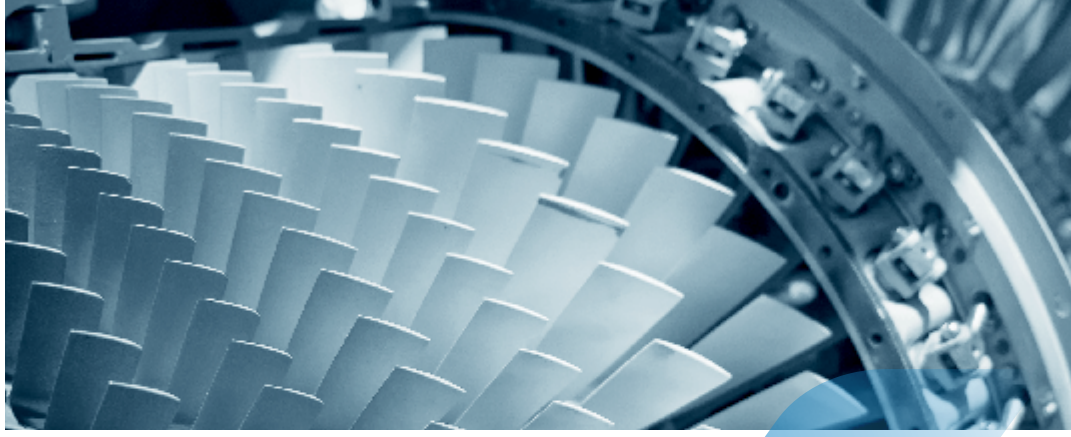





INDUSTRIAL LUBRICANTS CATALOG

GAZPROM NEFT / GAZPROMNEFT LUBRICANTS

gazpromneft-sm.ru

CONTENT

GAZPROM NEFT / GAZPROMNEFT LUBRICANTS

GAZPROMNEFT-LUBRICANTS LTD. IS A SUBSIDIARY OF PJSC GAZPROM NEFT, SPECIALIZING IN THE PRODUCTION AND SALE OF OILS, LUBRICANTS AND TECHNICAL FLUIDS.

4 SALES OFFICES IN RUSSIA, BELARUS AND KAZAKHSTAN

4 PRODUCTION SITES

№ 17 IN THE WORLD

№ 1 IN RUSSIA*

>55 COUNTRIES – GEOGRAPHY OF SUPPLIES

550 THOUSAND TONS OF OILS, GREASES, AND TECHNICAL FLUIDS PER YEAR

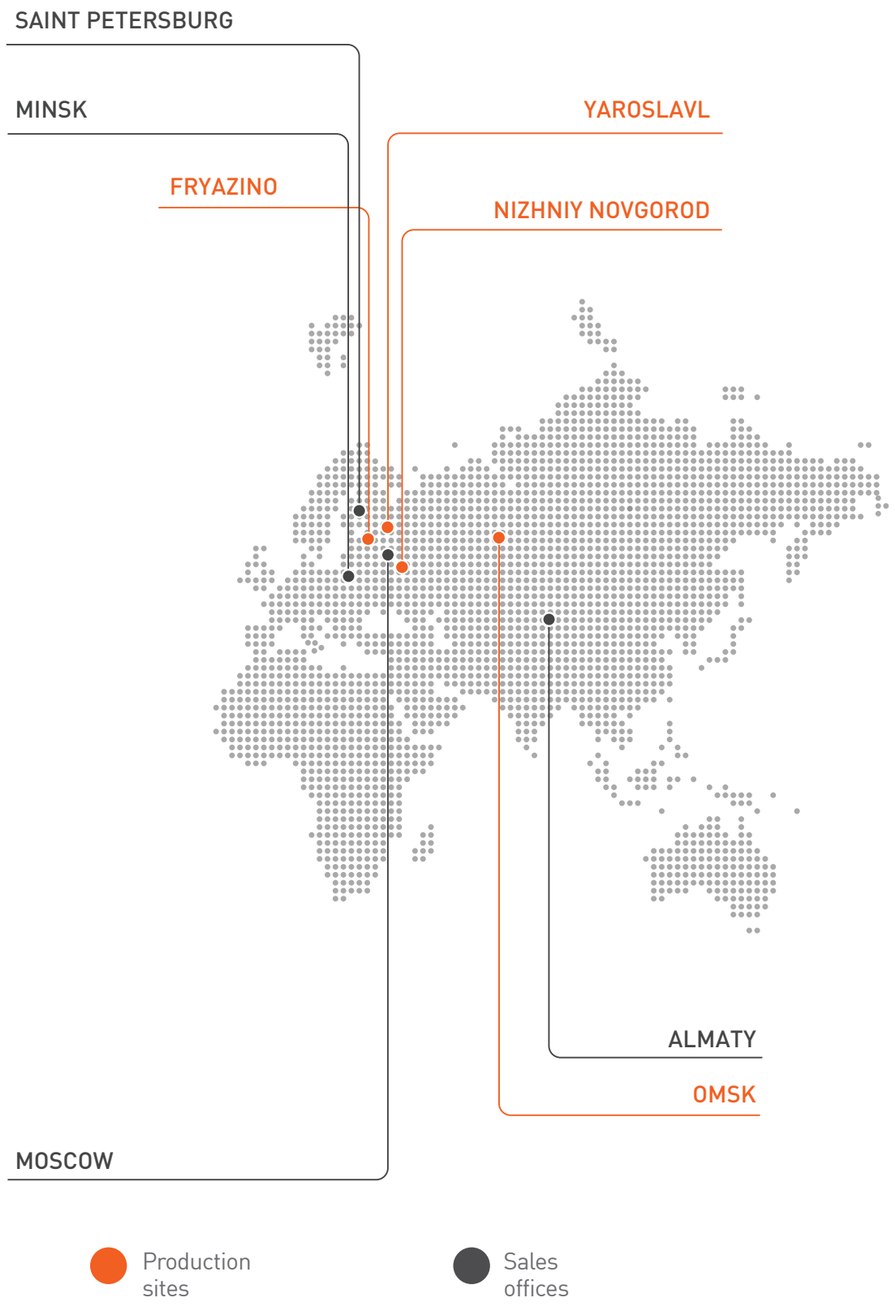
BUSINESS

- Own production of synthetic and mineral base oils (groups I, II, III and V according to API)
- Own production of additives
- International network of service stations G-Energy Service
- The company's management system and production assets meet the requirements of international standards

ISO 9001 ISO 45001 ISO 14001

COMPANY'S SCALE

- More than 150 distributors
- More than 1000 products
- 1st place in the Russian marine oil market**



* By sales of packaged products in 2023.
** Based on 2022 data.

Gazpromneft – Lubricants is a reliable partner offering comprehensive solutions for various industries.

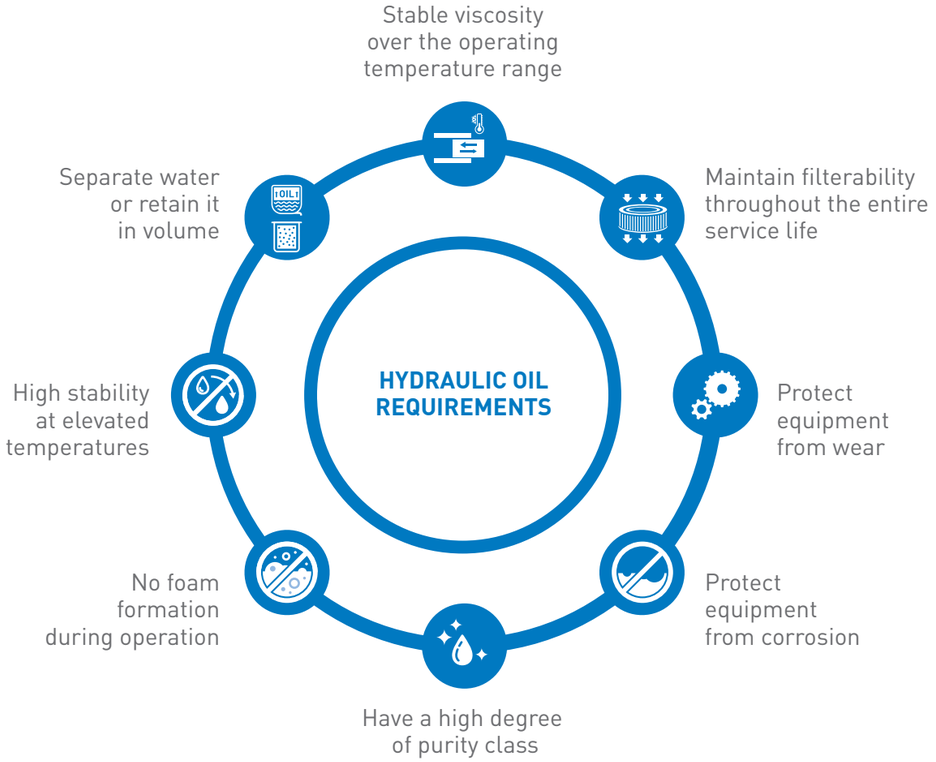
HYDRAULIC OILS

HYDRAULIC OILS

Hydraulic oils are the most widespread industrial lubricants, as they are used in a wide range of industrial equipment of all sectors: machine tools, presses, lifting and loading equipment, and others.

Widespread use of hydraulic systems is due to a number of advantages they have over mechanical systems:
- high efficiency;
- constructive flexibility;
- high accuracy;
- stepless force transmission, etc.

Hydraulic oil is the working fluid of the hydraulic system, which largely determines its operability, efficiency and service life.



HYDRAULIC OILS CLASSIFICATION

As most industrial lubricants, hydraulic oils are classified according to international standards DIN 51524 and ISO 6743/ISO 11158 in terms of their performance properties, and according to ISO 3448 in terms of viscosity classes.

DIN PROPERTY LEVEL CLASSIFICATION

Oil composition	Typical application	DIN 51524	ISO 6743/4, ISO 11158
Oils without additives	Stationary equipment with no special requirements for hydraulic oil	**H**	**HH**
H level oil + anticorrosion and antioxidant additives		**Part 1 (HL)**	**HL**
HL level oil + antiwear additives	Stationary hydraulic systems with high loads	**Part 2 (HLP)**	**HM**
HLP level oil + emulsifying properties	Stationary hydraulic systems with high loads where water retention in the oil volume is required	**Part 2 (HLPD)**	
HLP level oil + viscosity modifier	Loaded hydraulic systems of equipment and machinery operating under significant temperature differences	**Part 3 (HVLP)**	**HV**
HVLP level oil + emulsifying properties	Loaded hydraulic systems of equipment and machinery operating under significant temperature differences and where water retention in the oil volume is required	**Part 3 (HVLPD)**	

ISO VISCOSITY CLASSIFICATION

	ISO 10	ISO 15	ISO 22	ISO 32	ISO 46	ISO 68	ISO 100	ISO 150
Kin. viscosity at 40 °C, mm²/s	9,0–11,0	13,5–16,5	19,8–24,2	28,8–35,2	41,4–50,6	61,2–74,8	90,0–110,0	135–165

PLEASE READ THE OPERATING INSTRUCTIONS CAREFULLY!

OEM It is not enough to know only the DIN 51524 properties and the ISO viscosity grade to select the right hydraulic oil. For reliable operation in highly loaded systems, the lubricant must comply with the OEM specifications.

Zn Some hydraulic equipment manufacturers restrict the use of antiwear additives with zinc content. These hydraulic systems require special zinc-free oils.

GAZPROMNEFT HYDRAULIC OIL RANGE

Gazpromneft-Lubricants' product range includes a large variety of hydraulic oils that not only meet the requirements of leading manufacturers of industrial equipment and machinery, but also exceed them.

Product name	Base	Low-temperature properties	Protection against water exposure	Zinc-free technology	Load level*	Compliances
Gazpromneft Hydraulic HVZF-22, -32, -46, -68	Synthetic	■■■	Excellent separation of water and contaminants	✔	■■■	DIN + OEM
Gazpromneft Hydraulic HVLP-10, -15, -22, -32, -46, -68	Mineral	■■■	Excellent separation of water and contaminants	—	■■■	DIN + OEM
Gazpromneft Hydraulic All Seasons	Synthetic	■■■	Excellent separation of water and contaminants	—	■■■	DIN + OEM
Gazpromneft Hydraulic Nord-32	Synthetic	■■■	Excellent separation of water and contaminants	—	■■■	DIN

Product name	Base	Protection against water exposure	Zinc-free technology	Load level*	Compliances
Gazpromneft Hydraulic HLP-32, -37, -46, -68, -100	Mineral	Excellent separation of water and contaminants	—	■■■	DIN + OEM
Gazpromneft Hydraulic HZF-32, -46, -68	Mineral	Excellent separation of water and contaminants	✔	■■■	DIN + OEM
Gazpromneft Hydraulic HLPD-32, -46, -68	Mineral	It effectively retains water and contaminants in a fine-dispersed state in hydraulic systems that are not equipped with drainage devices.	✔	■■■	DIN
Gazpromneft Hydraulic-32, -46, -68, -100	Mineral	Excellent separation of water and contaminants	—	■■■	DIN
IGP-18, -30, -38, -49, -72, -91, -114, -152	Mineral	Excellent separation of water and contaminants	—	■■■	GOST

* This is the relative load level at which the oil ensures uninterrupted operation of the hydraulic system. It is determined by the performance and pressure of the hydraulic pump when the product is bench tested.

Synthetic base

Mineral base

Relative property reserve indicator

✔ The characteristic in the headline is applicable to the product

Excellent separation of water and contaminants, allows them to be drained from the hydraulic system.

It effectively retains water and contaminants in a fine-dispersed state in hydraulic systems that are not equipped with drainage devices.

GAZPROMNEFT HYDRAULIC HVZF-22, -32, -46, -68

Zn FREE

For use in equipment requiring zinc-free hydraulic oils.

Gazpromneft Hydraulic HVZF — a series of synthetic multigrade hydraulic oils developed using zinc-free additive technology for use in hydraulic equipment systems, for which both low and high operating temperatures are typical. Oils due to the use of synthetic base components have increased stability to oxidation, providing an extended service interval.

Specifications:
DIN 515124 Part 3; ISO 11158 HV;
Denison HF-0, -1, -2 (ISO 32, 46, 68);
Eaton E-FDGN-TB002-E (ISO 32, 46, 68);
Bosh Rexroth RDE 90235;
Fives Cincinnati P-68 (ISO 32);
Fives Cincinnati P-69 (ISO 68);
Fives Cincinnati P-70 (ISO 46).

APPLICATION

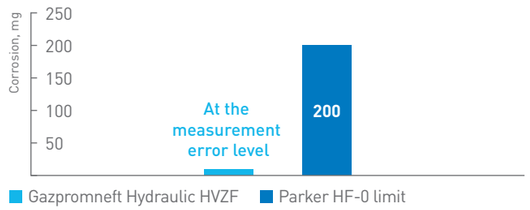
Hydraulic systems of industrial equipment and special machinery operated in a wide range of temperatures, where the use of zinc-free hydraulic oils is required:
- lifting and transport machines and other special equipment;
- machine tools, presses, manipulators and other stationary equipment.

ADVANTAGES

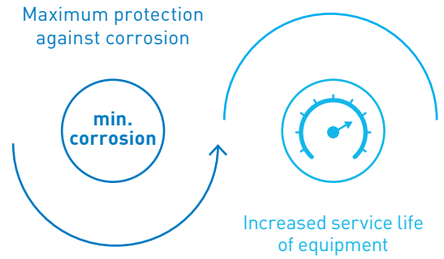
- Synthetic base → Extended oil life
- Excellent viscosity-temperature properties → Multigrade outdoor operation
- Excellent protection against corrosion → Reduction of unscheduled downtime
- High oxidation stability → Extended service life
- Zinc-free antiwear additives → Compliance with OEM requirements

TEST RESULTS

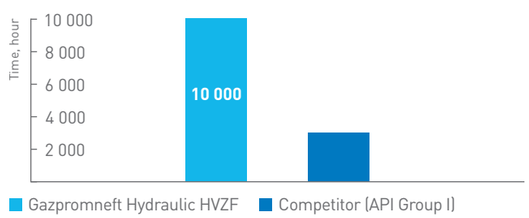
Copper corrosion after oil oxidation*



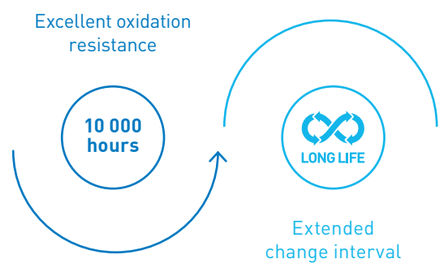
*ASTM D4310 test



Oxidation stability*



*ASTM D943 test



DIN Gazpromneft Hydraulic HVZF complies with international standard DIN 51524 Part 3

Compliance with DIN 51524 Part 3 (HVLP), absence of corrosive activity and high oxidation stability allow the hydraulic oil to be used in equipment where zinc-containing additives are not allowed, in a wide temperature range.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade			
		22	32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	22	33	47	70
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5	6,6	8,3	10,8
Kinematic viscosity at sub-zero temperatures °C, mm² / s	ASTM D445	714 (–20)	1349 (–20)	964 (–10)	—
Viscosity index	ASTM D2270	164	164	150	143
Flash point, °C	ASTM D92	210	06	223	228
Pour point, °C	GOST 20287	–52	–49	–45	–43
Purity class	GOST 17216	12	12	12	12
Density at 20 °C, kg/m³	ASTM D4052	840	844	843	850
Corrosion on copper plates, points	ASTM D130	1a	1a	1a	1a

GAZPROMNEFT HYDRAULIC HVLP-10, -15, -22, -32, -46, -68

Zn BASED

For use in equipment where zinc-containing oils are recommended.

Gazpromneft Hydraulic HVLP is a series of multigrade hydraulic oils designed for use in hydraulic equipment systems with both low and high operating temperatures. The oils ensure operation of hydraulic systems of mobile equipment in a wide temperature range, protect pumps from wear and have excellent filterability, keeping filters in working condition.

Specifications:
DIN 51524 Part 3; ISO 11158 HV;
Denison HF-0, -1, -2 (ISO 32, 46, 68);
Eaton E-FDGN-TB002-E (ISO 32, 46, 68);
Bosch Rexroth RDE 90235 (ISO 32, 46, 68);
Fives Cincinnati P-68 (ISO 32);
Fives Cincinnati P-69 (ISO 68);
Fives Cincinnati P-70 (ISO 46);
Beltrameli (ISO 32, 46, 68); Sierra T 1000 (ISO 46).

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade					
		10	15	22	32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	10	15	22	32	46	68
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	3,0	3,9	5,0	6,3	7,9	10,4
Kinematic viscosity at sub-zero temperatures °C, mm² / s	ASTM D445	100 (–40)	580 (–30)	700 (–20)	1 500 (–20)	1 100 (–10)	—
Viscosity index	ASTM D2270	169	167	161	165	145	140
Flash point, °C	ASTM D92	175	160	196	218	226	230
Pour point, °C	GOST 20287	–60	–58	–50	–48	–43	–38
Purity class	GOST 17216	14 (*12)	14 (*12)	14 (*12)	14 (*12)	14 (*12)	14 (*12)
Density at 20 °C, kg/m³	ASTM D4052	830	833	840	850	856	859

APPLICATION

Hydraulic systems of industrial equipment and special machinery operated in a wide range of temperatures, where the use of zinc-containing hydraulic oils is recommended:
- lifting and transport machines and other special equipment;
- machine tools, presses, manipulators and other stationary equipment;
- in various hydraulic pumps, including those manufactured by Denison, Cincinnati Machine, Eaton Vickers, Bosch Rexroth.

ADVANTAGES

High quality base oil	Excellent viscosity-temperature properties	High demulsifying properties	Excellent filterability	Excellent antiwear properties
▼	▼	▼	▼	▼
Excellent lubricating properties	Year-round outdoor operation	Reduction of unplanned downtime	Reliable equipment operation	Extended equipment lifetime

GAZPROMNEFT HYDRAULIC NORD-32

Zn BASED

For use in equipment where zinc-containing oils are recommended.

Gazpromneft Hydraulic Nord-32 is a multigrade hydraulic oil designed for use in hydraulic equipment systems for which both low and high operating temperatures are typical. The oil is designed to withstand very low ambient temperatures. It can replace standard multigrade oils of viscosity classes ISO 22, 32, 46.
Specifications: DIN 51524 Part 3.

APPLICATION

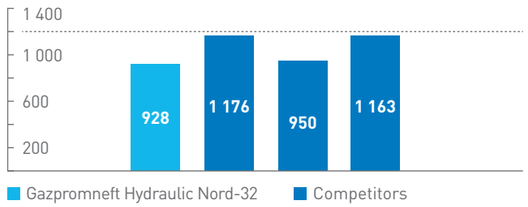
Hydraulic systems of industrial equipment and special machinery operated under conditions of extreme temperatures:
• lifting and transport machines and other special equipment;
• machine tools, presses, manipulators and other stationary equipment.

ADVANTAGES

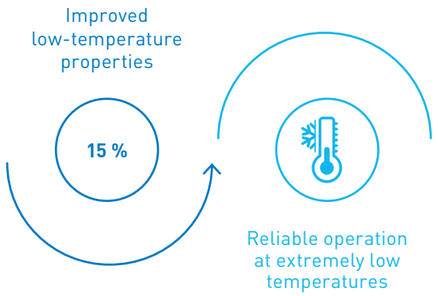
Synthetic technologies	Excellent low-temperature properties	Excellent viscosity-temperature properties	Excellent filterability	Excellent antiwear properties
Extended oil life	Operation at extremely low temperatures	Reduction of unplanned downtime	Reliable equipment operation	Extended equipment lifetime

TEST RESULTS

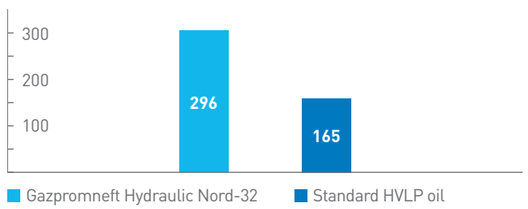
Kinematic viscosity at –30 °C, mm²/sec



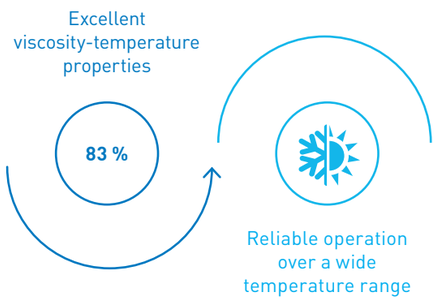
*ASTM D445 test



Viscosity index*



*ASTM D2270 test



DIN Gazpromneft Hydraulic Nord-32 complies with international standard DIN 51524 Part 3

The use of esters in the base of the product allows to provide excellent both low-temperature and antiwear properties of the product.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Hydraulic Nord-32
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	9,4
Kinematic viscosity at –30 °C, mm²/sec	ASTM D445	1 163
Kinematic viscosity at –40 °C, mm²/sec	ASTM D445	2 701
Viscosity index	ASTM D2270	296
Flash point, COC, °C	ASTM D92	118
Pour point, °C	GOST 20287	–56
Density at 20 °C, kg/m³	ASTM D4052	841

GAZPROMNEFT HYDRAULIC ALL SEASONS

Zn BASED

For use in equipment where zinc-containing oils are recommended.

Gazpromneft Hydraulic All Seasons is a hydraulic oil based on synthetic base components that provides an extended temperature range of use compared to standard multigrade oils. The combination of synthetic base components and high stability polymer additive allows to achieve improved low-temperature and antioxidant properties. Due to improved viscosity-temperature characteristics it can be used instead of multigrade oils of viscosity classes ISO 22, 32.

Specifications:
DIN 51524 Part 3;
ISO 6743-4 HV;
PSM-HYDRAULICS.

PSM HYDRAULICS

APPLICATION

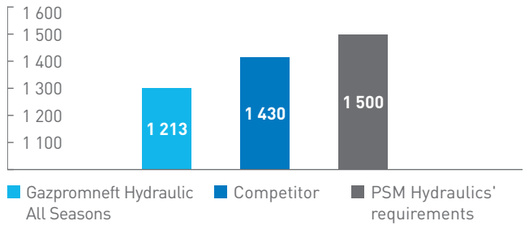
- Hydraulic systems of industrial equipment and special machinery, including those produced by PSM-Hydraulics: Galichanin, Klintsy, Ivanovets, etc.
- Equipment and machinery where seasonal use of VMGZ and MGE 46-V oils is recommended.
- Equipment and machinery requiring the use of hydraulic oils of DIN 51524 Part 3 (HVLP) level.

ADVANTAGES

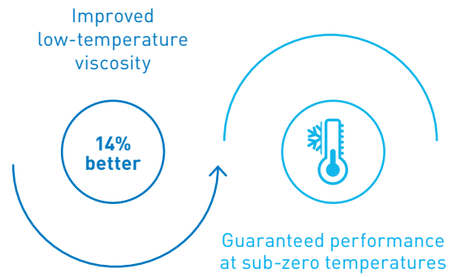
- Synthetic technologies → Extended oil life
- Excellent viscosity-temperature properties → Operation over a wide temperature range
- Excellent antiwear properties → Extended equipment lifetime
- Excellent filterability → Reliable equipment operation
- High purity class → Increased reliability and longer service life of the equipment

TEST RESULTS

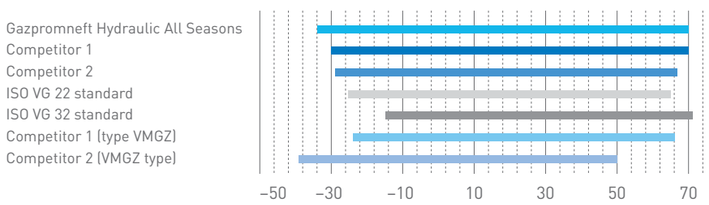
Kinematic viscosity at –30 °C, mm²/sec*



*ASTM D445 test



Oil operating temperature range



DIN Gazpromneft Hydraulic All Seasons complies with international standard DIN 51524 Part 3

Compliance with the international standard DIN 51524 Part 3, as well as the level of properties exceeding the requirements of PSM-HYDRAULICS, ensure the reliable use of Gazpromneft Hydraulic All Seasons product in most units of equipment and machinery of both Russian and foreign production.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Hydraulic All Seasons
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	22
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,72
Kinematic viscosity at 70 °C, mm²/sec	ASTM D445	10,2
Kinematic viscosity at –30 °C, mm²/sec	ASTM D445	1 213
Viscosity index	ASTM D2270	220
Flash point, COC, °C	ASTM D92	165
Pour point, °C	GOST 20287	–58
Purity class	GOST 17216	12
Corrosion on copper plates, points	ASTM D130	1b

GAZPROMNEFT HYDRAULIC HLP-32, -46, -68, -100

Zn BASED

For use in equipment where zinc-containing oils are recommended.

Gazpromneft Hydraulic HLP is a series of hydraulic oils developed for use in hydraulic drives of stationary equipment where excellent anti-wear properties, effective corrosion protection, excellent filterability and deposit minimization are required. The oils in this series have a significant number of approvals from various hydraulic equipment manufacturers and meet the operational requirements of most hydraulic systems.

Specifications:
DIN 51524 Part 2; ISO 11158 HM;
Denison Hydraulics HF-0, -1, -2;
Eaton E-FDGN-TB002-E;
Danieli (ISO 68);
Bosch Rexroth Fluid Rating List RDE 90245;
Fives Cincinnati P-68 (ISO 32);
Fives Cincinnati P-69 (ISO 68);
Fives Cincinnati P-70 (ISO 46);
AIST;
Beltramelli.

APPLICATION

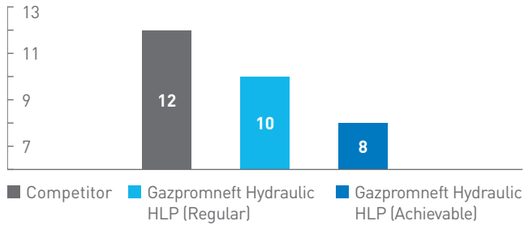
Hydraulic systems of industrial equipment and machinery operating at constant temperatures.

ADVANTAGES

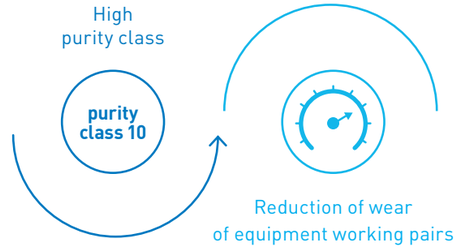
- High quality base oil → Excellent lubricating properties
- Excellent antiwear properties → Extended equipment lifetime
- Excellent protection against corrosion → Reduction of unplanned downtime
- Excellent filterability → Reliable equipment operation
- High purity class → Increased reliability and longer service life of the equipment

TEST RESULTS

Purity class*



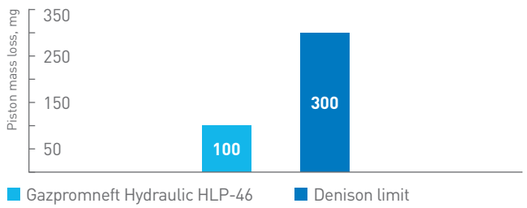
*GOST 17216 test



DIN Gazpromneft Hydraulic HLP complies with international standard DIN 51524 Part 2

The purity class of hydraulic oil characterizes the amount and size of solid particles in it. A high purity class in combination with antiwear additives can significantly increase the service life of the equipment. In case of special need, additional filtration can be used to achieve the 8th purity class of the product.

Piston wear protection*



* Denison Hybrid Pump Testing.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade			
		32	46	68	100
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32	46	68	100
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,5	6,8	8,8	11,4
Viscosity index	ASTM D2270	104	99	97	95
Flash point, COC, °C	ASTM D92	223	243	241	246
Pour point, °C	GOST 20287	–41	–38	–35	–31
Acid number, mg KOH/g	GOST 11362	0,75	0,69	0,73	0,73
Purity class, no more than	GOST 17216	12 (*10)	12 (*10)	12 (*10)	12 (*10)
Density at 20 °C, kg/m³	ASTM D4052	872	876	880	886

GAZPROMNEFT HYDRAULIC HZF-32, -46, -68

Zn FREE

For use in equipment requiring zinc-free hydraulic oils.

Gazpromneft Hydraulic HZF is a series of zinc-free hydraulic oils specially developed for hydraulic systems of industrial equipment operating at constant temperatures, where the use of zinc-free anti-wear additives is required. The oils provide excellent performance in systems with servo valves, have improved filterability, are compatible with most non-ferrous metals and protect metals from corrosion and rusting.

Specifications:
DIN 51524 Part 2;
ISO 11158 HM.

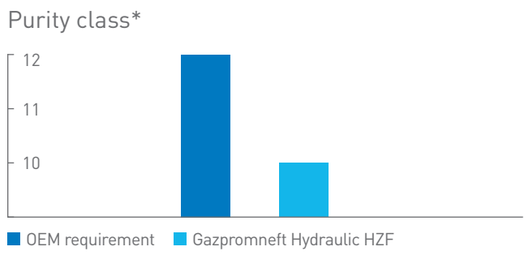
APPLICATION

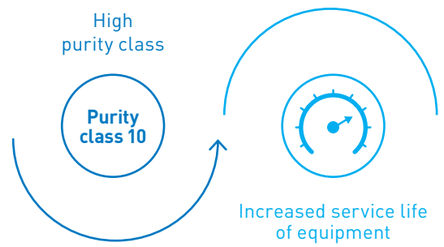
Industrial equipment hydraulic systems operating at constant temperatures that require the use of zinc-free hydraulic oils.

ADVANTAGES

- High quality base oil → Excellent lubricating properties
- Excellent antiwear properties → Extended equipment lifetime
- Excellent protection against corrosion → Reduction of unplanned downtime
- Excellent filterability → Reliable equipment operation
- Zinc-free antiwear additives → Compliance with specific OEM requirements

TEST RESULTS





*GOST 17216 test

DIN Gazpromneft Hydraulic HZF complies with international standard DIN 51524 Part 2

70–80% of hydraulic system failures are caused by contamination of the working fluid. Gazpromneft Hydraulic HZF is produced using modern filtration systems by PALL, which retain particles as small as 3–5 microns. This ensures filtration up to 10th purity class. In case of special need, additional filtration can be used to achieve purity class 8.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade		
		32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32	46	68
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,5	6,8	8,6
Viscosity index	ASTM D2270	101	100	97
Flash point, COC, °C	ASTM D92	228	255	251
Pour point, °C	GOST 20287	–40	–36	–31
Acid number, mg KOH/g	GOST 11362	0,2	0,2	0,2
Purity class, no more than	GOST 17216	10	10	10
Density at 20 °C, kg/m³	ASTM D4052	867	873	879

GAZPROMNEFT HYDRAULIC HLPD-32, -46, -68

Zn FREE

For use in equipment requiring zinc-free hydraulic oils.

Gazpromneft Hydraulic HLPD is a series of ashless hydraulic oils developed for hydraulic systems of industrial equipment where water, dirt, etc. may enter the lubrication system. HLPD class oils contain emulsifying and dispersing additives that keep contaminant particles in a finely dispersed suspended state and protect the surfaces of hydraulic equipment from wear and corrosion, ensuring efficient operation of the equipment.

Specifications: DIN 51524 Part 2 (except for "ASTMD1401 Demulsifying Properties" – this does not apply to HLPD oils).

APPLICATION

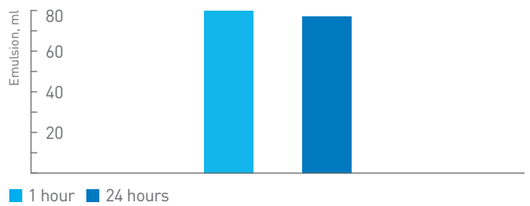
- Hydraulic systems of industrial equipment and special machinery operating in conditions where water ingress is unavoidable and it is impossible to remove it from the system.
- Hydraulic systems requiring the use of HLPD grade oils.

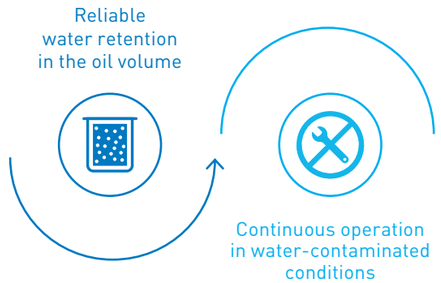
ADVANTAGES

- High quality base oil → Excellent lubricating properties
- High emulsifying properties → Operation in water-contaminated conditions
- Excellent protection against corrosion → Reduction of unplanned downtime
- Excellent antiwear properties → Extended equipment lifetime
- High purity class → Increased reliability and longer service life of the equipment

TEST RESULTS

Emulsifying properties*





*ASTM D1401 test

DIN Gazpromneft Hydraulic HLPD complies with international standard DIN 51524 Part 2

The design of some hydraulic systems does not allow for drainage of water from the system, which places additional demands on the hydraulic oil – to keep water in the form of small droplets reliably in its volume. Otherwise, a significant amount of water may enter the hydraulic pump or freeze in the system, resulting in poor smooth operation or failure. Free water in the system can also corrode parts.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade		
		32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32	48	68
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,3	6,9	8,6
Viscosity index	ASTM D2270	97	100	98
Flash point, COC, °C	ASTM D92	218	230	236
Pour point, °C	GOST 20287	–39	–37	–33
Acid number, mg KOH/g	GOST 11362	0,3	0,2	0,3
Purity class, no more than	GOST 17216	12	12	12
Density at 20 °C, kg/m³	ASTM D4052	871	873	873

GAZPROMNEFT HYDRAULIC-32, -46, -68, -100

Zn BASED

For use in equipment where zinc-containing oils are recommended.

Gazpromneft Hydraulic is a series of high quality mineral base oils with a multifunctional additive package, which provides a level of operational properties that exceeds the requirements for Industrial Hydraulic Oils with Additives. (IGP) and meet the requirements of DIN 51524 Part 2. The oils have a high purity class, ensuring the performance of hydraulic drives.

Specifications: DIN 51524 Part 2.

APPLICATION

- Hydraulic systems of industrial equipment, where application of GOST level oils (IGP) is recommended.
- Hydraulic systems requiring application of oils of DIN 51524 Part 2 level.

ADVANTAGES

High quality base oil	Excellent antiwear properties	Improved protection against corrosion	Improved filterability	Increased oxidation resistance
▼	▼	▼	▼	▼
Excellent lubricating properties	Extended equipment lifetime	Reduction of unplanned downtime	Reliable equipment operation	Extended operating life

COMPARATIVE CHARACTERISTICS OF IGP OILS AND GAZPROMNEFT HYDRAULIC OILS

Characteristic	Performance advantage	IGP	Gazpromneft Hydraulic
Purity class	Protects the system against premature system failure due to particulate impurities in the oil	✕ Not regulated	✓ Checked
Demulsifying properties	Ensuring water separation from lubricant and equipment parts	✕ Not regulated	✓ Checked
Air separation capability	No air in the system	✕ Not regulated	✓ Checked
Filterability	Stable oil circulation in the system	✕ Not regulated	✓ Checked
Wear protection	Conservation of service life and long-term operation of the equipment	✕ Not regulated	✓ Checked
Compatibility with seal materials	Oil leakage prevention	✕ Not regulated	✓ Checked
Antioxidant properties	Maintaining the performance of the oil during operation	✓ Checked	✓ Checked
Antifoaming properties	Preventing foam formation and maintaining pressure in the system	✓ Checked	✓ Checked
Anticorrosive properties	Protection of equipment parts against corrosion	✓ Checked	✓ Checked

DIN Gazpromneft Hydraulic complies with international standard DIN 51524 Part 2

Improved additive package and standardization of all characteristics of international standard DIN 51524 Part 2 (HLP) in production documentation provide a significant advantage of Gazpromneft Hydraulic oils in comparison with IGP oils.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade			
		32	46	68	100
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32	46	68	100
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,2	6,5	8,1	10,9
Viscosity index	ASTM D2270	94	92	92	90
Flash point, COC, °C	ASTM D92	228	237	246	248
Pour point, °C	GOST 20287	–27	–25	–28	–23
Acid number, mg KOH/g	GOST 11362	0,9	0,9	0,9	0,9
Purity class	GOST 17216	12	12	12	12
Density at 20 °C, kg/m³	ASTM D4052	873	876	882	889

GAZPROMNEFT HYDRAULIC HFDU-46, -68

Gazpromneft Hydraulic HFDU-46, -68 is a series of flame resistant hydraulic fluids developed on the basis of synthetic esters with the addition of a multifunctional additive package that enhances performance characteristics. Created specifically for hydraulic equipment where a fluid is required to reduce the risk of fire when in contact with open flames or glowing surfaces. Standard (mineral) hydrocarbon hydraulic fluids do not provide the required level of safety.

Specifications: DIN 51502 HFDU/ISO 6743/4 HFDU.

APPLICATION

- In hydraulic equipment replaces hydrocarbon oils of DIN 51524 Part 2 (HLP) class where there is a risk of fire.
- Hydraulic equipment operated in the area around naked flames and where there is a significant risk of fire.

ADVANTAGES

Possibility of fluid operation near naked flame and red-hot surfaces

Operation over a wide temperature range

Efficient operation of the hydraulic pump

Operation over a wide temperature range

Improved protection against corrosion

Equipment protection against corrosive effects

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade	
		46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	46	68
Viscosity index	GOST 25371	190	180
Flash point, COC, °C	GOST 4333	300	290
Auto-ignition temperature, °C	GOST 12.1.044	>400	>470
Pour point, °C	GOST 20287, method B	–50	–50
Copper corrosion test	GOST 2917	Max 1V	Max 1V
Four ball EP test, Wear diameter (196 N, 60 min), mm	GOST 9490	0,36	0,29
Density at 20 °C, kg/m³	GOST 3900	913	926

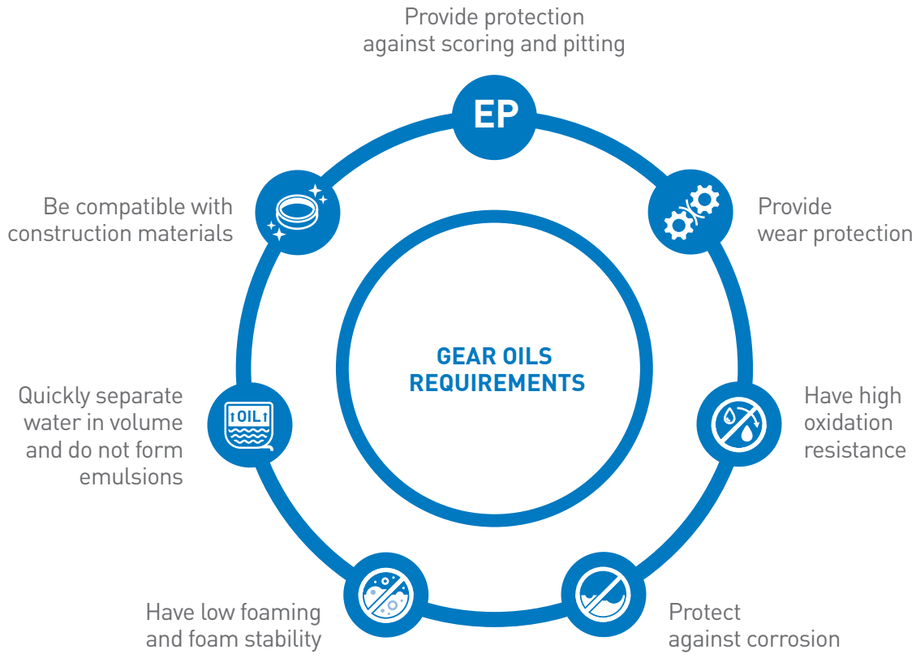
GEAR OILS

GEAR OILS

Gear oils are the second most consumed industrial oils, second only to hydraulic oils. This is due to the leading role of gearboxes and multipliers in the transmission and conversion of torque, which is necessary in every production plant. Gear oils find their application in all branches of industry, among which are:

- metallurgy;
- mining industry;
- manufacturing industry;
- power engineering;
- construction;
- oil and gas production;
- oil and gas processing;
- agriculture, etc.

In response to the constant demand from industrial enterprises for more and more reliable and productive gearboxes their improvement is going in the direction of increasing mechanical and thermal loads, service life of the equipment. The main role in ensuring long and reliable operation of gearboxes operating in harsh conditions is given to the applied lubricants. High-quality and properly selected oil, which fulfills its functions in the entire range of loads, is the key to reliable operation of the gearbox and its economic efficiency.



GEAR OIL CLASSIFICATION

Like most lubricants, gear oils are classified according to their performance and viscosity.

The main international standard that classifies gear oils by performance level is the German standard DIN 51517, which consists of three parts.

DIN 51517 PROPERTY LEVEL CLASSIFICATION

Part	Type	Description
1	C	Base oil without additives
2	CL	Base oil with antioxidant and anticorrosion additive
3	CLP	Base oil with CL property level + anti-seize additive

Gear oils can be classified by viscosity according to both international classifications ISO 3448 (ISO VG), SAE J 306C and Russian classification GOST 17479.2-85.

ISO VISCOSITY CLASSIFICATION

ISO VG	SAE J 306C	GOST 17479.2-85
22, 32, 46	75W	9
68, 100	80W/85W	12
150, 220	90	18
320, 460	140	34

PLEASE READ THE OPERATING INSTRUCTIONS CAREFULLY!

OEM Knowing only the DIN 51517 properties and the ISO VG viscosity grade is not enough to select the right gear oil. For reliable operation in most imported gearboxes, the lubricant must meet the requirements of the OEM specifications.

GAZPROMNEFT GEAR OIL RANGE

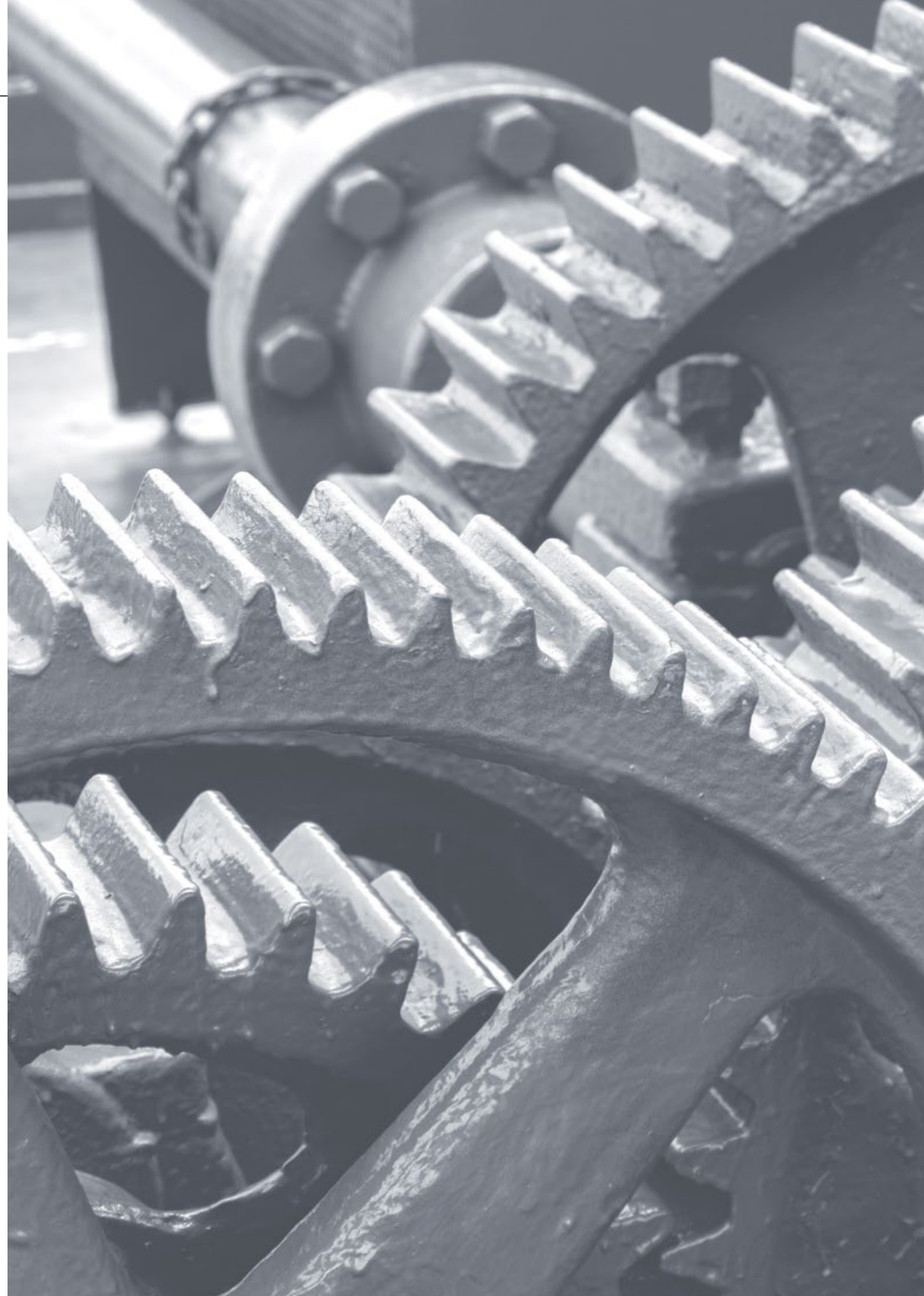
Name, ISO viscosity grade	Base	Anti-seize properties	Oxidation resistance	Protection against corrosion	Antifoaming properties	Low-temperature properties
Gazpromneft Reductor PAO Synth-150, -220, -320, -460, -680	PAO	▰▰▰▱	▰▰▰▰	▰▰▰▱	▰▰▰▱	▰▰▰▰
Gazpromneft Reductor F Synth-150, -220, -320, -460	Synthetic base	▰▰▰▱	▰▰▰▱	▰▰▰▱	▰▰▰▱	▰▰▰▱
Gazpromneft Reductor CLP-68, -100, -150, -220, -320, -460, -680	Mineral base	▰▰▰▱	▰▰▱▱	▰▰▰▱	▰▰▱▱	▰▱▱▱
Gazpromneft Reductor WS-100, -150, -220	Mineral base	▰▰▱▱	▰▰▱▱	▰▰▱▱	▰▰▱▱	▰▰▱▱
Gazpromneft Reductor ITD-68, -100, -150, -220, -320, -460, -680	Mineral base	▰▰▱▱	▰▱▱▱	▰▱▱▱	▰▱▱▱	▰▱▱▱

PAO Synthetic oil

Synthetic base

Mineral base

▰ Relative property reserve indicator



GAZPROMNEFT REDUCTOR PAO SYNTH-150, -220, -320, -460, -680

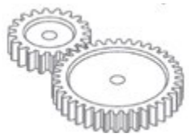
Gazpromneft Reductor PAO Synth is a series of fully synthetic gear oils designed for use in modern industrial gearboxes operating under severe operating conditions. The use of synthetic base oils based on polyalphaolefins (PAO) allows Gazpromneft Reductor PAO Synth oils to operate at both negative and high operating temperatures, with the possibility of significantly extending the change interval (compared to mineral-based oils).Recommended for use in equipment with long periods between maintenance.

Specifications:
AGMA 9005-E02; AIST 224;
DIN 51517 PART 3 CLP;
FLENDER;
ISO 12925-1 (CKD).

APPLICATION

Heavy duty gearboxes of modern industrial equipment operating under the highest loads and a wide temperature range. Used to lubricate bearings and enclosed gears under the most extreme operating conditions.

Spur



Helical

Sun-and-planet

Bevel

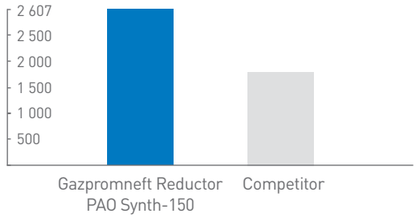
Herringbone

ADVANTAGES

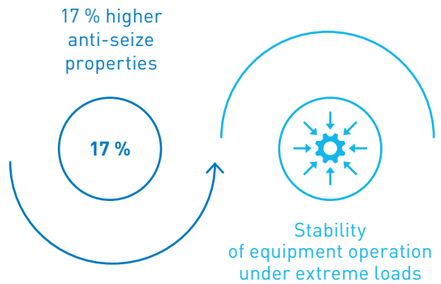
- PAO synthetic → Maximum oil life
- Excellent resistance to oxidation → Reduced maintenance costs
- Excellent anti-seize properties → Maximum protection against seizing and pitting
- Excellent viscosity-temperature characteristics → Extended temperature range applications
- Low foaming → Capable of operating at high rotational speeds

TEST RESULTS

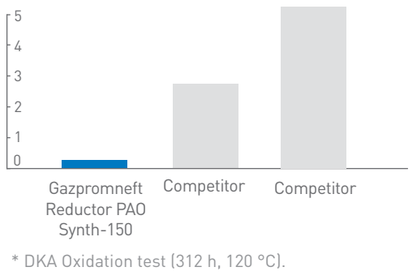
Antiwear properties*
Welding load, H



* GOST 9490 test



Oxidation resistance*
Relative change of kinematic viscosity at 100 °C, %



* DKA Oxidation test (312 h, 120 °C).

DIN Gazpromneft Reductor PAO Synth complies with international standard DIN 51517 Part 3 CLP.

Excellent oxidation resistance is possible due to the use of synthetic base oils of the PAO group, which, in addition to reducing the formation of deposits, also allows for longer oil change intervals. A special set of EP anti-seize additives reliably protects gears under the most extreme operating conditions.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade				
		150	220	320	460	680
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	150	220	320	460	684,1
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	20,3	27,6	37,9	49,3	68,2
Viscosity index	ASTM D2270	159	167	161	165	174
Flash point, COC, °C	ASTM D92	232	235	238	240	267
Pour point, °C	GOST 20287	–38	–37	–35	–34	–29
Density at 15 °C, kg/m³	ASTM D4052	877	884	869	896	855,4
FZG A/8.3/90, loading stages	DIN ISO 14635-1	>14	>14	>14	>14	>14
FZG A/16.6/90, loading stages	DIN ISO 14635-1	>12	>12	>12	>12	>12

GAZPROMNEFT REDUCTOR F SYNTH-150, -220, -320, -460

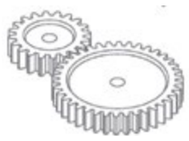
Gazpromneft Reductor F Synth is a series of synthetic gear oils designed for use in modern gearboxes of various industrial equipment. The oils provide high cleanliness of gearbox working surfaces, excellent antioxidant, antifoaming, anti-wear and demulsifying properties.

Specifications:
DIN 51517 Part 3 CLP;
ISO 12925-1 (CKD) (ISO 220, 320);
AGMA 9005-E02;
Hansen Industrial Transmissions NV;
Flender.

APPLICATION

Heavy duty gearboxes of modern industrial equipment operating under the highest loads and a wide temperature range. Used to lubricate bearings and enclosed gears under the most extreme operating conditions.

Spur



Helical

Sun-and-planet

Bevel

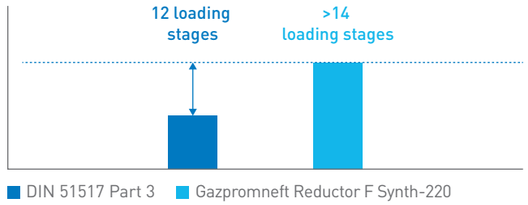
Herringbone

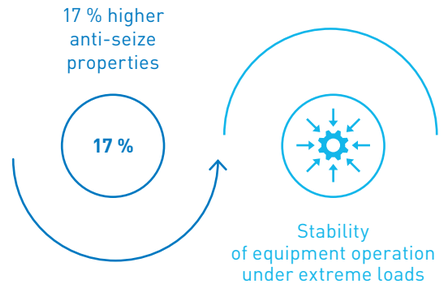
ADVANTAGES

- Synthetic base → Extended oil life
- Increased oxidation resistance → Reduced maintenance costs
- Excellent anti-seize properties → Reliable protection against seizing and pitting
- High viscosity-temperature characteristics → Extended temperature range application
- Low foaming → Capable of operating at high rotational speeds

TEST RESULTS

Anti-seize properties*





* FZG Scuffing Test A/8.3/90.

DIN Gazpromneft Reductor F Synth complies with international standard DIN 51517 Part 3 CLP.

Excellent oxidation resistance is possible due to the use of Group III synthetic base oils, which, in addition to reducing deposit formation, also allows for longer oil change intervals. A special set of EP anti-seize additives reliably protects gears under the most extreme operating conditions.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade			
		150	220	320	460
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	150	220	320	460
Viscosity index	ASTM D2270	159	167	161	165
Flash point, COC, °C	ASTM D92	232	235	238	240
Pour point, °C	GOST 20287	–38	–37	–35	–34
FZG A/8.3/90, loading stages	DIN ISO 14635-1	>14	>14	>14	>14

GAZPROMNEFT REDUCTOR CLP-68, -100, -150, -220, -320, -460, -680

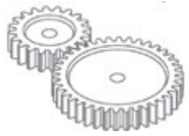
Gazpromneft Reductor CLP is a series of gear oils designed for use in modern gearboxes equipped with a circulating or splash lubrication system. It is suitable for use in the gears of a wide range of modern industrial equipment.

Specifications:
DIN 51517 Part 3;
ISO 12925-1 (L-CKC/CKC);
ISO 6743-6 (L-CKC/CKD);
AGMA 9005-E02;
David Brown S1.53.101 (E);
AIST 224;
Danieli (except ISO 68 and 100);
MAG P-74/P-77 (ISO 220/150).

APPLICATION

Gears of a wide range of modern imported industrial equipment operating under medium, high and increased loads. It is also possible to use in circulation systems of various mechanisms operating under increased loads.

Spur



Helical

Sun-and-planet

Bevel

Herringbone

ADVANTAGES

- High load capacity → Operation under extreme loads
- Oxidation resistance → High equipment performance
- Excellent anti-seize properties → Reliable protection against scoring and pitting
- High demulsifying properties → Capable of operating in water-contaminated conditions
- Protection against rusting → Reduced gear component costs

DIN Gazpromneft Reductor CLP complies with international standard DIN 51517 Part 3 CLP.

Mineral base base ensures high quality level and affordability of the product. A special package of anti-seize (EP-extreme pressure) and anti-wear additives allows the product to be used under high load conditions.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade						
		68	100	150	220	320	460	680
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	68	100	150	220	320	460	680
Viscosity index	ASTM D2270	97	95	92	92	92	90	86
Flash point, COC, °C	ASTM D92	238	240	242	246	249	257	260
Pour point, °C	GOST 20287	–34	–30	–19	–21	–17	–15	–15
Load wear index, N	GOST 9490	454	464	470	480	509	530	550
Wear spot diameter, mm	GOST 9490	0,25	0,26	0,27	0,27	0,28	0,28	0,29
Corrosion test on copper plates at 100 °C for 3 h, points	ASTM D130	1b	1b	1b	1b	1b	1b	1b

GAZPROMNEFT REDUCTOR WS-100, -150, -220

Gazpromneft Reductor WS is a series of gear oils designed for multigrade use in the gears of industrial gearboxes operating at low temperatures. The oils have high performance characteristics and can be used in gearboxes that require DIN 51517 Part 3 performance levels and improved low-temperature performance to ensure high productivity.

Specifications: DIN 51517 Part 3; Wartsila (ISO 150).

APPLICATION

All-season use in enclosed industrial gearboxes of modern industrial equipment. Specially designed for gearboxes operating at low temperatures: ISO 100 - down to -30 °C, ISO 150 - down to -25 °C, ISO 220 - down to -20 °C.

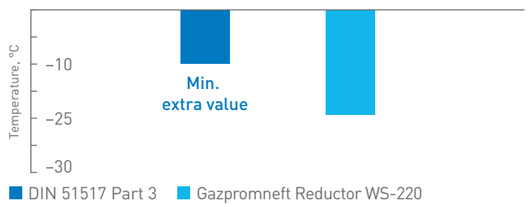
Spur | Helical | Sun-and-planet | Bevel | Herringbone

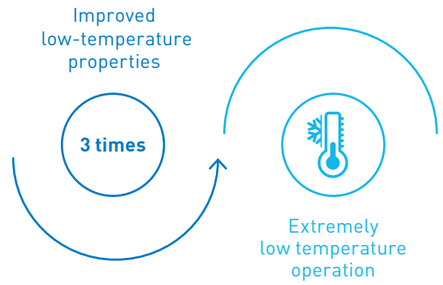
ADVANTAGES

- High quality base oils → Excellent lubricating properties
- High extreme pressure properties → Capable of operating under severe conditions
- Excellent low temperature properties → Stable oil performance outdoors
- Wear protection → Maintains equipment life
- Low foaming → Stable lubricating properties

TEST RESULTS

Low-temperature properties*





* GOST 20287 test

DIN Gazpromneft Reductor WS complies with international standard DIN 51517 Part 3 CLP.

The pour point of Gazpromneft Reductor WS series oils ensures stable operation of gearboxes operating outdoors.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade		
		100	150	220
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	100	150	220
Viscosity index	ASTM D2270	101	98	97
Flash point, COC, °C	ASTM D92	230	244	247
Pour point, °C	GOST 20287	–33	–30	–25
Copper corrosion at 100 °C for 3 h, points	ASTM D130	1b	1b	1b

GAZPROMNEFT REDUCTOR ITD-68, -100, -150, -220, -320, -460, -680

Gazpromneft Reductor ITD is a series of gear oils designed to replace GOST level oils (ITD, ICP, etc.). Due to the involvement of a multifunctional additive package, the oils have improved anti-wear and anti-seize properties.

Specifications: DIN 51517 Part 3.

APPLICATION

Gears of Russian industrial equipment operating under medium and high loads. Can be used in friction units of automatic hot stamping presses, circulation systems of various mechanisms. Replaces GOST level oils.

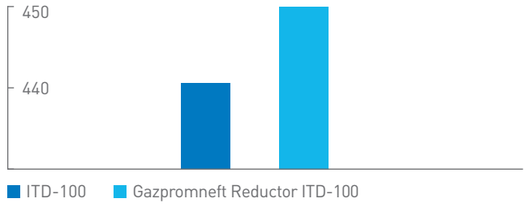
Spur | Helical | Sun-and-planet | Bevel | Herringbone

ADVANTAGES

- High quality base oils → Excellent lubricating properties
- High demulsifying properties → Maintains oil properties in water-contaminated conditions
- Compatible with seal materials → Reduction of lubricant leakage
- Wear protection → Maintains equipment life
- Excellent anti-seize properties → Capable of operating in severe conditions

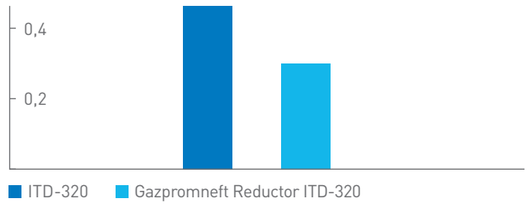
TEST RESULTS

Load wear index, N*



*GOST 9490 test

Wear spot diameter, mm*



*GOST 9490 test

DIN Gazpromneft Reductor ITD complies with international standard DIN 51517 Part 3 CLP.

Improved tribological anti-wear and anti-seize properties, compared to GOST level oils, allow to reduce wear of equipment.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade						
		68	100	150	220	320	460	680
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	68	100	150	220	320	460	680
Viscosity index	ASTM D2270	95	95	93	92	92	92	90
Flash point, COC, °C	ASTM D92	236	238	240	242	250	256	260
Pour point, °C	GOST 20287	–23	–23	–19	–18	–7	–15	–15
Load wear index, N	GOST 9490	450	458	468	477	496	519	522
Wear spot diameter, mm	GOST 9490	0,28	0,29	0,29	0,28	0,30	0,27	0,27
Corrosion test on copper plates at 100 °C for 3 h, points	ASTM D130	1b	1b	1b	1b	1b	1b	1b

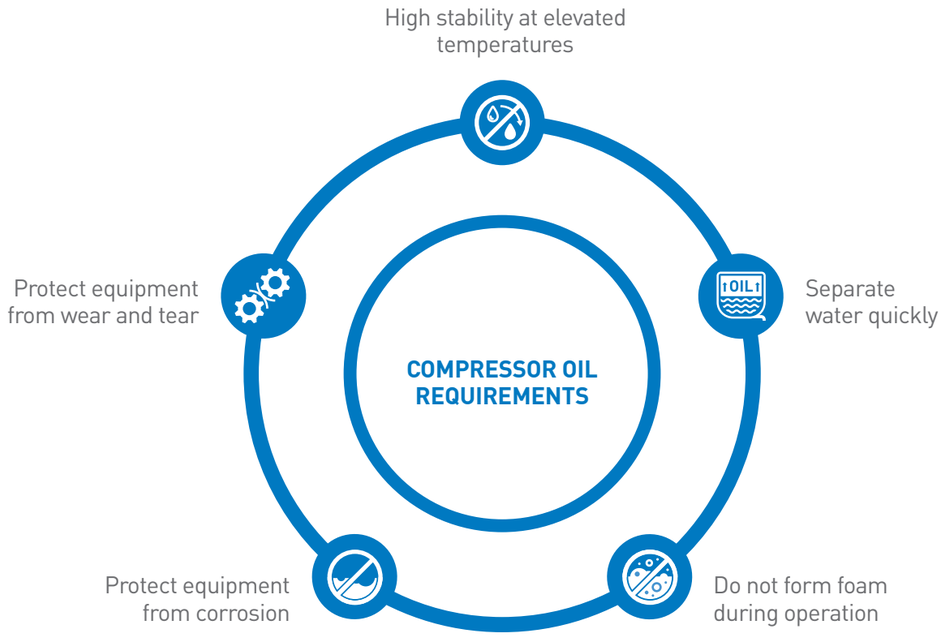
COMPRESSOR OILS

COMPRESSOR OILS

Today, compressor units occupy one of the most important places in modern large-scale production, as their functionality has significantly increased the speed and efficiency of enterprises. Indeed, various technological processes require the use of compressed gas, and that is why compressors are used in such areas as:

- oil and gas and chemical industry;
- mining industry;
- construction;
- power engineering;
- aviation, etc.

Due to the high demand for this type of industrial equipment, the performance and manufacturability of compressors is increasing, which directly affects the requirements for lubricant properties. The vast experience of Gazpromneft-Lubricants Ltd, in working with the largest industrial complexes of the Russian Federation, where compressors of various capacities are represented, has allowed us to form a demand for lubricants of a certain level of properties. Auditing of enterprises, monitoring of oil quality, close work with the engineering staff of enterprises - this is what made it possible to create formulations of extra-class compressor oils that ensure reliable operation of expensive equipment over long intervals.



CLASSIFICATION OF AIR COMPRESSOR OILS

DIN 51506

Oil Category	Maximum temperature of compressed air, °C	
	For compressors installed on mobile equipment	For stationary compressors
VB(L)	up to 140	up to 140
VC(L)	up to 220	up to 160
VDL	up to 220	up to 220

L - oils containing corrosion inhibitors and antioxidant additives.

ISO 6743-3

Piston and rotary (vane) compressors with drip oil supply	Rotary (vane and screw) compressors with intensive oil supply
Light DAA mode Conditions: t < 160 °C, p < 10 bar, compression ratio < 3 : 1 t < 140 °C, p > 10 bar, compression ratio < 3 : 1	**Light DAG mode** Conditions: t < 90 °C, p < 8 bar
Medium DAB mode Conditions: t > 160 °C, p < 10 bar, compression ratio < 3 : 1 t = 140-160 °C, p > 10 bar, compression ratio < 3 : 1, compression ratio > 3 : 1	**Medium DAH mode** Conditions: t < 100 °C, p = 8-15 bar t < 100-110 °C, p < 8 bar
Heavy DAC mode Conditions: Same as medium mode, but in the case of DAB grade oils, coxan formation of the discharge line is observed.	**Heavy DAJ mode** Conditions: t > 100 °C, p < 8 bar t < 100 °C, p = 8-15 bar p > 15 bar

GAZPROMNEFT COMPRESSOR OILS RANGE

DIN 51506	Name, ISO viscosity grade	Base	Deposit protection	Stability at high temperature	Low-temperature properties	Application in rotary compressors	Application in reciprocating compressors	Application in dynamic compressors
Air compressor oils								
VDL	Gazpromneft Compressor F Synth-46, -68	Synthetic	■■■	■■■	■■■	✓		
VDL	Gazpromneft Compressor S Synth-46, -68	Semi-synthetic	■■	■■	■■	✓		
	Gazpromneft Compressor S Synth-100, -150	Semi-synthetic	■■	■■	■■		✓	
VCL	Gazpromneft Compressor Oil-46, -68	Mineral	■■	■■	■■	✓		
VCL	Gazpromneft Compressor Oil-100, -150, -220, -320, -460, -680	Mineral	■■	■■	■■		✓	
	Gazpromneft Compressor Oil T-46	Semi-synthetic	■■	■■	■■			✓
Oils for gas compressors (pumping hydrocarbon gases)								
	Gazpromneft Compressor PAO NG-150	Synthetic	■■■■	■■■■	■■■■	✓	✓	

Synthetic base

Semi-synthetic base

Mineral base

■ Relative property reserve indicator

✓ The characteristic in the headline is applicable to the product

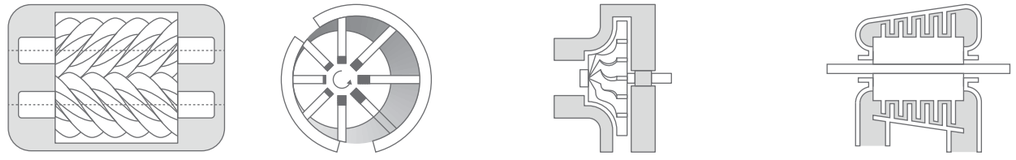
GAZPROMNEFT COMPRESSOR F SYNTH-46, -68

Gazpromneft Compressor F Synth is a series of ashless synthetic compressor oils designed for use in screw and vane (air) compressors requiring high performance at DIN 51506 VDL or ISO 6743 DAJ levels. The use of synthetic base oils ensures high cleanliness of compressor equipment due to high thermal stability of the oil and resistance to deposit formation.

Specifications: DIN 51506 VDL; ISO 6743 DAJ; ROTORCOMP VERDICHTER GmbH.

APPLICATION

ISO 46/68 **ISO 46**



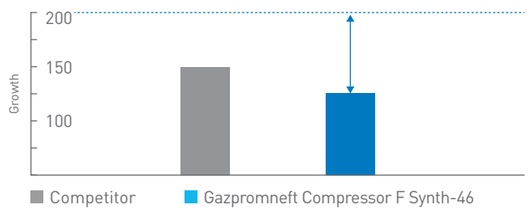
Screw | Vane | Centrifugal compressor | Axial compressor

ADVANTAGES

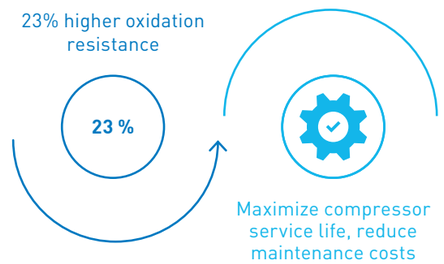
- Synthetic base → Extended oil life
- Increased oxidation resistance → Reduced maintenance costs
- Excellent protection against corrosion → Reduced unscheduled downtime
- High demulsifying properties → Reduced unscheduled downtime
- Effective wear protection → Reliable machine operation

TEST RESULTS

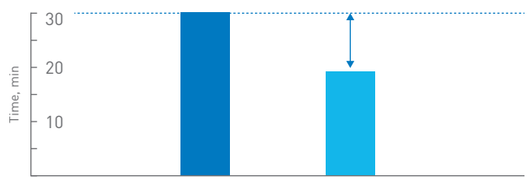
Thermo-oxidative stability*



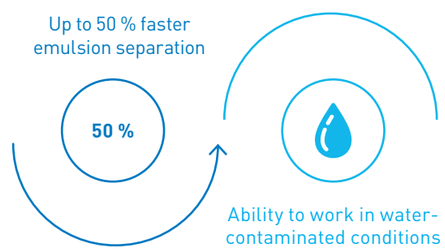
*MPC test after 3 weeks of TOST.



Emulsion separation time*



*ASTM D1401 test



DIN Gazpromneft Compressor F Synth complies with international standard DIN 51506 VDL.

The use of synthetic base oils of API Group III in the formulation of Gazpromneft Compressor F Synth-46, -68 provides excellent resistance to oxidation under high thermal loads, as well as stable operation over extended intervals. High demulsifying properties protect compressor parts from the negative effects of water.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	ISO viscosity grade	
		46	68
Kinematic viscosity at 40 °C, мм²/с	ASTM D445	46	68
Kinematic viscosity at 100 °C, мм²/с	ASTM D445	7,5	10,4
Viscosity index	ASTM D2270	130	146
Flash point, COC, °C	ASTM D92	230	246
Pour point, °C	GOST 20287	–39	–40
Acid number, mg KOH/g	GOST 11362	0,4	0,4

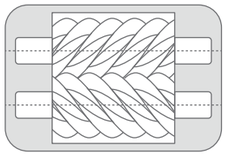
GAZPROMNEFT COMPRESSOR S SYNTH-46, 68, 100, 150

Gazpromneft Compressor S Synth is a series of ashless semi-synthetic compressor oils designed for lubrication of air compressors (volumetric and dynamic types) in modern production where the oil performance level is required to be at least DIN 51506 VDL. Synthetic base components provide high stability against oxidation and deposit formation.

Specifications: DIN 51506 VDL; Compressor plant "Borets" (ISO 100, 150); ROTORCOMP VERDICHTER GmbH (ISO 46, 68, 100).

APPLICATION

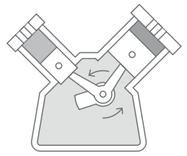
ISO 46/68



Screw

Vane

ISO 100/150



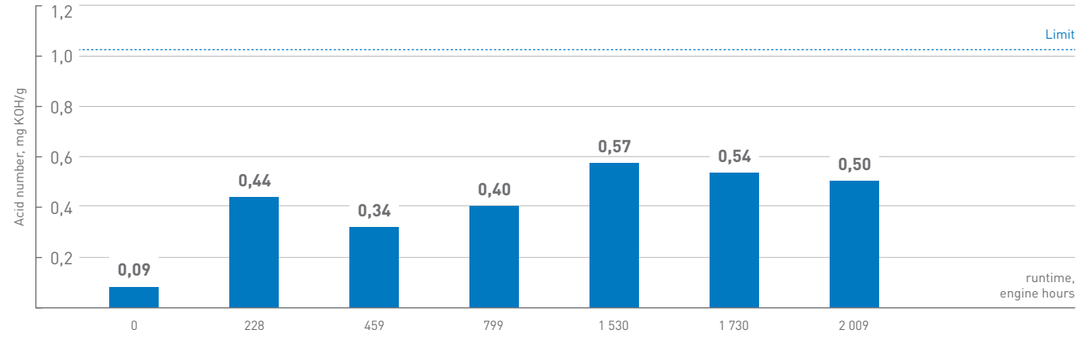
Piston

ADVANTAGES

- Semi-synthetic base → High thermal stability
- Foaming stability → Reliable equipment operation
- High demulsifying properties → Reduced unscheduled downtime
- Effective wear protection → Reliable machine operation
- Excellent deaeration capacity → Reliable machine operation

TEST RESULTS

Acid number, ASTM D664, in Atlas Copco GA 18 VSD compressor



2 000 moto-h

During the tests, the acid number of Gazpromneft Compressor S Synth-46 oil was less than 0.6 mg KOH/g. None of the indicators reached the reject value. This indicates high antioxidant properties of Gazpromneft Compressor S Synth-46 oil.

DIN Gazpromneft Compressor S Synth complies with international standard DIN 51506 VDL.

Gazpromneft Compressor S Synth compressor oils operate in hot air environments. For reliable equipment operation, the formulations of these products are enhanced with synthetic base components.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade			
		46	68	100	150
Kinematic viscosity at 40 °C, мм²/с	ASTM D445	46	68	100	150
Kinematic viscosity at 100 °C, мм²/с	ASTM D445	6,9	9,0	11,5	15,2
Viscosity index	ASTM D2270	105	104	103	102
Flash point, COC, °C	ASTM D92	241	252	253	258
Pour point, °C	GOST 20287	–32	–31	–31	–29
Acid number, mg KOH/g	GOST 11362	0,1	0,1	0,1	0,1

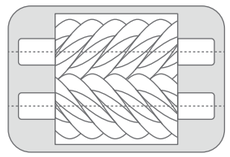
GAZPROMNEFT COMPRESSOR OIL-46, -68, -100, -150, -220, -320, -460, -680

Gazpromneft Compressor Oil is a series of ashless compressor oils developed for lubrication of dynamic type (ISO 46, 68) and volumetric type (ISO 46, 68, 100, 150, 220, 320) compressors where the DIN 51506 VCL performance level is required. High-quality base components ensure high thermal stability, minimizing the formation of varnish deposits. The oils effectively protect compressor working surfaces against wear and corrosion.

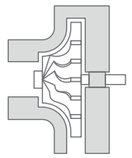
Specifications: DIN 51506 VCL; JSC "UKZ" (except ISO 320, 460, 680); JSC "Sumy NPO" (except ISO 320, 460, 680); ROTORCOMP VERDICHTER GmbH (ISO 46, 68, 100).

APPLICATION

ISO 46/68

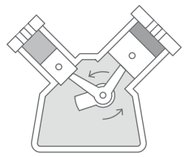


Screw compressor



Centrifugal compressor

ISO 100/150/220/320/460/680



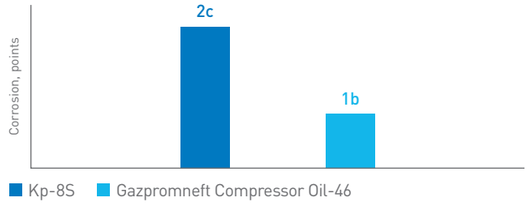
Piston compressor

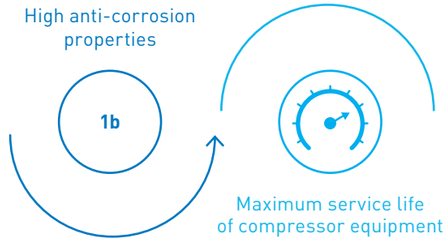
ADVANTAGES

- High auto-ignition temperature → Safe operation in production
- High thermal stability → Reduced unscheduled downtime
- Effective wear protection → Reliable machine operation
- Protection against corrosion → Reduced costs for additional spare parts

TEST RESULTS

Corrosion on copper plate*

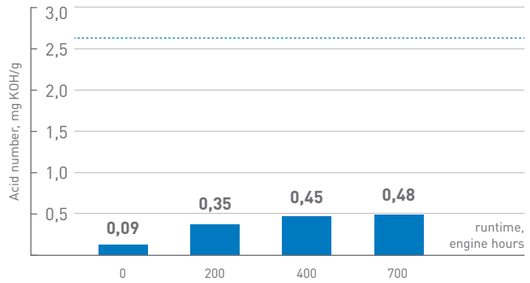




* GOST 2917 test

FIELD TESTS

Acid number, ASTM D664
(compressor unit VSHV-2,3/230)



700 moto-h

For Gazpromneft Compressor Oil-220 oil with 700 motor-hours of operation, the acid number value was 0.48 mg KOH/g with a rejection rate of 2.63 mg KOH/g. This indicates the high performance properties of the oil.

TYPICAL PHYSICOCHEMICAL PARAMETERS

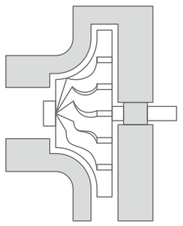
Indicators	Method	Viscosity grade							
		46	68	100	150	220	320	460	680
Kinematic viscosity at 40 °C, мм²/с	ASTM D445	46	68	100	150	220	320	422	630
Kinematic viscosity at 100 °C, мм²/с	ASTM D445	6,7	8,5	11,0	14,7	18,3	24,3	28,1	35,2
Viscosity index	ASTM D2270	97	93	93	93	91	91	92	92
Flash point, COC, °C	ASTM D92	235	246	251	257	263	264	306	600
Pour point, °C	GOST 20287	–32	–30	–28	–23	–20	–17	–15	–14
Acid number, mg KOH/g	GOST 11362	0,14	0,14	0,14	0,14	0,14	0,14	0,1	0,1

GAZPROMNEFT COMPRESSOR OIL T-46

Gazpromneft Compressor Oil T-46 is an oil for dynamic compressors. Due to the use of synthetic components Gazpromneft Compressor Oil T-46 has high thermo-oxidative stability, minimizing the formation of deposits in the discharge lines of compressors. Stability of viscosity-temperature characteristics ensures reliable lubrication at elevated temperatures throughout the entire life of the lubricant.

APPLICATION

ISO 46/68



Centrifugal compressor

ADVANTAGES

- High thermal oxidation stability → Reduced unscheduled downtime
- Low foaming → Reliable lubrication and heat dissipation
- Rapid air separation → Stable lubricating film
- Protection against corrosion → Reduced costs for additional spare parts

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Compressor Oil T-46
Kinematic viscosity at 40 °C, мм²/sec	ASTM D445	46
Flash point, COC, °C	ASTM D92	228
Pour point, °C	GOST 20287	–15
Acid number, mg KOH/g	GOST 11362	0,07
Copper corrosion, 3 h at 120 °C, points	ASTM D130	2c
Foaming tendency/foam stability, cm³, not more: sequence 1; sequence 2; sequence 3	ASTM D892	10/0; 20/0; 10/0

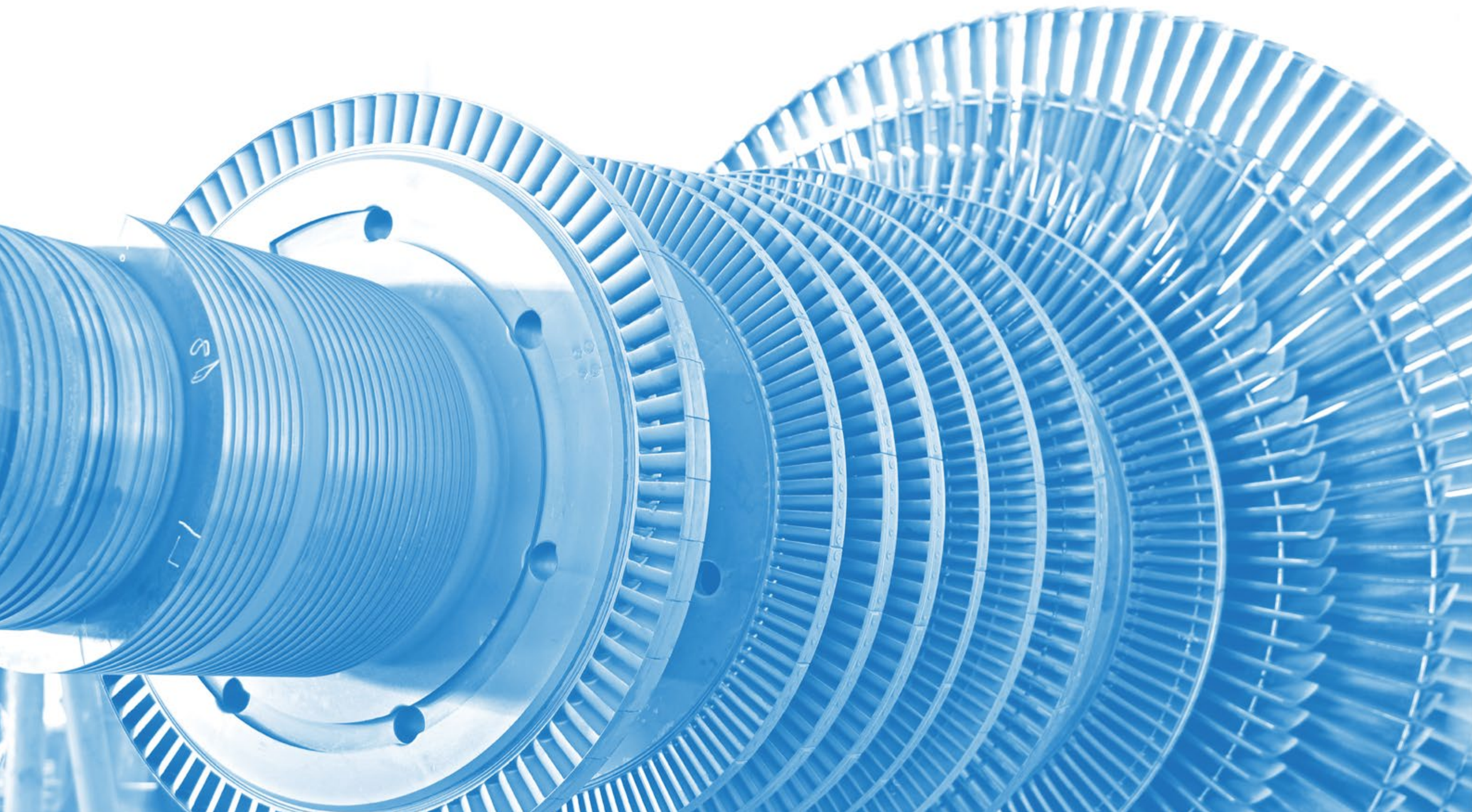
COMPRESSOR OILS OF GOST LEVEL

Oil	Description	Application
Gazpromneft MGD-14M STO 77820966-062-2017	Gazpromneft MGD-14M is made of mineral base oils of high purity and effective complex additive package with reduced ash content.	Intended for lubrication of two-stroke gas-motor compressors installed in the systems of main gas pipelines for compression of natural and associated petroleum gases transportation, for gas injection into underground storages. It is intended for use as a single lubricating oil (two-stroke gas engine and compressor part).
Gazpromneft MGD-20M STO 84035624-035-2011	Gazpromneft MGD-20M is made of mineral base oils of high purity and effective complex additive package with reduced ash content.	It is intended for lubrication of two-stroke gas motor compressors installed in the systems of main gas pipelines for compression and transportation of natural and associated petroleum gases, for gas injection into underground storage facilities. It is intended for use as a single lubricating oil (two-stroke gas engine and compressor part) for gas motor compressors of models MK-8, MK-8M, 10GKMA, 10GKNAM and 10GKMA as a replacement of MS-20 oil.
Kp- 8S with improved stability TU 38.1011296-90	Kp- 8S with increased stability is produced from high quality mineral base oils with application of improved additive package providing enhanced antioxidant and anticorrosion properties. Produced in accordance with technical specifications of VNIINP TU 38.1011296-90.	Designed for use in lubrication systems of dynamic compressors (turbo compressors, centrifugal compressors) and screw compressors. It can be used in compressors equipped with a single lubrication system for blower and gearbox, as well as for pumping ammonia.
KS-19p A TU 38.401-58-243-99	KS-19p A is produced on the basis of unique base oils with the use of antioxidant additives that help to minimize deposits in the blower lines and ensure long and efficient operation.	It is intended for lubrication of medium and high pressure reciprocating compressors, air-blowers and rotary compressors operated in various industries and transportation where the manufacturer of equipment has approved the use of oil of this viscosity class. It is also recommended for single-stage and multi-stage compressors compressing air and/or other gases insoluble in oil.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Gazpromneft MGD-14M	Gazpromneft MGD-20M	Kp- 8S with improved stability	KS-19p A
Kinematic viscosity, mm²/sec	14 (at 100 °C)	20,8 (at 100 °C)	41,4–50,6 (at 40 °C)	23,2 (at 100 °C)
Viscosity index	94	105	95	88
Flash point, COC, °C	267	255	226	272
Pour point, °C	–29	–23	–15	–16
Acid number, mg KOH/g	—	—	0,045	0,01
Ash content, %	0,28	0,26	—	0,005
Stability against oxidation:				
– mass fraction of sludge, % wt.	—	—	0,02	0,005
– acid number of oxidized oil,mg KOH/g	—	—	0,2	0,24

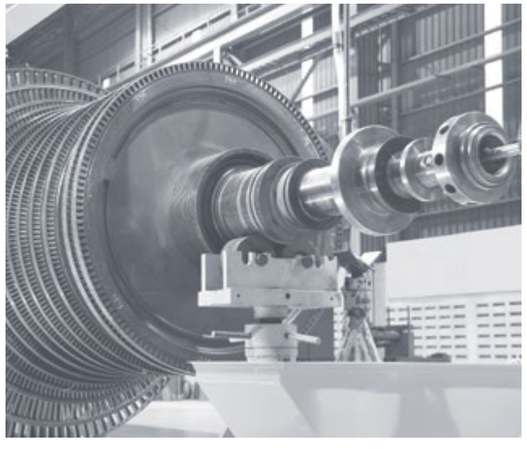
TURBINE OILS

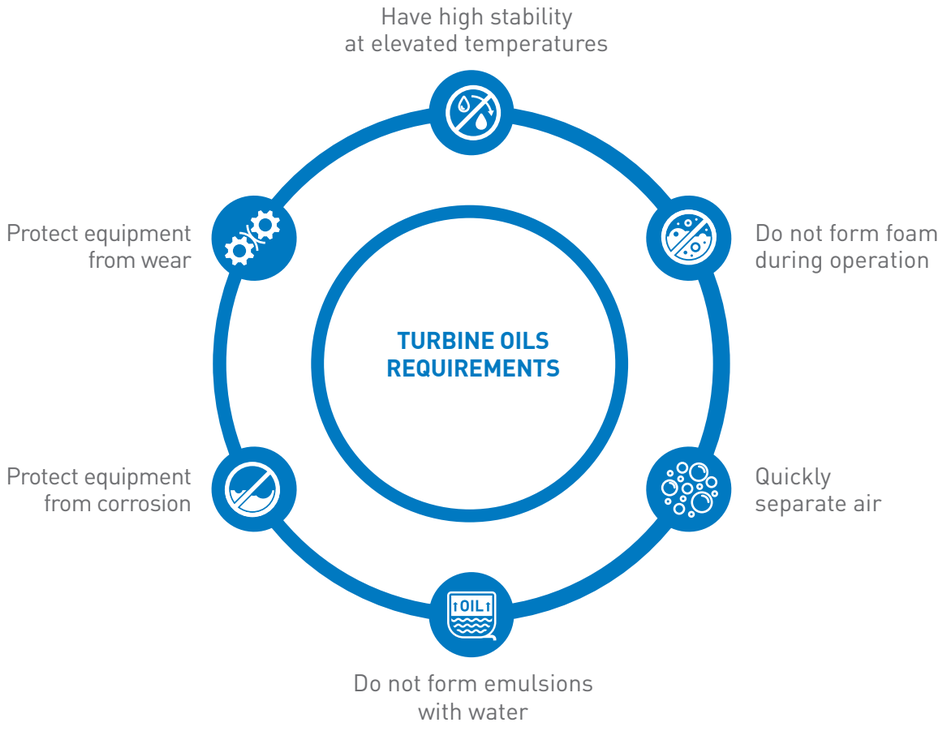


TURBINE OILS

The main function of turbine oils is to lubricate and cool the bearings of various types of turbine units. These can be steam turbines, gas turbines, various turbo-compressor units. Turbine oils are also used as working fluids in turbine control systems, in hydraulic and circulation systems of various industrial units.

Turbine units have found application in the following areas:
- large power generation:
- steam turbines of TPPs, GRESs, CCGTs;
- gas turbines;
- industrial turbochargers.





TURBINE OILS REQUIREMENTS

DIN 51515

Characteristics	Normal turbine oils, turbine oils for steam turbines	High-temperature turbine oils
No anti-seize additives (EP)	DIN 51515-1	DIN 51515-2
With anti-seize additives (EP)	DIN 51515-1	DIN 51515-2

TURBINE OIL REQUIREMENTS

Tests	DIN 51515-1				DIN 51515-2		Measurement technique
	LTD — for normal conditions				LTG — for high temperature applications		
	32	46	68	100	32	46	
Viscosity index, min.	90	90	90	90	90	90	ISO 2209
Flash point, °C, min.	185	185	205	215	185	185	ISO 2592
Foaming tendency/foam stability, cm^3, not more:							ISO 6247
Sequence 1 Sequence 2 Sequence 3	450/0 50/0 450/0	450/0 50/0 450/0	450/0 50/0 450/0	450/0 50/0 450/0	450/0 50/0 450/0	450/0 50/0 450/0	
Oxidation resistance (TOST), h	3 000	3 000	2 500	2 000	3 500	3 500	ISO 4263-1
Induction period oxidation time (RPVOT), min	—	—	—	—	750	750	ASTM D2272
Induction period of oxidation modified (RPVOT), min	—	—	—	—	85	85	ASTM D2272
Deaeration properties at 50 °C, min (max)	5	5	6	—	5	5	DIN 9120
Water separation, s (max.)	300	300	300	300	300	300	DIN 51589-1

GAZPROMNEFT TURBINE OIL RANGE

DIN 51515	Mark	Base oil	Oxidation resistance	Anti-seize properties	Protection against corrosion	Water separation	Antifoaming properties	Deaeration
For steam and gas turbines								
DIN 51515-2	Gazpromneft Turbine Oil F Synth EP-32, -46							
—	Tp-22S mark 1			–				
—	TP-30			–				

Synthetic base

Mineral base

Relative property reserve indicator

GAZPROMNEFT TURBINE OIL F SYNTH EP-32, -46

Gazpromneft Turbine Oil F Synth EP is a series of synthetic turbine oils with anti-seize additives designed for lubrication of modern gas turbines and combined cycle gas turbines. The oils are used in high-speed gas turbines and combined cycle gas turbines, including turbine-gear systems. The use of synthetic base oils in combination with antioxidant additives allows these products to be used for lubrication of bearings and gearboxes of heat-stressed turbines according to DIN 51515 Part 2. They can be used with longer change intervals compared to mineral-based oils.

Specifications:
DIN 51515-1 L-TD;
DIN 51515-2 L-TG;
ISO 8068:2006 L-TSA/TGA, L-TSE/TGE;
General Electric GEK 101941A/ GEK 32568J/ GEK 107395A/GEK 3121608 (ISO 32);
Siemens TLV 901304 & TLV 901305;
ABB; Alstom HTGD 90117 Revision Y (ISO 32);
Brush (ISO 32);
OJSC Power Machines(ISO 46).

APPLICATION

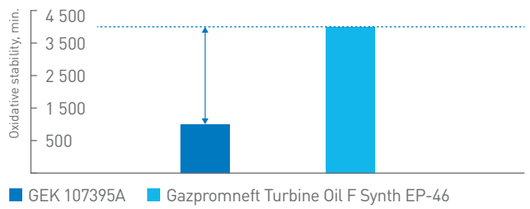
- Highly loaded gas turbines and CCGT systems “turbine - gearbox” at TPPs and GRESs with the possibility of operation at extended replacement intervals (TOST > 10 000 h).
- Gas turbines (including turbine-reducer systems) of compressor units and power units at oil and gas facilities.
- In the hydraulic control system of the turbine.

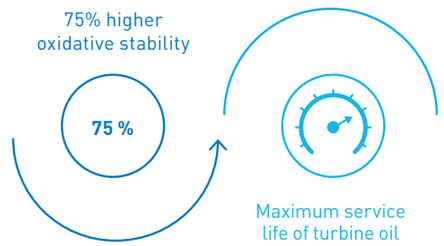
ADVANTAGES

- Synthetic base oil → Extended oil life
- Increased oxidation resistance → Reduced maintenance costs
- Excellent anti-wear and anti-seize properties (EP) → Reliable wear and seizure protection
- Excellent protection against corrosion → Reduced unscheduled downtime
- High deaeration properties → Reliable equipment operation

TEST RESULTS

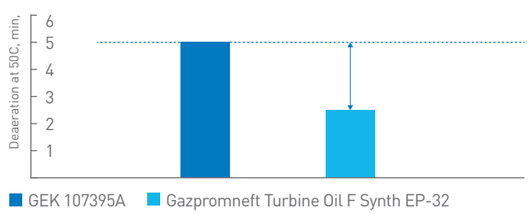
Oxidative stability (RPVOT)*

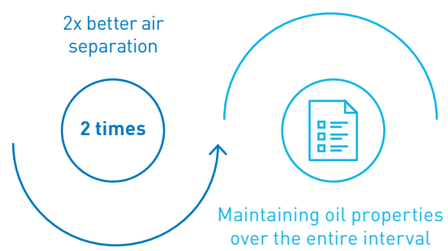




*ASTM D3427 test

Deaeration properties*





*ASTM D3427 test

DIN Gazpromneft Turbine Oil FSynth EP complies with international standard DIN 51515 Part 2.

The use of special EP additives provides maximum protection for heavily loaded components. Excellent deaeration reduces the risk of premature oil oxidation. Involved synthetic base oils minimize deposit formation and allow extended drain intervals.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade	
		32	46
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	32,7	46,5
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,8	7,2
Viscosity index	ASTM D2270	120	115
Flash point, COC, °C	ASTM D92	236	244
Pour point, °C	GOST 20287	–41	–39
Acid number, mg KOH/g	GOST 11362	0,07	0,07
Density at 20 °C, kg/m³	ASTM D4052	845,1	849
Copper corrosion, 3 h at 100 °C, points	ASTM D130	1в	1в

TP- 22S MARK 1

Tp-22S mark 1 is a turbine oil designed for lubrication of bearings and auxiliary mechanisms of high-speed turbines. It is produced using high quality base components and modern corrosion inhibitors and metal passivators, which increases the service life of the lubricant and preserves the resource of the equipment.

Specifications: JSC TURBOATOM; JSC VTI; JSC RAO EAS of Russia.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Tp-22S mark 1
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	29,6
Kinematic viscosity at 50 °C, mm²/sec	GOST 33	20
Viscosity index	GOST 25371	95
Flash point, COC, °C	GOST 4333	220
Pour point, °C	GOST 20287	–17
Acid number, mg KOH/g	GOST 11362	0,06
Stability against oxidation at 150 °C, 16 h and oxygen flow rate 3 dm3/h: **- mass fraction of precipitate, %** **- acid number, mg KOH/g** **- volatile low molecular weight acids, mg KOH/g**	GOST 981	 0,004 0,1 0,03
Density at 15 °C, kg/m3	ASTM D4052	871
Demulsification time, s	GOST 12068	100

TP-30

TP-30 is a turbine oil produced from high quality mineral base oils and effective additive package.
It provides high performance characteristics: excellent equipment protection, reliable operation, reduced downtime and longer oil change intervals.

Specifications: OJSC “VNIINP”

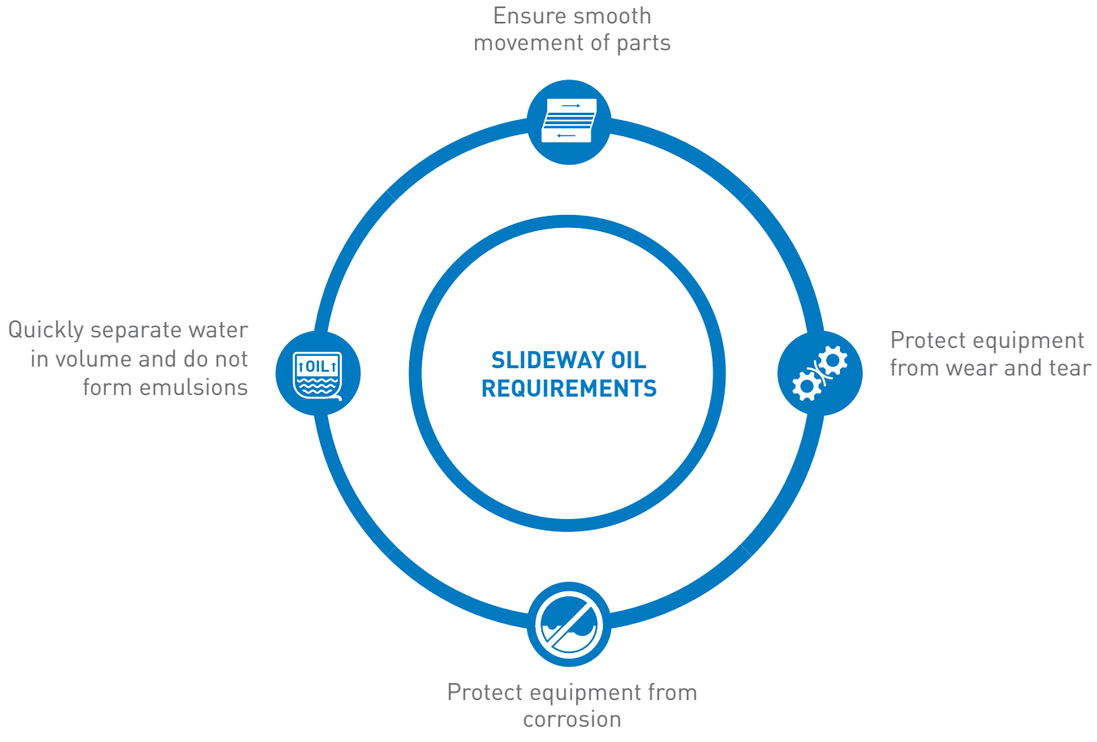
TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	TP-30
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	44,5
Viscosity index	GOST 25371	95
Flash point, COC, °C	GOST 4333	234
Pour point, °C	GOST 20287	–16
Acid number, mg KOH/g	GOST 11362	0,2
Sulfur mass fraction in base oil, %	GOST 1437	0,3
Stability against oxidation: **- mass fraction of precipitate, %** **- acid number, mg KOH/g**	GOST 18136	 0,005 0,36
Demulsification time, s	GOST 12068	2,3
Density at 15 °C, kg/m³	GOST P 51069	876
Color on colorimeter, CNT units	GOST 20284	1,0

SLIDEWAY OILS

SLIDEWAY OILS

Slideway oils are used for lubrication of vertical and horizontal slideways of various machine tools, conveyor systems and other industrial equipment. High-quality lubrication of slideways is the basis for smooth and accurate movement of moving parts, which, in turn, ensures the quality of workpiece processing. In addition to preventing jerkiness of moving parts of equipment, sliding guide oils provide protection against wear and corrosion, including in the presence of water.



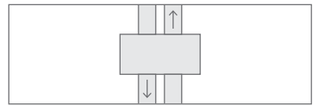
GAZPROMNEFT SLIDE WAY–68, -220

Gazpromneft Slide Way — is a series of oils designed for lubrication of sliding guides of modern machine tools. Thanks to a special package of functional additives, the oils have excellent antiskid, antioxidant, anticorrosive and demulsifying properties. They ensure high accuracy of parts machining and long service life of the equipment.

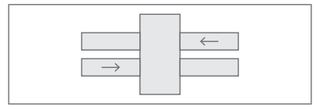
Specifications:
DIN 51524 Part 2 HLP;
DIN 51517 Part 3 CLP;
DIN 51502 CGLP;
ISO 19378 (L-GA);
ISO 6743-13: L-GA/GB;
MAG-47 (ISO 68);
MAG-50 (ISO 220).

APPLICATION

ISO 220
Vertical slide guides



ISO 32, 68
Horizontal slide guides

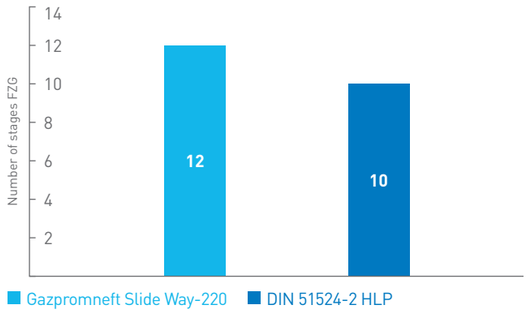


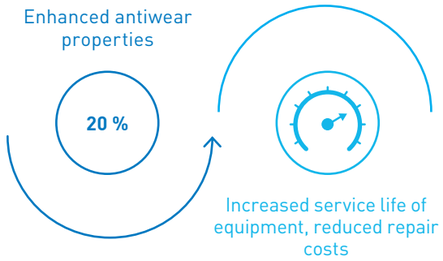
ADVANTAGES

High quality base oils	Excellent anti-skid properties	Excellent protection against corrosion	High demulsifying properties	Increased oxidation resistance
Excellent lubricating properties	High precision machining of components	Longer service life of equipment	Stable lubrication and service life retention	Maintains oil performance

TEST RESULTS

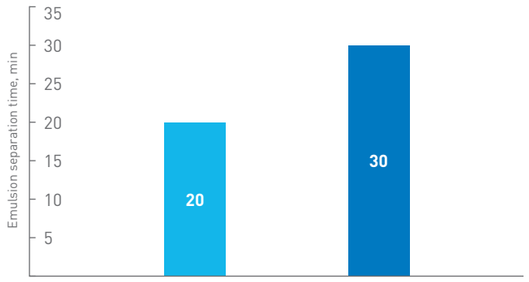
Anti-seize properties*

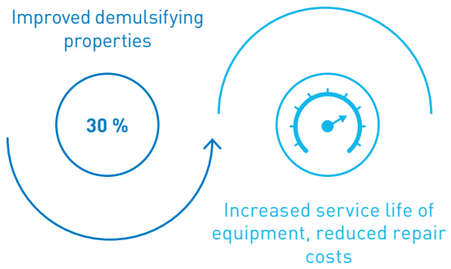




* FZG Scuffing Test A/8.3/90.

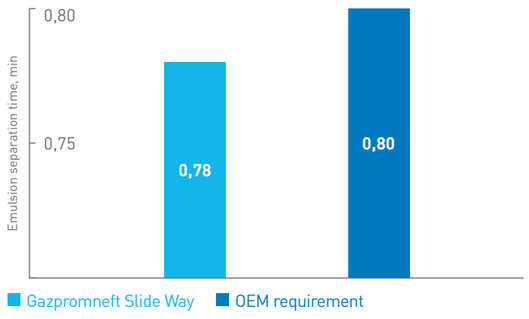
Demulsifying properties*

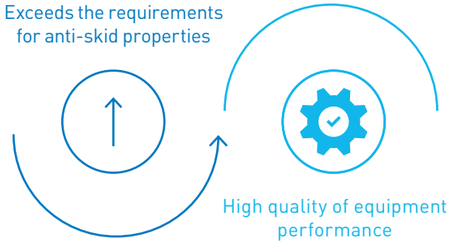




*ISO 6614 test.

Anti-skid properties*



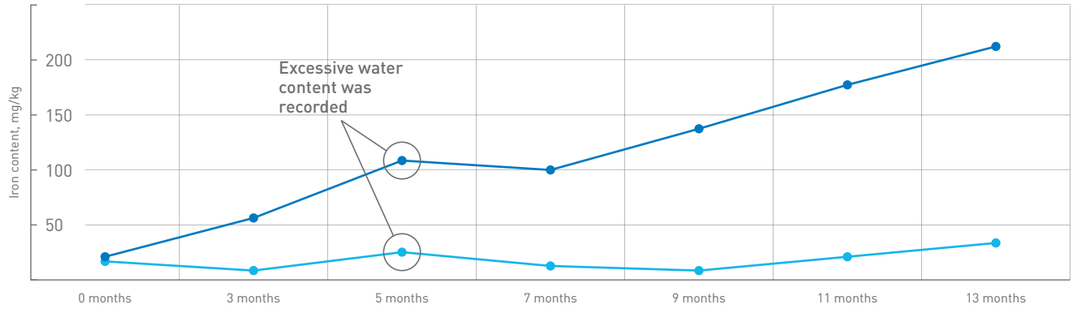


*Fives Cincinnati Stick-slip Test.

FIELD TESTS

Equipment: gearbox of round bar deburring machine.

Monitoring duration: 13 months.
Working conditions: 24/7.



9 400 h

Gazpromneft Slide Way-68 ensured uninterrupted operation of the machine with minimal wear even in conditions of increased watering (water content exceeding 3.5 times was recorded) during 9,400 hours of round-the-clock operation.

DIN Gazpromneft Slide Way complies with the international standard DIN 51502 CGLP.

Excellent anti-wear and demulsifying properties, compliance with the international standard DIN 51502 CGLP, as well as positive results of operational tests make Gazpromneft Slide Way oils an ideal solution for use in modern machine tools operating even under severe operating conditions.

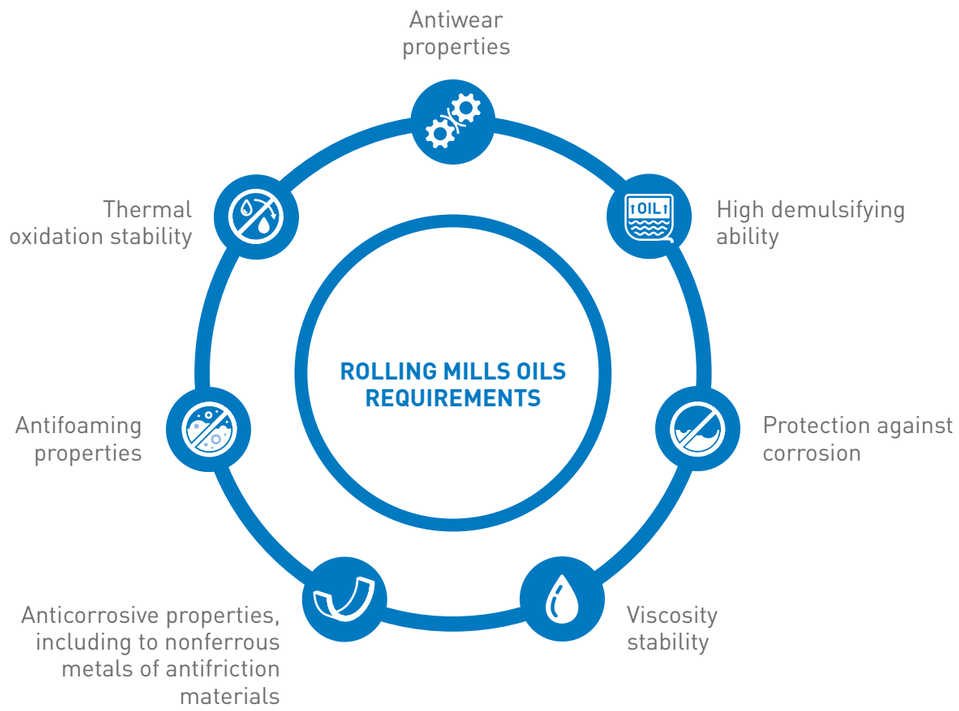
TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade	
		68	220
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	68	220
Viscosity index	ASTM D2270	93	91
Flash point, COC, °C	ASTM D92	249	257
Pour point, °C	GOST 20287	–23	–18
Acid number, mg KOH/g	GOST 11362	0,5	0,5
Density at 20 °C, kg/m³	ASTM D4052	880	891

OILS FOR ROLLING MILLS

OILS FOR ROLLING MILLS

Many industries, such as machine building, construction, transportation, etc., cannot be imagined without the use of rolled metal products. Every year the requirements for production flexibility of equipment and reduction of downtime associated with repair and maintenance are increasing. Application of quality lubricants ensuring reliable operation of liquid friction bearings of rolling mills contributes to achievement of the highest productivity. Requirements to oils for rolling mills are mainly conditioned by contact with water and lubricating and cooling fluids, which contributes to corrosion processes and various types of wear of liquid friction bearings.



GAZPROMNEFT ROMIL-46, -100, -150, -220, -320, -460

Gazpromneft Romil is a series of circulating oils for rolling mills operated at steel mills with improved demulsifying and anti-corrosion properties. The oils are designed to provide effective lubrication of Danieli and Morgoil liquid friction bearings (LFBs). Their high load carrying capacity and excellent oxidation stability help to maximize bearing and equipment life.

Specifications: Danieli; Morgoil — Standart Lubricant (SN 180-3:2009-01); Morgoil — Standart Lubricant (SN 180-4:2009-01).

APPLICATION

- Lubrication of highly loaded liquid friction bearings of rolling mills in the steel industry.
- For liquid friction bearings manufactured by Danieli, Morgoil.
- Circulation systems where ISO 46, 100, 150, 220, 320, 460 viscosity and high water separation properties are required.

ADVANTAGES

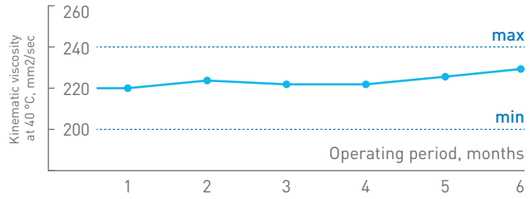
- Excellent demulsifying ability — Prevents formation of stable emulsions with water
- Excellent viscosity stability — Reliable lubrication under increased loads
- Stability against oxidation — Minimizes formation of oil oxidation products that cause corrosion
- High anti-corrosion properties — Protection of the sliding layer of liquid friction bearings
- Stability to foam formation — Ensuring equipment operability

INDUSTRIAL TESTS

Lubrication system of medium-grade group of stands of rolling mill 350 SPTs-2.

Operating temperatures: 38–65 °C.
Operating mode: 24 h/day.

Kinematic viscosity of Gazpromneft Romil-220 oil when operating in the LFB system*

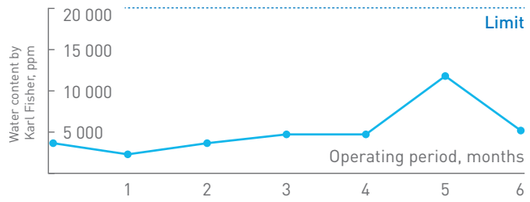


*ASTM D445 test

Stability of viscosity and load-bearing capacity of oil film in water-contaminated conditions

Reliable lubrication of equipment

Water cut of Gazpromneft Romil-220 oil during operation in the lubrication system LFB*



**ASTM D6304 test

High demulsifying properties

Maintaining oil characteristics when in water-contaminated conditions

Viscosity retention even under high watering conditions provides load carrying capacity. Effective water separation maintains performance and protects equipment from corrosion in water-contaminated conditions.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Viscosity grade					
		46	100	150	220	320	460
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	46	100	150	220	320	460
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	6,7	11,0	14,4	18,5	23,3	29,1
Viscosity index	ASTM D2270	95	94	93	93	91	90
Flash point, COC, °C	ASTM D92	238	246	250	256	273	288
Pour point, °C	GOST 20287	-14	–13	–12	–12	–11	–10
Density at 20 °C, kg/m³	ASTM D4052	875,6	882,8	887,9	892,5	894,2	899,1
Copper corrosion, 3 h at 100 °C, points	ASTM D130	1в	1в	1в	1в	1в	1в
Demulsifying capacity, min	ASTM D1401	10	15	15	20	20	25

GAZPROMNEFT I46PV, I220PV, I460PV

Gazpromneft I46PV, I220PV, I460PV are industrial oils of Gazpromneft IPV series, which are a mixture of refined mineral oils with additives improving anticorrosive, antioxidant, demulsifying and anti-foaming properties.

Approved/specifications: EZTM.

APPLICATION

Lubrication of liquid friction bearings of rolling (section-rolling, sheet-rolling and wire-rolling) mills.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	I46PV	I22PV	I460PV
Kinematic viscosity at 100 °C, mm²/sec	GOST 33	6,8	18,2	28,7
Viscosity index	GOST 25371	98	91	90
Flash point, COC, °C	GOST 4333	230	252	287
Pour point, °C	GOST 20287	–17	–16	–16
Acid number, mg KOH/g	GOST 11362	0,4	0,4	0,4
Density at 20 °C, kg/m³	GOST 3900	877	895	899
Coking capacity, %	GOST 19932	0,1	0,3	0,5

PS-28, P-40

PS-28, P-40 — oils intended for use in rolling mill gearboxes.

ADVANTAGES

- The unique high-viscosity base oil provides a stable load-bearing film by eliminating the use of thickening polymers.
- Lubricating properties provide the necessary level of protection for working surfaces.
- Thermo-oxidative stability allows the oil to be used in equipment circulation systems for long periods of time.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	PS-28	P-40
Kinematic viscosity at 100 °C, mm²/sec	GOST 33	28,1	39,4
Viscosity index	GOST 25371	88	86
Flash point, COC, °C	GOST 4333	278	295
Pour point, °C	GOST 20287	–15	–13
Sulfur mass fraction, %	GOST 1437	0,62	0,75
Density at 20 °C, kg/m³	GOST 3900	899	908
Coking capacity, %	GOST 19932	—	1,01

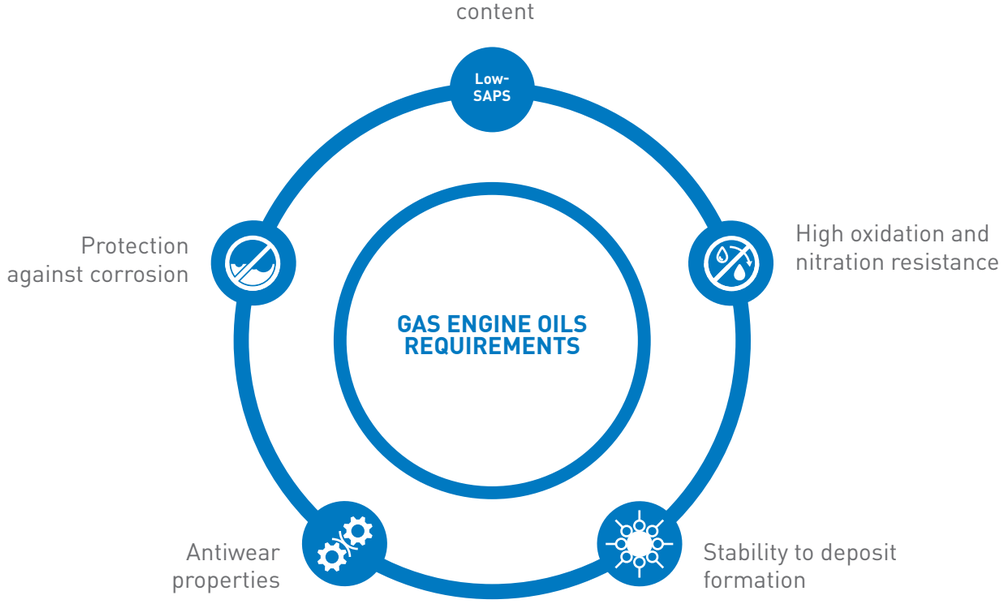
GAS ENGINE OILS

GAS ENGINE OILS

The harsh natural and climatic conditions of most enterprises in the oil and gas and other industries do not allow laying traditional centralized power grids. It is quite difficult and expensive to run a power supply line through impassable areas. That is why small-scale power engineering has received accelerated development due to its mobility.

Advantages in the use of gas piston plants:
- mobility;
- no need to purchase electricity from grid companies;
- high efficiency.

Gas engines have found application in the following areas:
- oil and gas industry (extraction of raw materials, drive of compressor equipment);
- electric power industry (power generation for own needs of large facilities: logistics terminals, shopping centers, etc.);
- trigeneration (co-generation of electricity, heat and cooling at industrial and agricultural enterprises, office buildings, etc.).



GAS ENGINE OILS RANGE

TYPICAL PHYSICOCHEMICAL PARAMETERS

Mark	Change interval	Deposit protection	Protection against corrosion	Antiwear properties	Low ash technology	Ash content of sulphate, % wt.
G-Profi SGE Premium 40	▰▰▰▰	▰▰▰▰	▰▰▰▰	▰▰▰▰	▰▰▰▰	0,6
G-Profi SGE 40 NAB	▰▰▰▱	▰▰▰▱	▰▰▰▱	▰▰▰▰	▰▰▰▰	0,5
Gazpromneft GEO 40	▰▰▱▱	▰▰▱▱	▰▰▰▱	▰▰▰▱	▰▰▰▰	0,5

▰ Relative property reserve indicator

G-PROFI SGE 40 NAB

G-Profi SGE 40 NAB is a high quality synthetic motor oil for stationary four-stroke gas engines. It is produced on the basis of synthetic base oil with a low ash additive package (Low-SAPS technology) for compatibility with emission reduction systems and effective protection of engines from deposits and wear. Provides extended drain interval compared to semi-synthetic and mineral-based oils.

Approvals/Specifications:
Jenbacher TA 1000-1109;
Cummins;
MWM;
MAN;
Niigata;
Wartsila;
Waukesha;
Caterpillar;
Guascor;
Dresser-Rand;
MTU.

APPLICATION

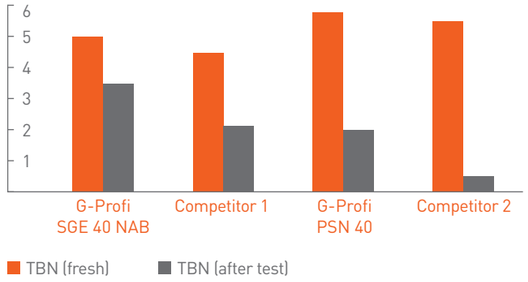
- Stationary gas engines used in public utilities, cogeneration at industrial enterprises, gas pumping stations, gas piston electric power stations at oil and gas fields.
- Engines operating on natural gas, associated petroleum gas.
- Engines with and without supercharging, operating under severe conditions.
- Engines equipped with exhaust gas emission reduction systems.

ADVANTAGES

Synthetic base oil	Low ash additive package	Increased resistance to oxidation and nitration	Excellent anti-wear properties	Increased resistance to deposit formation
Increased resistance to deposit formation	Reduced unscheduled downtime	Reduced maintenance costs	Reliable wear protection	Clean engine parts

TEST RESULTS

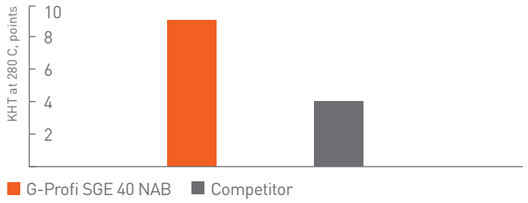
Total base number (TBN) consumption, mg KOH/g*

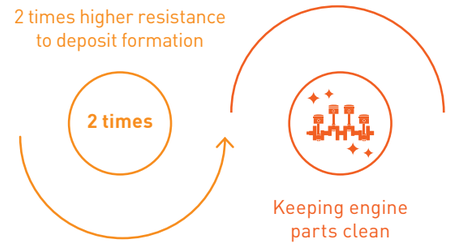


The low base number consumption of G-Profi SGE 40 NAB motor oil is evidence of its high stability against deposit formation over a longer period of time compared to competitor products.

*Ageing Test

Resistance to deposit formation*





** Komatsu Hot Tube (KHT) test

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	G-PROFI SGE 40 NAB
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	93,1
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	13,6
Viscosity index	ASTM D2270	148
Flash point, COC, °C	ASTM D92	238
Pour point, °C	ASTM D97	–15
Base number, mg KOH/g	ASTM D2896	5,5
Density at 15 °C, kg/m³	ASTM D4052	858
Sulphate ash content, % wt.	ASTM D874	0,5

G-PROFI SGE PREMIUM 40

G-Profi SGE Premium 40 is a very high performance engine oil designed for use in the latest gas engines, including those with steel pistons. The oil provides excellent performance at extended drain intervals and excellent stability against deposit formation, and is able to maintain its performance at higher operating temperatures and loads than previous generations of oils.

Specifications:
Jenbacher Type 6 H + K;
Jenbacher Type 6 C, E, F, J;
Jenbacher Type 4 A, B, C, D;
Jenbacher Type 2 + 3;
Caterpillar;
MWM;
MAN;
Rolls Royce;
MTU;
Waukesha;
Wartsila.

APPLICATION

- For stationary four-stroke gas engines (stoichiometric, lean mixtures) of various manufacturers with aluminum and steel pistons.
- Engines operating on natural or associated petroleum gas (bio-gas and landfill gas operation is possible after technical consultation).
- For engines that drive compressors and pumps, as part of cogeneration plants in various applications.

ADVANTAGES

High quality Group II base oil	Low ash additive package	Excellent protection against corrosion	Excellent anti-wear properties	High stability against deposit formation
▼	▼	▼	▼	▼
Stability of gas engine performance	Reduced unscheduled downtime	Reduced repair costs	Reliable wear protection	Clean engine parts

TEST RESULTS

Stability to lacquer deposits on steel plates (Panel Coker Test*)

G-Porfi SGE Premium 40
8,63 — evaluation score

Competitor
7.21 — evaluation score

Washing properties of G-Profi SGE Premium 40 provide a high degree of protection of cylinder-piston group parts against deposit formation, prolonging engine life.

*The test is traditional for the quality assessment of oils by INNIO Jenbacher.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	G-PROFI SGE Premium
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	14,0
Viscosity index	ASTM D2270	111
Flash point, COC, °C	ASTM D92	252
Pour point, °C	ASTM D97	–22
Density at 15 °C, kg/m³	ASTM D4052	879
Base number, mg KOH/g	ASTM D2896	5,9
Sulphate ash content, % wt.	ASTM D874	0,6

GAZPROMNEFT GEO 40

Gazpromneft GEO 40 is a high quality engine oil for stationary gas engines requiring low ash content lubricants. It is developed using a special additive package (Low-SAPS technology) for effective protection of engine parts from ash deposits, as well as increased protection from varnish deposits.

Specifications:
Caterpillar;
Waukesha;
Guascor;
Wartsila;
Jenbacher Type 3;
Cummins;
MAN.

APPLICATION

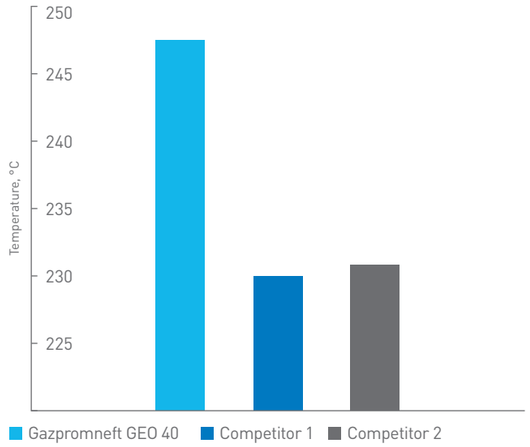
- For stationary four-stroke gas engines.
- For engines running on natural gas, associated petroleum gas and certain other types of special gases (technical advice required).
- For engines operating under severe conditions on depleted mixtures as part of cogeneration plants, including turbocharged engines.

ADVANTAGES

High quality base oil	Low ash additive package	Excellent protection against corrosion	Excellent anti-wear properties
Excellent lubricating properties	Reduced likelihood of unscheduled downtime	Reduced unscheduled downtime	Reliable wear protection

TEST RESULTS

Stability to formation of high-temperature deposits on aluminum surface*



*Micro Coking Test.

The high temperature at which deposits begin to form characterizes the ability of Gazpromneft GEO 40 to protect pistons from varnish deposits, especially at high loads and operating conditions characteristic of gas engines at the end of their service life.

Stability to lacquer deposits on steel plates (Panel Coker Test*)

Gazpromneft GEO 40:
8,66 — evaluation score

Competitor
4,84 — evaluation score

*The test is traditional for the quality assessment of oils by INNIO Jenbacher.

Detergent properties of Gazpromneft GEO 40 provide a high degree of protection of cylinder liners from the formation of deposits, preserving the resource of the engine.

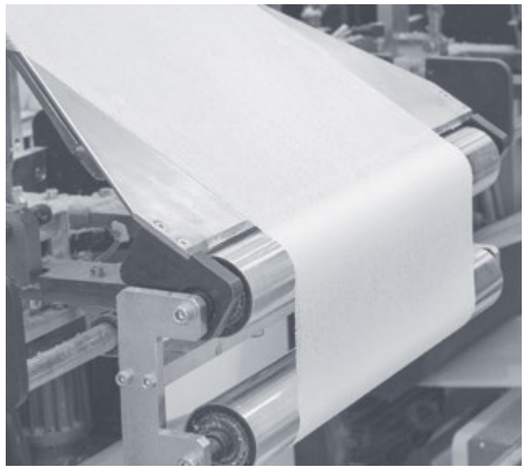
TYPICAL PHYSICOCHEMICAL PARAMETERS

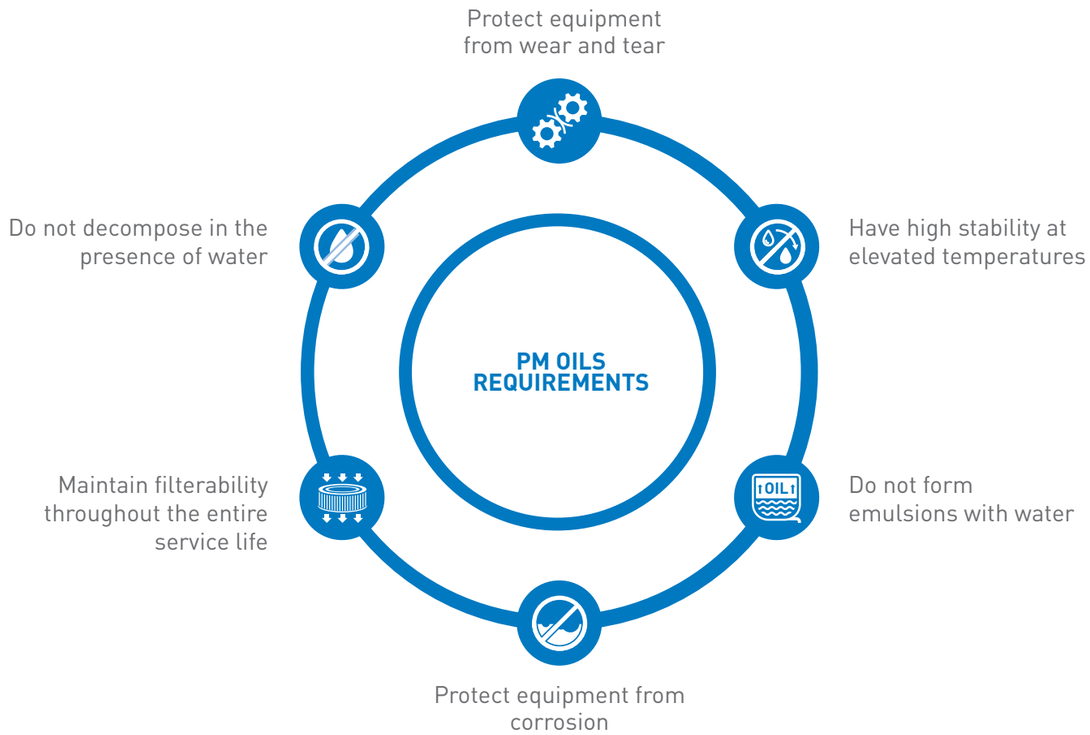
Indicators	Method	Gazpromneft GEO 40
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	120
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	13,2
Flash point, COC, °C	ASTM D92	230
Pour point, °C	ASTM D92	–15
Base number, mg KOH/g	ASTM D2896	5,7
Sulphate ash content, % wt.	ASTM D874	0,5

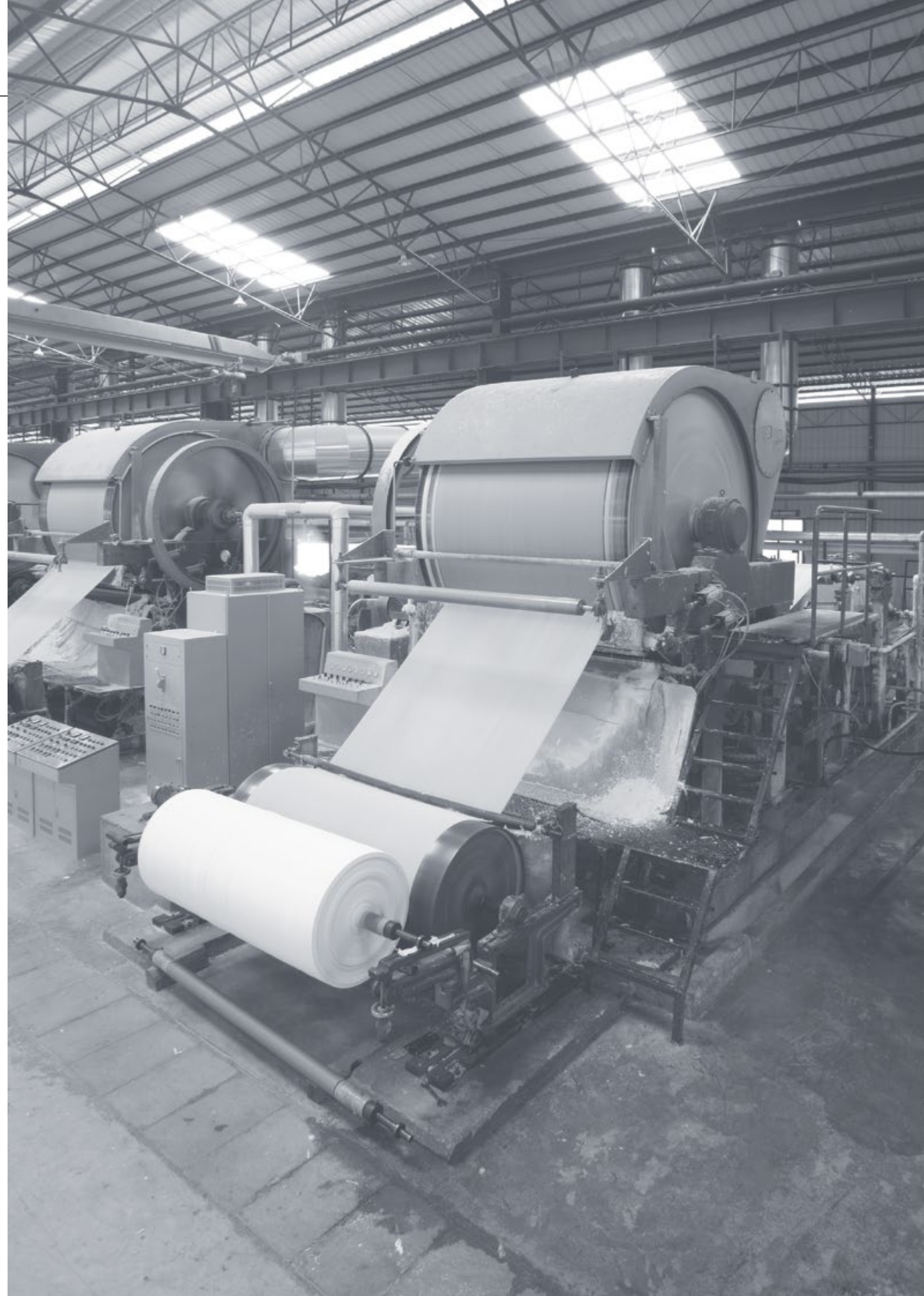
PAPER MACHINE OILS

PAPER MACHINE OILS

The volume of paper production in Russia is increasing from year to year. At the moment Russia ranks 13th in the world in paper production. The most complex and expensive equipment is used in this process. Since the lubricants used are largely responsible for maintaining the life of the equipment, pumps and filters, they are subject to high requirements. In modern high-speed paper machines (PMs), oils are used at high temperatures, high speeds and high specific pressures. In addition, oil operation in the wet section involves contact with water, which places demands on the oil's ability to quickly demulsify water.







GAZPROMNEFT PM-150, -220

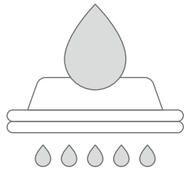
Gazpromneft PM-150, 220 is a series of oils designed for use in circulating lubrication systems of paper machines, as well as for lubrication of heavily loaded friction units of gears and bearings. The oils have improved water separation properties, excellent load carrying capacity and high corrosion protection.

Specifications: DIN 51517 Part 3.

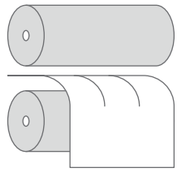
APPLICATION

Circulation systems for gears and bearings in paper machines, including those produced by Metso, where ISO 150, 220 viscosity oils are required.

"WET" SECTION

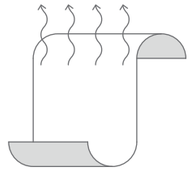


Fourdrinier table



Press section

"DRY" SECTION



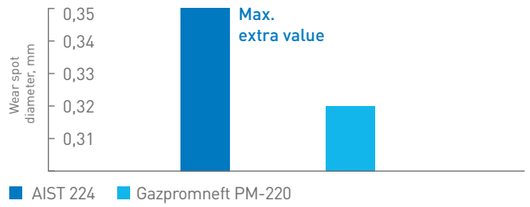
Drying section

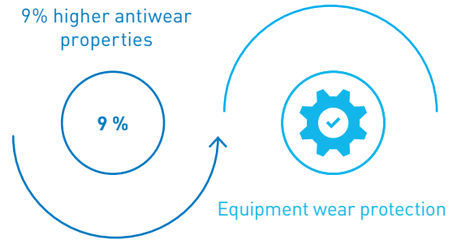
ADVANTAGES

- **Excellent load-bearing capacity** — Effective protection of teeth, bearings, gears
- **High demulsifying properties** — Fast water separation with subsequent removal
- **Hydrolytic stability** — Possibility of oil operation under severe conditions
- **High filterability** — Reduced operating costs
- **Excellent protection against corrosion and rust** — Maintains the service life of paper machines

TEST RESULTS

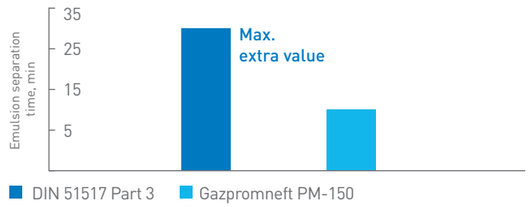
Wear spot diameter*

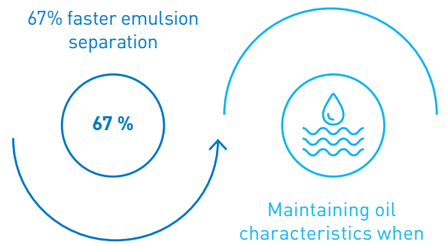




*ASTM D4712 test.

Demulsifying properties*





*ASTM D1401 test.

DIN Gazpromneft PM complies with international standard DIN 51517 Part 3

The oils provide excellent protection against bearing wear and effectively separate water to prevent corrosion.

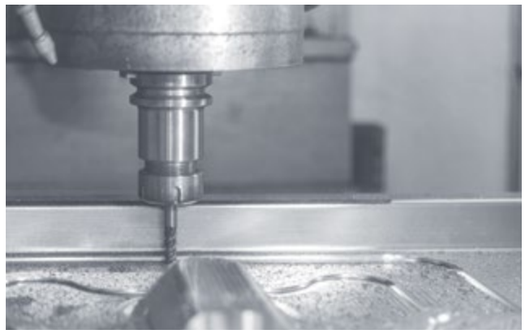
TYPICAL PHYSICOCHEMICAL PARAMETERS

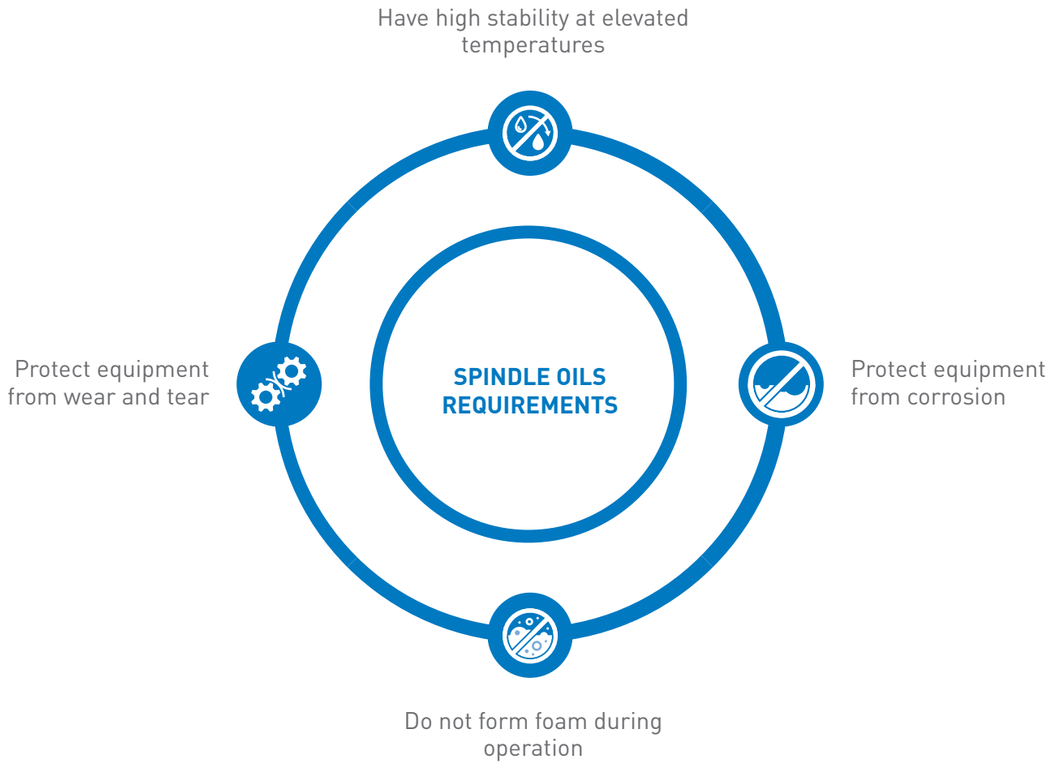
Indicators	Method	Viscosity grade	
		150	220
Kinematic viscosity at 40 °C, mm2/sec	ASTM D445	150	220
Viscosity index	ASTM D2270	92	91
Flash point, COC, °C	ASTM D92	258	280
Pour point, °C	GOST 20287	–17	–18
Acid number, mg KOH/g	GOST 11362	0,2	0,2
Density at 20 °C, kg/m^3	ASTM D4052	886	893
Purity class	GOST 17216	12	12
Corrosion test on copper plates at 100 °C for 3 h, points	GOST 2917	1a	1a
Demulsification, min	ASTM D1401	10	10

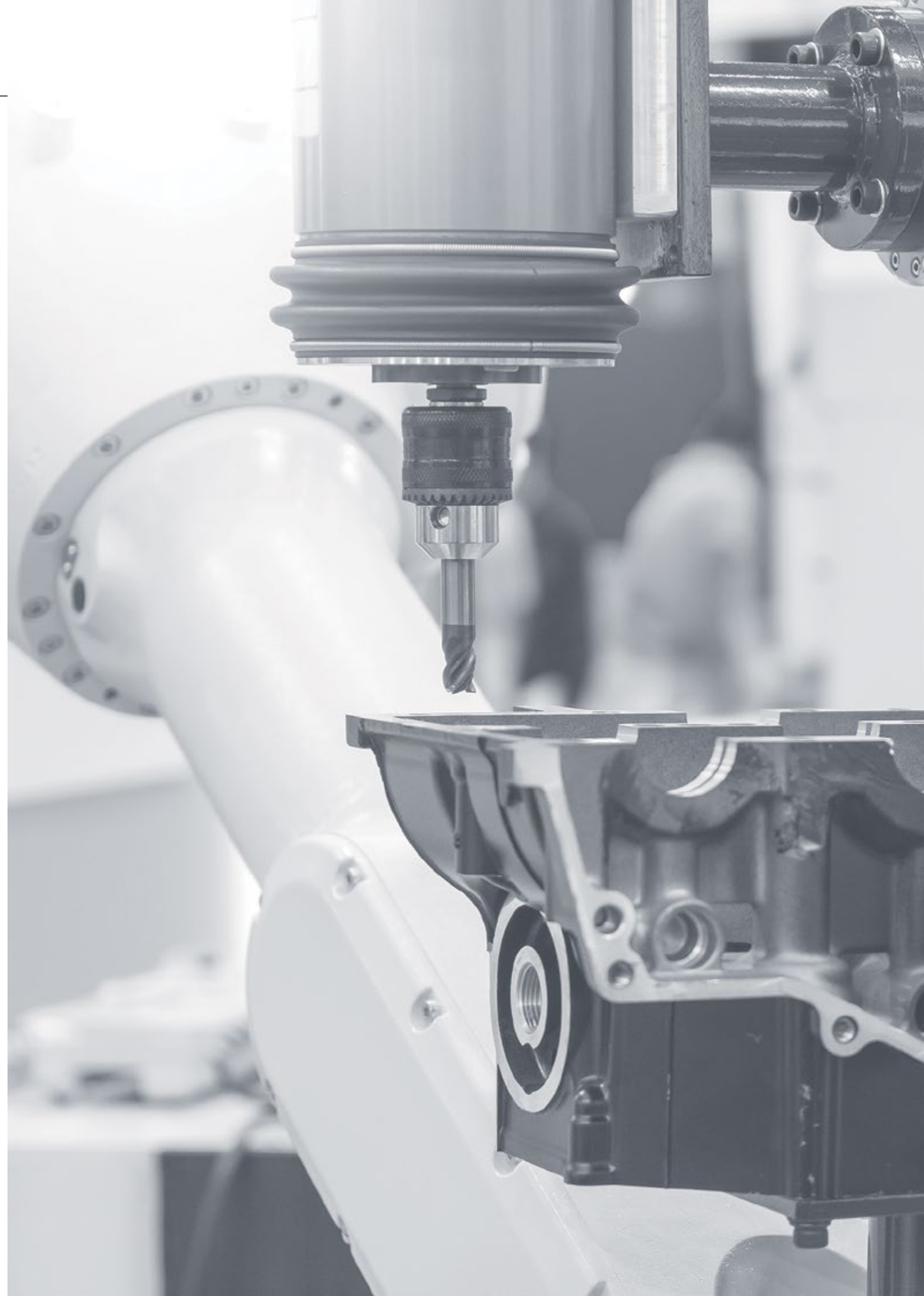
SPINDLE OILS

SPINDLE OILS

The spindle is one of the most important elements in the machining of various materials, which is a high-speed rotating shaft with bearings. Given the requirements for high precision in material processing, the characteristic features of a properly functioning bearing are vibration-free, stable operation at high temperatures and loads. Due to the enormous rotational speed of the bearing, the properties of the lubricants determine the reliability of the machine function and the quality of the overall operation.







GAZPROMNEFT VELOCITE OIL 2, GAZPROMNEFT SPINDLE OIL-7, -10

Gazpromneft Velocite Oil 2, Gazpromneft Spindle Oil-7, -10 are process oils based on highly refined low-viscosity oil distillates with the addition of a highly effective additive package that improves antioxidant, anticorrosion and antifoaming properties of the products.

APPLICATION

- High speed spindles of modern machine tools.
- Lightly loaded high-speed industrial bearings.
- Industrial oil circulation systems.
- Hydraulic systems requiring low-viscosity oils.

ADVANTAGES

High oxidation resistance	Excellent protection against corrosion	Stability against foaming	Effective wear protection
Minimal deposit formation	Reduced costs for additional spare parts	Reliable operation of equipment	Reliable operation of equipment

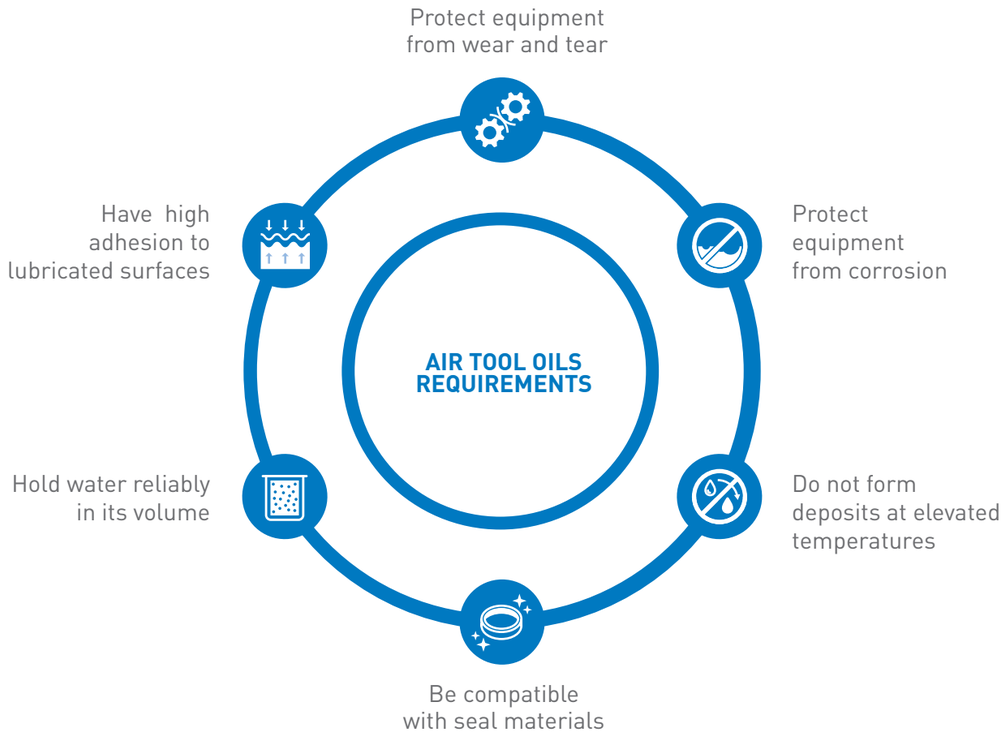
TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Velocite Oil 2	Gazpromneft Spindle Oil-7	Gazpromneft Spindle Oil-10
Appearance	Item 7.3 of the Organization Standard 77820966-075-2018	Homogeneous transparent liquid without visible foreign matter	Homogeneous transparent liquid without visible foreign matter	Homogeneous transparent liquid without visible foreign matter
Kinematic viscosity at 40 °C, mm^2/s, within the limits of	GOST 33	1,98–2,42	6,12–7,48	9,00–11,00
Mass fraction of sulfur, %, not more than	GOST 1431	0,4	0,4	0,4
Acid number, mg KOH/g, no more than	GOST 5985	0,1	0,1	0,1
Tests of corrosive effect on the plate made of copper M1 or M-2 according to GOST 859	GOST 2917	Withstands	Withstands	Withstands
Flash point, COC, °C, no less than	GOST 6356	80	135	150
Pour point, °C, no more than	GOST 20287, method B	–35	–27	–20
Density at 20 °C, kg/m^3, no more than	GOST 3900	880	880	880

AIR TOOL OILS

AIR TOOL OILS

Air tool oils play a crucial role in the durability and performance of air tools. One of the characteristic requirements is to ensure a high strength of the oil film, as there are enormous shock loads in the friction pairs inside the system. Presence of sealing elements in air tools imposes additional requirements to lubricants on their compatibility with seal materials.
Since air tools are powered by compressed air, lubricants must be highly resistant to moisture. At the same time, the compressed air used must also be free of impurities and moisture to ensure reliable operation of the equipment.



GAZPROMNEFT PNEUMO 32, 46, 100

Gazpromneft Pneumo 32, 46, 100 is a series of oils designed for break-away type air tools, including rock drilling equipment. Gazpromneft Pneumo has excellent adhesion properties, which ensures a stable oil film even under shock loads. It contains special emulsifiers that retain moisture, protecting equipment from corrosion and wear.

APPLICATION

- Pneumatic tools for mining and construction companies.
- Air tools, including rock drilling equipment (rock drills, concrete breakers).
- Pneumatic piling machines, concrete tamping machines, etc.

ADVANTAGES

High emulsifying properties	Excellent adhesion properties	Excellent protection against corrosion	High oxidation resistance	Effective wear protection
▼	▼	▼	▼	▼
Protection of operating elements	Long service life of equipment	Reduction of unscheduled downtime	Minimal deposit formation	Reliable operation of the equipment

TYPICAL PHYSICOCHEMICAL PARAMETERS

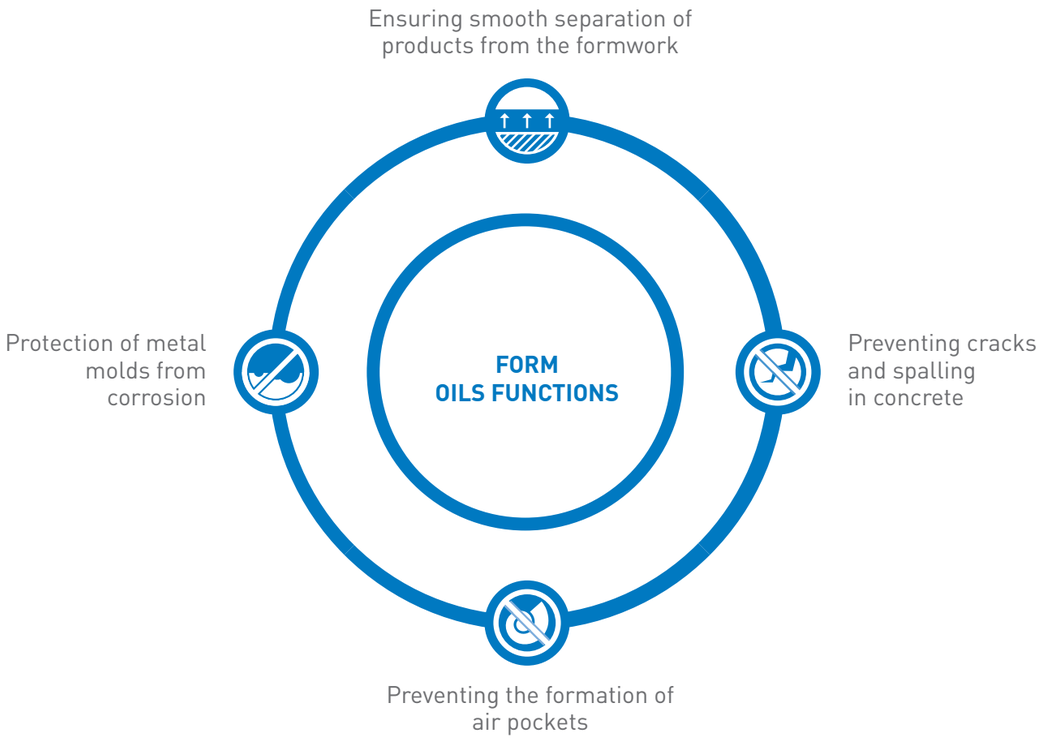
TYPICAL PHYSICOCHEMICAL PARAMETERS	Method	Viscosity grade		
		32	46	100
Kinematic viscosity at 40 °C, mm2/sec	GOST 33	31,2	45,6	97,9
Viscosity index	GOST 25371	114	104	97
Flash point, COC, °C	GOST 4333	195	204	230
Pour point, °C	GOST 20287	–39	–33	–26

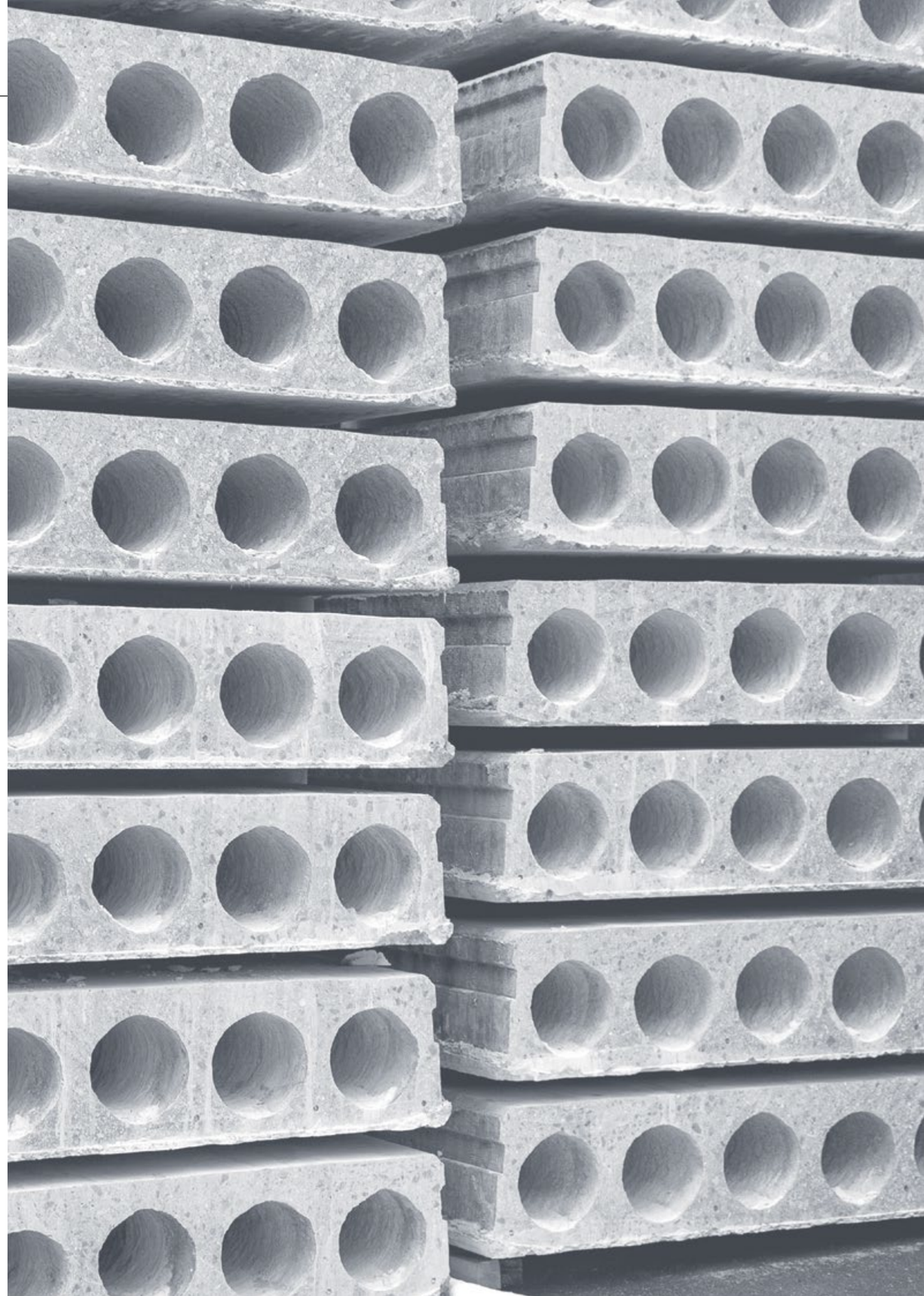
FORM OILS

FORM OILS

In the production of concrete products, it is difficult to avoid the use of various lubricants for the separation of molds and formwork. These include waste oils, water emulsions and special form oils. Waste oils are almost not used nowadays because of harm to personnel health and environment, unsatisfactory surface quality of finished products, sanitary and hygienic unsuitability of finished concrete elements in residential construction. Emulsions are still used despite the complexity of their preparation, delamination and, as a consequence, deterioration of the quality of finished products. Also when using aqueous emulsions, it is difficult to separate the formwork and contaminate the production facilities. The most effective means of formwork separation are molding oils, which avoid the negative consequences of the use and disadvantages of the above-mentioned means.

Quality form oils meet the following requirements:
- prevention of defects on the surface and inside the finished product;
- cleanliness of the working area;
- economical application;
- absence of oil streaks on the product surface;
- high resistance to oxidation and formation of deposits;
- formation of a thin durable layer during application;
- high anticorrosive properties;
- environmental friendliness;
- convenience of use, storage and transportation.





GAZPROMNEFT FORMWORK OIL C 10, GAZPROMNEFT FORM OIL 135

Gazpromneft Formwork Oil C 10, Gazpromneft Form Oil 135 — are separation oils for separating concrete products from formwork. The oils have improved adhesion, wetting and anti-corrosion properties. They form a separating layer on the formwork surface, which prevents direct contact between the formwork and the working material.

APPLICATION

The process of casting concrete products in steel, wooden, or plastic-coated forms outdoors and indoors.

Gazpromneft Formwork Oil C 10

Monolithic construction and production of heavy concrete products

Gazpromneft Form Oil 135

Spray, brush and roller application

Production of porous concrete

Brush or roller application

ADVANTAGES

Excellent adhesion properties

No oil dripping

High wetting properties

Fast product separation

Excellent anti-corrosion properties

Extended service life of metal molds

Low-temperature properties

Operation at sub-zero temperatures

Environmental safety

Use in residential construction

TYPICAL PHYSICOCHEMICAL PARAMETERS

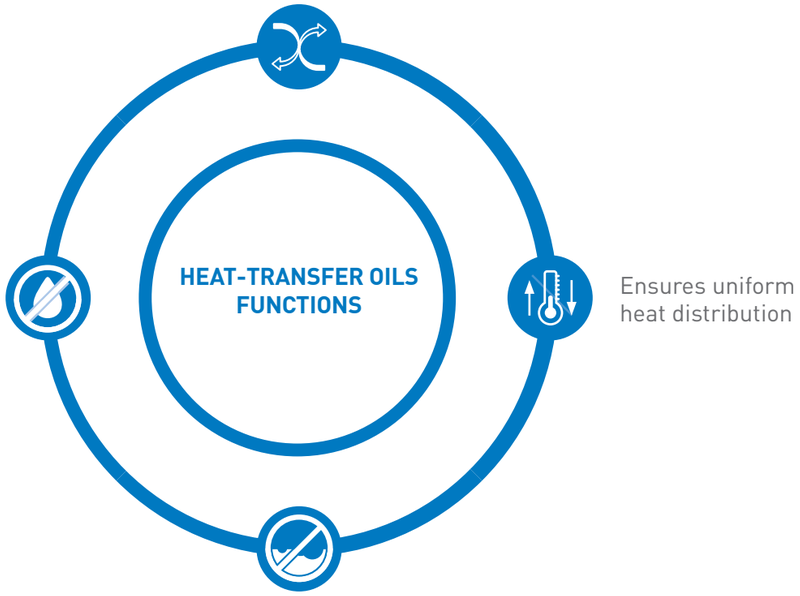
Indicators	Method	Gazpromneft Formwork Oil C 10	Gazpromneft Form Oil 135
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	11,5	148,9
Flash point, COC, °C	ASTM D92	175	242
Pour point, °C	GOST 20287	–42	–28
Corrosion test on copper plates at 100 °C for 3 h, points	ASTM D130	2a	2a
Mechanical impurities, % wt.	GOST 6370	None	None

HEAT-TRANSFER OILS

HEAT-TRANSFER OILS

Heat exchange processes have become an integral part of many production procedures. The use of oil heating systems is a reliable and efficient solution in many industrial plants where hot air, steam, water or a specific temperature is required. Heat carrier oils are effectively used at the enterprises of oil, chemical, construction, paper, woodworking, textile, metallurgical and other industries. The use of oil as a heat-carrier allows to obtain higher temperatures of the working medium at low pressures, which significantly reduces production costs and increases the efficiency of systems, being a compact and convenient solution.

Heat transfer oils circulating in closed circuits retain their properties over a long service life, resulting in lower maintenance costs and lower operating costs for the entire system. The main criterion for selecting this type of heat transfer fluid is the temperature range of application, namely the upper limit of operability.



GAZPROMNEFT HTO 32

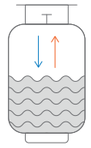
Gazpromneft HTO 32 is a semi-synthetic heat transfer oil designed for use in open and closed circuits of heating systems with intensive forced circulation. Due to the use of synthetic components, it provides high thermal and thermal oxidation stability, reducing the amount of deposits on the elements of heating systems.

Approvals/Specifications: ISO 6743-12 (Q).

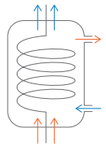
APPLICATION

Open and closed circulation heating systems.
- Industrial applications (manufacturing, chemical, oil and gas and other industries).
- Domestic applications (oil-filled heaters).

Open heating systems (up to 180 °C)



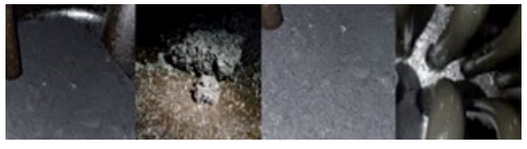
Closed heating systems (up to 310 °C)



ADVANTAGES

- Stability to thermal decomposition → No coke deposits in the system
- High thermal-oxidative stability → Reduced formation of deposits on equipment walls
- Improved low-temperature properties → Ability to operate heating systems over a wide range of air temperatures
- Compatibility with structural materials → Preservation of life of heat exchangers and seals
- CARCINOGEN FREE — No carcinogenic substances → Safety at production facilities

EQUIPMENT CONDITION

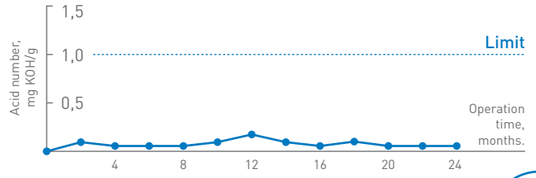


Due to the detergent additive, Gazpromneft HTO 32 has improved detergent properties, keeping the system clean, maintaining better heat transfer and maximizing the life of the heat exchange equipment.

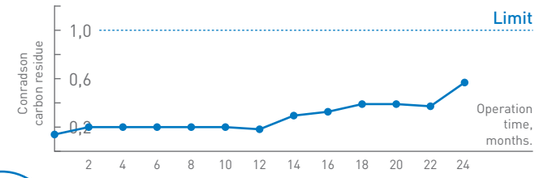
INDUSTRIAL TESTS

- Replacement of coolant on the basis of residual extract (without flushing).
- Installation "Lithium greases".
- Operating temperatures 180-200 °C.

Acid number*



Cokeability**



2 years

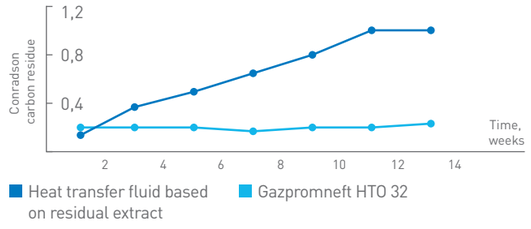
Low oxidation — extended oil life — maintenance savings

No coke deposits in the system — reduced probability of unscheduled downtime

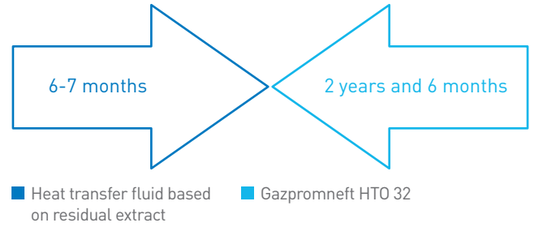
! High stability against oxidation and thermal decomposition minimizes the formation of deposits in the system. Gazpromneft HTO 32 retains its characteristics during continuous operation in heat exchangers.

HEAT TRANSFER FLUID COMPARISON

Cokeability**



Run time without refills



! Gazpromneft HTO 32 operates with extended oil life and reduces operating costs for oil changes.

TYPICAL PHYSICOCHEMICAL PARAMETERS

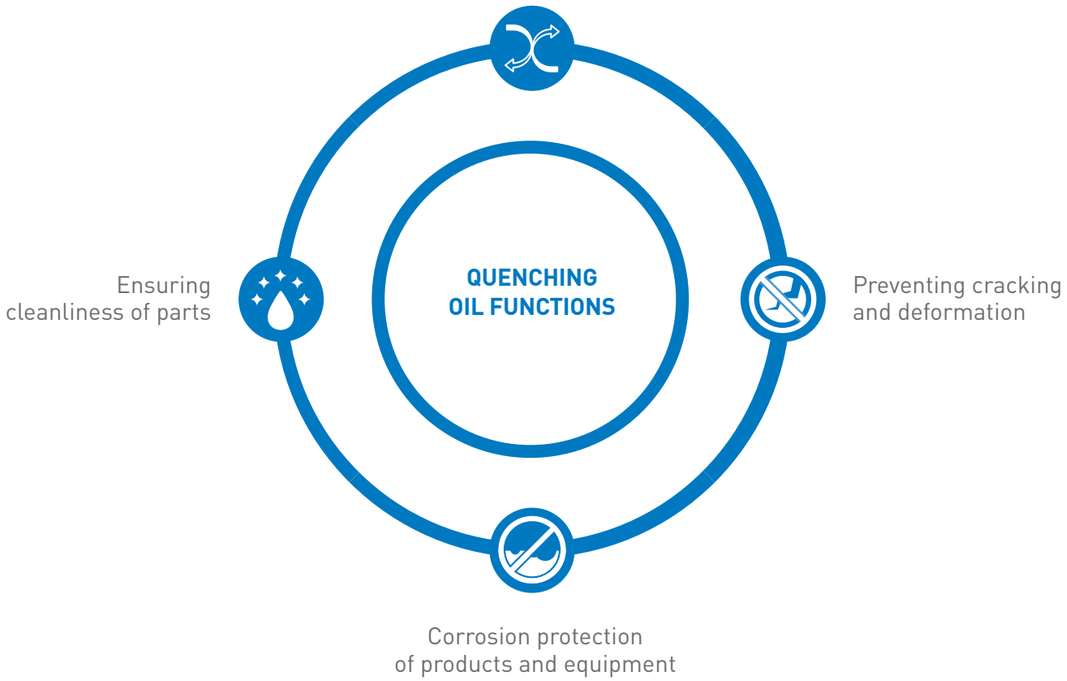
Indicators	Method	Gazpromneft HTO 32
Kinematic viscosity at 100 °C, mm²/sec	ASTM D445	5,5
Flash point, COC, °C	ASTM D92	232
Pour point, °C	GOST 20287	–34
Acid number, mg KOH/g	GOST 11362	0,1
Water content, % wt.	GOST 2477	None
Mass fraction of mechanical impurities, % wt.	GOST 6370	None

* GOST 5985 test.
** GOST 19932 test.

QUENCHING OILS

QUENCHING OILS

One of the most important types of heat treatment of metal products is quenching, which allows to significantly increase hardness, strength and wear resistance of metals and alloys. In this process, parts are heated to temperatures above critical, held at specified temperatures and placed in a quenching medium for cooling. At the moment, one of the most common quenching fluids at enterprises is oil. However, the use of quenching oil requires serious fire safety measures due to its high flammability. Therefore, when selecting it, it is necessary to take into account the temperature of the oil flash — it should be 30 ° C below the temperature of the general quenching process. The use of quality quenching oil helps to prevent insufficient hardness and inhomogeneities in the structure of quenched parts.



THERMOIL-16, -26

Thermoil-16, -26 — a series of quenching oils for obtaining steel products with high values of hardness, required structure and surface cleanliness. The oils have low vaporizability, high thermal stability. They do not form harmful substances during heat treatment, provide optimal cooling and hardening, including large-sized products.

Approvals/Specifications: JSC AVTOVAZ.

APPLICATION

Heat treatment of large/ oversized parts or quenching of a whole batch of parts.

Thermoil-16 Cold quenching (20-50 °C)

Thermoil-26 Hot quenching (70-110 °C)

ADVANTAGES

- Low vaporizability → Uniform cooling of quenched parts
- High thermal and chemical stability → Protection against deposits on the surface of parts
- High cleaning properties → Increased cleanliness of parts
- High antifoaming and deaerating properties → Prevention of cracking and deformation during quenching
- Low content of polycyclic aromatic hydrocarbons → Prevention of formation of substances harmful to health

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	THERMOIL-16	THERMOIL-26
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	25	38
Viscosity index	ASTM D2270	93	92
Flash point, COC, °C	ASTM D92	210	226
Ash content, % wt.	GOST 1461	0,04	0,04
Saponification number, mg KOH/g	GOST 17362	0,2	0,2

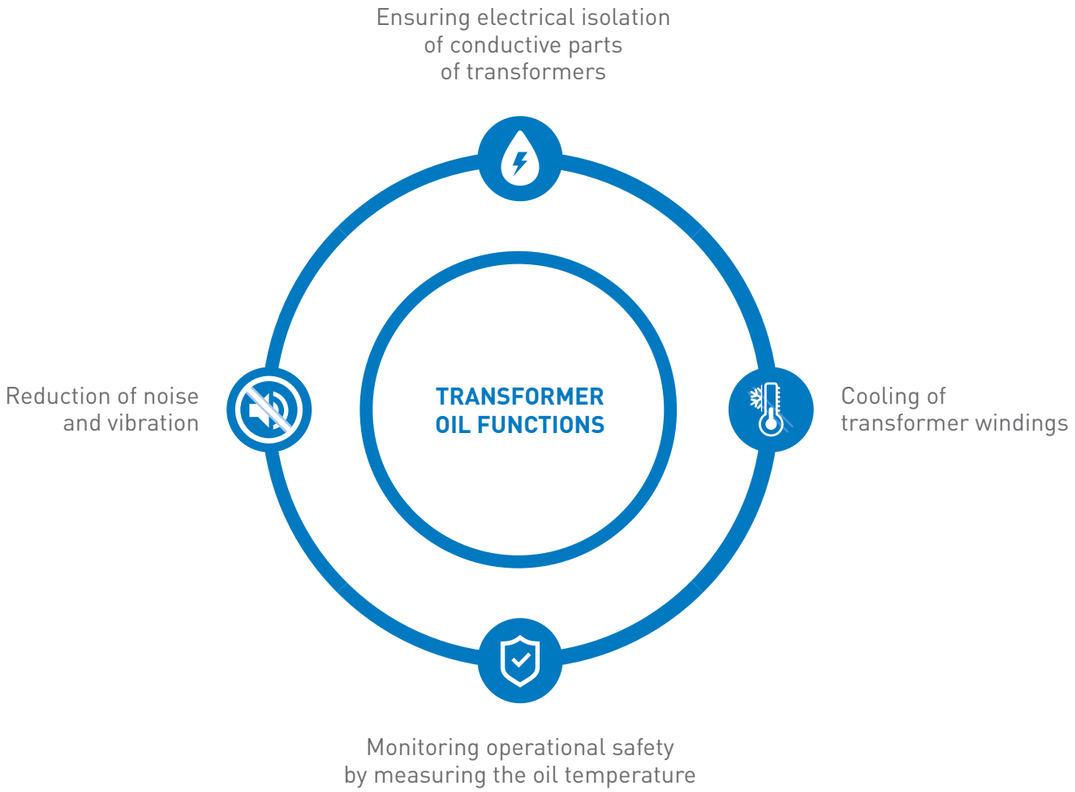
TRANSFORMER OILS

TRANSFORMER OILS

Transformer oils, along with cable and capacitor oils, are electrical insulating oils, i.e. they insulate live parts. Most transformers used for power supply use transformer oils. The main part of the transformer is the windings, which need to be protected. The oil helps to avoid short circuits by acting as an insulator between the windings. Also during power surges their temperature rises, which if not cooled can cause the copper winding to melt and electrical contact to be lost.

To ensure safe and reliable operation of transformers, transformer oils must have such properties as:

- chemical resistance in contact with non-ferrous metals;
- minimal dielectric losses (low dissipation factor);
- high thermo-oxidative stability and durability;
- absence of mechanical impurities and water;
- minimal outgassing under the action of electric field;
- low pour point;
- minimum viscosity at high flash point.



GAZPROMNEFT GK MARK 1, MARK 2

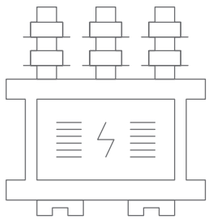
Gazpromneft GK Mark 1, Mark 2 are mineral-based oils with an antioxidant additive. They have good dielectric properties and high stability against oxidation.

Approvals/Specifications: comply with the requirements of the international standard IEC 60296:2012.

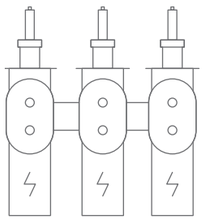
APPLICATION

- In power and measuring transformers, reactors, autotransformers and bushings as an electrical insulating material with a long service life.
- In oil circuit breakers as arc suppression medium.
- Recommended for use in electrical equipment of higher voltage classes.

Electrical insulating material.Industrial transformers



Arc suppression medium. Oil circuit breakers

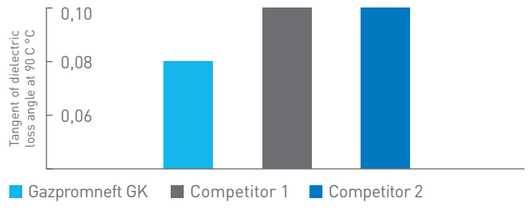


ADVANTAGES

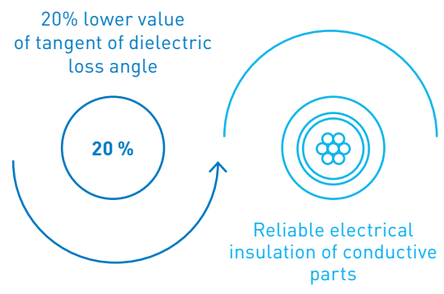
- Low tangent of dielectric loss angle → High electrical insulating properties
- High stability against oxidation → Long service life
- Good low-temperature properties → Capable of operation in cold climates
- Excellent anti-corrosion properties → Preservation of service life of non-ferrous metal windings

TEST RESULTS

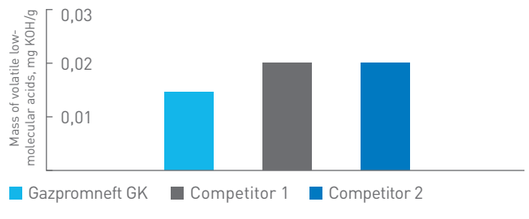
Dielectric losses*



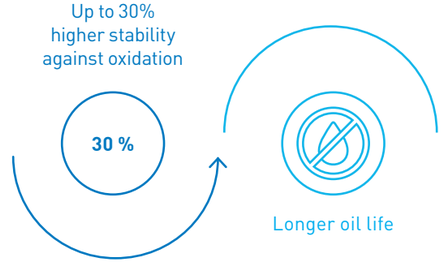
* Test GOST 6581 p. 2



Dielectric losses*



* GOST 981 test



! The low value of the tangent of the dielectric loss angle and high oxidation stability confirm the excellent operational properties of transformer oils of Gazpromneft GK.

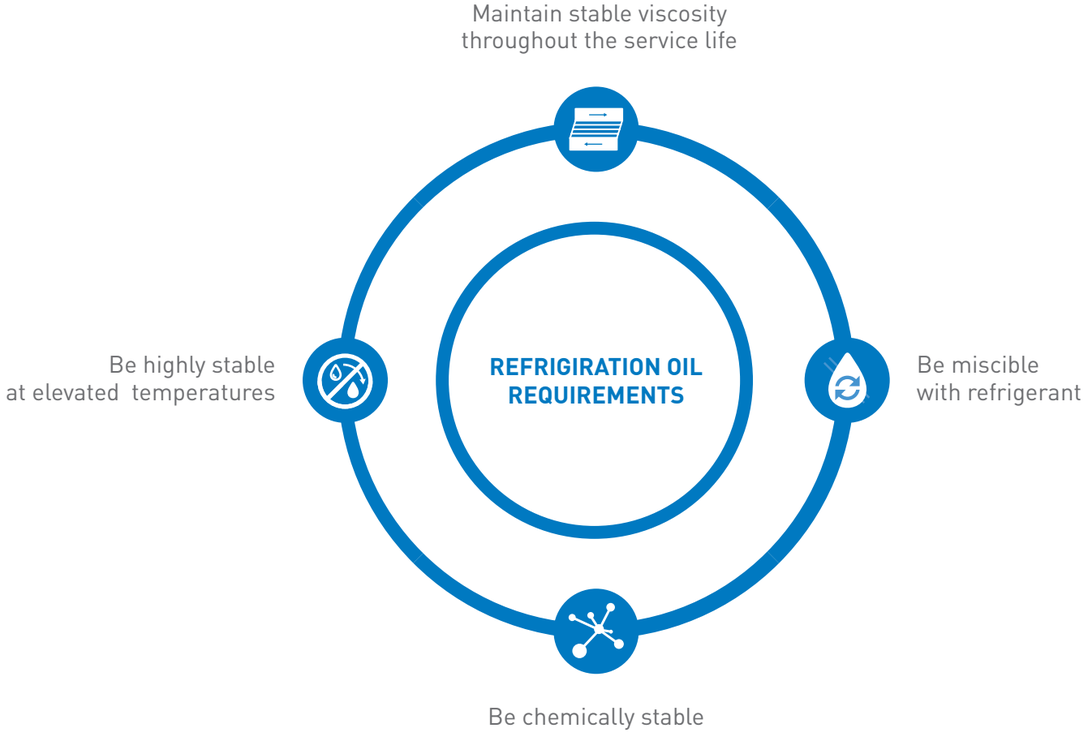
TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft GK Mark 1	Gazpromneft GK Mark 2
Kinematic viscosity at 50 °C, mm²/sec	GOST 33	5,8	6
Kinematic viscosity at –30 °C, mm²/sec	GOST 33	299	334,8
Density at 15 °C, kg/m³	GOST R 51069	829,5	831,8
Density at 20 °C, kg/m³	GOST R 51069	826,0	828,3
Flash Point, PMCC, °C	GOST 6356	144	178
Pour point, °C	GOST 20287, method B, or ASTM D97	–41	–47 (–60 on request)
Acid number, mg KOH/g	GOST 5985 or GOST 11362	0,01	0,01
Tangent of dielectric loss angle at 90 °C, %	GOST 6581 p. 2	0,08	0,10
Stability against oxidation (120 °C, 500 h, 150 ml/h): total acid number, mg KOH/g; mass fraction of precipitate, %; tangent of dielectric loss angle at 90 °C, %	GOST R IEC 61125, method C, or IEC 61125, method C	0,08; 0,002; 0,26	0,08; 0,002; 0,26
Stability against oxidation (155 °C, 14 h, 50 ml/h): mass of volatile low molecular weight acids, mg KOH/g; mass fraction of precipitate, %; acid number of oxidizing oil mg KOH/g	GOST 981	0,014; <0,01; 0,09	0,012; <0,01; 0,08

REFRIGERATION OILS

REFRIGERATION OILS

Refrigeration oils occupy a separate place in the segment of compressor oils. This is due to the fact that special requirements are imposed on this type of fluids due to the constant contact of oils with various substances (refrigerants), as well as operation in conditions of extremely high and extremely low temperatures. That is why the expected durability of refrigeration compressors directly depends on the high quality of lubricants.



HA-30

HA-30 is a mineral refrigeration oil, which is made from a mixture of residual and distillate petroleum oils. It is fully miscible with RH, R21, R113, R500 refrigerants and dissolves in R12 refrigerant under operating conditions of refrigeration equipment. When dissolved in the refrigerant, a mixture is formed, which is a homogeneous medium, which fully returns to the compressor and provides its normal lubrication. With other refrigerants (R22, R13B1, RH4, R152a, R501, R502) oil is mixed only partially, miscibility depends on temperature and type of refrigerant. XA-30 oil can be used for compressors operating on ammonia (R717). In such cases, oil return points to the compressor are technologically provided.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Norm according to Regulatory Documentation
Kinematic viscosity at 20 °C, mm²/sec	120–150
Kinematic viscosity at 50 °C, mm²/sec	28–32
Acid number, mg KOH/g, no more than	0,05
Flash point, COC, °C, no less than	185
Pour point, °C, no more than	–38

HF-12-16

HF-12-16 is a mineral oil with antioxidant additive. It is characterized by high anti-oxidation stability, does not contain water-soluble acids and alkalis, mechanical impurities and water. It is fully compatible with R12 refrigerant. The resulting mixture is a homogeneous medium, which fully returns to the compressor and reliably provides its lubrication. The flaking temperature in the solution of R12 refrigerant for XF-12-16 oil is -50 °C. It is also fully miscible with refrigerants RH, R21, R113, R500.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Norm according to Regulatory Documentation
Kinematic viscosity at 50 °C, mm²/sec, no less than	17
Acid number, mg KOH/g, no more than	0,02
Flash point, COC, °C, no less than	174
Pour point, °C, no more than	–42

HF-22-24

HF-22-24 is a high quality mineral thickened oil. It has high antioxidizing stability, is not aggressive towards sealing materials. It is fully compatible with R22 refrigerant, the resulting mixture is a homogeneous medium, which is fully returned to the compressor and provides its normal lubrication.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Norm according to Regulatory Documentation
Kinematic viscosity at 50 °C, mm²/sec	24,5–28,4
Viscosity index, no less than	110
Acid number, mg KOH/g, no more tnan	0,04
Flash point, COC, °C, no less than	130
Pour point, °C, no more than	–55

HS-40

HS-40 is a synthetic oil based on polyalphaolefin base oil (PAHO). It has high viscosity-temperature stability and forms a thick enough lubricating film on rubbing surfaces during operation at temperature difference. It is well compatible with R12 refrigerant, the homogeneous mixture formed is fully returned to the compressor. The flaking temperature in the solution of R12 refrigerant for HS-40 oil is -55 °C. During long-term operation it retains its properties and does not decompose, it is not aggressive towards compressor structural materials.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Norm according to Regulatory Documentation
Kinematic viscosity at 50 °C, mm²/sec	37–42
Viscosity index, no less than	110
Acid number, mg KOH/g, no more than	0,02
Flash point, COC, °C, no less than	200
Pour point, °C, no more than	–50
Density at 20 °C, kg/m³	830–850

HF-22S-16

HF-22S-16 is a synthetic oil (polyalphaolefins) with antioxidant additive for compressors of refrigerating machines. By operational characteristics it differs from mineral refrigeration oils by higher thermal and antioxidant stability, lower pour point, better lubricating properties and less aggressiveness to compressor construction materials. It shows good solubility and high stability in mixture with refrigerants, does not form two-layer mixtures. Oil HF-22S-16 is used in low-temperature installations. It is intended for lubrication of compressors of refrigeration machines operating on freon.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Norm according to Regulatory Documentation
Kinematic viscosity at 50 °C, mm²/sec, no less than	16
Acid number, mg KOH/g, no more than	0,35
Flash point, COC, °C, no less than	225
Pour point, °C, no more than	–58

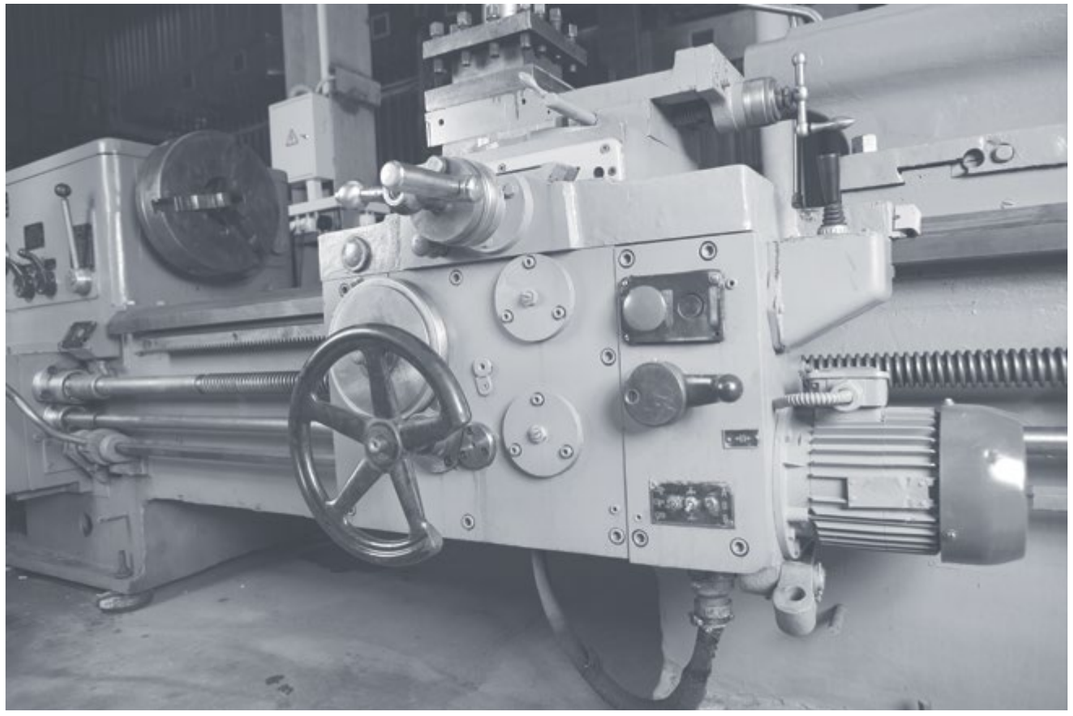
GENERAL PURPOSE INDUSTRIAL OILS

I-12A, I-20A, I-30A, I-40A, I-50A

I-12A, I-20A, I-30A, I-40A, I-50A — oils without additives, used as operating fluids in hydraulic systems of industrial equipment, road-building machines, automatic lines, presses. Can be used as a base component in the production of oils with additives, greases. They are used in conditions of positive temperatures. **Produced in accordance with GOST 20799.**

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	I-12A	I-20A	I-30A	I-40A	I-50A
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	14	31,2	45,7	65,8	97,7
Flash point, COC, °C	GOST 4333	179	222	229	236	247
Pour point, °C	GOST 20287	–25	–16	–16	–15	–15
Acid number, mg KOH/g	GOST 11362	—	0,01	0,01	0,01	0,01
Ash content, % wt.	GOST 1461	0,002	0,005	0,005	0,005	0,005



IGP-18, IGP-30, IGP-38, IGP-49, IGP-72, IGP-91, IGP-114, IGP-152

IGP-18, IGP-30, IGP-38, IGP-49, IGP-72, IGP-91, IGP-114, IGP-152 — industrial oils are distillate, residual or a mixture of distillate and residual oil from sulfuric oils of deep selective purification with additives that improve the ex-operational properties of oils. Intended for use in hydraulic systems of machine, press and other industrial equipment, as well as for lubrication of low- and medium-loaded gears and worm gears of domestic production. **Produced according to TU 0253-052-00151911.**

Approved by JSC "SvNIINP": IGP-18, IGP-38.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	IGP-18	IGP-30	IGP-38	IGP-49	IGP-72	IGP-91	IGP-114	IGP-152
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	27	45,1	60,2	81,2	199,6	151,7	195,2	275
Viscosity index	GOST 25371	92	91	91	92	90	91	88	88
Flash point, COC, °C	GOST 4333	219	230	237	240	247	262	256	255
Pour point, °C	GOST 20287	–19	–18	–18	–17	–17	–19	–17	–16
Acid number, mg KOH/g	GOST 11362	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Ash content, % wt.	GOST 1461	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12

General purpose oils are used in machines, mechanisms of industrial equipment, which do not stipulate special requirements to anti-corrosion and anti-oxidation properties of oils. Application of oils depends on their viscosity: as it increases, oils are used in more loaded and less high-speed mechanisms.

GAZPROMNEFT CIRCULATION OIL 100

Gazpromneft Circulation Oil 100 is a circulation oil based on high quality mineral base oils with improved demulsifying and anti-corrosion properties. High-quality base oil and a package of functional additives allow to ensure the preservation of service life and increase the efficiency of equipment operation.

Specifications: DIN 51524 Part 2 HLP; SEB 181 222; U.S. Steel 126/127.

APPLICATION

- Circulation systems of modern industrial equipment.
- Sliding and rolling bearings.
- Lightly loaded hydraulic systems and gearboxes.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Circulation Oil 100
Kinematic viscosity at 40 °C, mm²/sec	ASTM D445	100
Viscosity index	ASTM D2270	91
Flash point, COC, °C	ASTM D92	252
Pour point, °C	GOST 20287	–20
Acid number, mg KOH/g	GOST 11362	0,8
Density at 20 °C, kg/m³	ASTM D4052	890
Demulsifying properties, min	ASTM D1401	10

AXIAL OILS Z, L

Axial oils Z and L are axial oils produced on the basis of high quality base oils with antiwear, anti-corrosion, antioxidant and depressor additives. They provide protection against corrosion and wear, have a long service life. They are intended for seasonal use. **Produced in accordance with GOST 610-2017.**

APPLICATION

Axle journals of wheel pairs of railroad rolling stock in winter ("Z" type) and summer ("L" type) periods.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Axial oil Z	Axial oil L
Kinematic viscosity at 50 °C, mm²/sec	GOST 33	27,4	46,9
Dynamic viscosity at -30 °C, P	GOST 1929	92	—
Dynamic viscosity at -10 °C, P	GOST 1929	—	44
Flash point, COC, °C	GOST 4333	223	216
Pour point, °C	GOST 20287	–41	—
Water content, %	GOST 2477	0,05	Tracks
Mechanical impurities content, %	GOST 6370	0,04	0,05

GREASES

GREASES

Greases are a type of lubricant widely used in industry and have specific advantages:
- Retention on moving surfaces under gravity and centrifugal forces.
- Retention in the friction unit and separation of rubbing surfaces at high contact pressures.
- Ensuring reliable sealing of the assembly. Due to the above mentioned advantages greases are used in such units as sliding and rolling bearings, CV-joints, guides, gears, as well as centralized lubrication systems of industrial equipment and machinery

Unlike oils, grease is a multi-component system:

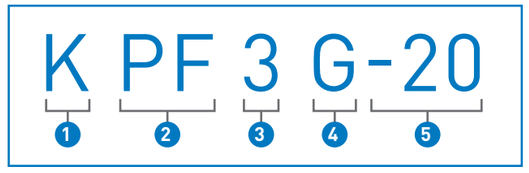
Grease

Base oil	Thickener	Filler	Additives
Mineral • Distillate • Residual	Soap • Lithium (lithium-complex) • Calcium. • Lithium-Calcium • Sodium • Aluminum, etc.	Molybdenum disulfide	Anti-seize
Synthetic • Polyalphaolefins • Complex esters • Silicones • Perfluoropolyesters • Polyphenylethers	Non-metallic • Bentonite • Polyurea • Sulfonate • Ceresin, etc.	Graphite	Adhesive
		Powders of copper and other metals	Anticorrosive, etc.
Its type and viscosity determine the temperature range of the grease and its applicability in the bearing on the basis of the speed coefficient.	Its nature and concentration determine the grease density, dropping point, as well as basic parameters such as water resistance, mechanical stability, etc. It is not used in all greases and serves mainly to give special properties to the grease.	It is not used in all greases and serves mainly to impart special anti-wear and anti-seize properties and to counteract shock loads.	As in lubricating oils, it is used to impart improved performance properties.

! To select the correct grease, it is necessary to rely on the requirements of the equipment manufacturer and, if these are unknown, to take into account the design and operating conditions of the particular unit (type of load, lubrication method, lubrication interval, temperature, speed of rotation, moisture and contaminants). When substituting products, it is also necessary to assess the possibility of mixing with residues of the previously used grease.

CLASSIFICATION OF GREASES

The basic classification of greases as well as industrial oils is the German DIN standard. The classification according to DIN 51502 provides information on composition, application, density, application conditions and the lower limit of application temperatures.



1. Purpose of grease.
2. Composition (base oil, additives, etc.).
3. NLGI grade.
4. Conditions of use.
5. Lower temperature range of application.

1 Purpose of grease

K	For rolling and plain bearings, sliding planes to DIN 51825
G	For closed gears according to DIN 51826
OG	For open gears
M	For bearing/seal pair

2 Composition (base oil, additives, etc.)

P	EP additive
F	Solid filler
E	Polyester oil
FK	Perfluoric fluid
HC	Synthetic hydrocarbons
PH	Phosphoric acid ester oil
PG	Polyglycol oil
SI	Silicone oil
X	Other oils

3 NLGI grade

NLGI grade	Penetration at 25 °C	Consistency	Area of application
000	445–475	Very soft – similar to viscous oil	Closed gears/centralized lubrication systems
00	400–430		
0	355–385	Soft-semi-fluid	
1	310–340	Soft	Closed gears/friction bearings/rolling bearings/ centralized lubrication systems
2	265–295	Soft	Friction bearings/rolling bearings/ linear guide bearings/ centralized lubrication systems
3	220–250	Semi-solid	Friction bearings/rolling bearings
4	175–205	Solid	Rolling bearings/water pump seals
5	130–160	Very solid	Open gears/water pump seals
6	85–115		

4 Conditions of use

Designation	Upper limit of operating temperature, °C	Water washout resistance at °C according to DIN 51807 (*)
C	60	0 at 40 °C or 1 at 40 °C
D		2 at 40 °C or 3 at 40 °C
E	80	0 at 40 °C or 1 at 40 °C
F		2 at 40 °C or 3 at 40 °C
G	100	0 at 90 °C or 1 at 90 °C
H		2 at 90 °C or 3 at 90 °C
K	120	0 at 90 °C or 1 at 90 °C
M		2 at 90 °C or 3 at 90 °C
N	140	No requirements
P	160	
R	180	
S	200	
T	220	
U	>220	

5 Lower temperature range of application

The minimum temperature at which the grease reliably performs its functions at the respective operating temperature is specified.

STRUCTURE OF GREASE ASSORTMENT

	Universal greases		Ultra-high loads	Special greases
	centralized lubrication system*	embedded method*		
Ultra	Gazpromneft Grease Synth LX EP 2	Gazpromneft Grease Synth LX EP 2		• Gazpromneft Grease HighSpeed EP 3: high-speed equipment
Premium+	Gazpromneft Premium Grease EP 00, 0, 1, 2	Gazpromneft Premium Grease EP 2		• Gazpromneft Grease Nord Moly: Ultra-high loads, Far North conditions
Premium	Gazpromneft Grease LX EP 1, 2 Gazpromneft Grease LTS 1, 2 Gazpromneft Grease L EP 00, 0, 1, 2	Gazpromneft Grease LX EP 2 Gazpromneft Grease LTS 2 Gazpromneft Grease L EP 2, 3	Gazpromneft Grease LTS Moly EP 2 Gazpromneft Grease L Moly EP 2	• Gazpromneft Steelgrease CS 1, 2: Extremely high temperatures and loads **For domestic use:** • Gazpromneft Universal Grease
Standart	Gazpromneft EP 2 Gazpromneft Grease L 2	Gazpromneft EP 2, 3 Gazpromneft Grease L 2		• Gazpromneft Reductor Grease • Gazpromneft Drill Grease
GOST		Litol-24 Gazpromneft Litol	CV-joint-4M Gazpromneft CV-joint	

↑ It is possible to change to a higher level grease provided the same NLGI class is selected.

Depending on the consistency of the grease (NLGI grade), greases can be used either in automatic centralized lubrication systems or as embedded grease. NLGI class 2 greases are universal and can be used both in automated centralized lubrication systems and as embedded lubricants.

GAZPROMNEFT GREASE SYNTH LX EP 2

UNIVERSAL

Wide temperature range

Gazpromneft Grease Synth LX EP 2 is a specialized grease based on synthetic base oil (PAO) and lithium-complex thickener containing anti-wear additives (EP additives). It is intended for use in the Far North in centralized lubrication systems and as a lubricant for various equipment and machinery.

Color:

Light beige

Temperature range:

–50 °C **+150 °C**

ADVANTAGES

- Group IV synthetic oils (PAO) → Wide temperature range of application. Improved low-temperature properties
- Li-X: Complex lithium thickener → High load capacity
- Li-X: Complex lithium thickener → Guaranteed corrosion protection in difficult conditions
- EP: Anti-seize additives → Excellent wear protection under high load conditions

APPLICATION

- Various equipment and machinery operating at extremely low temperatures.
- It is used for centralized lubrication systems and as a embedded lubricant.

GAZPROMNEFT PREMIUM GREASE EP 00, 0, 1, 2

UNIVERSAL

Extremely loaded bearings

Wide temperature range

Gazpromneft Premium Grease EP 00, 0, 1, 2 are universal greases based on high quality base oil and lithium complex thickener containing anti-wear additives (EP additives). They are intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as an embedded lubricant.

Color:

Light brown

Temperature range:

–50 °C (for NLGI 00 and 0) **+140 °C (for NLGI 00 and 0)**
–40 °C **+160 °C**

ADVANTAGES

- Semi-synthetic oil → Wide temperature range of application
- Li-X: Complex lithium thickener → High load capacity
- Li-X: Complex lithium thickener → Guaranteed corrosion protection in difficult conditions
- EP: Anti-seize additives → Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under medium and high load conditions.
- Used for centralized lubrication systems (NLGI 00, 0, 1, 2).
- Used as a embedded lubricant for rolling and friction bearings (NLGI 2).

GAZPROMNEFT GREASE LX EP 1, 2

UNIVERSAL

Gazpromneft Grease LX EP 1, 2 are universal greases based on high-quality base oil and lithium-complex thickener containing anti-wear additives (EP additives). They are intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as embedded lubricants.

Color:

Blue

Temperature range:

–30 °C +160 °C

ADVANTAGES

- Mineral base oils
- Complex lithium thickener
- Anti-seize additives
- High load capacity
- Guaranteed corrosion protection in difficult conditions
- Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under medium and high loads.
- Used for centralized lubrication systems (NLGI 1, 2).
- Suitable for rolling bearings, friction bearings, etc. (NLGI 2).

GAZPROMNEFT GREASE LTS 1, 2

UNIVERSAL High adhesion

Gazpromneft Grease LTS 1, 2 are universal greases based on high quality base oil and lithium-calcium thickener containing anti-wear additives (EP additives) and high adhesion. Intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as embedded lubricants.

Color:

Light brown

Temperature range:

–30 °C +120 °C +150 °C*

*Short-term

ADVANTAGES

- Mineral base oils
- Lithium-calcium thickener
- Anti-seize additives
- High load capacity
- High water resistance and corrosion protection
- Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under high and ultra-high loads.
- Suitable for centralized lubrication systems (NLGI 1, 2).
- Suitable for rolling bearings, friction bearings, etc. (NLGI 2).

GAZPROMNEFT GREASE L EP 00, 0, 1, 2, 3

UNIVERSAL

Gazpromneft Grease L EP 00, 0, 1, 2, 3 are universal greases based on high quality base oil and lithium thickener containing anti-wear additives (EP additives). They are intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as embedded lubricants.

Color:

Light brown

Temperature range:

–30 °C **+120 °C** **+150 °C***

*Short-term

ADVANTAGES

- Mineral base oils
- Lithium thickener
- Anti-seize additives
- High load capacity
- Reliable corrosion protection, even in the presence of water
- Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under medium and high loads.
- Used for centralized lubrication systems (NLGI 00, 0, 1, 2).
- Suitable for rolling bearings, friction bearings, etc. (NLGI 2, 3).

GAZPROMNEFT GREASE EP 2, 3

UNIVERSAL

Gazpromneft Grease EP 2, 3 are universal greases based on high-quality base oil and lithium thickener containing anti-wear additives (EP-additives). They are intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as embedded lubricant.

Color:

Light brown

Temperature range:

–40 °C **+130 °C** **+150 °C***

*Short-term

ADVANTAGES

- Mineral base oils
- Lithium thickener
- Anti-seize additives
- High load capacity
- Reliable corrosion protection, even in the presence of water
- Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under medium and high loads.
- Used for centralized lubrication systems (NLGI 2).
- Suitable for rolling bearings, friction bearings, etc. (NLGI 2, 3).

GAZPROMNEFT GREASE L 2

UNIVERSAL

Gazpromneft Grease L 2 is a universal grease based on high quality base oil and lithium thickener with anti-wear additives (EP additives). It is intended for use in a wide range of industrial equipment and machinery with centralized lubrication systems and as embedded lubricant.

Color:

Light brown

Temperature range:

–30 °C +120 °C +150 °C*

*Short-term

ADVANTAGES

- Mineral base oils
- Lithium thickener
- High load capacity
- Reliable corrosion protection, even in the presence of water

APPLICATION

- Various equipment operating under medium to high loads.
- Used for centralized lubrication systems and as embedded lubricant.

GAZPROMNEFT GREASE LTS MOLY EP 2

High loads · Shock loads · High contamination

Gazpromneft Grease LTS Moly EP 2 is a universal grease based on high-quality base oil and lithium-calcium thickener containing anti-wear additives (EP additives). It is intended for use in a wide range of industrial equipment and machinery as embedded lubricant.

Color:

Dark gray

Temperature range:

–30 °C +120 °C +150 °C*

*Short-term

ADVANTAGES

- High quality base oils
- Lithium-calcium thickener
- Molybdenum disulfide
- Anti-seize additives
- High load capacity
- High water resistance and corrosion protection
- Jamming prevention
- Excellent wear protection under high and impact loads

APPLICATION

- CV-Joints, guides, slewing rings and other friction units of various equipment operating under high and ultra-high loads, in contact with water, where the use of greases with solid fillers is recommended.
- It is used as embedded grease.

GAZPROMNEFT GREASE L MOLY EP 2

Jamming prevention

Gazpromneft Grease L Moly EP 2 is a multifunctional grease based on high quality base oil and lithium thickener containing anti-wear additives (EP additives) and solid filler (molybdenum disulfide). It is intended for use in heavily loaded friction units of transportation, equipment and machinery as embedded lubricant.

Color:

Dark gray

Temperature range:

–30 °C **+120 °C** **+150 °C***

*Short-term

ADVANTAGES

- Mineral base oils → High load capacity
- Lithium thickener → Reliable corrosion protection, even in the presence of water
- MoS_2 Molybdenum disulfide → Jamming prevention
- EP Anti-seize additives → Excellent wear protection under extreme load conditions, even when there is a lack of lubricant and the working environment is heavily contaminated.

APPLICATION

- CV-Joints, rotary joints, various guides and other units of equipment and machinery operating under extremely high loads, where the use of solid filler greases is allowed.
- It is used as a caster grease.

GAZPROMNEFT GREASE HIGHSPEED EP 3

SPECIAL

Energy

High-speed equipment

Gazpromneft Grease HighSpeed EP 3 is a specialized grease based on synthetic base oil and lithium complex thickener with anti-wear additives (EP additives). It is intended for use in high-speed bearings of electrical equipment and other units as embedded lubricant.

Color:

Light beige

Temperature range:

–40 °C **+140 °C**

ADVANTAGES

- Group III synthetic oils → Wide temperature range of application. Improved low-temperature properties
- Li-X Complex lithium thickener → High load capacity
- Guaranteed corrosion protection in difficult conditions
- EP Anti-seize additives → Excellent wear protection under high load conditions

APPLICATION

- Rolling bearings for electric motors.
- Wheels with high speed factor.
- High-speed machine tools, industrial fans and other high-speed equipment.

GAZPROMNEFT GREASE NORD MOLY

SPECIAL

Extreme loads

Extremely low temperatures

Gazpromneft Grease Nord Moly is a specialized grease based on high quality base oil and lithium complex thickener containing anti-wear additives (EP additives) and solid filler (molybdenum disulfide). Intended for use in heavy-duty friction units of various machinery in the Far North conditions.

Color:

Dark gray

Temperature range:

–50 °C **+120 °C** **+150 °C***

*Short-term

ADVANTAGES

- Group III synthetic oils → Wide temperature range of application
- Li-X: Complex lithium thickener → Excellent load capacity, vibration resistance
- MoS_2: Molybdenum disulfide → Guaranteed corrosion protection in difficult conditions
- EP: Anti-seize additives → Exceptional wear and seizing protection under extremely high load conditions

APPLICATION

- Various extremely loaded friction units of equipment and machinery.
- Suitable for use in centralized lubrication systems according to manufacturer's recommendations.

GAZPROMNEFT STEELGREASE CS 1, 2

SPECIAL

Ultra-high loads

Extreme temperatures

Excellent water resistance

Gazpromneft Steelgrease CS 1, 2 are greases based on high-quality base oil and calcium sulfonate thickener containing anti-wear additives (EP-additives). They are intended for use in a wide range of industrial equipment and machinery, especially in metallurgical industry, operating under conditions of particularly high temperatures, high loads and frequent contact with water.

Color:

Brown*

Temperature range:

–30 °C **+200 °C**

ADVANTAGES

- Mineral base oils → High load capacity
- Ca-S: Calcium sulfonate → High water resistance and corrosion protection
- Operation at extremely high temperatures
- EP: Anti-seize additives → Excellent wear protection under high load conditions

APPLICATION

- Bearings of continuous casting, hot rolling and other equipment of metallurgical plants.
- Equipment of machine-building, shipbuilding, mining, pulp and paper industries. Construction equipment.
- Used in centralized lubrication systems (NLGI 1, 2) and as embedded lubricant (NLGI 2).

* When in contact with water and moisture, the color of the grease becomes lighter.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Grease Synth LX EP 2	Gazpromneft Premium Grease EP				Gazpromneft Grease LX EP		Gazpromneft Grease LTS		Gazpromneft Grease L EP					Gazpromneft Grease EP		Gazpromneft Grease L 2	Gazpromneft Grease LTS Moly EP 2	Gazpromneft Grease L Moly EP 2	Gazpromneft Grease HighSpeed EP 3	Gazpromneft Grease Nord Moly	Gazpromneft Steelgrease CS	
			00	0	1	2	1	2	1	2	00	0	1	2	3	2	3						1	2
Conformity to DIN 51502	DIN 51502	KPHC 2 N-50	KP 00 K-50	KP 0 K-50	KP 1 P-40	KP 2 P-40	KP 1 P-30	KP 2 P-30	KP 1 K-30	KP 2 K-30	KP 00 K-30	KP 0 K-30	KP 1 K-30	KP 2 K-30	KP 3 K-30	KP 2 K-40	KP 3 K-40	K 2 K-30	KPF 2 K-30	KPF 2 K-30	KP 3 N-30	KPF 0 K-50	KP 1 S-30	KP 2 S-30
NLGI grade	ASTM D217	2	00	0	1	2	1	2	1	2	00	0	1	2	3	2	3	2	2	2	3	0	1	2
Thickener type	—	Lithium complex soap									Lithium soap					Lithium soap			Lithium-calcium soap	Lithium soap	Lithium complex soap		Calcium sulfonate	
Filler type	—	—	—				—		—		—					—		—	Molybdenum disulfide		—	Molybde-num disulfide	—	
Dropping point, °C	ASTM D 2265 / GOST 32322 / GOST 6793	> 250	—	>210	>250	>250	>250	>250	>180	>180	>170	>170	>180	>180	>190	>190	>200	>180	>180	>180	>250	>210	>300	>300
Base oil	—	Synth.	Semi-synthetic				Mineral									Mineral					Group III Base oil		Mineral	
Kinematic viscosity of base oil at 40 °C, mm²/sec	GOST 33	—	100	100	100	100	220	220	220	220	160	160	160	160	160	70	70	160	220	160	45	20	420	420
4-Ball Load Test, Weld Point, N	GOST 9490	3 920	3 283	3 283	3 283	3 283	3 283	3 283	2 607	2 607	2 450	2 450	2 450	2 450	2 450	2 450	2 450	1 568	4 136	3 087	2 323	4 136	4 136	4 136
4-Ball Load Test, wear spot diameter, mm	GOST 9490	0,6	0,5	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,5	0,5	0,5	0,5	0,5	—	—	—	0,5	0,4	0,6	0,6	0,5	0,5

The specified values of physical and chemical parameters are typical and may vary slightly from batch to batch.The main limits of values are presented in the normative documentation. Data for 2020.

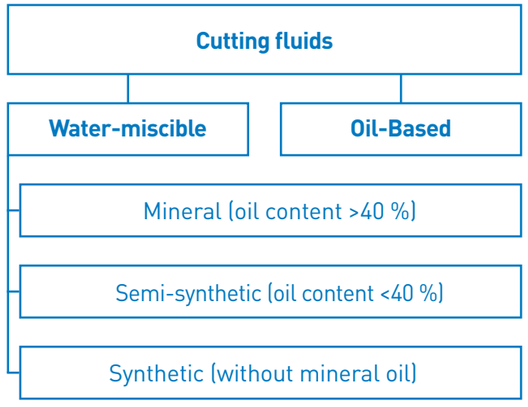
CUTTING FLUIDS

CUTTING FLUIDS

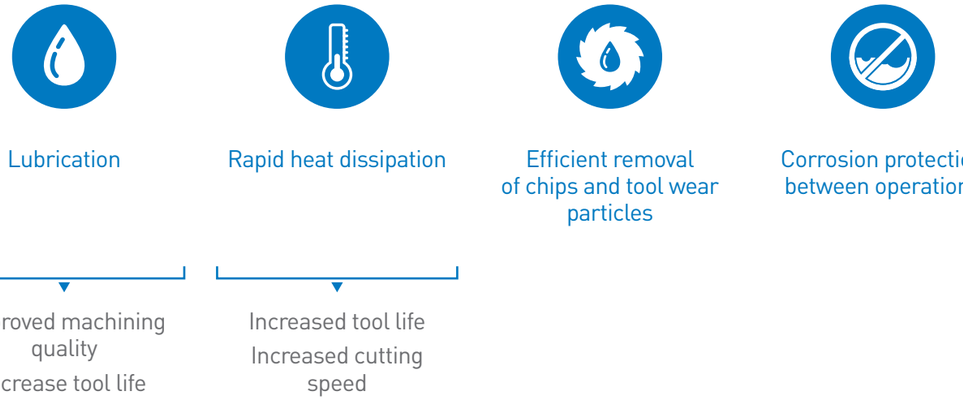
There is a huge variety of methods for machining metals. In most cases, metalworking cannot take place without the use of cutting fluids (coolants).

One or another type of coolant is used depending on the machining operation, the metals and alloys being machined and the hardness of the water used to prepare the water- miscible coolant. Often the choice of cutting fluid requires an individual approach, taking into account all the features and requirements of the technological process of a particular production.

Cutting fluids are designed to improve the efficiency of metalworking by performing the following functions.



CUTTING FLUIDS FUNCTIONS



GAZPROMNEFT CUTTING FLUIDS

Type of CUTTING FLUIDS	Name	Base	Lubrication	Cooling	Emulsion stability	Protection against corrosion	Chip removal	Emulsion life	Separation of extraneous oils	Safety	Low oil mist	Vaporization rate
Water-miscible	Cutfluid Standard	mineral	■■□	■■□	■■■	■■■	✓	■■□	■■□	✓	–	–
	Cutfluid Standard LE	mineral	■■□	■■□	■■□	■■■	✓	■■□	■■□	✓	–	–
	Cutfluid EST	semi-synthetic	■■■	■■■	■■■	■■■	✓	■■■	■■■	✓	–	–
	Cutfluid AL	semi-synthetic	■■□	■■■	■■■	■■■	✓	■■■	■■■	✓	–	–
	Cutfluid Universal	semi-synthetic	■■□	■■■	■■■	■■■	✓	■■■	■■■	✓	–	–
	Cutfluid Universal LE	semi-synthetic	■■□	■■■	■■□	■■■	✓	■■□	■■■	✓	–	–
	Cutfluid Synthetic	synthetic	■□□	■■■	■■■	■■■	✓	■■■	■■■	✓	–	–
	Cutfluid Synthetic LE	synthetic	■□□	■■■	■■□	■■■	✓	■■■	■■■	✓	–	–
Oil-based	Cutoil GR 7	synthetic	■■■	■■□	–	■■■	–	–	–	✓	■■■	–
	Cutoil GR 10	semi-synthetic	■■■	■■□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 20	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 30	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 10 EP	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 20 EP	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 30 EP	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Cutoil 50 EP	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
	Pressoil D 60	semi-synthetic	■■■	■□□	–	■■■	–	–	–	✓	■■■	–
Fast evaporating	Formsynth EV 1H	semi-synthetic	■■■	–	–	–	–	–	–	✓	–	■■■
	Formsynth EV 2	semi-synthetic	■■■	–	–	–	–	–	–	✓	–	■■□

Synthetic base · Mineral base · Semi-synthetic base

■ Relative property reserve indicator

✓ The characteristic in the headline is applicable to the product

Depending on the metal to be processed, the requirements for the composition and characteristics of the cutting fluid are determined. These requirements often determine the choice of coolant. Metals differ in hardness, brittleness, corrosion resistance, so the level of difficulty of machining different metals differs. It should be taken into account that for the same operation of machining the same metal can often be used cutting fluids of different types. Therefore, the choice of cutting fluids requires an individual approach.

GAZPROMNEFT CUTTING FLUIDS APPLICATION RECOMMENDATIONS

Operations	Grinding	Honing	Turning	Milling
Cast iron	Cutfluid EST Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10	Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid GR 7 Cutfluid GR 10	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP
Low and medium alloy steels	Cutfluid EST Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10	Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid GR 7 Cutfluid GR 10	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP
High alloy/stainless steels	Cutfluid EST Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10	Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid GR 7 Cutfluid GR 10	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP
Aluminum/aluminum alloys	Cutfluid EST Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10	Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid GR 7 Cutfluid GR 10	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 30	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 30
Non-ferrous metals	Cutfluid EST Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10	Cutfluid Synthetic Cutfluid Synthetic LE Cutfluid GR 7 Cutfluid GR 10	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 30	Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutfluid GR 7 Cutfluid GR 10 Cutoil 20 Cutoil 30
Titanium/titanium alloys	Cutfluid EST Cutfluid Synthetic Cutfluid Universal Cutfluid AL Cutfluid GR 7	Cutfluid GR 7	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 Cutoil 20 EP Cutoil 30 Cutoil 30 EP

GAZPROMNEFT CUTTING FLUIDS APPLICATION RECOMMENDATIONS

Drilling	Tapping	Reaming	Drawing/grooving	Stamping
Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutoil 10 EP	Cutfluid EST Cutoil 20 EP Cutoil 30 EP	Cutfluid EST Cutoil 20 EP Cutoil 30 EP	—	—
Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutoil 10 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP	Cutfluid EST Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP Pressoil D 60	Formsynth EV 1H Formsynth EV 2 Pressoil D 60
Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutoil 10 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 E	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP	Cutfluid EST Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP Pressoil D 60	Formsynth EV 1H Formsynth EV 2 Pressoil D 60
Cutfluid EST Cutfluid Universal Cutfluid AL	Cutfluid EST	Cutfluid EST	Cutfluid EST Cutfluid AL	Formsynth EV 1H Formsynth EV 2
Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL	Cutfluid EST Cutfluid Universal Cutfluid AL	Cutfluid EST Cutfluid Universal Cutfluid AL	Cutfluid EST Cutfluid AL	Formsynth EV 1H Formsynth EV 2
Cutfluid EST Cutfluid Universal Cutfluid Universal LE Cutfluid AL Cutoil 10 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP	Cutfluid EST Cutfluid Universal Cutfluid AL Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP	Cutfluid EST Cutoil 20 EP Cutoil 30 EP Cutoil 50 EP Pressoil D 60	—

GAZPROMNEFT CUTFLUID STANDARD

Mineral cutting fluid

Gazpromneft Cutfluid Standard — a high quality water-miscible fluid with a high content of mineral oil and a highly effective additive package that provides multifunctionality and emulsion stability.

Processed materials:
- all types of steel;
- cast iron;
- non-ferrous metals;
- aluminum.

The recommended concentration:
- drilling, turning, milling — 5-7%;
- screw cutting, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- Excellent lubricating properties
- High anti-corrosion protection
- Easily mixed with water
- Cost-effective use
- Low foaming
- Long emulsion service life
- Good emulsion stability
- 100–500 ppm $CaCO_3$ — Use with water of a wide range of hardness

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Standard
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	31,2
Density at 20 °C, kg/m³	GOST 3900	889
Hydrogen index, 5% of emulsion, pH	GOST 6243 p. 4	9,0
Refraction factor	Manufacturer's information	1,0

GAZPROMNEFT CUTFLUID STANDARD LE

Mineral cutting fluid

Gazpromneft Cutfluid Standard LE — water-miscible cutting fluid with a high content of mineral oil. Gazpromneft Cutfluid Standard LE coolant is developed on the basis of domestic components, including those of its own design, which ensure multifunctionality, stability and long service life of the working emulsion.

Processed materials:
- all types of steel;
- cast iron;
- non-ferrous metals;
- aluminum.

The recommended concentration:
- drilling, turning, milling — 5-7%;
- screw cutting, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- Excellent lubricating properties
- High anti-corrosion protection
- Easily mixed with water
- Cost-effective use
- Low foaming
- Long emulsion service life
- Good emulsion stability
- 100–500 ppm $CaCO_3$ — Use with water of a wide range of hardness
- High level of import substitution industrialization

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Standard LE
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	63,9
Density at 20 °C, kg/m³	GOST 3900	920
Hydrogen index, 5% of emulsion, pH	GOST 6243 p. 4	9,6
Refraction factor	Manufacturer's information	1,0

GAZPROMNEFT CUTFLUID EST

Semi-synthetic cutting fluid

Gazpromneft Cutfluid EST — biostable semi-synthetic water-miscible cutting fluid based on mineral oil and esters. It is used for medium and heavy operations: turning, rifling, drilling, milling, deep drilling with gun drills, gear cutting, tapping, broaching, reaming and countersinking.

Processed materials:
- all types of steels;
- non-ferrous metals;
- aluminum;
- titanium;
- nickel;
- aircraft alloys.

The recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- screw cutting, reaming, broaching — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- HARD — For the harshest processing conditions
- High anti-corrosion protection
- Versatile for most types of metals
- Cost-effective use
- Low foaming
- High stability
- OIL — Separation of oils entering the cutting fluid
- 50–700 ppm $CaCO_3$ — Use with water of a wide range of hardness
- Excellent cooling properties

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid EST
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	62,4
Density at 20 °C, kg/m³	GOST 3900	964
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,0
Refraction factor	Manufacturer's information	1,1

GAZPROMNEFT CUTFLUID AL

Semi-synthetic cutting fluid

Gazpromneft Cutfluid AL — semi-synthetic water-miscible cutting fluid for a wide range of applications with mineral oil content. The concentrate provides multifunctionality and emulsion stability even under extreme metalworking conditions. Especially recommended for aluminum, aluminum alloys, aircraft alloys.

Processed materials:
- aircraft alloys;
- aluminum;
- steels and alloys;
- non-ferrous metals.

- The recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- screw cutting, reaming, broaching — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- Efficient washing out of metal chips
- Effective anti-corrosion protection
- Long emulsion service life
- Cost-effective use
- Low foaming
- Excellent stability of the finely dispersed emulsion structure
- Excellent cooling properties
- Easily mixed with water
- Use for aerospace materials

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid AL
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	60,6
Density at 20 °C, kg/m³	GOST 3900	966
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,2
Refraction factor	Manufacturer's information	1,2

GAZPROMNEFT CUTFLUID UNIVERSAL

Semi-synthetic cutting fluid

Gazpromneft Cutfluid Universal — a semi-synthetic water-miscible cutting fluid for a wide range of applications with mineral oil content. The concentrate provides multifunctionality and emulsion stability even under extreme metalworking conditions.The product is designed for most metalworking operations: grinding, turning, cutting, drilling and milling.

Processed materials:
- cast iron;
- steels and alloys;
- non-ferrous metals;
- aluminum;
- aircraft alloys;
- titanium.

The recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- screw cutting, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- Efficient washing out of metal chips
- Effective anti-corrosion protection
- Excellent cooling properties
- Cost-effective use
- Long emulsion service life
- Low foaming
- Easily mixed with water
- 50–700 ppm $CaCO_3$ — Use with water of a wide range of hardness
- Excellent stability of the finely dispersed emulsion structure

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Universal
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	41,5
Density at 20 °C, kg/m³	GOST 3900	1 081
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,4
Refraction factor	Manufacturer's information	1,2

GAZPROMNEFT CUTFLUID UNIVERSAL LE

Semi-synthetic cutting fluid

Gazpromneft Cutfluid Universal LE — a modern universal semi-synthetic water-miscible cutting fluid. Gazpromneft Cutfluid Universal LE was developed in accordance with the requirements of the Russian metalworking market on the basis of carefully selected domestic components, including internal production of Gazpromneft-Lubricants, using a balanced complex of emulsifiers and corrosion inhibitors of own development, effective detergents and biocidal additives.

Processed materials:
- cast iron;
- steels and alloys;
- non-ferrous metals;
- aircraft alloys;
- titanium.

The recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- screw cutting, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF USE

- Use for aerospace materials
- High emulsification rate
- Biological stability
- Does not contain chlorine, phenol, secondary amines
- 50–700 ppm $CaCO_3$ — Use with water of a wide range of hardness
- Low foaming when operating on water of different quality
- Excellent cleaning properties for removal of chips, sludge from the processing zone

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Universal LE
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	77,0
Density at 20 °C, kg/m³	GOST 3900	974
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,8
Refraction factor	Manufacturer's information	1,0

GAZPROMNEFT CUTFLUID SYNTHETIC

Synthetic cutting fluid

Gazpromneft Cutfluid Synthetic — a synthetic water-miscible fluid based on a modern imported additive package that forms a transparent emulsion. The product provides excellent anti-corrosion protection and heat dissipation from the contact zone between tool and workpiece.
Application: grinding, honing, turning.

Processed materials:
- ferrous metals (including steel, cast iron);
- non-ferrous metals.

The recommended concentration:
- grinding — 3-5%.

ADVANTAGES AND BENEFITS OF USE

- Easy removal of small metal chips
- High anti-corrosion protection
- Excellent cooling properties
- Cost-effective use
- Low foaming
- Does not harm the operator's health if the operating requirements are met
- Separation of oils entering the cutting fluid
- Guaranteed emulsion stability
- Use with water of a wide range of hardness

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Synthetic
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	6,4
Density at 20 °C, kg/m³	GOST 3900	1 081
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,4
Refraction factor	Manufacturer's information	2,3

GAZPROMNEFT CUTFLUID SYNTHETIC LE

Synthetic cutting fluid

Gazpromneft Cutfluid Synthetic LE — a modern universal synthetic water-miscible cutting fluid. Gazpromneft Cutfluid Synthetic LE has been developed in accordance with the requirements of the Russian metalworking market based on carefully selected domestic components, including those produced in-house by Gazpromneft-Lubricants.

Processed materials:
- ferrous metals (including steel, cast iron);
- non-ferrous metals.

The recommended concentration:
- grinding — 3-5%.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- Low foaming when operating on water of different quality
- Does not contain chlorine, phenol, secondary amines
- Cost-effective use
- Effectively separates the oil from the cutting fluid
- Excellent cleaning properties for removing chips and sludge from the machining zone
- High anti-corrosion protection
- Maintains stability in water of a wide range of hardness

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutfluid Synthetic LE
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	6
Density at 20 °C, kg/m³	GOST 3900	1 015
Hydrogen index, 5% of emulsion, pH	GOST 6243, p. 4	9,5
Refraction factor	Manufacturer's information	1,7

GAZPROMNEFT CLEANFLUID

CLEANING AGENT

Gazpromneft Cleanfluid — a biocide-free, highly effective cleaner for cooling systems, production machines, circulation systems and other equipment. Gazpromneft Cleanfluid breaks down biofilms that can accumulate in machine tool systems and cleans the system

Application:
- cleaning of the machine coolant system before changing the emulsion;
- stabilization of the emulsion used in order to prolong its service life.

The recommended concentration: 1–3 %.

CUTTING FLUID REPLACEMENT

- After the equipment systems have been completely cleaned of cutting fluid, it is recommended to circulate the aqueous solution of the cleaner for at least two hours.
- If it is preferable to flush without stopping production, it is recommended to pour Gazpromneft Cleanfluid solution into the used cutting fluid and work with this emulsion for 3-5 days.
- After the cleaning procedure, drain the cleaner/cleaner/mixture with the coolant and flush the system with water before refilling with fresh cutting fluid.
- Carefully monitor filters, machine ducts and tank level due to the destruction of deposits and biofilms.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Gazpromneft Cleanfluid
Appearance	Clear liquid
Density at 20 °C, kg/m³, no more than	1 075
pH value of 1% in demineralized water	9,9

GAZPROMNEFT CUTOIL GR 7

Synthetic fluid

Gazpromneft Cutoil GR 7 — low-viscosity oil-based cutting fluid on a synthetic base with the addition of a specially developed additive complex. It has high tribological characteristics, increased resistance to oxidation and long service life. Provides the highest quality of the processed surface.

Application
Honing, grinding with diamond and ceramic (boron nitride) wheels, superfinishing, blading. The product is recommended for machining various ferrous and non-ferrous alloys.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- No negative impact on human health if the operating requirements are met
- Suitable for machining most metals and alloys
- High tribological characteristics
- Low oil mist formation
- Stable machining on highly loaded and high-temperature operations
- Increased durability of the cutting tool and quality of the machined surface

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutoil GR 7
Appearance	Visually	Homogeneous transparent liquid without visible impurities
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	6,5
Density at 20 °C, kg/m³	GOST 3900	824
Flash point, COC, °C	GOST 4333	158
Pour point, °C	GOST 20287 method B	–58

GAZPROMNEFT CUTOIL GR 10

Semi-synthetic fluid

Gazpromneft Cutoil GR 10 — multifunctional oil-based cutting fluid on high purity oil bases with excellent performance characteristics, low tendency to foaming and evaporation.

Application

General light to medium duty metalworking operations: milling, drilling, automatic and profile turning, screw cutting, reaming and sawing. Suitable for honing, grinding, including diamond and ceramic (boron nitride) wheels. Suitable for all steel grades and their alloys, non-ferrous metals (except magnesium and magnesium alloys).

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- No negative impact on human health if the operating requirements are met
- Suitable for machining most metals and alloys
- Excellent cooling and flushing capacity
- Increased durability of the cutting tool and quality of the machined surface
- Low oil mist formation

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutoil GR 10
Appearance	Visually	Homogeneous transparent liquid without visible impurities
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	10,0
Density at 20 °C, kg/m3, no more than	GOST 3900	857,0
Flash point, COC, °C	GOST 4333	179
Pour point, °C	GOST 20287 method B	–46

GAZPROMNEFT CUTOIL 20, 30

Semi-synthetic fluid

Gazpromneft Cutoil 20, 30 — multifunctional oil-based cutting fluids based on high-quality high-index base oils. The composition includes complexes of anti-seize, anti-wear additives with friction modifiers and antioxidant additives of the latest generation.

Application

Light to medium duty general metalworking operations. The products are suitable for milling, drilling, automatic and profile turning, screw cutting, reaming and sawing of structural and alloy steels, aluminum and copper alloys.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- Excellent cooling and flushing capacity
- Low tendency to oxidation and oil mist formation
- Increased durability of the cutting tool and quality of the machined surface
- No negative impact on human health if the operating requirements are met
- Suitable for machining most metals and alloys

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutoil 20	Gazpromneft Cutoil 30
Appearance	Visually	Homogeneous transparent liquid without visible impurities	
Kinematic viscosity at 40 °C, mm2/sec	GOST 33	19,0	30,0
Density at 20 °C, kg/m3, no more than	GOST 3900	847	865
Flash point, COC, °C	GOST 4333	198	210
Pour point, °C	GOST 20287 method B	–46	–46

GAZPROMNEFT CUTOIL 10 EP, 20 EP, 30 EP

Semi-synthetic fluid

Gazpromneft Cutoil 10 EP, 20 EP, 30 EP — multifunctional oil-based cutting fluids based on high purity base oils with the addition of a modern additive complex for heavy-duty machining operations on a wide range of steel and alloy grades.

Application

Highly loaded general metalworking operations. Products can be used for grinding, turning, milling, screw cutting, roll threading, reaming of structural, alloyed, corrosion-resistant, heat-resistant steels and alloys. The products are of limited suitability for machining non-ferrous metal-based alloys. Gazpromneft Cutoil 10 EP is specially formulated for deep drilling operations on high-alloy steels. Gazpromneft Cutoil 20 EP is a specialized product for the hobbing segment, planing and hobbing operations on modern machining centers.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- Low level of evaporation and oil mist formation
- Efficient flushing of generated chips out of the machining zone
- Does not contain chlorine or heavy metals
- Modern tribological additive complex
- Increased durability of the cutting tool and quality of the machined surface
- Increased oxidative stability of the product for long service life

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutoil 10 EP	Gazpromneft Cutoil 20 EP	Gazpromneft Cutoil 30 EP
Appearance	Visually	Homogeneous transparent liquid with no visible impurities. Opalescence is allowed		
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	10,0	21,0	30,0
Density at 20 °C, kg/m³, no more than	GOST 3900	848	860	865
Flash point, COC, °C	GOST 4333	178	190	200
Pour point, °C	GOST 20287 method B	–56	–40	–40
Test of corrosive effect on the plate made of copper grade M1 or M2 according to GOST 859	GOST 2917	4C	4C	4C

GAZPROMNEFT CUTOIL 50 EP

Semi-synthetic fluid

EP Extreme loads

Gazpromneft Cutoil 50 EP — oil-based cutting fluid developed for medium- and heavy-duty general metalworking operations: reaming, broaching, deep drilling, gear cutting and stamping. Contains sulfur compounds that provide anti-seize properties.

Processed materials:

- high-strength and stainless steels;
- titanium.

Not recommended for processing non-ferrous metals and alloys!

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- No negative impact on human health if the rules of industrial hygiene are observed
- Excellent lubricating properties
- Long cutting tool life
- Suitable for extreme loads
- Low oil mist formation
- Does not contain chlorine

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Cutoil 50 EP
Appearance	Visually	Homogeneous liquid of yellow color
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	51,0
Density at 20 °C, kg/m³, no more than	GOST 3900	892
Flash point, COC, °C	GOST 4333	192
Pour point, °C	GOST 20287	–23

GAZPROMNEFT PRESSOIL D 60

Semi-synthetic fluid

Gazpromneft Pressoil D 60 — oil-based cutting fluid developed for medium and heavy metalworking operations such as drawing, stamping, rolling, torsion and thread rolling.

Processed materials:
- steel;
- stainless steel;
- steel alloy.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- Suitable for machining most metals and alloys
- Excellent lubricating properties
- Suitable for machining most metals and alloys
- Low oil mist formation
- Does not contain chlorine
- No negative impact on human health if the operating requirements are met

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Pressoil D 60
Appearance	Visually	Transparent liquid of brown color
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	58,0
Density at 20 °C, kg/m³, no more than	GOST 3900	900
Flash point, COC, °C	GOST 4333	192

GAZPROMNEFT FORMSYNTH EV 1H

Semi-synthetic fluid

Gazpromneft Formsynth EV 1H — fast evaporating oil. The product dries in a short period of time, significantly facilitating further painting and welding processes. Does not contain silicone.

Application:
for punching, stamping, piercing and light drawing of aluminum and thin steel sheets.

ADVANTAGES AND BENEFITS OF USE

- Protects tools from wear (matrixes, punches)
- Does not contain chlorine
- Fast evaporation
- Does not contain heavy metals, including zinc
- Does not contain silicone

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Formsynth EV 1H
Appearance	Visually	Homogeneous colorless liquid without sediment or suspended matter
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	1,2
Density at 20 °C, kg/m³, no more than	GOST 3900	759
Water content	GOST 1547	None

GAZPROMNEFT FORMSYNTH EV 2

Semi-synthetic fluid

Gazpromneft Formsynth EV 2 — a fast evaporating, highly purified oil providing high lubricating properties. The oil film dries in a short period of time, which makes it possible to quickly perform further processes of painting, welding of parts. Recommended for punching, stamping, piercing and light drawing operations.

Processed materials:
- thin sheet steels;
- aluminum.

ADVANTAGES AND BENEFITS OF USE

- High level of import substitution industrialization
- Does not contain chlorine
- Does not contain silicone
- Protects tools from wear (matrixes, punches)
- Does not contain heavy metals, including zinc
- Characterized by complete evaporation from the product surface

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Method	Gazpromneft Formsynth EV 2
Appearance	Homogeneous liquid of yellow color	Homogeneous liquid of yellow color
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	2,6
Density at 20 °C, kg/m³, no more than	GOST 3900	803
Flash Point, PMCC, °C	GOST 6356	90
Test of corrosive effect on the plate made of copper grade M1 or M2 according to GOST 859, points	GOST 2917	1b

Cutting fluid	Description and application
RPH-S Organization Standard 77820966-004-2007	Fully synthetic cutting fluids, does not contain oily or greasy substances, therefore it is completely soluble in water, forming a transparent solution, which makes it easy to control metal working. **Application** It is intended for preparation of 3-10% aqueous solutions, which are used as a lubricant-anticorrosive agent in hydraulic presses, for pressure testing of pipes, as a cooling agent for welding mills and profiling machines.
RPH-06-PS TU 0258-005-77820966-06	Balanced mixture of petroleum oil, emulsifiers, anti-corrosion and anti-wear additives, as well as components providing bio-resistance of microemulsions. **Application** It is intended for preparation of aqueous 3-10 % microemulsions, which are used for blade and abrasive machining of gray cast iron, steel and alloys in operations with high requirements to protection of parts from corrosion for inter-operational period and quality of machined surface, aluminum alloys.
RPH-PK Organization Standard 77820966-017-2012	Water-miscible semi-synthetic cutting fluid, is a balanced mixture of petroleum oil and surface-active substances, anticorrosive and anti-wear additives, as well as components providing bio-resistance of microemulsions. **Application** It is intended for preparation of aqueous 3-10 % microemulsions, which are used in the processes of machining ferrous and non-ferrous metals by cutting and grinding, in conditions of medium and heavy modes. The liquid is especially recommended for aluminum alloys.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	RPH-S	RPH-06-PS	RPH-PK
Concentrate (product in supply state)			
Appearance at temperature 20 ± 10 °C	Homogeneous transparent light brown colored liquid	Homogeneous oily liquid light brown to dark brown in color	Homogeneous transparent light brown to dark brown colored liquid
Odor	Specific, not irritating.	Specific, not irritating.	Specific, not irritating.
Kinematic viscosity at 20 °C, mm^2/sec, no more than	40	—	200
Kinematic viscosity at 50 °C, mm^2/sec, no more than	—	100	—
Density at 20 °C, kg/m^3, within the limits	1 000–1 120	1 000–1 100	1 000–1 100
Total base number,mg KOH/g, not less than	—	—	130
Acid number, mg KOH/g, no less than	20	20	30
Stability during storage	Withstands	Withstands	Withstands
Impact of hard water	Withstands	—	Withstands

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	RPH-S	RPH-06-PS	RPH-PK
Emulsion 5%			
Stability of the emulsion after 24 h of aging	—	Withstands	—
Hydrogen index,pH of emulsion, within limits	—	9,0–10,0	—
Emulsion 3%			
Corrosion aggressiveness towards ferrous metals (latent fingerprint method)	—	Absent	—
Stability of the emulsion after 24 h of aging	Withstands	—	Withstands
Hydrogen index,pH of emulsion, within limits	9,0–11,0	—	8,0–10,0
Corrosion aggressiveness (cast iron SCh-20 according to GOST1412-85)	Withstands	—	—
Corrosion aggressiveness (drop method): **- in relation to ferrous metals cast iron SCh-18** **- steel 40 or 50 according to GOST1050-74**	—	—	Absent Absent
Tendency to foaming, cm^3, not more	200	200	200
Foam stability, cm^3, not more	50	50	50

Cutting fluid	Description and application
Emulsol T grade A TU 6-14-254-87	Emulsifying lubricating and cooling technological agent EMULSOL T grade A is a mixture of mineral oil and triethanolamine salt of oleic acid grade OM. **Application** It is intended for production of aqueous emulsions (with mass fraction 3-10 %) of cutting fluids during cold rolling of metal at metallurgical plants and during cold metal cutting at metalworking plants.
Emulsol EGT TU 38.101149-95	Emulsifying lubricating and cooling technological agent EMULSOL EGT is sodium soaps of high molecular weight carboxylic acids dispersed in mineral oil with addition of stabilizer. **Application** It is used in the form of 5-10% aqueous emulsions for various types of treatment of ferrous and non-ferrous metals, except magnesium and its alloys, hard-to-machine steel grades.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	Emulsol T grade A	Emulsol EGT
Concentrate (product in supply state)		
Appearance at temperature 20 ± 10 °C	Homogeneous oil-like transparent liquid from yellow to brown color	Homogeneous brown colored liquid
Odor	Mineral oil odor	—
Water content, % wt., max.	2,0	10,0
Density at 20 °C, kg/m³, within the limits	850–950	—
Acid number, mg KOH/g emulsol, no more than	—	No more than 7,0
Free alkali content in terms of NaOH, %, max.	—	0,3
Total content of organic acids,% wt., no more than	—	12,0
Mass fraction of ash, %, not more	0,04	—
Stability during storage	Withstands	—
Low temperature stability (-15 °C)	—	Withstands
Emulsion 3%		
Stability of emulsion after 3 h of exposure, oil is released, %, no more than	—	1,0
Hydrogen index,pH of emulsion, within limits	—	9,0–10,0
Corrosion aggressiveness of emulsion prepared on distilled water	—	Withstands

Cutting fluid	Description and application
MR-1u TU 38.101731-80	The product is based on purified mineral oil with the addition of anti-wear, anti-seize, anti-corrosion additives. **Application** It is intended for machining of carbon, alloyed structural stainless steels on machine tools, automatic machines, as well as in a number of separate operations of thread cutting, broaching, drilling.

TYPICAL PHYSICOCHEMICAL PARAMETERS

Indicators	MR-1u
Appearance	Transparent oily liquid with yellow to brown color
Odor	Specific for mineral oil
Density at 20 °C, kg/m³, within the limits	800–930
Kinematic viscosity, mm²/s, at 50 °C, within the limits	18–24
Flash point, COC, °C, no less than	175
Corrosive effect on metals: **- gray cast iron** **- steel 40**	 Withstands Withstands
Acid number, mg KOH/g	Not more than 1,5
Water content	Absent
Mass fraction of chlorine, %, within the limits	1,0–1,6
Mass fraction of sulfur, %, within the limits	0,7–1,5
Mass fraction of mechanical impurities, %, no more than	0,035
Stability during storage	Withstands

Technical services

G-Energy Academy

G-Energy Academy is a unique system for training qualified personnel using the latest digital technologies, VR and AR.

Areas of work

Spread

All countries of supply

G-Energy Academy

On-line courses

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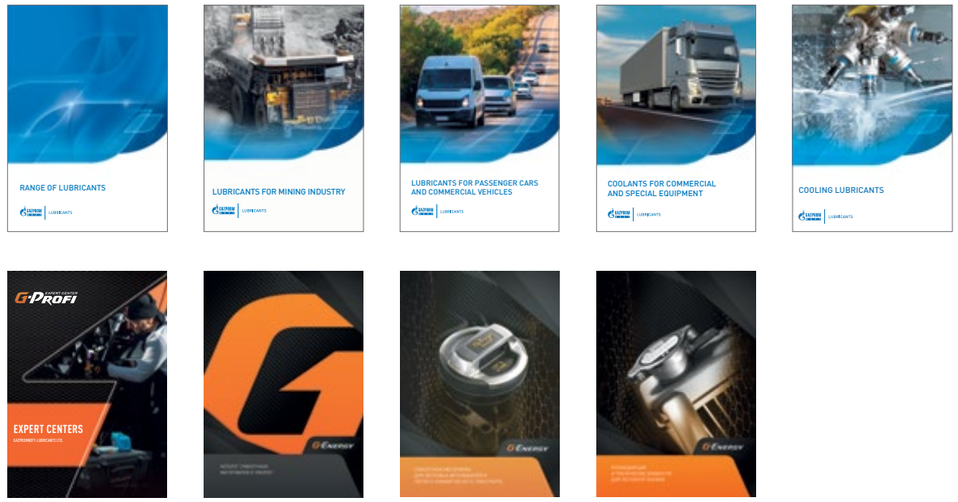
Development of product catalogs and leaflets

Technical Support (for Lubricant application)

Certification of distributor employees

Information materials

>30 publications in various sectors



G-Energy Academy Technical Tools

PLAS — complete product information (internal users only)

GEA links — information and training platform for distributors (remote certification, online training and informational materials)

VR — 360 video clips, virtual plant tour, VR trainings

3 000 analogues

4 500 product items

40+ video courses

1 000+ users

22 countries

13 simulations and videos

10 languages

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Arguments to choose
Gazpromneft – Lubricants Ltd.

- OEM compliance, usage recommendations, positive application experience.
- Optimum drain intervals.
- Comprehensive product offer.
- Technical expertise.
- Optimal logistics, extensive supply network.

GAZPROM NEFT / GAZPROMNEFT LUBRICANTS

Abbreviations

SAE xxW-x

Classification of viscosity grades.

API Sx/Cx; ACEA Ex; JASO DH-x

Classification of lubricants by applications, properties and quality.

MB xxx, Cummins CES 200xx, Caterpillar ECF-x, MTU Cat. x, Deutz DQC xx and other

Specifications developed by OEMs. Usually sets higher required quality limits than API, ACEA, JASO.

EGR

Exhaust Gas Recirculation. Can be installed on diesel and gas engines. Intended to reduce toxicity of exhaust gases.

SCR

Selective Catalytic Reactor. Can be installed on diesel engines. Intended to reduce toxicity of exhaust gases.

DPF

Diesel Particle Filter. Can be installed on diesel engines. Intended to reduce toxicity of exhaust gases.

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