FLUIDS AND LUBRICANTS FOR METALWORKING

GAZPROM NEFT | GAZPROMNEFT LUBRICANTS

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CONTENT

ABOUT THE COMPANY 4

MWF (METALWORKING FLUIDS) 6

WATER-MISCIBLE GROUP
OF METALWORKING FLUIDS 9

OIL GROUP OF METALWORKING FLUIDS 19

LOW-VISCOSITY OIL
AND RAPIDLY EVAPORATING FORMULATIONS 27

RANGE OF METALWORKING FLUIDS 30

METALWORKING FLUIDS RECOMMENDATIONS 31

HYDRAULIC OILS 37

GREASES 47

SLIDING GUIDE OILS 53

SPINDLE OILS 57

INFORMATION AND TECHNICAL SUPPORT 60

TECHNICAL SERVICES 62

GAZPROM NEFT / GAZPROMNEFT LUBRICANTS

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

4 SALES OFFICES IN RUSSIA, BELARUS, KAZAKHSTAN

4 PRODUCTION SITES

№ 14 IN THE WORLD

74 COUNTRIES — GEOGRAPHY OF SUPPLY

№ 1
IN RUSSIA*

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

BUSSINES

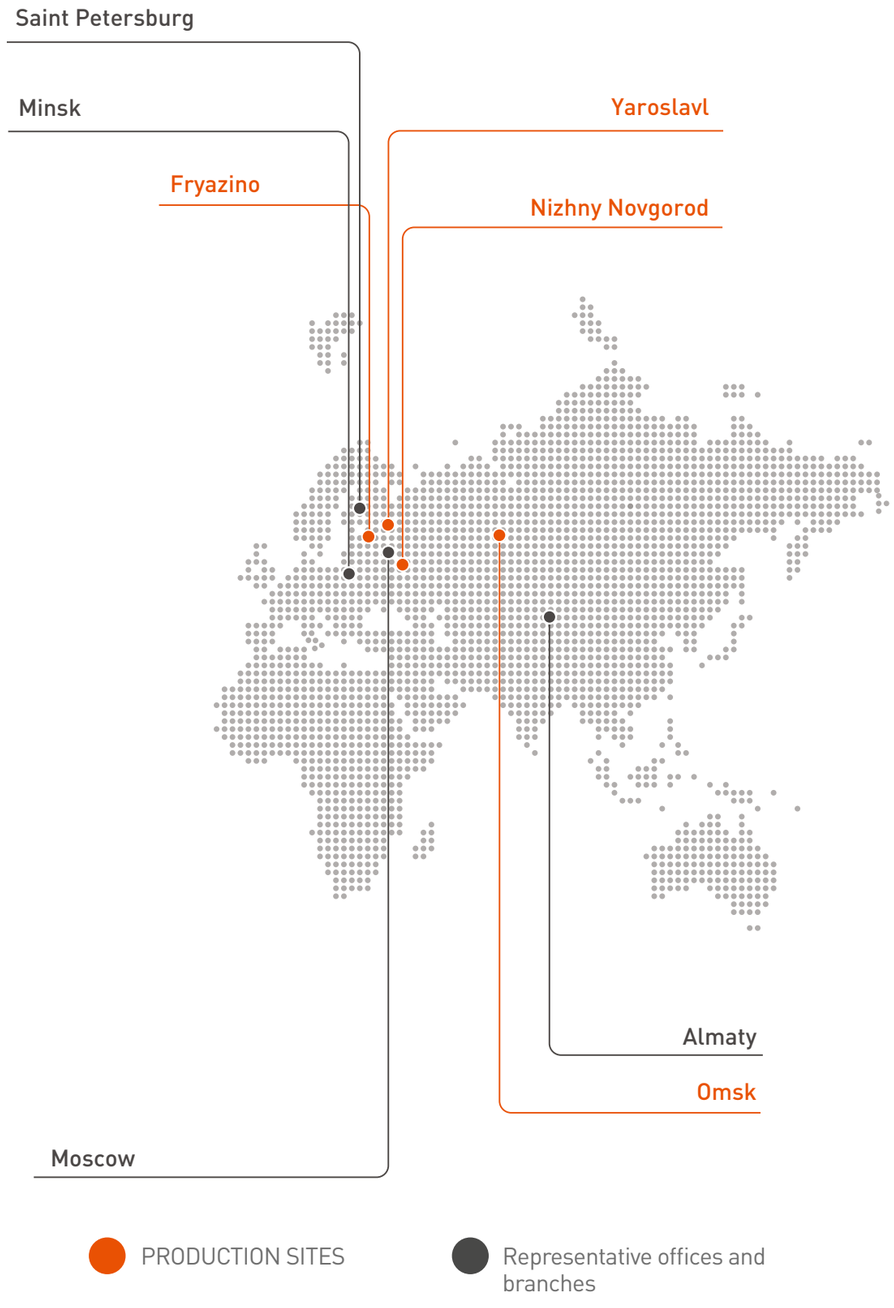
- Production of synthetic and mineral base oils (API groups I, II, III and V)
- Development and production of additive packages
- International network of service stations G-Energy Service
- The company's management system and production assets meet the requirements of international standards

ISO 9001 ISO 45001 ISO 14001

SCALE

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

* By sales of prepackaged products in 2024.
** According to 2024 data.



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

MWF (Metalworking Fluids)

There is a huge variety of methods for machining metals. In most cases, metalworking cannot take place without the use of special fluids.
One or another type of metalworking fluid is used depending on the machining operation, the metals and alloys being machined and the hardness of the water used to prepare the water-mixed fluid. Often the choice of the fluid requires an individual approach, taking into account all the features and requirements of the technological process of a particular production.

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

FUNCTIONS OF MWFS

- Lubrication
  - Improved processing quality
  - Reduced coefficient of friction
- Fast heat dissipation
  - Increased tool life
  - Increased cutting speed
- Efficient removal of chips and tool wear particlesc
- Efficient removal of chips and tool wear particles

GAZPROMNEFT METALWORKING FLUIDS

WATER-MISCIBLE

- **MINERAL** OIL CONTENT 50–80%
  - CUTFLUID STANDARD
  - CUTFLUID STANDARD LE
- **SEMI-SYNTHETIC** OIL CONTENT 10–50%
  - CUTFLUID EST
  - CUTFLUID AL
  - CUTFLUID UNIVERSAL
  - CUTFLUID UNIVERSAL LE
- **SYNTHETIC** MINERAL OIL FREE
  - CUTFLUID SYNTHETIC
  - CUTFLUID SYNTHETIC LE

GAZPROMNEFT MWF SERVICE INSTRUMENTATION KIT FOR MONITORING IS USED

- **METALWORKING FLUID SYSTEM CLEANER**
  - GAZPROMNEFT CLEANFLUID

OILS IMMISCIBLE

- CUTOIL GR 7
- CUTOIL GR 10
- CUTOIL 20
- CUTOIL 30
- CUTOIL 10 EP
- CUTOIL 20 EP
- CUTOIL 30 EP
- CUTOIL 50 EP
- PRESSOIL D 60
- FORMSYNTH EV 2

EVAPORATIVE

- FORMSYNTH EV 1H

GAZPROMNEFT CUTFLUID

WATER-MISCIBLE GROUP OF METALWORKING FLUIDS

GAZPROMNEFT CUTFLUID STANDARD

MINERAL MWF

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

Processed materials:
- All types of steels;
- cast iron;
- non-ferrous metals;
- aluminum.

Recommended concentration:
- drilling, turning, milling — 5-7%;
- tapping, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

- Excellent lubricating properties
- High corrosion protection
- Easy to mix with water
- Economy of use
- Low foaming
- Long service life of emulsions
- Good emulsion stability
- Use with water of a wide range of hardness (100–500 ppm $CaCO_3$)

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

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

Processed materials:
- All types of steels;
- cast iron;
- non-ferrous metals;
- aluminum.

Recommended concentration:
- drilling, turning, milling — 5-7%;
- tapping, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

- High level of import substitution
- Excellent lubricating properties
- High corrosion protection
- Easy to mix with water
- Economy of use
- Low foaming
- Long service life of emulsions
- Good emulsion stability
- Use with water of a wide range of hardness (100–500 ppm $CaCO_3$)

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

Gazpromneft Cutfluid EST — Biostable semi-synthetic water-miscible 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.

Recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- tapping, reaming, broaching — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

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

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

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

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

Recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- tapping, reaming, broaching — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

- Use for aerospace materials
- Efficient washing out of metal chips
- High corrosion protection
- Long service life of emulsions
- Economy of use
- Low foaming
- Excellent stability of the fine emulsion structure
- Excellent cooling properties
- Easy to mix with water

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

Gazpromneft Cutfluid Universal — semi-synthetic water-miscible fluid for a wide range of applications with mineral oil content. The concentrate provides versatility 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.

Recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- tapping, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

- Efficient washing out of metal chips
- High corrosion protection
- Excellent cooling properties
- Economy of use
- Long service life of emulsions
- Low foaming
- Easy to mix with water
- 50–700 ppm $CaCO_3$ — Use with water of a wide range of hardness
- Excellent stability of the fine emulsion structure

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

Gazpromneft Cutfluid Universal LE — is a modern universal semi-synthetic water-miscible cutting lubricant. Gazpromneft Cutfluid Universal LE coolant is developed in accordance with the requirements of the Russian metalworking market on the basis of carefully selected domestic components, including those produced in-house by Gazpromneft-Lubricants, using a balanced complex of emulsifiers and corrosion inhibitors developed in-house, effective detergents and biocidal additives.

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

Recommended concentration:
- grinding — 3-5%;
- drilling, turning, milling — 5-7%;
- tapping, reaming — 6-8%.

ADVANTAGES AND BENEFITS OF APPLICATION

- High level of import substitution
- High emulsification rate
- Free of chlorine, phenol, secondary amines
- Biological stability
- 50–700 ppm $CaCO_3$ — Remains stable in a wide range of water hardnesses
- Low foaming when operating on water of different quality
- Excellent cleaning properties for removal of chips, sludge from the machining zone

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

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

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

Recommended concentration:
- grinding — 3-5%.

APPLICATION

Grinding, honing, turning.

ADVANTAGES AND BENEFITS OF APPLICATION

- Easy removal of small metal chips
- High corrosion protection
- Excellent cooling properties
- Economy of use
- Low foaming
- No harm to the operator's health if the operating requirements are met
- Separation of oils entering the MWF
- Guaranteed emulsion stability
- Use with water of any hardness

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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 MWF

Gazpromneft Cutfluid Synthetic LE — is a modern universal synthetic water-miscible cutting and cooling lubricant. Gazpromneft Cutfluid Synthetic LE coolant 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 Ltd.

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

Recommended concentration:
- grinding — 3-5%.

ADVANTAGES AND BENEFITS OF APPLICATION

- High level of import substitution
- Free of chlorine, phenol, secondary amines
- Excellent cleaning properties for removing chips and sludge from the machining zone
- Economy of use
- Low foaming when operating on water of different quality
- Effectively separates the oils entering the MWF
- High corrosion protection
- Remains stable in a wide range of water hardnesses

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

Indicators	Method	Gazpromneft Cutfluid Synthetic LE
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	6
Density at 20 °C, kg/m³	GOST 3900	1015
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.

Purpose:
- To clean the machine system with MWF before changing the emulsion;
- to stabilize the emulsion in order to prolong its useful life.

The recommended concentration: 1–3%.

FLUID REPLACEMENT

- After the equipment systems have been completely cleaned of MWF, it is recommended to circulate the aqueous solution of the cleaner for at least 2 hours.
- If it is preferable to flush without stopping production, it is recommended to pour Gazpromneft Cleanfluid solution into the MWF used and work with this emulsion for 3-5 days.
- After the cleaning procedure, drain the cleaner/cleaner mixture from the MWF and flush the system with water before refilling with fresh coolant.
- Carefully monitor filters, machine ducts and tank level due to the destruction of deposits and biofilms.

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

Indicators	Gazpromneft Cleanfluid
Appearance	Clear liquid
Density at 20 °C, kg/m³, max	1 075
pH value of 1% in demineralized water	9,9

GAZPROMNEFT CUTOIL

OIL GROUP OF METALWORKING FLUIDS

GAZPROMNEFT CUTOIL GR 7

Synthetic fluid

Gazpromneft Cutoil GR 7 — low-viscosity oil-based Metalworking Fuid 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 metal alloys.

ADVANTAGES AND BENEFITS OF APPLICATION

- High level of import substitution
- 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 CHARACTERISTICS

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 Metalworking 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 APPLICATION

- High level of import substitution
- 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 CHARACTERISTICS

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	GOST 3900	857,0
Flash point, COC, °C	GOST 4333	179
Pour point, °C	GOST 20287 method B	–46

GAZPROMNEFT CUTOIL 20, GAZPROMNEFT CUTOIL 30

Semi-synthetic fluid

Gazpromneft Cutoil 20, Gazpromneft Cutoil 30 — multifunctional oil-based Metalworking 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 APPLICATION

- High level of import substitution
- Excellent cooling and flushing cpacity
- 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 CHARACTERISTICS

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, max	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, GAZPROMNEFT CUTOIL 20 EP, GAZPROMNEFT CUTOIL 30 EP

Semi-synthetic fluid

Gazpromneft Cutoil 10 EP, Gazpromneft Cutoil 20 EP, Gazpromneft Cutoil 30 EP — multifunctional oil-based Metalworking 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 APPLICATION

- High level of import substitution
- 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 CHARACTERISTICS

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, max	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 Metalworking 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 APPLICATION

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

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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, max	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 APPLICATION

- High level of import substitution
- Suitable for machining most metals and alloys
- Excellent lubricating properties
- Tool cost savings
- Low oil mist formation
- Does not contain chlorine
- No negative impact on human health if the rules of industrial hygiene are observed

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

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, max	GOST 3900	900
Flash point, COC, °C	GOST 4333	192

GAZPROMNEFT FORMSYNTH

LOW-VISCOSITY OIL AND RAPIDLY EVAPORATING FORMULATIONS

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 APPLICATION

- 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 CHARACTERISTICS

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, max	GOST 3900	759
Water content	GOST 1547	None

GAZPROMNEFT FORMSYNTH EV 2

Semi-synthetic fluid

Gazpromneft Formsynth EV 2 — low-viscosity, highly refined oil providing high lubricating properties due to an effective package of functional additives. The oil film can be easily removed from the surface of machined parts due to the low viscosity of the product, which allows for rapid subsequent machining operations. Recommended for punching, stamping, broaching and light drawing operations.

Processed materials:
• thin sheet steels;
• aluminum.

ADVANTAGES AND BENEFITS OF APPLICATION

- High level of import substitution
- Does not contain chlorine
- Does not contain silicone
- Protects tools from wear (matrixes, punches)
- Does not contain heavy metals, including zinc

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

Indicators	Method	Gazpromneft Formsynth EV 2
Appearance	Visually	Homogeneous liquid of yellow color
Kinematic viscosity at 40 °C, mm²/sec	GOST 33	2,6
Density at 20 °C, kg/m³, max	GOST 3900	803
Flash point, COC, °C	GOST 6356	90
Test of corrosive effect on the plate made of copper grade M1K or M2 according to GOST 859, points	GOST 2917	1b

RANGE OF METALWORKING FLUIDS

GAZPROMNEFT METALEWORKING FLUIDS

Types of MWFs	Title	Basic foundation	Lubrication	Cooling	Emulsion stability	Corrosion protection	Chip removal	Emulsion service life	Separation of extraneous oils	Safety	Low oil mist level	Evaporation 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	▰▰▰	▰▱▱	–	▰▰▰	–	–	–	✔	▰▰▰	–
	Formsynth EV 2	semi-synthetic	▰▰▰	–	–	–	–	–	–	✔	–	▰▱▱
Fast evaporating	Formsynth EV 1H	semi-synthetic	▰▱▱	–	–	–	–	–	–	✔	–	▰▰▰

Synthetic base — Mineral base — Semi-synthetic base

▰ Relative property stock index — ✔ The characterization in the headline applies to the product

METALWORKING FLUIDS RECOMMENDATIONS

In order to ensure proper operation and to maximize the efficiency of Gazpromneft Cutfluid MWFs, please observe the following recommendations.

METALWORKING FLUID GAZPROMNEFT CUTFLUID RECOMMENDATIONS

Product type and application	Read the documentation for MWFs carefully before use. Technical Information Sheet (TIS) — General product description, recommended concentration ranges, allowable water hardness, metal compatibility restrictions. Safety Data Sheet (SDS) — A summary of the product's characteristics, rules, regulations, safety requirements, and necessary anti-pollution measures.
Machine cleaning	The machine must be properly cleaned prior to priming. The use of Gazpromneft Cleanfluid system cleaner is mandatory for this purpose. Deposits and deposits in the machine must be removed. Note: The system cleaner has good detergent properties to help remove deposits, including those in the machine nozzles. However, the machine walls require subsequent mechanical cleaning.
Emulsion preparation	Mixing with mixers. For the preparation of a homogeneous emulsion and in order to achieve a stable concentration, we recommend the use of special mixers (Venturi nozzle dispensers). Manual mixing. The emulsion can be prepared manually if a mixer is not available. Always add water first, then slowly add the concentrate while mixing gently.
Water requirements	Before preparing the emulsion, make sure that the water hardness meets the requirements specified in the TIS document. In case of deviations, consult the Engineering and Technical Department (ETD) of Gazpromneft-Lubricants Ltd.
Concentration	The required concentration depends on the material and application/treatment. The recommended concentration is specified in the TIS. For central systems, we strongly recommend a buffer concentration of 1-2% over the minimum recommended value. Note: pay attention to the refractive factor. It can be found in the TIS for the product. Top-ups and emulsion adjustments should be made with a slightly concentrated (minimum 1%) emulsion or a highly concentrated (15% maximum) emulsion, if necessary, contact Gazpromneft-Lubricants Ltd. ETD for details. Never refill pure concentrate or pure water into the machine tank, this may destabilize the emulsion.
pH value	For long-term operation of the emulsion, the pH value of the emulsion must be monitored. The permissible pH range is specified in the TIS of the product. In case of pH drop: temporary increase of concentration is possible. In case of increased pH: contact ETD Gazpromneft-Lubricants Ltd.
Control	Daily checking of concentrations and entering information into the MWF monitoring log. It is recommended to monitor the pH on a weekly basis.
Extraneous oils	It is strongly recommended to remove foreign oil from the tank surface in order to maintain the emulsion in the machine system for a long time.
Product Safety Information	Information on sanitary and epidemiological rules and regulations (SanPiN) is contained in the product safety data sheet.

Depending on the metal to be processed, the requirements for the composition and characteristics of the MWF are determined.
and characteristics of the MWF. These requirements often determine the choice of MWF. Metals vary in hardness, brittleness, and corrosiveness, so the level of difficulty in machining different metals varies. Note that different types of MWFs can often be used for similar machining operations on the same metal. Therefore, the choice of MWF requires an individual approach.

GAZPROMNEFT METALWORKING FLUID RECOMMENDATIONS

Operations	Grinding	Honing	Turning	Milling	Drilling	Tapping	Reaming	Drawing/Toothing	Stamping
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	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	—	—
Low and medium alloy steel	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	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
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	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
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	Cutfluid EST Cutfluid Universal Cutfluid AL	Cutfluid EST	Cutfluid EST	Cutfluid EST Cutfluid AL	Formsynth EV 1H Formsynth EV 2
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	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
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	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	—

RECOMMENDATIONS FOR ADJUSTING THE CONCENTRATION OF THE WORKING EMULSION

FORMULAS FOR CALCULATING THE CONCENTRATION ADJUSTMENT

W — concentrations, %
V — volumes, liters

Increased concentration required

$$V_{\text{emulsion added}} = \frac{V_{\text{emulsion poured}} \left(W_{\text{required}} - W_{\text{current}} \right)}{W_{\text{emulsion added}} - W_{\text{required}}}$$

Decreased concentration required

$$V_{\text{emulsion added}} = \frac{V_{\text{emulsion poured}} \left(W_{\text{current}} - W_{\text{required}} \right)}{W_{\text{required}} - W_{\text{emulsion added}}}$$

Gazpromneft-Lubricants Ltd. recommends to use emulsions with 12% concentration to increase the concentration of working emulsion, and to decrease the concentration of working emulsion we recommend to use 1% emulsion. In this case, the formulas for calculating the refill volume are as follows:

Increased concentration required

$$V_{\text{emulsion added}} = \frac{V_{\text{emulsion poured}} \left(W_{\text{required}} - W_{\text{current}} \right)}{12\% - W_{\text{required}}}$$

Decreased concentration required

$$V_{\text{emulsion added}} = \frac{V_{\text{emulsion poured}} \left(W_{\text{current}} - W_{\text{required}} \right)}{W_{\text{required}} - 1\%}$$

! In case if it is possible to add only water to the operating emulsion to reduce the concentration, the formula for calculation will look as follows:

$$V_{\text{emulsion added}} = \frac{V_{\text{emulsion poured}} \left(W_{\text{current}} - W_{\text{required}} \right)}{W_{\text{required}}}$$

! Gazpromneft-Lubricants Ltd. does not recommend adding net water to reduce the concentration of the operating emulsion, as in this case problems with the stability of the operating emulsion may appear, which will adversely affect the processing of parts and equipment.

GAZPROMNEFT CUTFLUID STORAGE RECOMMENDATIONS

Concentrates of **Metalworking Fluids** are systems of complex components. It is recommended to store these compositions not more than 1 year. This is due to the fact that concentrates of Metalworking Fluids are colloidal systems in which the concentration of many additives may decrease over time due to sedimentation and adsorption processes. This is particularly relevant for defoamers, biocides and some anti-wear and anti-seize additives.
In addition to physicochemical changes, many active ingredients can change their structure over time, which can lead to a decrease in their chemical activity. These phenomena lead to the fact that if the storage time is exceeded, MWFs may lose some of their original properties and may not work optimally in the equipment. In order to be sure of preservation of all technological characteristics of our products, we recommend to observe not only the terms, but also the conditions of product storage.

! **In case the temperature in the storage room drops below 0 °C, Gazpromneft-Lubricants recommends mixing the concentrate before use by rolling the drum on the floor for 15-20 minutes.**

Gazpromneft-Lubricants does not recommend to overfreeze water-miscible products.
If the concentrate has been subjected to freezing, mixing the container with it before pouring it into the equipment is mandatory.

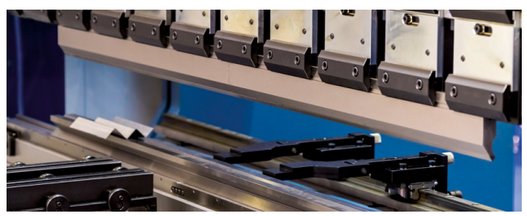
If after opening the MWF container it has not been used up completely, we recommend to close it tightly with a lid to ensure maximum tightness to prevent moisture and contamination. It is also inadmissible to pour cutting fluid concentrate into galvanized containers, as zinc may react with active components of the product to form zinc soap, which will have an extremely negative effect on cutting fluid properties and emulsion separation will occur.

HYDRAULIC OILS

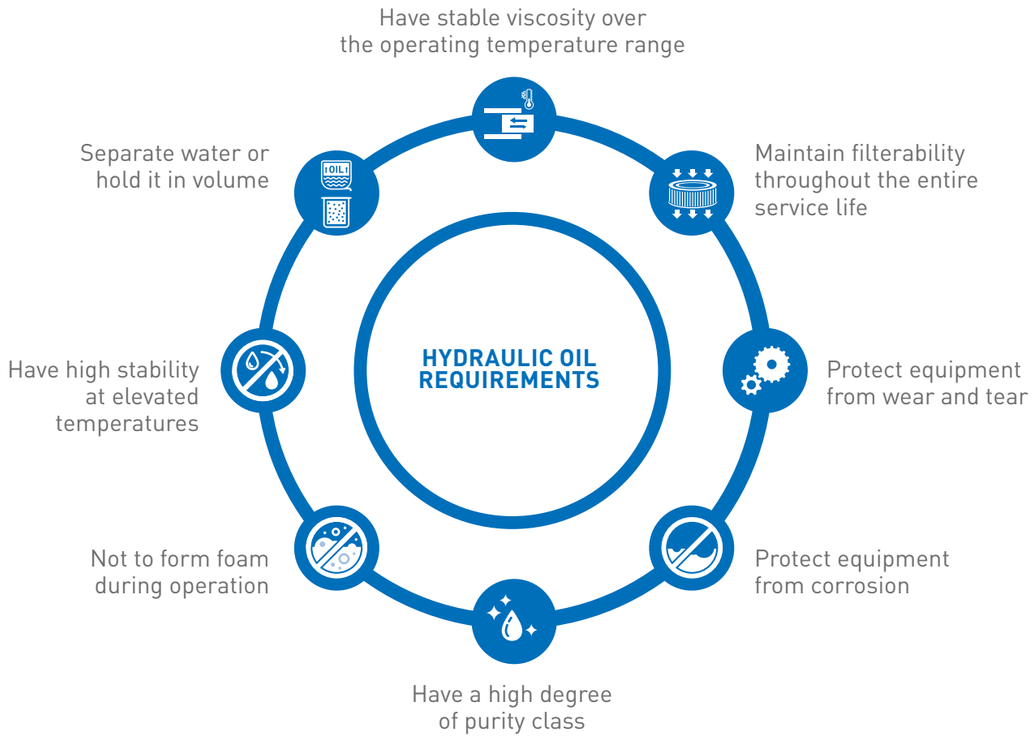
HYDRAULIC OILS

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

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



Hydraulic oil is the working body of the hydraulic system, largely determining its operability, efficiency and service life.



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:
ISO VG 22:
DIN 51524 Part 3 (HVLP)
ISO VG 32, 46, 68:
Bosch Rexroth RDE 90235
DIN 51524 Part 3 (HVLP)
Denison Hydraulics HF-0,1,2
Eaton E-FDGN-TB002-E
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:
- Material handling and transportation machines and other special machinery;
- machine tools, presses, manipulators and other stationary equipment.

ADVANTAGES

Synthetic base	Excellent viscosity-temperature properties	Excellent corrosion protectio	High oxidation stability	Zinc-free anti-wear additives
▼	▼	▼	▼	▼
Extended oil life	Year-round outdoor operation	Reduced unscheduled downtime	Longer service life	Compliance with OEM specific requirements

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

Zn BASED For use in equipment where zinc-containing oils are recommended

Gazpromneft Hydraulic HVLP — a series of multigrade hydraulic oils designed for use in hydraulic equipment systems for which both low and high operating temperatures are typical. 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:
ISO VG 10, 15, 22:
DIN 51524 Part 3 (HVLP)
ISO 11158 HV
ISO VG 32, 46, 68:
Beltrameli
Bosch Rexroth RDE 90235
Denison HF-0, -1, -2
DIN 51524 Part 3
Eaton E-FDGN-TB002-E
Fives Cincinnati P-68 (ISO 32); Fives Cincinnati P-69 (ISO 68); Fives Cincinnati P-70 (ISO 46)
ISO 11158 HV

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:
- Material handling and transportation machines and other special machinery;
- 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 lubricating properties
- Excellent viscosity-temperature properties → Year-round outdoor operation
- High demulsifying properties → Reduced unscheduled downtime
- Excellent filterability → Reliable operation of equipment
- Excellent anti-wear properties → Longer service life of equipment

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

Zn BASED For use in equipment where zinc-containing oils are recommended

Gazpromneft Hydraulic HLP — a series of hydraulic oils designed for use in hydraulic drives of stationary equipment where excellent anti-wear properties, effective corrosion protection, excellent filterability and minimization of deposits are required. The oils in this series meet the operational requirements of most hydraulic systems.

Specifications:
AIST 126
ASTM D6158 HL
ASTM D6158 HM
Beltramelli
Bosch Rexroth RDE 90235
Danieli (ISO 46; 68)
Denison Hydraulics HF-0,1,2
DIN 51524 Part 2 (HLP)
Eaton E-FDGN-TB002-E.
Fives Cincinnati P-68 (ISO 32); Fives Cincinnati P-69 (ISO 68); Fives Cincinnati P-70 (ISO 46)
GB 111118.1 L-HM
ISO 11158 HM
SEB 181 222

APPLICATION

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

ADVANTAGES

- High quality base oil → Excellent lubricating properties
- Excellent anti-wear properties → Longer service life of equipment
- Excellent corrosion protection → Reduced unscheduled downtime
- Excellent filterability → Reliable operation of equipment
- High purity class → Increased reliability and longer equipment life

GAZPROMNEFT HYDRAULIC HZF-32, -46, -68

Zn FREE

For use in equipment requiring zinc-free hydraulic oils

Gazpromneft Hydraulic HZF — a series of zinc-free hydraulic oils specifically designed for industrial equipment hydraulic systems operating in constant temperature environments where zinc-free anti-wear additives are 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

Constant-temperature industrial equipment hydraulic systems that require zinc-free hydraulic oils.

ADVANTAGES

- High quality base oil → Excellent lubricating properties
- Excellent anti-wear properties → Longer service life of equipment
- Excellent corrosion protection → Reduced unscheduled downtime
- Excellent filterability → Reliable operation of equipment
- Zinc-free anti-wear additives → Compliance with OEM specific requirements

GAZPROMNEFT HYDRAULIC HLPD-32, -46, -68

Zn FREE

For use in equipment requiring zinc-free hydraulic oils

Gazpromneft Hydraulic HLPD — a series of ashless hydraulic oils designed 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 fine suspension and protect hydraulic equipment surfaces from wear, corrosion, ensuring efficient operation of equipment.

Specifications:
DIN 51524 Part 2 (with the exception of ASTM D1401 Demulsifying Properties, which is not applicable to HLPD oils).

APPLICATION

- Hydraulic systems of industrial equipment and special machinery operating in conditions where water ingress is unavoidable and cannot be removed 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 waterlogged conditions
- Excellent corrosion protection → Reduced unscheduled downtime
- Excellent anti-wear properties → Longer service life of equipment
- High purity class → Increased reliability and longer equipment life

Data on typical physicochemical characteristics of products

GAZPROMNEFT HYDRAULIC HVZF — 22, 32, 46, 68

Indicators	Method	ISO Viscosity Grade			
		22	32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D 445	22	33	47	70
Kinematic viscosity at 100 °C, mm²/s	ASTM D 445	5	6,6	8,3	10,8
Kinematic viscosity at negative temperatures °C, mm²/s	ASTM D 445	714 (-20)	1349 (-20)	964 (-10)	-
Viscosity index	ASTM D 2270	164	164	150	143
Flash point, °C	ASTM D 92	210	6	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 D 4052	840	844	843	850
Corrosion on copper plates, points	ASTM D 130	1a	1a	1a	1a

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

Indicators	Method	ISO Viscosity Grade					
		10	15	22	32	46	68
Kinematic viscosity at 100 °C, mm²/s	ASTM D445	10	15	22	32	46	68
Kinematic viscosity at -20 °C, mm²/s	ASTM D445	3	3,9	5	6,3	7,9	10,4
Kinematic viscosity at -10 °C, mm²/s	ASTM D445	-	-	749	1502	-	-
Viscosity index	ASTM D445	-	-	-	-	1112	1846
Flash point, °C	ASTM D2270	171	161	151	147	143	144
Pour point, °C	ASTM D92	138	168	199	218	201	224
Purity class (* on request)	GOST 20287	-55	-51	-52	-46	-43	-40
Density at 20 °C, kg/m³	GOST 17216	14 (*12)	14 (*12)	14 (*12)	14 (*12)	14 (*12)	14 (*12)
Corrosion on copper plates, points	ASTM D4052	830	833	840	850	856	859

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

Indicators	Method	ISO Viscosity Grade			
		32	46	68	100
Kinematic viscosity at 40 °C, mm²/sec	ASTM D 445	32	46	68	100
Kinematic viscosity at 100 °C, mm²/s	ASTM D 445	5,5	6,8	8,8	11,4
Viscosity index	ASTM D 2270	104	99	97	95
Flash Point Open Cup, °C	ASTM D 92	223	243	241	246
Pour point, °C	GOST 20287	-41	-38	-35	-31
Acid value, mg KOH/g	GOST 11362	0,75	0,69	0,73	0,73
Purity class (* on request)	GOST 17216	12 (*10)	12 (*10)	12 (*10)	12 (*10)
Density at 20 °C, kg/m³	ASTM D 4052	872	876	880	886

GAZPROMNEFT HYDRAULIC HZF — 32, -46, -68

Indicators	Method	ISO Viscosity Grade		
		32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D 445	32	46	68
Kinematic viscosity at 100 °C, mm²/s	ASTM D 445	5,5	6,8	8,6
Viscosity index	ASTM D 2270	101	100	97
Flash Point Open Cup, °C	ASTM D 92	228	255	251
Pour point, °C	GOST 20287	-40	-36	-31
Acid value, mg KOH/g	GOST 11362	0,2	0,2	0,2
Purity class (* on request)	GOST 17216	10	10	10
Density at 20 °C, kg/m³	ASTM D 4052	867	873	879

GAZPROMNEFT HYDRAULIC HLPD — 32, -46, -68

Indicators	Method	ISO Viscosity Grade		
		32	46	68
Kinematic viscosity at 40 °C, mm²/sec	ASTM D 445	32	48	68
Kinematic viscosity at 100 °C, mm²/s	ASTM D 445	5,3	6,9	8,6
Viscosity index	ASTM D 2270	97	100	98
Flash Point Open Cup, °C	ASTM D 92	218	230	236
Pour point, °C	GOST 20287	-39	-37	-33
Acid value, mg KOH/g	GOST 11362	0,3	0,2	0,3
Purity class (* on request)	GOST 17216	12	12	12
Density at 20 °C, kg/m³	ASTM D 4052	871	873	873

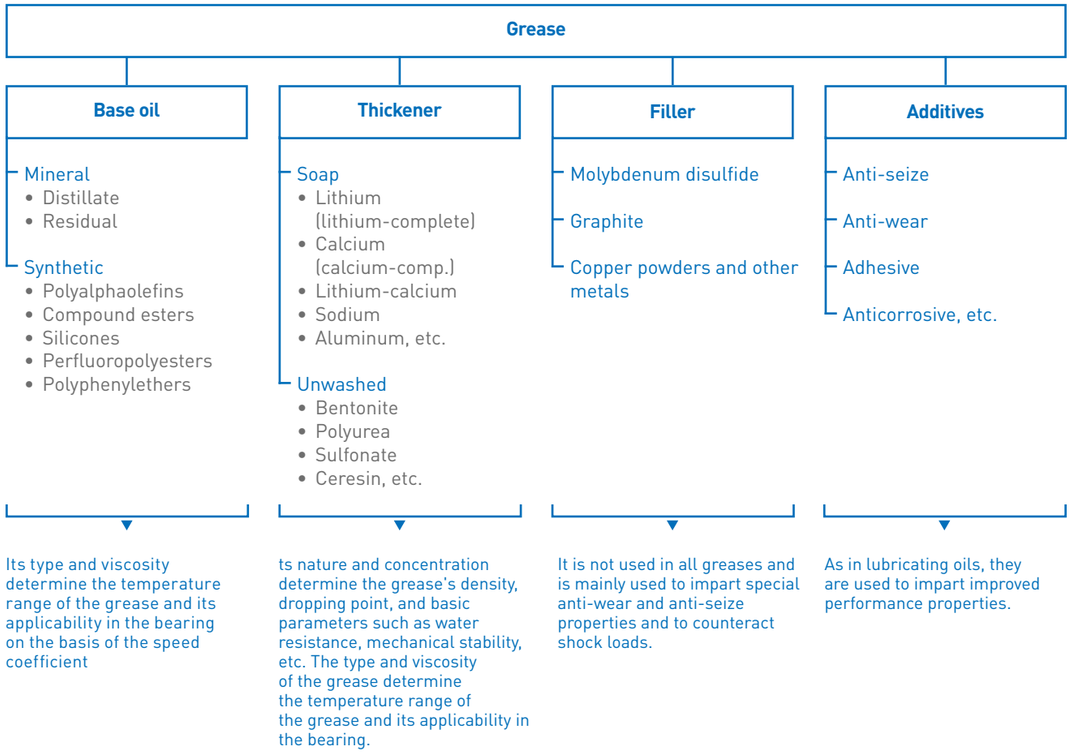
GREASES

GREASES

Plastic 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 advantages greases are used in such units as rolling and friction bearings, ball and sleeve bearings, ball joints, guides, gears, as well as centralized lubrication systems of industrial equipment and machinery.

Unlike oils, grease is a multi-component system.



! In order 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 evaluate the possibility of mixing with residues of the previously used grease.

GAZPROMNEFT GREASE HIGHSPEED EP 3

SPECIAL · Energy · High-speed equipment

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

Color

Light beige

Temperature range:

–40 °C **+140 °C**

ADVANTAGES

- Group III base oils → 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 demanding environments
- EP — Anti-scuffing additives → Excellent wear protection under high load conditions

APPLICATION

- Rolling bearings for electric motors.
- High-speed spindle bearings and other rolling bearings.

GAZPROMNEFT GREASE SYNTH LX EP 2

UNIVERSAL

Wide temperature range

Gazpromneft Grease Synth LX EP 2 — universal 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 grease for various equipment and machinery.

Color

Light beige

Temperature range:

–50 °C **+150 °C**

ADVANTAGES

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

APPLICATION

- Various equipment and machinery operating at extremely low temperatures.
- For centralized lubrication systems and as embedded lubrication.
- High-speed rolling bearings for electric motors, spindles, etc.

GAZPROMNEFT PREMIUM GREASE EP 00, 0, 1, 2

UNIVERSAL

Extremely loaded bearings

Wide temperature range

Gazpromneft Premium Grease EP 00, 0, 1, 2 — universal greases based on semi-synthetic base oils and lithium complex thickener containing anti-wear additives (EP additives). 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:

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

ADVANTAGES

- Semi-synthetic oils → Wide temperature range of application.
- Li-X: Complex lithium thickener → Excellent load capacity
- Complex lithium thickener → Guaranteed corrosion protection in demanding environments
- EP: Anti-scuffing additives → Excellent wear protection under high load conditions

APPLICATION

- Various equipment operating under medium to heavy loads over a wide temperature range.
- For centralized lubrication systems (NLGI 00,0,1 for slideways; NLGI 2 for high-speed rolling bearings).
- As a tab for rolling and plain bearings (NLGI 2).

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

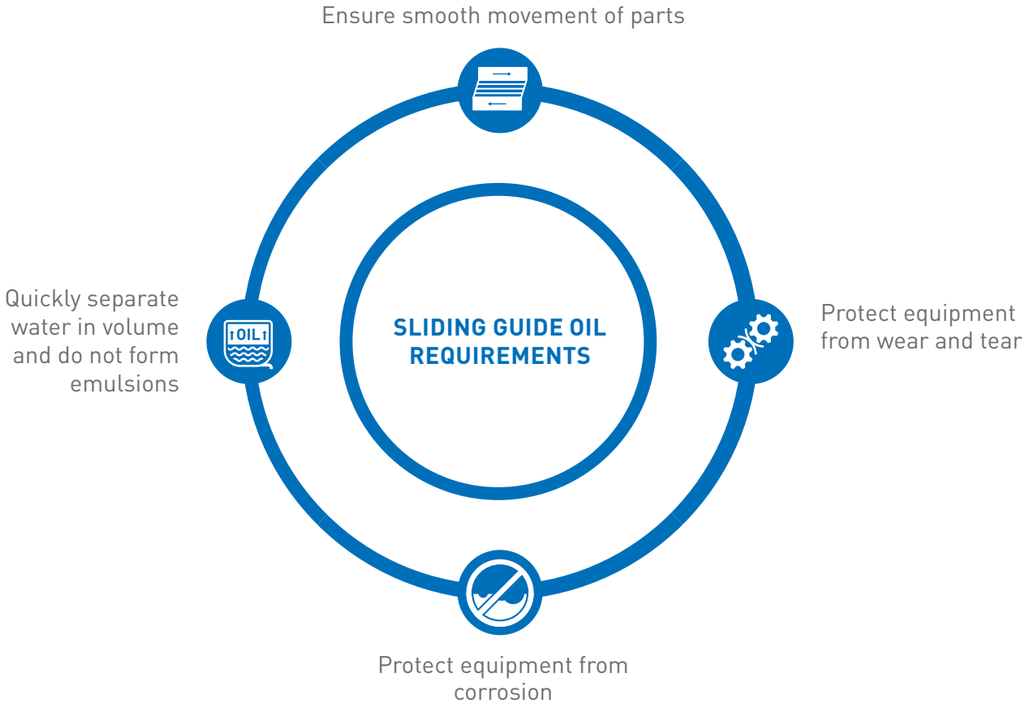
Indicators	Method	Gazpromneft Grease Synth LX EP 2	Gazpromneft Premium Grease EP				Gazpromneft Grease HighSpeed EP 3
			00	0	1	2	
Compliance with DIN 51502	DIN 51502	KPHC 2 N-50	KP 00 K-50	KP 0 K-50	KP 1 P-40	KP 2 P-40	KP 3 N-40
NLGI grade	ASTM D217	2	00	0	1	2	3
Type of thickener	—	Lithium complex soap					
Dropping point, °C	GOST 32322	> 250	—	>210	>250	>250	>250
Base oil	—	PAO	Semi-synthetic				Group III base oil
Base oil kinematic viscosity at 40 °C, mm²/s	GOST 33	100	100	100	100	100	45
Welding load on the 4-ball friction machine, N	GOST 9490	2 930	3 283	3 283	3 283	3 283	2 764
Wear on 4-ball friction machine, wear spot diameter, mm	GOST 9490	0,6	0,5	0,5	0,5	0,5	0,6

Note. The specified values of physicochemical indicators are typical and may vary slightly from batch to batch.
The main limits of values are presented in the normative documentation. Data for 2024.

SLIDING GUIDE OILS

SLIDING GUIDE OILS

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



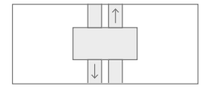
GAZPROMNEFT SLIDE WAY-32, 68, 220

Gazpromneft Slide Way — a series of oils designed for lubricating the 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 processing and long service life of the equipment.

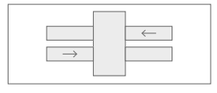
Specifications:
DIN 51524 Part 2 HLP;
DIN 51517 Part 3 CLP;
DIN 51502 CGLP;
ISO 19378 (L-GA);
ISO 6743-13: L-GA/GB;
MAG-47 (ISO 68); MAG-50 (ISO 220).

APPLICATION

ISO 220
Vertical slide rails



ISO 32, 68
Horizontal slide rails



ADVANTAGES

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

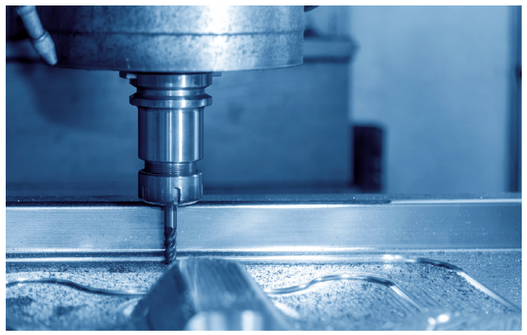
TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

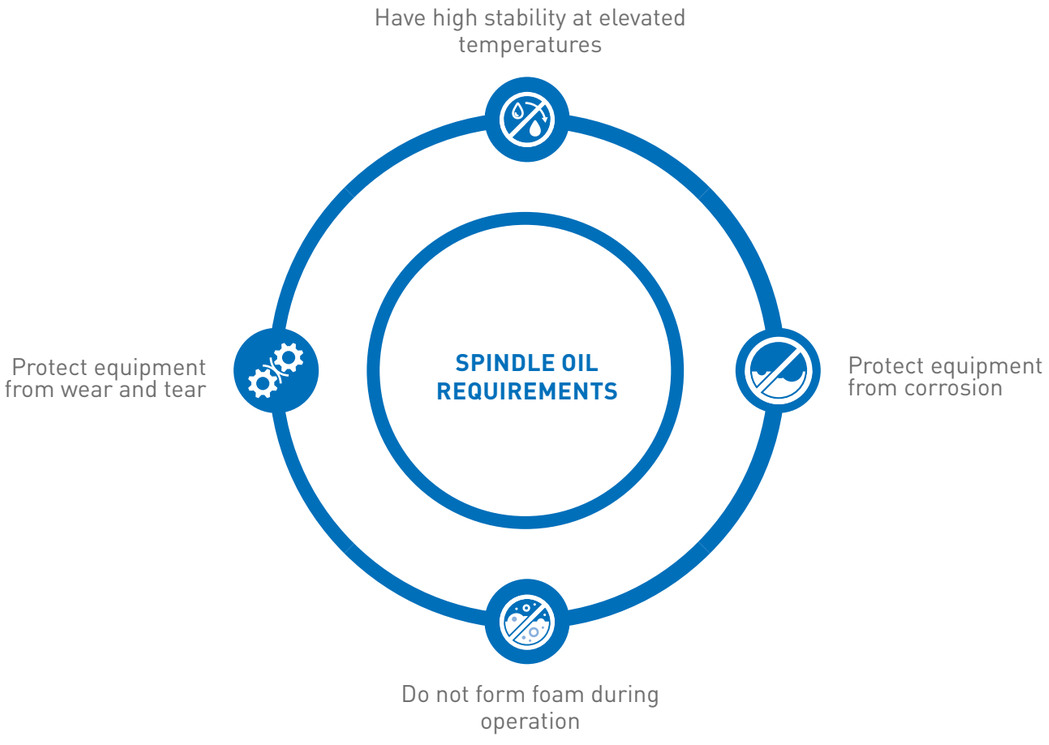
Indicators	Method	ISO Viscosity Grade		
		32	68	220
Kinematic viscosity at 40 °C, mm²/sec	ASTM D 445	32	68	220
Kinematic viscosity at 100 °C, mm²/s	ASTM D 445	5,4	9,6	18,3
Viscosity index	ASTM D 2270	102	121	91
Flash Point Open Cup, °C	ASTM D 92	220	240	245
Pour point, °C	GOST 20287	-40	-25	-18
Acid value, mg KOH/g	GOST 11362	0,5	0,5	0,5
Density at 20 °C, kg/m³	ASTM D 4052	0,866	0,88	0,892

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. In view of the requirements for high precision material processing, the characteristic features of proper bearing operation are vibration-free, stable operation under high temperatures and loads. Due to the high rotational speed of the bearing, the reliable operation of the machine and the overall quality of the work depends on the properties of the lubricants.





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

Gazpromneft Velocite Oil 2, Gazpromneft Spindle Oil-7, -10 — process oils based on highly refined low-viscosity oil distillates with the addition of a highly effective additive package that improves antioxidant, anticorrosive 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 corrosion protection	Foaming stability	Effective wear protection
Minimal deposit formation	Reduced costs for additional spare parts	Reliable operation of equipment	Reliable machine operation

TYPICAL PHYSICOCHEMICAL CHARACTERISTICS

Indicators	Method	Product Name		
		Gazpromneft Velocite Oil 2	Gazpromneft Spindle Oil-7	Gazpromneft Spindle Oil-10
Appearance	p. 7.3 STO 77820966-075-2018	Homogeneous transparent liquid without visible foreign matter		
Kinematic viscosity at 40 °C, mm²/s, within the range	GOST 33	2,5-3,0	7,5	10
Mass fraction of sulphur, %, max.	GOST 1431	0,12	0,2	
Acid value, mg KOH/g, max.	GOST 5985	0,1	0,02	
Tests of corrosive action on the plate made of copper M1 or M-2 according to GOST 859	GOST 2917	Withstanding		
Flash Point Open Cup, C, min	GOST 6356	98	146	173
Pour Point, °C, max	GOST 20287 method B	-54	-45	-39
Density, at ^{20} °C, g/cm³, max	GOST 3900	795	827	

INFORMATION AND TECHNICAL SUPPORT

G-Energy Academy

G-Energy Academy — a unique system for training qualified personnel using the latest digital technologies, virtual and augmented reality.

Areas of work

G-Energy Academy

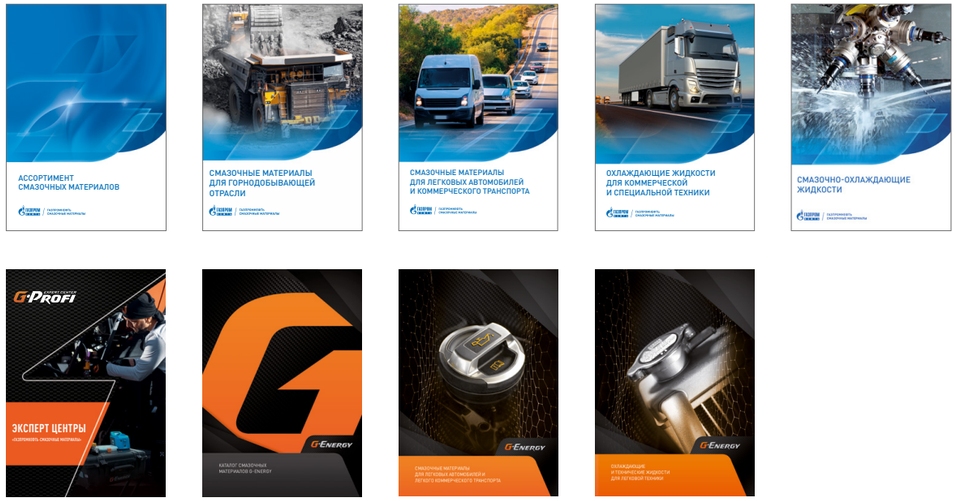
- Preparation of online courses
- Face-to-face trainings and webinars
- Development of product catalogs and leaflets
- Technical support (on lubricants application)
- Certification of distributor employees

Coverage

All countries of supply

Information material

>30 publications in various fields



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 videos, virtual tour of the plant, VR trainings

3 700+ product items

40+ video courses

2 000+ users

22 countries

13 simulations and clips

10 adaptation languages

Contact information

Techservice@gazprom-neft.ru

TECHNICAL SERVICES

Technical services of Gazproneft-Lubricants are a set of engineering and technical solutions that allow the consumer to choose the best option for purchasing and consuming products, as well as to use them economically within a reasonable period of time dictated by the interests of the company.

The purpose of service is to offer consumers the available products manufactured by Gazproneft-Lubricants Ltd. and to assist them in obtaining the greatest benefits from the purchased goods.

To implement technical services, the company's specialists use a unique set of mobile diagnostic equipment that allows them to competently assess the condition of the lubricant and the unit in which it is used at any point in real time.

IR spectrometer

xRF-spectrometer

Mini viscomete

Troubleshooting tool kit

MWFs condition monitoring instrumentation kit

OTS-MONITORING

Operational monitoring of products manufactured by Gazpromneft-Lubricants Ltd.

PURPOSE

Monitoring of the state of lubricants and units of the company's machinery during operation.

BACKGROUND

- Long-term monitoring of the use of Gazpromneft-Lubricants Ltd. oils.
- Sampling of operating oil from the units of the company's fleet, according to the approved sample, during maintenance.
- The samples are examined both using a mobile laboratory and in an independent testing center.
- Data on the results of research for each machine are sent to your personal account on the service portal.

RESULT

- Obtaining information on the technical condition of fleet units.
- Real-time assessment of the performance of the applied lubricant in specific operating conditions.
- Identification of the need to adjust lubricant change intervals.
- Early detection of malfunctions.

METALLWORKING FLUIDS SERVICE

Monitoring of MWFs working emulsion condition indicators

PURPOSE

Systematic monitoring of the MWF condition during operation.

BACKGROUND

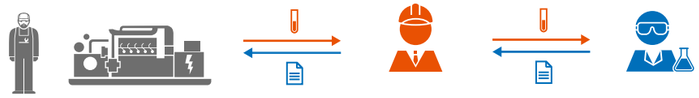
- Sampling of MWF working emulsion from the plant equipment according to the approved program.
- The samples are analyzed using the Gazpromneft MWF Service instrument set.
- Formation of recommendations on corrections to bring the fluid parameters back to the required values.

RESULT

- Identifying the need to adjust MWF operating parameters.
- Ensuring MWF performance and extending it's life.
- Timely protection of equipment from corrosive effects.

OIL EXPERT SERVICE

Examination and analysis of operational situations



PURPOSE

Resolution of disputable operational situations arising from the use of Gazpromneft-Lubricants products.

BACKGROUND

- Retrospection of an operational situation: collecting and analyzing information about the event.
- Examination of a sample of running oil and a sample of oil from the factory packaging in an independent laboratory center, evaluation of changes in its parameters.
- Determination of the most probable causes of the operational situation.

RESULT

- A technical report indicating the probable causes of the operational situation and recommendations for preventing it in the future.

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Arguments to choose
Gazpromneft–Lubricants Ltd.

- OEM approvals, recommendations on application, strong references from main mining industry players
- Optimal drain intervals
- Complex range of products and services
- Technical expertise in the application of lubricants.
- Optimized logistics, extensive supply chain

GAZPROM NEFT / GAZPROMNEFT LUBRICANTS

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