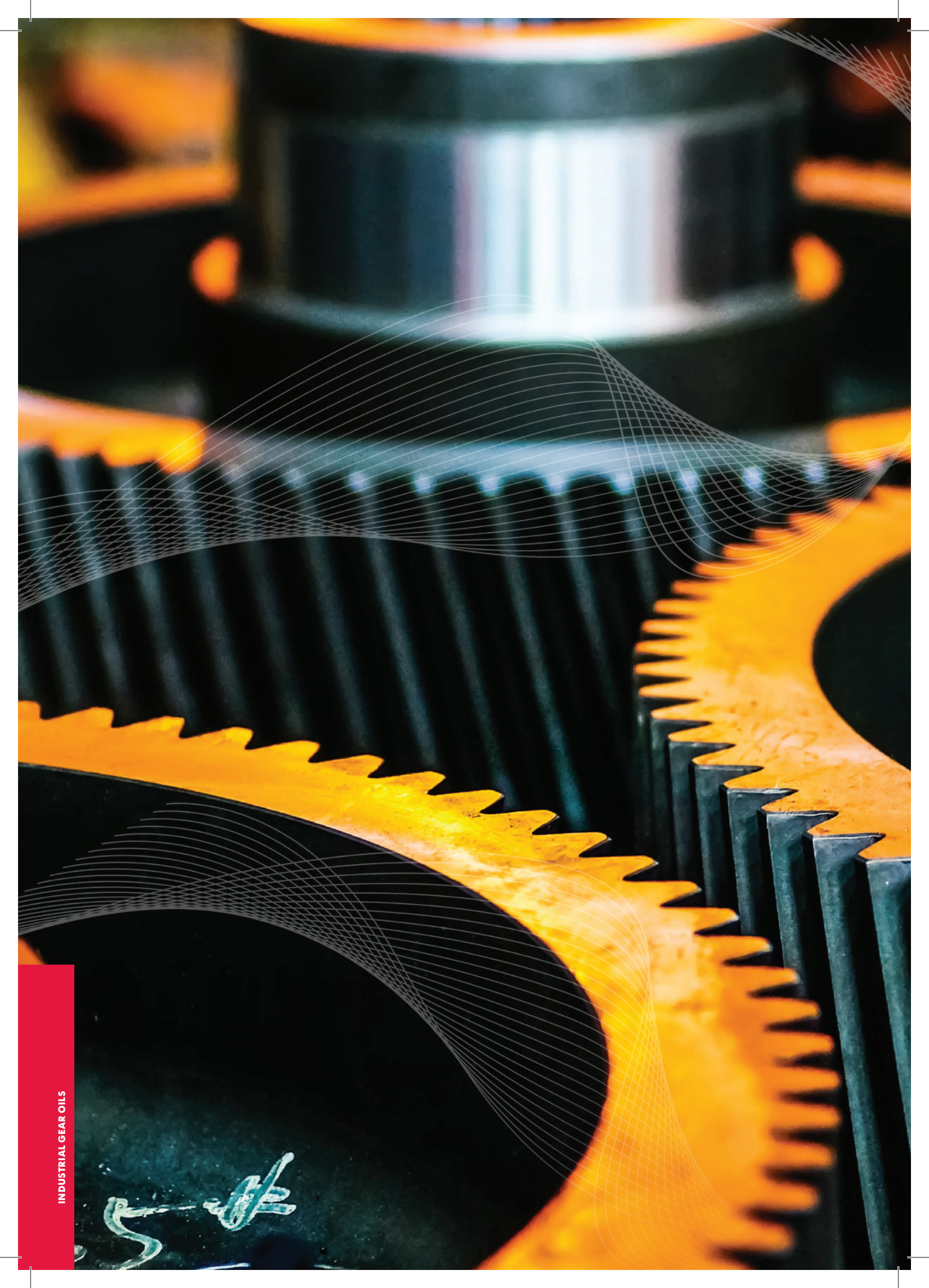
LUKOIL GEYSER BIO S Series oils are biodegradable and insoluble in water. Very good temperature characteristics and low viscosity-temperature dependence guarantee optimum operating safety even with significant temperature changes.

The high temperature stability and aging stability of LUKOIL GEYSER BIO S prevent the formation of residues due to aging substances and ensure a very long service life of the oil.

LUKOIL GEYSER BIO S has a neutral reaction with elastomers and should not be blended with mineral oil based hydraulic oils.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL GEYSER BIO S 15	15	4,2	>220	<-54	922	ON C 2027 – HEES; PALFINGER; VDMA 24568 – HEES
LUKOIL GEYSER BIO S 32	32	7	>230	<-51	913	ON C 2027 – HEES; PALFINGER; ThyssenKrupp Industrial Solutions; VDMA 24568 – HEES
LUKOIL GEYSER BIO S 46	46	9,3	>230	<-45	913	ON C 2027 – HEES; PALFINGER; VDMA 24568 – HEES





INDUSTRIAL GEAR OILS

0 2



**INDUSTRIAL  
GEAR OILS**

# HIGH LOAD RESISTANCE, ZINC-FREE, CLOSED SYSTEM GEAR OILS



LUKOIL Steelo Series products are high quality oils developed for heavy-duty industrial gearboxes.

The products of LUKOIL STEELO Series offer excellent performance due to their high viscosity index, special additive package containing sulphur and phosphorus, as well as carefully selected very good refined base oils. The proper ratio of anti-friction additives with EP properties allows them to be used effectively in various components and units of the industrial equipment of LUKOIL STEELO Series.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STEELO 68	66	8,7	>220	<-33	874	ALTA; Joy Mining Machinery; SCHOTTEL; DIN 51517-3 (CLP); AGMA 9005-E02 (EP); AIST 224; SEB 181226; ISO 12925-1 (CKD); David Brown S1.53.101; GB 5903-2011; JIS K 2219:2006
LUKOIL STEELO 100	93	10,6	>240	<-20	886	ALTA; LAEIS; LOESCHE; Eisenbeiss; SCHOTTEL; SMS group SN 180-2; SMT Scharf; ThyssenKrupp Industrial Solutions; WIKOV MGI; DIN 51517-3 (CLP); AGMA 9005-E02 (EP); David Brown SEB 181226; AIST 224; SEB 181226; Eickhoff; ISO 12925-1 (CKD); GB 5903-2011; JIS K 2219:2006
LUKOIL STEELO 150	144	13,9	>248	<-20	889	ALTA; Bornemann; Danieli 0.000.001; Eisenbeiss; FLSmidth MAAG Gear AG; Haitan; Kopex Machinery; Krauss Maffei Berstorff; LOESCHE; REXAM; Rosscor; Sacma Group; Santasalo; SCHOTTEL; SMS Group SN 180-2; ThyssenKrupp Industrial Solutions; WIKOV MGI; DIN 51517-3(CLP); ISO 12925-1; AGMA 9005-E02 (EP); David Brown SEB 181226; AIST 224; GB 5903-2011; JIS K 2219:2006; Eickhoff; Fives Cincinnati P-77; SEB 181226
LUKOIL STEELO 220	221	18,5	>243	<-18	895	Battenfeld; Danieli 0.000.001; Eickhoff; Eisenbeiss; FELUWA Pumpen; FLSmidth MAAG Gear AG; Joy Mining Machinery; Knodler; Kopex Machinery; Krauss Maffei Berstorff; LAEIS; LOESCHE; Montanari Giulio & C.; Santasalo; SCHOTTEL; SMS group SN 180-2; ThyssenKrupp Industrial Solutions; WIKOV MGI; DIN 51517 Part 3; AGMA 9005-E02 (EP) /9005 F-16; David Brown SEB 181226; AIST 224; JIS K 2219:2006; ISO 12925-1(CKD); GB 5903-2011; Fives Cincinnati P-74; SEB 181226
LUKOIL STEELO 320	347	22,4	>272	<-15	898	Danielli 0.000.001; Eickhoff; Eisenbeiss; FELUWA Pumpen; FLSmidth MAAG Gear AG; Henschel; Joy Mining Machinery; Kopex Machinery; Knodler; LOESCHE; Montanari Giulio & C.; Santasalo; SMS group SN 180-2; ThyssenKrupp Industrial Solutions; WIKOV MGI; DIN 51517-3 CLP; AGMA 9005-E02 (EP) / 9005-F16; David Brown SEB 181226; AIST 224; ISO 12925-1 (CKD); GB 5903-2011; SEB 181226; JIS K 2219:2006
LUKOIL STEELO 460	433	29	>262	<-12	902	Danieli 0.000.001; Eisenbeiss; Eickhoff; FLSmidth MAAG Gear AG; Henschel; Kopex Machinery; Krauss Maffei Berstorff; LOESCHE; Santasalo; SMS Group SN 180-2; ThyssenKrupp Industrial Solutions; ThyssenKrupp AG Mining Systems; WIKOV MGI; DIN 51517-3(CLP); AGMA 9005-E02 (EP) / 9005-F16; David Brown SEB 181226; AIST 224; ISO 12925-1(CKD); GB 5903-2011; JIS K 2219:2006; SEB 181226
LUKOIL STEELO 680	658	46,9	>290	<-12	908	Danieli 0.000.001; Eisenbeiss; Krauss Maffei Berstorff; LOESCHE; Santasalo; SMS Group SN 180-2; ThyssenKrupp Industrial Solutions; Wikov MGI; DIN 51517-3 (CLP); AGMA 9005-E02 (EP)/9005-F16; David Brown SEB 181226; AIST 224; GB 5903-2011; ISO 12925-1 (CKD); JIS K 2219:2006; SEB 181226

# HIGH LOAD RESISTANCE, ZINC-FREE, CLOSED SYSTEM GEAR OILS



LUKOIL STEELO HST Series oils are industrial gear oils for the highest loads (Timken: 70 lbs), they are suitable even for very unfavorable slip conditions and very heavy impact stresses. A stable EP-AW film prevents surface fatigue for effective protection against micro-cavities. Very good aging stability, very low foaming tendency and good viscosity temperature behavior ensures very long oil change intervals.

LUKOIL STEELO HST Series oils also combine excellent corrosion protection for steel and yellow metals with good compatibility with commonly used elastomers and varnishes.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STEELO HST 1000	1000	55	>230	<-9	904	DANIELI; AGMA 250.04; AGMA 9005-D94; DIN 51517-3 CLP; ISO 12925-1-CKC; Müller Weingarten DT 55005; Siemens MD (Flender) Revision 13 Flender Code A11
LUKOIL STEELO HST 2200	2200	118	>230	<-3	905	AGMA 250.04, AGMA 9005-D94, DIN 51 517-CLP, SEB 181 226, US Steel 222, 223, 224, ISO 12925-1 L-CKC

LUKOIL STEELO PLUS Series offer excellent performance due to their high viscosity index, special additive package containing sulphur and phosphorus, as well as carefully selected very good refined base oils. The proper ratio of anti-friction additives with EP properties allows them to be used effectively in various components and units of the industrial equipment of LUKOIL STEELO PLUS Series.



Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
STEELO PLUS 68	65,46	8,27	>220	<-30	881	-
STEELO PLUS 100	102,7	11,18	>222	<-24	889	-
STEELO PLUS 150	143	13,8	>248	<-21	889	Siemens Flender rev.16; Danieli 0.000.001; LOESCHE; Rosscor; DIN 51517-3(CLP); SMS group SN 180-2
STEELO PLUS 220	219	18,5	>250	<-18	893	Siemens FLENDER rev. 16; Danieli 0.000.001; Knodler; LAEIS; LOESCHE; Rosscor; DIN 51517-3(CLP); SMS group SN 180-2
STEELO PLUS 320	312	23,2	>256	<-15	898	Siemens Flender rev.16; Danieli 0.000.001; LOESCHE; Rosscor; Knodler; DIN 51517-3(CLP); SMS group SN 180-2
STEELO PLUS 460	430	28,5	>262	<-12	903	Siemens Flender rev.16; Danieli 0.000.001; LOESCHE; Rosscor; DIN 51517-3(CLP); SMS group SN 180-2

# FULLY SYNTHETIC CLOSED SYSTEM GEAR OILS

LUKOIL STEELO S Series is a high quality, fully synthetic, high performance gear lubricant with advanced additive technology. LUKOIL STEELO S Series, in accordance with the equipment manufacturer's instructions, is ideal for use in heavy-duty industrial gearboxes and bearing assemblies. It provides maximum lubricating film stability during start-up and high temperatures, which provides low wear and energy savings at low temperatures. The balanced formulation ensures maximum service intervals and offers excellent compatibility with steel materials, non-ferrous metals, elastomer materials and paints, with the help of excellent wear and corrosion protection, low foaming, very good aging resistance properties. The mineral can be easily blended with industrial gear oils.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STEELO S 68	68	10,3	>225	<-54	850	WINERGY; ZF-Wind; AGMA 250.04; AGMA 9005-D94; AGMA 9005-E02; AIST 224; DIN 51517-3 CLP-HC; ISO 12925-1 L-CKT; SEB 181 226; U.S. STEEL 222, 223, 224
LUKOIL STEELO S 100	100	14,3	>240	<-48	842	RENK ZAN 36011; METSO; WINERGY; AGMA 250.04; AGMA 9005-D94; AGMA 9005-E02; AIST 224; DIN 51517-3 CLP-HC; ISO 12925-1 L-CKT; SEB 181 226; U.S. STEEL 222, 223, 224
LUKOIL STEELO S 220	220	25,2	>240	<-36	861	DANA BREVINI; DANIELI 0.000.001; EICKHOFF; FELUWA; FLSmidth MAAG; LOESCHE; METSO; RENK ZAN 36011; Siemens FLENDER Revision 16 Code A35, A34, A33, A32; SMS group SN 180-2; STIEBEL Getriebe A2000, S2000, QuarryMaster, QuarryMaster highpower; ThyssenKrupp Industrial Solutions; WIKOV MGI; WINERGY; ZF-Wind; AGMA 250.04; AGMA 9005-D94; AGMA 9005-E02; AIST 224; DIN 51517-3 CLP-HC; ISO 12925-1 L-CKT; SEB 181 226; U.S. STEEL 222, 223, 224
LUKOIL STEELO S 320	320	34,3	>230	<-39	863	DANA BREVINI; DANIELI 0.000.001; EICKHOFF; FELUWA; FLSmidth MAAG; LOESCHE; RENK ZAN 36011; Siemens FLENDER Revision 16 Code A35, A34, A33, A32; SMS group SN 180-2; STIEBEL Getriebe A2000, S2000, QuarryMaster, QuarryMaster highpower; ThyssenKrupp Industrial Solutions; WIKOV MGI; WINERGY; ZF-Wind; AGMA 250.04; AGMA 9005-D94; AGMA 9005-E02; AIST 224; DIN 51517-3 CLP-HC; ISO 12925-1 L-CKT; SEB 181 226; U.S. STEEL 222, 223, 224

LUKOIL STEELO SYNTH Series is a fully synthetic industrial gear oil formulated with high quality base oils (PAO) and modern additive packages. Developed for high-load, high-temperature enclosed gearboxes that require improved EP characteristics. LUKOIL STEELO SYNTH Series provides stability in equipment operating between -40°C and + 130°C. LUKOIL STEELO SYNTH Series can be used in industrial gearboxes, high-speed closed gearboxes (spur, bevel and worm gears), mixer drive gears, gearboxes and bearings for centrifugal, extruder, skid and cylinder lubrication.

It can be applied to high load and wide temperature ranges. Suitable for most applications such as circulation and spray lubrication.



Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STEELO SYNTH 150	154	20,4	>263	<-40	-	Siemens FLENDER rev. 16; Danieli 0.000.001; Dana Brevini; FLS midth MAAG Gear AG; RENK ZAN 36011; ThyssenKrupp Industrial Solutions; WIKOV MGI; AGMA 9005-E02; AIST 224; DIN 51517-3 (CLP)
LUKOIL STEELO SYNTH 220	205	25,4	>250	<-45	-	Siemens FLENDER rev. 16; Danieli 0.000.001; Dana Brevini; Eickhoff; FLS midth MAAG Gear AG; RENK ZAN 36011; ThyssenKrupp Industrial Solutions; WIKOV MGI; AGMA 9005-E02; AIST 224; DIN 51517-3 (CLP)
LUKOIL STEELO SYNTH 320	322	37,7	>255	<-43	-	Siemens FLENDER rev. 16; RENK ZAN 36011; Eickhoff; Danieli 0.000.001; LOESCHE; FLSmidth MAAG Gear AG; WIKOV MGI; ThyssenKrupp Industrial Solutions; Dana Brevini; AGMA 9005-E02; AIST 224; DIN 51517-3 (CLP)
LUKOIL STEELO SYNTH 460	322	37,7	>255	<-43	-	Siemens FLENDER rev. 16; Eickhoff; Danieli 0.000.001; LOESCHE; FLSmidth MAAG Gear AG; WIKOV MGI; ThyssenKrupp Industrial Solutions; Dana Brevini; SMS group SN 180-2; RENK ZAN 36011; AGMA 9005-E02; AIST 224; DIN 51517-3 (CLP)

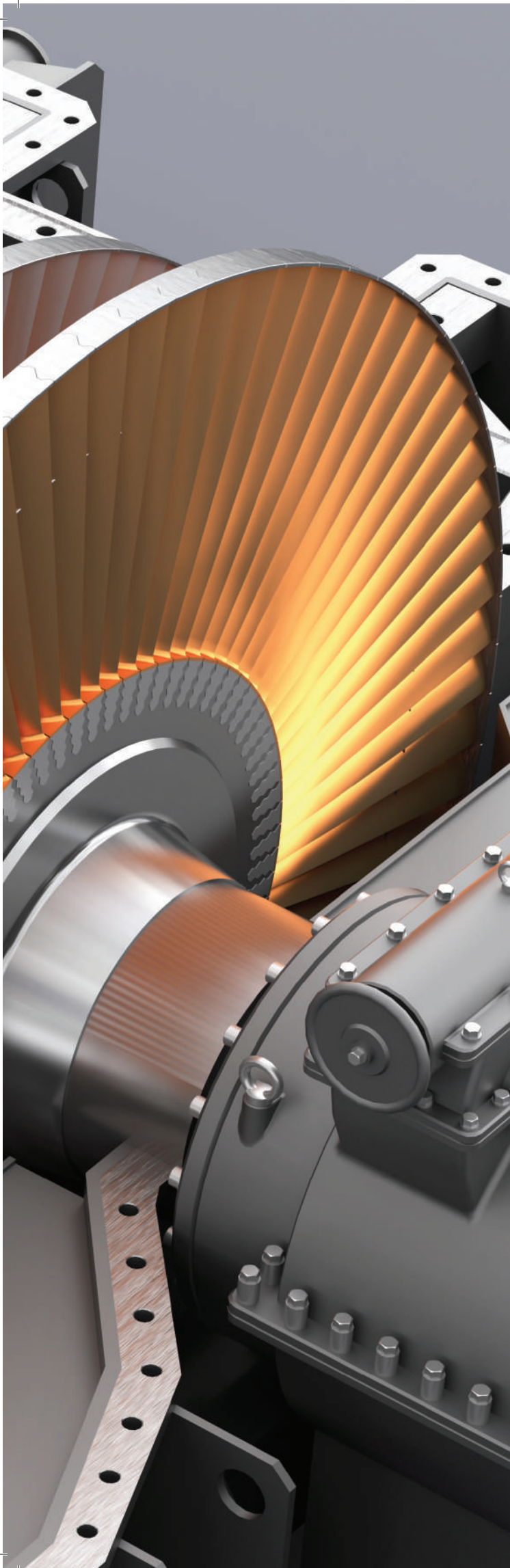
LUKOIL STEELO PG Series is a high-quality, high-performance polyalkylene glycol-based gear oil with advanced additive technology. This product is ideal for use in extreme heavy duty industrial gearboxes, such as worm gears with steel and bronze components (not aluminum) according to the manufacturer's instructions, and provides low wear and energy-saving start-up at low temperatures and maximum lubricating film stability at high temperatures. The balanced formulation ensures maximum service intervals and offers excellent wear and corrosion protection, low foaming and very good aging resistance. Compatibility with elastomer materials and paint should be determined in advance. LUKOIL STEELO PG Series is not compatible with mineral, synthetic and rapidly biodegradable gear oils!

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STEELO PG 220	220	36,8	>240	<-36	1072	LOESCHE-machines (except gearboxes) S 3; DIN 51517-3 CLP-PG; ISO 6743-6 CKC, CKD, CKE, CKT; ISO 12925-1 CKC, CKD, CKE, CKT; AGMA 9005-E02-EP
LUKOIL STEELO PG 460	460	75,1	>280	<-36	1075	LOESCHE-machines (except gearboxes) S 3; DIN 51517-3 CLP-PG; ISO 6743-6 CKC, CKD, CKE, CKT; ISO 12925-1 CKC, CKD, CKE, CKT; AGMA 9005-E02-EP



TURBINE AND COMPRESSOR OILS

03



**TURBINE AND  
COMPRESSOR  
OILS**

# SYNTHETIC TURBINE OILS



LUKOIL TORNADO S AND T Series are a high-quality synthetic-based turbine oils with a very high performance ash-free additive package. Designed and approved with the participation of the world's leading turbine manufacturers.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO S 32	30,1	5,8	>235	<-19	832	Siemens TLV 901305; Siemens TLV 901304; MAN Turbo; JSC "Bobruisk Machine Bulding Plant"; JSC "Volgogradneftemash"; PJSC "Nizhnevartivskkremservice"; Ansaldo Energia; PJSC "The Ural Turbine Works"; JSC "Turboatom"; BRUSH; FLOWSERVE; DIN 51515-1 L-TD; DIN 51515-2 L-TG; Brown Boveri HTGD 90117; Alstom HTGD 90117 V0001 S; General Electric GEK 32568F; Westinghouse Electric Corp. Turbine oil spec. U.S; Steel 120; CEBG 207001; MIL L-17672; Solar ES 9-224; BS 489; ISO 8068
LUKOIL TORNADO T 32						
LUKOIL TORNADO S 46	48,8	7,9	>264	<-25	844	Siemens TLV 901305; Siemens TLV 901304; MAN Turbo; JSC "Power Machines"; BRUSH; JSC "Volgogradneftemash"; PJSC "Nizhnevartivskkremservice"; JSC "Aviadvigatel"; ABB; JSC "Bobruisk Machine Bulding Plant"; Ansaldo Energia; DIN 51515-1 L-TD; DIN 51515-2 L-TG; Brown Boveri HTGD 90117; Alstom HTGD 90117 V0001 S; General Electric GEK 32568F; Westinghouse Electric Corp. Turbine oil spec. U.S; Steel 120; CEBG 207001; MIL L-17672; Solar ES 9-224; BS 489; ISO 8068
LUKOIL TORNADO T 46						

LUKOIL TORNADO SEP Series oils combine excellent oxidation stability, excellent air venting, fast water separation and excellent corrosion prevention properties even at higher operating temperatures.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO SEP 32	32	5,9	>230	<-36	845	SIEMENS TLV 9013 04/ 9013 05; DIN 51515-2 TSP; GENERAL ELECTRIC; MAN TURBO; VOITH Turbo
LUKOIL TORNADO SEP 46	46	7,6	>240	<-33	845	SIEMENS TLV 9013 04/ 9013 05; MAN TURBO; DIN 51515-2 TSP; GENERAL ELECTRIC; VOITH Turbo

LUKOIL TORNADO SNH Series consists in high-performance turbine oils formulated with synthetic base oils, featuring exceptional quality, excellent aging stability and anti-corrosion properties. LUKOIL TORNADO SNH Series has been specially developed for systems where turbine oil can come into contact with ammonia.

LUKOIL TORNADO SNH Series combines excellent oxidation stability even at higher operating temperatures with excellent water separation. Thanks to its advanced formulation, it effectively prevents varnish formation.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO SNH 38	38	6,8	>240	<-33	845	DIN 51515-1 TD
LUKOIL TORNADO SNH 46	46	7,9	>245	<-33	846	DRESSER-RAND; DIN 51515-1 TD

# MINERAL TURBINE OILS



LUKOIL TORNADO Series consists in high-quality turbine oils based on quality base oils and a high-performance additive package. It provides fast water separation, excellent air separation and high corrosion resistance.

LUKOIL TORNADO Series oils are used in steam and gas turbines and can also be used in circulation and hydraulic systems exposed to high temperatures and air.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO 32	32	5,3	>200	<-12	876	FLSmidth MAAG; SIEMENS TLV 9013 04; DIN 51515-1 TD; BBC; ELIN; Kraftwerksunion; MAN; KK&K; SIEMENS TLV 9013 04 (ISO VG 68); STAL-LAVAL
LUKOIL TORNADO 46	46	6,7	>220	<-12	878	FLSmidth MAAG; SIEMENS TLV 9013 04; DIN 51515-1 TD; BBC; ELIN; Kraftwerksunion; MAN; KK&K; SIEMENS TLV 9013 04 (ISO VG 68); STAL-LAVAL
LUKOIL TORNADO 68	68	8,6	>220	<-9	878	FLSmidth MAAG; DIN 51515-1 TD; BBC; ELIN; Kraftwerksunion; MAN; KK&K; SIEMENS TLV 9013 04 (ISO VG 68); STAL-LAVAL

LUKOIL TORNADO EP Series turbine oils combine excellent oxidation stability, excellent air venting, fast water separation and excellent corrosion prevention properties even at higher operating temperatures. It does not contain zinc, chlorine, PCB and PCT.

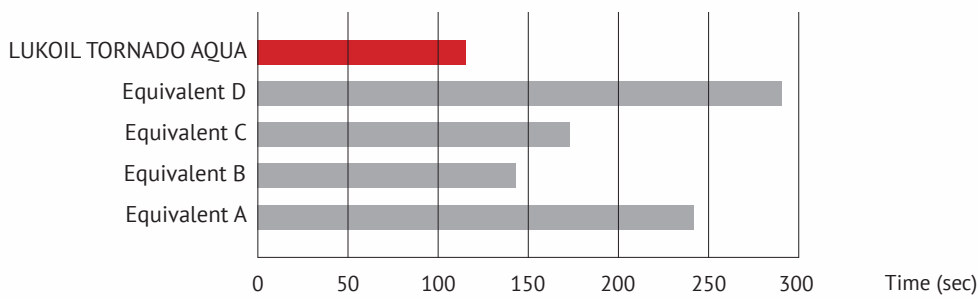
Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO EP 32	32	5,3	>200	<-12	875	SIEMENS TLV 9013 04; DIN 51506 – VB,-VBL; DIN 51515-1 TDP; DIN 51517-2 CL; DIN 51524-1 HL; Kraftwerksunion (= Siemens KWU); SEB 181222; VDMA 24318 – HL
LUKOIL TORNADO EP 46	46	6,7	>210	<-12	874	SIEMENS TLV 9013 04; DIN 51506 – VB,-VBL; DIN 51515-1 TDP; DIN 51517-2 CL; DIN 51524-1 HL; Kraftwerksunion (= Siemens KWU); SEB 181222; VDMA 24318 – HL
LUKOIL TORNADO EP 68	68	8,6	>210	<-9	881	DIN 51506 – VB,-VBL; DIN 51515-1 TDP; DIN 51517-2 CL; DIN 51524-1 HL; Kraftwerksunion (= Siemens KWU); SEB 181222; SIEMENS TLV 9013 04 (ISO VG 68); VDMA 24318 – HL

# TURBINE OILS FOR WATER TURBINES

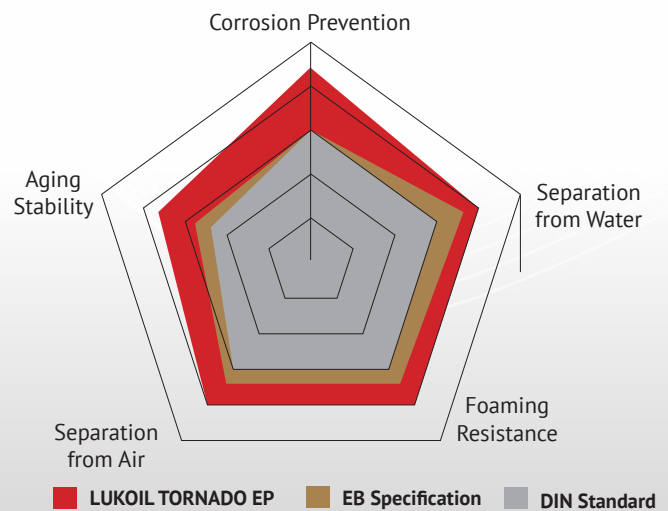
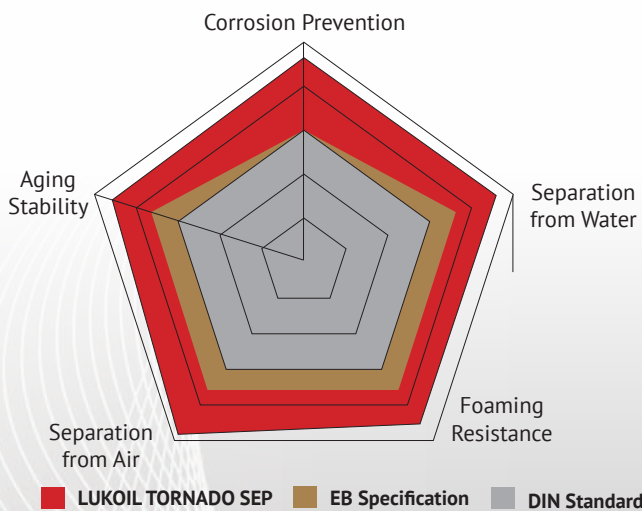
LUKOIL TORNADO AQUA are high quality mineral turbine oils. The products offer excellent aging resistance, especially good air and water evacuation, and reliable corrosion protection. LUKOIL TORNADO AQUA Series is suitable as lubricating oils for water and steam turbines and hydraulic and circulation lubrication systems according to the manufacturer's instructions.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TORNADO AQUA 78	78	9,4	>210	<-21	875	DIN 51515-1 TD; ISO 8086-L-TSA,-TGA; BBC; DEMAG-DELAVAL; ELIN Kraftwerksunion; MAN; STAL-LAVAL
LUKOIL TORNADO AQUA 100	100	11	>220	<-21	878	-

## LUKOIL TORNADO AQUA WATER SEPARATION CAPABILITY



## TURBINE OIL CHARACTERISTIC PROPERTIES



# MINERAL COMPRESSOR OILS

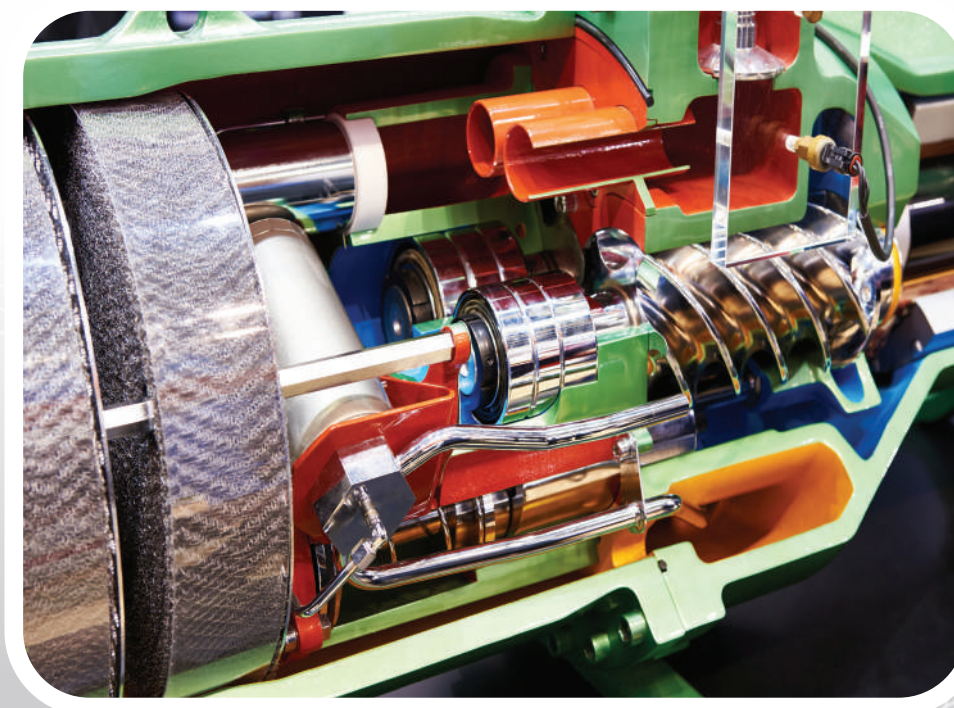


LUKOIL STABIO Series oils are high quality compressor oils based on quality base stocks and a high-performance additive package. In addition to the circulation of lubrication systems operating at high temperatures, it shows excellent performance at extremely low temperatures in modern screw compressors. Thanks to its balanced viscosity-temperature behavior, it provides constant pressure to the hydraulic circuit.

LUKOIL STABIO Series lubricants support easy commissioning at low temperatures. It is designed to meet the latest lubrication requirements.

LUKOIL STABIO Series lubricants offer excellent protection against oxidation, abrasion and corrosion. It reduces the formation of sludge and deposits in the compressor discharge lines. It has excellent performance, and wide temperature operating range.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STABIO 46	44,7	6,8	>258	<-38	862	ATMOS Chrast; Termomeccanica Compressori; Rotorcomp Verdichter; PJSC Sumy Machine-Building Science and Production Association (Sumy Frunze NPO); DIN 51506 VDL; ISO 6743-3A
LUKOIL STABIO 68	69,4	9,1	>240	<-30	872	ATMOS Chrast; Termomeccanica Compressori; Rotorcomp Verdichter; PJSC Sumy Machine-Building Science and Production Association (Sumy Frunze NPO); DIN 51506 VDL; ISO 6743-3A
LUKOIL STABIO 100	107,8	11,6	>258	<-28	887	ATMOS Chrast; Termomeccanica Compressori; Rotorcomp Verdichter; PJSC Sumy Machine-Building Science and Production Association (Sumy Frunze NPO); REXAM; Rosscor; Sacma Group; Santasalo; SCHOTTEL; SMS Group SN 180-2; ThyssenKrupp Industrial Solutions; WIKOV MGI; DIN 51506 VDL; ISO 6743-3A
LUKOIL STABIO 150	150	14,4	>250	<-18	886	DIN 51506 - VB,-VBL,-VC,-VCL,-VDL; ISO 6521 - DAA,-DAB,-DAG,-DAH



## COMPRESSOR OILS WITH DETERGENT ADDITIVES

LUKOIL STABIO D Series is a high-quality compressor oil containing zinc and moderate detergents for screw, piston and sliding blade compressors with or without injection cooling.

LUKOIL STABIO D Series is extremely resistant to aging and reliably protects the equipment from wear and corrosion, shows excellent foaming behavior, as well as good low temperature properties and emulsifying properties.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STABIO D 46	47,4	6,9	>220	<-27	877	DIN 51506 – VB,-VBL,-VC,-VCL,-VDL; ISO 6521 – DAA,-DAB,-DAG,-DAH
LUKOIL STABIO D 68	68,7	8,7	>225	<-24	883	DIN 51506 – VB,-VBL,-VC,-VCL,-VDL; ISO 6521 – DAA,-DAB,-DAG,-DAH

## SYNTHETIC COMPRESSOR OILS

LUKOIL STABIO S Series is characterized by exceptional aging resistance, minimal residue formation, good sealing compatibility, extremely low yield point, low evaporation tendency and excellent foaming behavior.

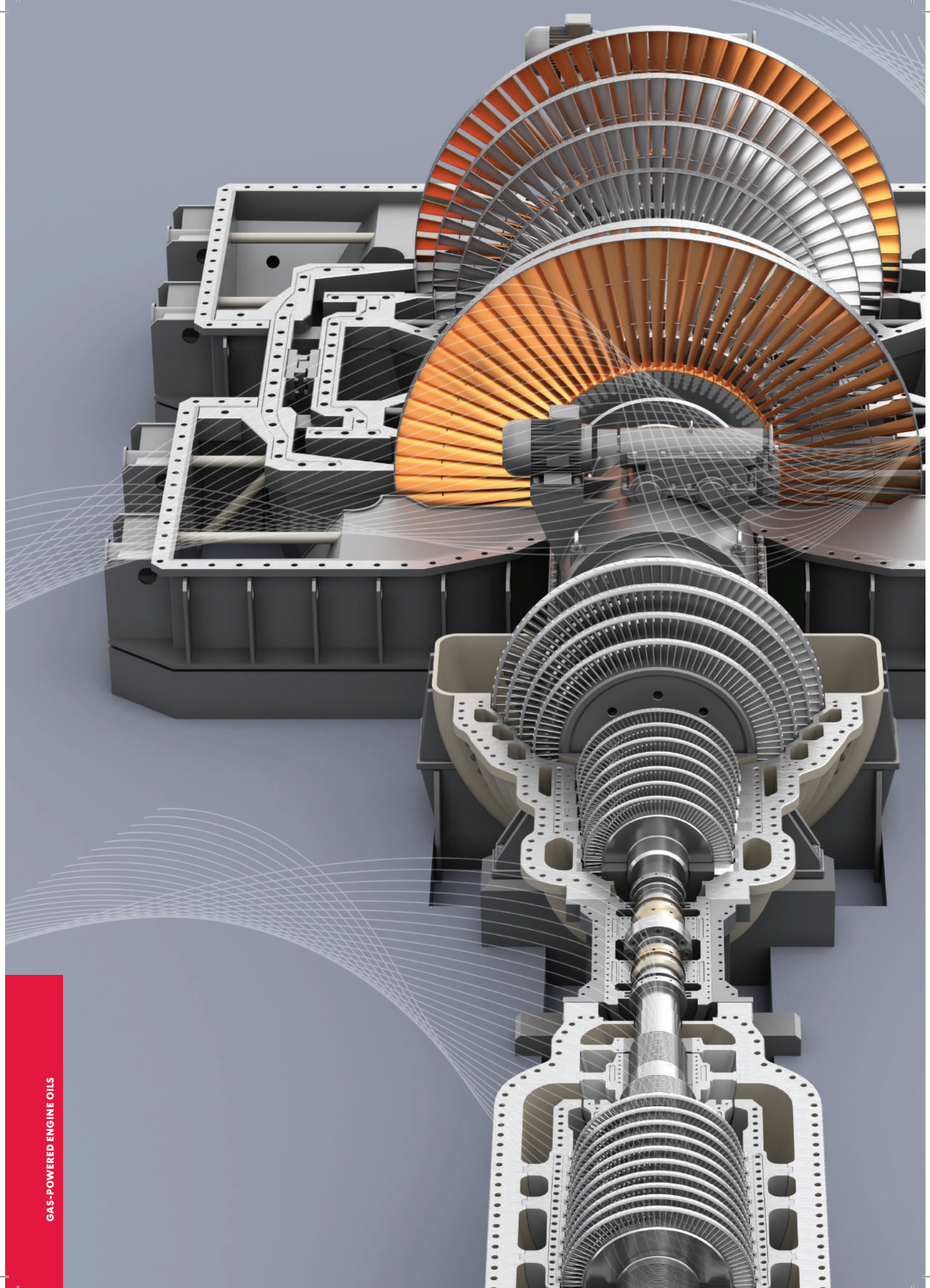
Sulfur-free and zinc-free anti-wear additives and synthetic base stock are the latest highlights of LUKOIL STABIO S performance equipment for heavy duty and long-term use. Suitable for use at a wide variety of temperatures and exceeds mineral compressor oils in all respects.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STABIO S 32	32	6,2	>220	<-54	829	DIN 51524-3 HVLP-HC; DIN 51506-VB-HC,-VBL-HC,-VC-HC,-VCL-HC,-VDL-HC; ISO 6521 - DAA,-DAB,-DAG,-DAH
LUKOIL STABIO S 46	46	7,9	>230	<-48	834	DIN 51524-3 HVLP-HC; DIN 51506-VB-HC,-VBL-HC,-VC-HC,-VCL-HC,-VDL-HC; ISO 6521 - DAA,-DAB,-DAG,-DAH
LUKOIL STABIO S 68	68	11,2	>260	<-48	836	DIN 51524-3 HVLP-HC; DIN 51506-VB-HC,-VBL-HC,-VC-HC,-VCL-HC,-VDL-HC; ISO 6521 - DAA,-DAB,-DAG,-DAH
LUKOIL STABIO S 100	100	14,2	>240	<-45	840	DIN 51524-3 HVLP-HC; DIN 51506-VB-HC,-VBL-HC,-VC-HC,-VCL-HC,-VDL-HC; ISO 6521 - DAA,-DAB,-DAG,-DAH

## HYDROTREATED COMPRESSOR OILS

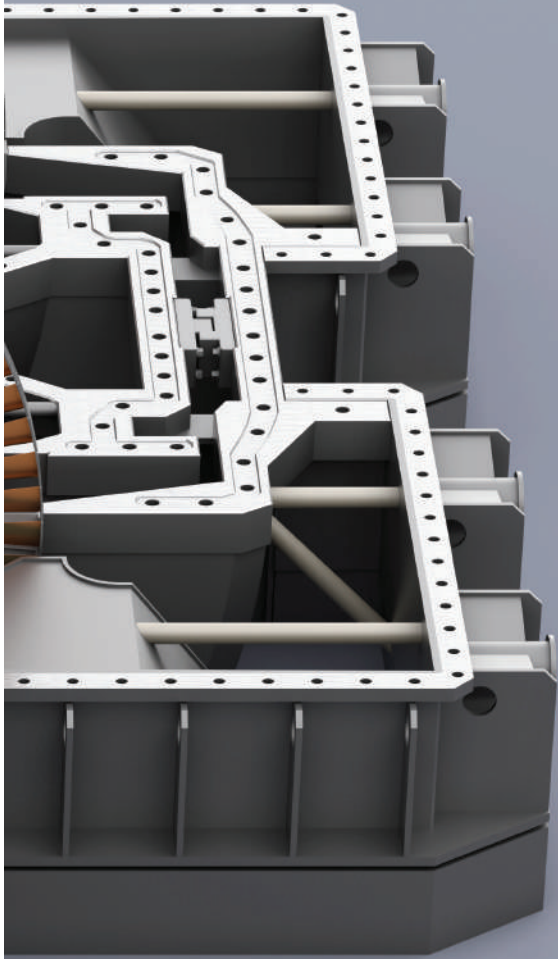
LUKOIL STABIO PLUS is a high-quality compressor oil based on quality base stocks and a high-performance additive package. In addition to the circulation of lubrication systems operating at high temperatures, it shows excellent performance at extremely low temperatures in modern screw compressors. Thanks to its balanced viscosity-temperature behavior, it provides constant pressure to the hydraulic circuit. LUKOIL STABIO PLUS Series lubricants offer excellent protection against oxidation, abrasion and corrosion. It reduces the formation of sludge and deposits in the compressor discharge lines. It has excellent performance and wide temperature operating range.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL STABIO PLUS 46	46	7,4	>214	<-39	864	Performances: DIN 51506 VDL, ISO 6743-3A
LUKOIL STABIO PLUS 68	70,67	9,24	>220	<-36	867	DIN 51506 VDL, ISO 6743-3A
LUKOIL STABIO PLUS 100	102	11,18	>250	<-24	888	DIN 51506 VDL, ISO 6743-3A



GAS-POWERED ENGINE OILS

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**GAS-POWERED  
ENGINE OILS**

# GAS-POWERED ENGINE OILS

LUKOIL EFFORCE XDI 4004 is a semi-synthetic gas engine oil with extremely low ash for maximum service intervals. This engine oil is ideal for use on turbocharged and catalytic converter or four-stroke gas engines. Advanced additive technology provides reliable protection against deposit formation in the combustion chamber and exhaust system, prevents deposit formation and carbonization, and offers excellent corrosion protection.

Not suitable for use on petrol or diesel-operated engines!

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL EFFORCE XDI 4004	134	13,2	278	-31	871	GE Jenbacher TA 1000-1109 Type 6 (C, E); GE Jenbacher TA 1000-1109 Type 4; (A, B) GE Jenbacher TA 1000-1109 Type; 3 (A, B) GE Jenbacher TA 1000-1109; Type 2 (A, B) Caterpillar; TR0199-99-12105-19 MWM; TR0199-99-02105-19; Waukesha Caterpillar 3500, 3600; Cummins QSV 91G, QSV 81G, QSK 60G; QSK 45G Wartsila 175SG, 220SG, 255G; 28SG, 34SG, 50SG, 20DF, 32DF, 34DF; 50DF

LUKOIL EFFORCE 4004 is a medium ash, mineral gas engine oil. This engine oil is ideal for use in turbocharged and catalytic converter or four-stroke gas-powered engines. Advanced additive technology provides reliable protection against deposit formation in the combustion chamber and exhaust system, prevents deposit formation and carbonization, and offers excellent corrosion protection.

Not suitable for use on petrol or diesel-operated engines!

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL EFFORCE 4004	131	14.2	>230	<-21	884	GE Jenbacher TA 1000-1109 (and especially for Series 6 F) Deutz 0199-99-2105/7 Rolls-Royce K-type engines Wärtsilä 175SG, 220SG, 255G, 28SG, 34SG, 50SG, 20DF, 32DF, 34DF, 50DF MAN Diesel & Turbo (4 stroke medium speed engines) MHI GS16R2; MAN 3271-2

LUKOIL EFFORCE HD 4009 is an extremely low ash mineral gas-powered engine oil. This engine oil is ideal for use in heavy-duty four-stroke gas engines. Advanced additive technology provides reliable protection against deposit formation in the combustion chamber and exhaust system, prevents deposit formation and carbonization, and offers excellent corrosion protection.

Not suitable for use on petrol or diesel-operated engines!

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL EFFORCE HD 4009	163	13.5	260	-27	888,4	MAN 3271-4, MDE 57 AP 2008, MTU BR 400, GE-JENBACHER TA 1000-1109; MIL-L-2104B/C, API CC





METALWORKING AND FORMING OILS

05



**METALWORKING  
AND FORMING  
OILS**

## VOLATILE FORMING FLUID

LUKOIL INSO FORM SP 3202 is a high performance volatile forming fluid.

LUKOIL INSO FORM SP 3202 allows the forming operation to be carried out after the process without requiring cleaning.

After the product evaporates, it does not leave unwanted deposits. LUKOIL INSO FORM SP 3202 does not stain non-ferrous metals such as aluminum, brass, copper, and is compatible with steel materials.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM SP 3202	1,5-3	0,871	65	-	807

## TAPPING OILS

LUKOIL INSO FORM DD 3246 is a semi-synthetic tapping oil with superior lubricating properties specially designed for use in tapping processes. Thanks to this feature, it minimizes friction on the inserts, reducing friction and improving surface quality.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM DD 3246	46-55	-	220	-	880

LUKOIL INSO FORM DD 32140 CLP is a semi-synthetic tapping oil with superior lubricating properties specially designed for use in tapping processes. Thanks to this feature, it minimizes friction on the inserts, reducing friction and improving surface quality.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM DD 32140 CLP	136	14,52	220	-18	982

## NEAT CUTTING OILS



LUKOIL INSO SP 3210 AL is a cutting, drilling and metal processing oil reinforced with qualified base oils and synthetic ester technology, made suitable for working with especially yellow and aluminum materials with its active sulfur-free structure. It can be used in full compliance with the bronze and tin materials in the bearings.

LUKOIL INSO SP 3210 AL is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 3210 AL	10	-	180	-57	840



LUKOIL INSO SP 3222 AL is a cutting, drilling and metalworking oil developed with qualified base oils, synthetic esters and chemical components and it is suitable for working with aluminum and yellow materials that the process will require. It can be used in full compliance with the bronze and tin materials in the bearings. It does not contain active sulfur, chlorine paraffin, zinc.

LUKOIL INSO SP 3222 AL is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 3222 AL	20-24	4-5	200	-12	874



LUKOIL INSO SP 3222 F is a metalworking oil developed for use in the cutting and drilling processes of steel, developed with qualified base oils, synthetic esters and chemical components that the process will require in accordance with the current REACH regulation.

LUKOIL INSO SP 3222 F is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 3222 F	22	4, 2	200	-12	874



LUKOIL INSO GP 12 Series are metalworking oils developed with high oxidation resistance and paraffinic base oils.

LUKOIL INSO GP 12 Series is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 1212	13	-	178	*	844
LUKOIL INSO SP 1215	14	-	172	*	830
LUKOIL INSO SP 1222	21, 5	-	190	*	840
LUKOIL INSO SP 1232	30	-	220	*	850
LUKOIL INSO SP 1246	46, 8	6, 8	226	-9	873
LUKOIL INSO SP 1268	69, 144	9, 3	230	-	860

LUKOIL INSO GP 22 Series are metalworking oils developed with high oxidation resistance and paraffinic base oils.

LUKOIL INSO GP 22 Series is a purely used product. It is not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 2215	14	-	172	-	830
LUKOIL INSO SP 2222	21,5	-	190	-	840
LUKOIL INSO SP 2232	30	-	220	-	850
LUKOIL INSO SP 2212	13	-	178	-	844

LUKOIL INSO SP 3222 YM is a pure cutting oil developed with zinc-free, synthetic inactive sulfur technology with base oils with low sulfur and high oxidation resistance. It does not contain chlorine paraffin.

LUKOIL INSO SP 3222 YM is a purely used product. It is not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 3222 YM	22	-	200	-12	874



LUKOIL INSO SP 3210 YM is a cutting, drilling and metal processing oil reinforced with qualified base oils and synthetic ester technology, made suitable for working with especially yellow and aluminum materials with its active sulfur-free structure. It can be used in full compliance with the bronze and tin materials in the bearings.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO SP 3210 YM	10	-	182	-57	840



LUKOIL INSO FORM SP 3217 Series is aluminum cutting oils developed with qualified base oils and up-to-date technology that the process will need.

LUKOIL INSO FORM SP 3217 Series is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO SP 3217	1,7-2,5	-	100	-51	770

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO SP 3217 PLUS	7,6	2,5	170	-51	822

## COLD FORMING OILS



LUKOIL INSO FORM CF 2246 YM is a metalworking oil developed for use in cutting, drilling and cold forming processes developed with qualified base oils. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 2246 YM	46	6,8	216	-15	870

LUKOIL INSO FORM CF 2268 YM is a metalworking oil developed for use in shear, drilling and cold forming processes developed with qualified base oils. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 2268 YM	68	-	220	-	880

LUKOIL INSO SP 22 F Series are metalworking oils developed with high oxidation resistance and paraffinic base oils.

LUKOIL INSO SP 22 F Series is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO SP 2212 F	11-13	-	170	*	840
INSO SP 2215 F	13-15	-	172	*	840

LUKOIL INSO FORM CF 3246 is a premium performance neat cutting oil formulated for alloy metals. It is used neat in heavy-duty operations such as broaching, milling, shear, turning, reaming, threading, tapping. It is especially formulated for stainless steel, very high alloy metals and titanium materials. Due to the content of EP additives in its formulation, it can cause color change in yellow materials such as bronze, brass and copper; Therefore, it is not recommended to use it in the processing of such materials.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 3246	47327	7,27	222	-36	866

LUKOIL INSO FORM CF 22100 is a metalworking oil developed for use in cutting, drilling and cold forming processes developed with qualified base oils. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 22100	101,4	10,96	230	-15	888

LUKOIL INSO FORM CF 22100 F is a chlorine-free metalworking oil suitable for use in all types of cold forming processes with medium to heavy loads, developed with qualified base oils and superior EP additives. It is a high-performance metalworking oils used in fasteners made of steel and its alloys in cold forming processes and threading operations of screws, bolts and nuts, hobbing machines in the machining industry, sliding automats, crushing, threading and grooving operations.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 22100 F	101,4	10,96	230	-15	886

INSO FORM CF 22100 YM is a metalworking oil compatible with yellow materials developed with qualified base oils for use in cutting, drilling and cold forming processes. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 22100 YM	101,4	10,96	230	-15	886

INSO FORM CF 22150 is a metalworking oil developed for use in shear, drilling and cold forming processes developed with qualified base oils. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 22150	142	14	236	-12	889

INSO FORM CF 22220 is a metalworking oil developed for use in cutting, drilling and cold forming processes developed with qualified base oils. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM CF 22220	216,6	18,4	240	-9	891





LUKOIL INSO FORM CF 12150 is a cold forming process oil with mineral base oil content, improved foam stability and oxidation resistance.

LUKOIL INSO FORM CF 12150 is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 12150	150	-	238	-	890

LUKOIL INSO FORM CF 12220 is a cold forming process oil with mineral base oil content, improved foam stability and oxidation resistance.

LUKOIL INSO FORM CF 12220 is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 12220	220	-	260	-	890

LUKOIL INSO FORM CF 3268 YM is a metal processing oil reinforced with qualified base oils and synthetic ester technology, made suitable for working with especially yellow and aluminum materials with its active sulfur-free structure, developed for use in shear, drilling and cold forming processes. It can be used in full compliance with the bronze and tin materials in the bearings. It is a product used as neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 3268 YM	68	-	240	-	880



LUKOIL INSO FORM CF 3246 F is a compatible metalworking oils for iron, steel and their alloys developed for use in the shear, tapping and drilling processes of steel, developed with qualified base oils, synthetic esters, high EP content.

LUKOIL INSO FORM CF 3246 F is used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 3246 F	46	7	220	-36	860



LUKOIL INSO FORM CF 3268 F is a metal working oil compatible with iron, steel and their alloys developed for use in the cutting, tapping and drilling processes of steel, developed with qualified base oils, synthetic esters, high EP content

LUKOIL INSO FORM CF 3268 F is a purely used product. It is not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 3268 F	68	8,8	214	-9	886

LUKOIL INSO FORM CF 3268 premium performance oil formulated for alloy metals.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO FORM CF 3268	68	8,8	214	-9	886

LUKOIL INSO FORM CF 3268 CS is a superior performance cold forming oil formulated for alloyed metals with high EP and detergent properties.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
INSO FORM 3268 CS	68	8,8	214	-9	886

## FORMING AND WIRE-DRAWING OILS

LUKOIL INSO WIRE FE is a forming and, wire drawing oil produced with high quality and high oxidation resistant base oils and special friction regulating chemicals obtained as a result of the hydrodewaxing process and which has effective sliding feature even under high pressure thanks to the synthetic component it contains.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO WIRE FE	87	11,9	240	-30	910

LUKOIL INSO WIRE FE can be used in wire drawing operations, surface correction diameter adjustment operations, forming operations.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL INSO WIRE FE 5	87	11,9	240	-30	-



## WATER-MISCIBLE METALWORKING FLUIDS

LUKOIL FREO FORM 3230 EP is a high performance forming fluid that is miscible with water. LUKOIL FREO FORM 3230 EP can be used in both central and single systems. LUKOIL FREO FORM 3230 EP can be used for steel and its alloys, aluminum and alloys.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO FORM 3230 EP	0,95-1,05	9-9,5	1

LUKOIL FREO FORM 3260 DC is a high performance forming fluid concentrate that is miscible with water. It can be used both in central and single systems. It can be used for steel and its alloys, aluminum and its alloys.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO FORM 3260 DC	0,95-1,05	9,0-9,5	1

LUKOIL FREO GP 1210 is a mineral oil-based macroemulsion coolant that provides very good cooling and lubrication thanks to its special formulation of well-refined base oils, esters and premium quality additives. It is recommended for use in all light to medium metal cutting operations and metalworking processes.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO GP 1210	0,88	9,2	1

LUKOIL FREO SP 2230 is a fully synthetic, high-performance grinding fluid. With LUKOIL FREO SP 2230, it is suitable for both central systems and single systems. Products made with LUKOIL FREO SP 2230 are compatible with hard water, form stable mixtures, and have high resistance to microorganisms.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO SP 2230	1,00	9,5	2,5

LUKOIL FREO SP 3220 EP is a high-performance metalworking fluid suitable for heavy-duty metalworking operations. It is suitable for use in central systems and storage benches. It has a high resistance against the formation of bacteria and fungi, forming stable emulsions compatible with hard water. It ensures high performance in the processing of alloyed steels, aluminum and aluminum alloys and some yellow metals.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO SP 3220 EP	0,9 - 1,0	9,4	1,4

LUKOIL FREO SP 2220 HW is a micro-emulsion type, bio-stable, bactericide-free, universal metalworking liquid developed for machining and grinding of various materials.

The finished emulsion prepared with LUKOIL FREO SP 2220 HW are resistant to hard water, form stable mixtures and are very resistant to micro-organisms.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO SP 2220 HW	1,025	9,4	1,6

FREO SP 2220 LS is a high-performance anti-corrosion and anti-burr fluid for metal welding and cutting shear, which protects workpieces from adhesion of high-energy splashes and eliminates costly deburring processes.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL FREO SP 2220 LS	-	9,4	-	-	1,05

LUKOIL FREO HF is a high performance forging fluid concentrate with graphite.

LUKOIL FREO HF WG provides protection against heat by coating the mold surfaces well thanks to its well-balanced distribution of micronized graphite particles. It forms a good protective film layer on the mold surfaces at high temperatures.

This film layer increases mold life by providing high metal flow rate even in extreme cases.

LUKOIL FREO HF WG is used by mixing with water.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO HF WG	1,1	-	-



The new generation of LUKOIL FREO HF S is a synthetic forging fluid concentrate.

LUKOIL FREO HF S does not contaminate the working environment as it does not contain graphite.

LUKOIL FREO HF S is used by mixing with water.

Product name	Density 20°C kg/m <sup>3</sup>	pH (%3 deionized water)	Refractometer factor
LUKOIL FREO HF S	1,05-1,20	-	-



## ELECTRO EROSION LIQUID - EDM

LUKOIL INSO SP 3202 EDM is a metalworking oil developed for use in the cutting, drilling and bolt production processes of vending steel, developed with qualified base oils and up-to-date technology that the process will require.

LUKOIL INSO SP 3202 EDM is a used neat, not used by mixing with water.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL INSO SP 3202 EDM	1,7-2,5	240	100	260	770	240

# ADDITIVE CHEMICALS FOR METAL PROCESSING



## LUKOIL FREO SCL SYSTEM CLEANER CONCENTRATE

LUKOIL FREO SCL is a powerful system cleaner. Cleanses dirt, sediment and microbial contamination.

LUKOIL FREO SCL is typically used between the ratio 1-3%.

## LUKOIL FREO BC ANTI-BACTERIAL CHEMICAL

LUKOIL FREO BC is used in liquids where microbial levels are elevated, especially for the control of bacterial contamination. It is soluble with water. As its general properties, it has high efficiency, shows its effect quickly and has a pH raising effect.

LUKOIL FREO BC is suitable for a wide range of applications. Therefore, the recommended usage may vary. In general, coolant can be used in the ratio of 1/1000 for mixing tank additions.

It is recommended that the pH value of the mixtures is 8, 8 or higher in tank additions. Therefore, it is recommended to use LUKOIL FREO PH before adding LUKOIL FREO BC.

## LUKOIL FREO FG ANTI-FUNGI CHEMICAL

LUKOIL FREO FG is used in liquids where microbial levels are elevated, especially for the control of fungi and yeast contamination. It is soluble with water. It has high effectiveness as its general characteristics and shows its effect quickly.

LUKOIL FREO FG is suitable for a wide range of applications. Therefore, the recommended usage may vary. In general, coolant can be used in the scale of 1/10000 for mixing tank additions.

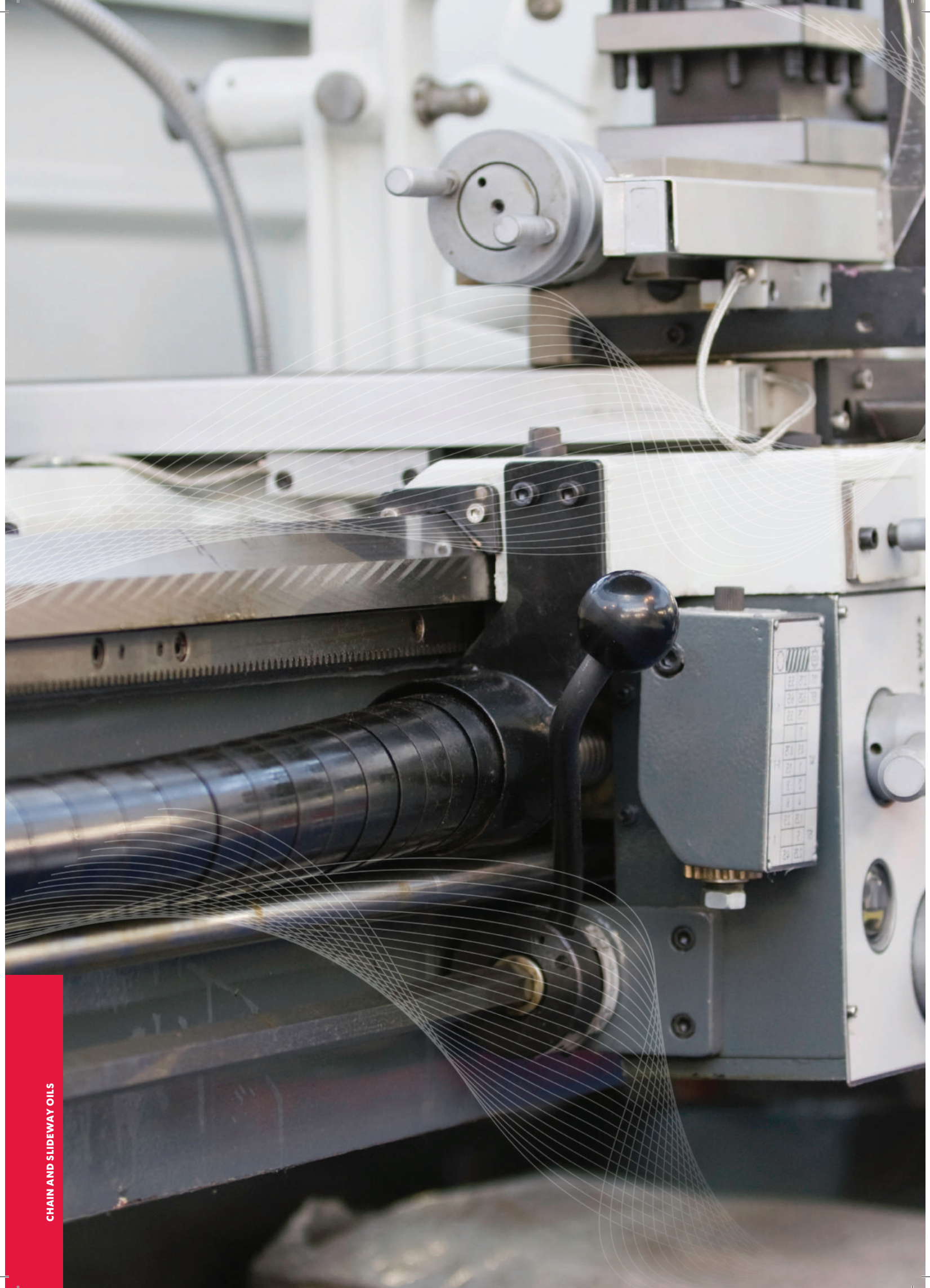
It is recommended that the pH value of the mixtures is 8, 8 or higher in tank additions. Therefore, it is recommended to use LUKOIL FREO PH before adding LUKOIL FREO FG.

## LUKOIL FREO PH PH BOOSTER CHEMICAL

LUKOIL FREO PH is used to raise pH levels to optimum values in water-mixed metalworking fluids and cleaners where pH levels are low. It is soluble with water.

LUKOIL FREO PH is suitable for a wide range of applications. Therefore, the recommended usage may vary. In general, coolant can be used in the ratio of 1/ 1000- 1/2000 for mixing tank additions.

In order to obtain optimum results, the pH value of the mixtures in the tank additions must be between 8.9 and 8.5. Before adding LUKOIL FREO FG, it is recommended to use LUKOIL FREO PH if the pH level is below 8.9.



CHAIN AND SLIDEWAY OILS

06



**SLIDEWAY OILS**

## SLIDEWAY OILS



LUKOIL SLIDO Series are high quality industrial slideway oils for machine skids, flat and rotary type sliding tables.

LUKOIL SLIDO Series is formulated with high viscosity index mineral base oils and selected additive package.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL SLIDO 68	68,1	8,9	224	-27	870	Haitian AVTOVAZ; DIN 51502 CG DIN 51524-2 HLP (ISO VG 32, 68, 150); DIN 51517-3 CLP Cincinnati Machine P-47 (ISO VG 68); Bijur Filtration Testing SKC Coolant Separability
LUKOIL SLIDO 220	217	18,2	260	-24	893	AVTOVAZ; DIN 51502 CG DIN 51517-3 CLP; Bijur Filtration Testing; SKC Coolant Separability
LUKOIL SLIDO 320	315	23,5	260	-12	898	DIN 51 502 CG, DIN 51 502 CGLP, DIN 51 517 CLP, ISO/TR 3498-G, ISO 6743/13-G
LUKOIL SLIDO 460	497	31,3	280	-9	904	DIN 51 502 CG, DIN 51 502 CGLP, DIN 51 517 CLP, ISO/TR 3498-G, ISO 6743/13-G



PNEUMATIC AND CIRCULATING OILS

07



**PNEUMATIC AND  
CIRCULATING  
OILS**

# PNEUMATIC OILS

Excellent adhesion properties and the ability to dissolve condensate or absorb moisture from the air mean that LUKOIL AIR S offers completely reliable anti-icing properties even in humid, cold weather conditions.

Other outstanding features of LUKOIL AIR S are its superior protection against corrosion, anti-wear properties, low viscosity-temperature dependence and low pour point.

LUKOIL AIR S provides excellent protection against corrosion; This is especially important for pneumatic tools when they are not in use and are in storage. Its good performance at low temperatures means that it can be used effectively even at very low temperatures.

Since LUKOIL AIR S is biodegradable, it provides optimum environmental protection.



Biodegradable

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL AIR S	20	-	>245	<-21	1100	DIN 51502 – CL PG22

LUKOIL AIR 100 adheres to metal surfaces thanks to its special, high polar additives. This prevents the oil from falling out and provides proper wear protection and low oil consumption.

LUKOIL AIR 100 prevents the effect of corrosion, which is especially necessary when pneumatic tools have longer periods of inactivity. Due to the appropriate low temperature behavior, LUKOIL AIR 100 should be used in wide temperature ranges.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL AIR 100	100	11,1	>225	<-9	884	ISO 6743-11

# CIRCULATING OILS

LUKOIL INTEGO Series is characterized by good resistance to aging, effective corrosion protection, low foaming tendency, excellent emulsion removal ability, good lubricating effect and neutral elastomer behavior.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL INTEGO 150	150	14,3	>230	<-15	892	DIN 51517-2 CL DIN 51501 – L-AN; DIN 51502 – H
LUKOIL INTEGO 220	220	18,9	>240	<-12	897	DIN 51517-2 CL DIN 51501 – L-AN; DIN 51502 – H
LUKOIL INTEGO 320	320	23,1	>250	<-9	899	DIN 51517-2 CL DIN 51501 – L-AN; DIN 51502 – H
LUKOIL INTEGO 460	460	30,1	>260	<-9	904	DIN 51517-2 CL DIN 51501 – L-AN; DIN 51502 – H



LUKOIL INTEGO PREMIUM Series is high performance heavy duty circulating oils developed to meet the requirements of No-Twist rolls. It also meets the Danielli frames of bar rolls and provides an effective performance for gear-bearing lubrication.

LUKOIL INTEGO PREMIUM Series consists of high-quality mineral base oils and high-performance ash-free additive packs, strong antioxidants, anti-corrosion and water-repellent components, providing high foaming stability.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL INTEGO PREMIUM 150	140,5	-	246	-14	-	Morgan No-Twist Mill Oil; EZTM; Danielli; SMS Group SN180-4
LUKOIL INTEGO PREMIUM 220	208,7	-	248	-18	-	Morgan No-Twist Mill Oil; EZTM; Danielli; SMS Group SN180-4
LUKOIL INTEGO PREMIUM 320	304,01	22,39	>293	<-12	0,896	Danieli 0.000.001; Morgan No-Twist Mill Oil; EZTM; SMS Group SN 180-4
LUKOIL INTEGO PREMIUM 460	467	29,70	>250	<-12	0,9066	Danieli 0.000.001; SMS Group SN 180-4; EZTM

LUKOIL ROUND Series is characterized by good oxidation stability, effective corrosion protection, absence of foaming, anti-wear properties and neutral reaction to seals.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL ROUND 10	10	2,8	>135	<-36	843	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 22	22	4,3	>210	<-12	850	-
LUKOIL ROUND 32	32	5,3	>205	<-18	874	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 46	46	6,9	>205	<-15	874	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 68	68	8,9	>215	<-12	879	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 100	100	11,4	>225	<-12	884	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 150	150	14,4	>250	<-9	889	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 220	220	18,8	>250	<-9	894	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 320	320	24,6	>250	<-9	894	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222
LUKOIL ROUND 460	460	29,1	>255	<-9	904	DIN 51506 – VB und -VBL DIN 51517-2 CL; DIN 51524-1 HL V; DMA 24318 – HL SEB 181222

LUKOIL ROUND EP Series is mineral-based circulating oils for the rubber industry. Formulated with highly purified LUKOIL base oils with the participation of modern multifunctional additives. They are mixed with rubber raw material at a rate of 1-2%.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL ROUND EP 220	220,5	19,1	244	-15	892
LUKOIL ROUND EP 320	317,23	23,142	250	-12	900
LUKOIL ROUND EP 460	455,6	29,5	294	-21	900



LUKOIL ADVANTO Series is special circulating oils for high-performance paper machines operating at high temperatures and speeds under pressurized steam conditions.

LUKOIL ADVANTO Series is made from highly refined mineral base oil components with the addition of a package of high-tech additives that provide excellent performance characteristics of the oil.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL ADVANTO 150	160,1	15,1	257	-26	895	DIN 51517 p.3 (CLP) Voith VN 108; SKF Emcor (Roller test); FAG FE8, Step 4, PMO Metso RAU4L00659/04 (wet end); Metso RAU4L00659/04 (dry end)
LUKOIL ADVANTO 220	219,3	18,9	263	-22	896	DIN 51517 p.3 (CLP) Voith VN 108; SKF Emcor (Roller test); FAG FE8, Step 4, PMO Metso RAU4L00659/04 (wet end); Metso RAU4L00659/04 (dry end)

08

# HEAT TRANSFER AND TRANSFORMER OILS





## HEAT TRANSFER OILS

Heat transfer fluid based on mineral oil for heating and cooling systems. It is characterized by high thermal stability, high protection against deposits and low evaporation loss. It is compatible with all standard materials and sealing materials.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL THERMO 32	30,7	5,2	236	-12	876,8	ISO 6743-12 (Q)

## TRANSFORMER OILS

LUKOIL transformer oils have been developed and formulated to provide strong resistance to oil degradation. Provide excellent oxidation stability for a longer transformer life requiring less maintenance. They have been developed for use in oil-filled electrical equipment, especially power and distribution transformers, rectifiers, circuit breakers and switches.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>	Approvals and Performances
LUKOIL TRANSFORMER OIL TX	9,8	-	160	-45	865,5	IEC 60296 Ed. 5
LUKOIL TRANSFORMER OIL	9,6	-	160	-43	863	IEC 60296 Ed. 5





MOLD RELEASE AND PROTECTIVE OILS

09



**MOLD RELEASE  
AND RUST  
PREVENTIVE  
OILS**

## MOLD RELEASE OILS

LUKOIL LAYER V 4060 is designed for easy removal of mold in concrete casting, mineral oil-based, volatile feature. It has been developed to obtain a smooth surface with its very low viscosity structure.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER V 4060	2	-	40	-42	800

LUKOIL LAYER V 8020 is a concrete formwork release oil developed with mineral oil based high paraffinic components so that the concrete surface can be easily released from the mold and smooth surfaces in the concrete.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER V 8020	8,5-11,5	-	>160	-12	830

LUKOIL LAYER V 8065 is a mineral oil-based, volatile mold separator developed for easy removal of the mold in concrete casting and for obtaining a smooth surface with its very low viscosity structure.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER V 8065	3,8	-	>110	-42	840



LUKOIL LAYER series consists in water-resistant mold oils containing special additives used in the lubrication of concrete molds. Benefits: prevents concrete from sticking to the formwork, facilitates the dismantling of concrete formwork, protects molds from rust and corrosion.

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER 5	9,7	2,7	184	-39	832,9

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER 12	12,1	3,1	215	-35	823,1

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER 100	100	11,1	250	-12	880

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER 150	138	14,2	258	-12	881

Product name	Viscosity 40°C mm <sup>2</sup> /s	Viscosity 100°C mm <sup>2</sup> /s	Flash Point °C	Pour Point °C	Density 15°C kg/m <sup>3</sup>
LUKOIL LAYER 220	200	17,5	240	-12	890,3



GREASES

10



**GREASES**



## GREASES WITH LITHIUM SOAP

LUKOIL SIGNUM L series contain greases with high pressure absorption capacity, made from highly refined base oils with a low tendency to evaporate, which are reinforced with a package of high-performance additives. These greases can be used for universal high-temperature applications. They can withstand high mechanical and thermal loads and guarantee reliable protection of components.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM L 3-150	Amber	3	Lithium	150	-30/130	195
LUKOIL SIGNUM L 2-150	Amber	2	Lithium	150	-30/130	195

## LITHIUM SOAP EP ADDITIVE GREASES

LUKOIL SIGNUM LP greases are multipurpose greases based on mineral base oils with extreme pressure additives and provide oxidation, wear and corrosion protection. They resist high mechanical loads and thermals stress and guarantee reliable protection of components even under high sliding and shock loads.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM LP 000-150	Amber	000	Lithium	150	-30/130	201
LUKOIL SIGNUM LP 00-150	Amber	00	Lithium	150	-30/130	201
LUKOIL SIGNUM LP 1-150	Amber	1	Lithium	150	-30/130	204
LUKOIL SIGNUM LP 2-150 (UM 185 Li 2)	Amber	2	Lithium	150	-30/130	204
LUKOIL SIGNUM LP 3-150	Amber	3	Lithium	150	-30/130	207

## LITHIUM SOAP EP ADDITIVE AND MoS2 GREASES



LUKOIL SIGNUM LPM greases are multipurpose greases based on mineral base oils with extreme pressure additives and provide oxidation, wear and corrosion protection. They contain molybdenum disulfide which ensures excellent performance under heavy loads and dry lubrication properties at high temperatures or when the grease has been removed.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM LPM 2-160	Black	2	Lithium	160	-30/130	195
LUKOIL SIGNUM LPM 2-220	Black	2	Lithium	160	-30/130	195
LUKOIL SIGNUM LPM 3-180	Black	3	Lithium	180	-30/130	195

## SYNTHETIC, LITHIUM-COMPLEX GREASE

LUKOIL SIGNUM LC series consists in high quality, Lithium Calcium mixed base greases for general purposed, LUKOIL SIGNUM SYNTH LXP 2-220 is a lithium complex grease based on synthetic base oil (PAO) with extreme pressure additives, enhanced with oxidation resistance, rust and wear protection additives. It ensures excellent chemical stability and works perfectly under universal high temperatures applications providing excellent protection under severe working conditions.ellent protection in humid and wet environments and under severe operating conditions.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM LXP 2-220	Blue	2	Lithium complex	220	-30/160	265

## LITHIUM-COMPLEX GREASE

LUKOIL SIGNUM LXP 2-220 is a lithium complex grease with high pressure absorption capacity, made from highly refined base oil with a low tendency to evaporate, which is reinforced with a package of high-performance additives including extreme pressure additives, whereby the lubricant efficiency is improved. It can withstand high mechanical and thermal loads and guarantees reliable protection of components even under high sliding and shock loads being used in an universal area of application.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM SYNTH LXP 2-220	Amber	2	Lithium complex	220	-30/160	290

## GREASES WITH LITHIUM-CALCIUM SOAP

LUKOIL SIGNUM LC series consists in high quality, Lithium Calcium mixed base greases for general purposed, enriched with a special combination of additives which provides outstanding protection from extreme pressures, oxidation and wear. It offers excellent protection in humid and wet environments and under severe operating conditions.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM LC 2-220	Amber	2	Lithium	220	-20/120	195
LUKOIL SIGNUM LC 3-220	Amber	3	Lithium	220	-20/120	170

## SYNTHETIC, CALCIUM SULFONATE GREASE

LUKOIL SIGNUM CSXP 2-220 is a multipurpose, advanced industrial type, calcium sulfonate complex grease based on mineral base oil with extreme pressure additives. It was especially designed to deal with the harshest operating conditions, high speeds and heavy loads and maintain effective protection against rust and corrosion. The calcium sulfonate soap base supports excellent performance in wet and humid environments.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM CSXP 2-220	Light Brown	2	Calcium Sulfonate Complex		-20/180	330

## ALUMINIUM COMPLEX GREASE

LUKOIL SIGNUM AX 1 is an aluminum complex grease with titanium dioxide which has excellent water resistance and excellent adhesion. The product is thermally highly resilient and offers reliable protection of the components from moisture, alkalis and acids. It is a special grease used for "wet" lubrication points in steel and hydraulic engineering.

Product Name	Color	NLGI	Soap Type	Viscosity 40°C mm <sup>2</sup> /s	Operating Temperature °C	Dropping Point °C
LUKOIL SIGNUM AX 1	White	1-2	Aluminium complex	220	-30/190	250





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