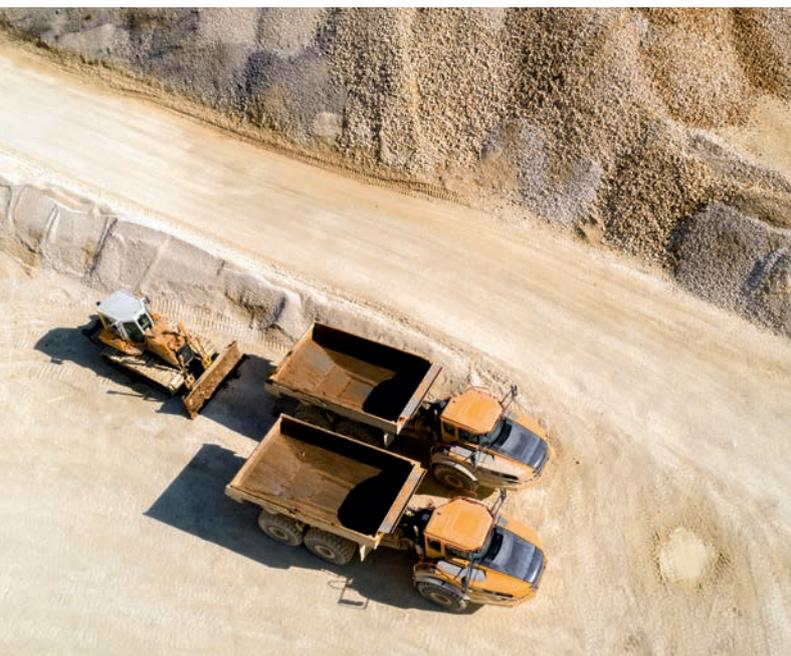


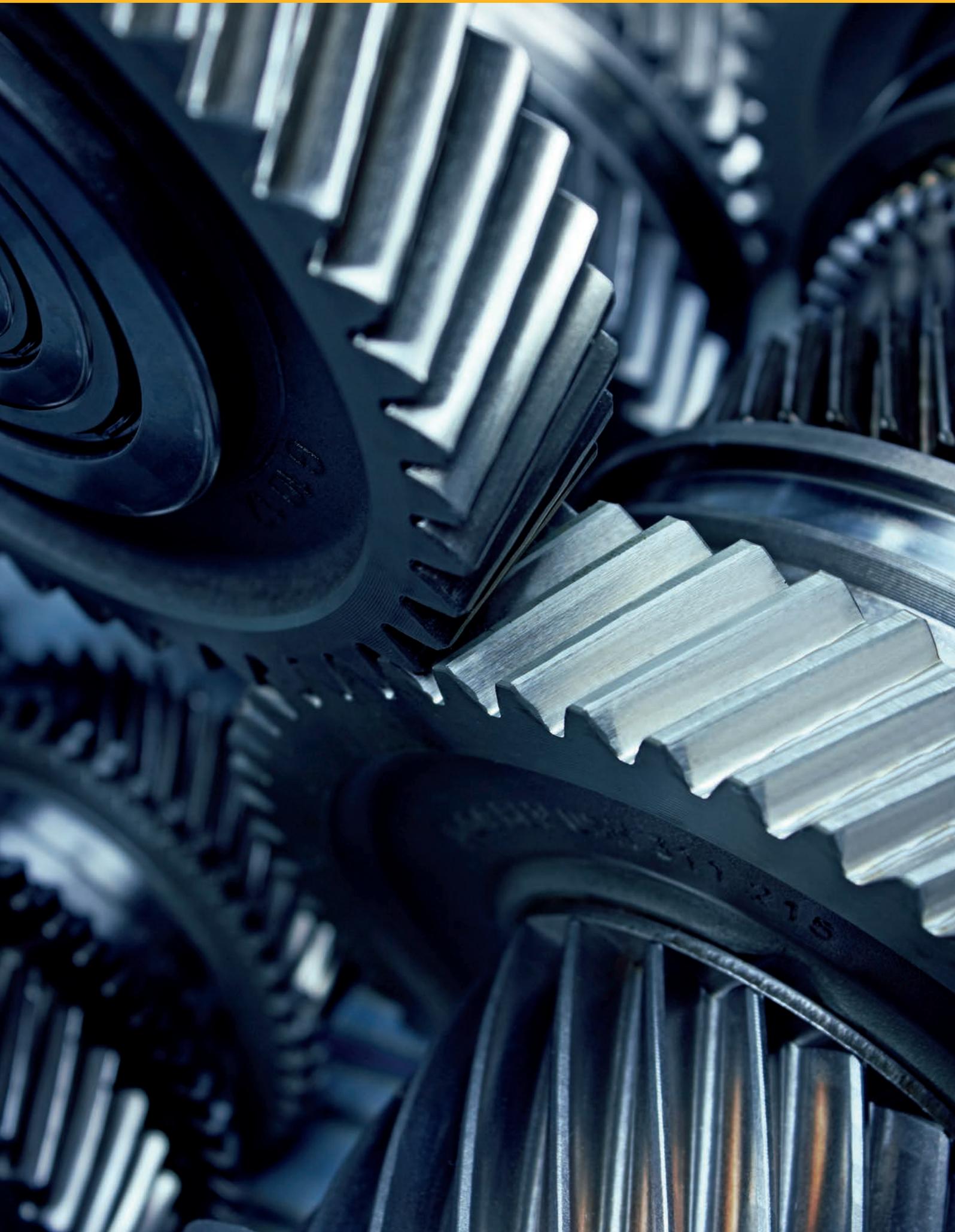


REPSOL

Let's invent the future

Catalogue of High-Performance Lubricating Greases





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REPSOL

Technology Lab



Technology
Lab

Introduction

When you choose Repsol Lubricants, **you get so much more**. Because in addition to a product of the highest quality, you also get the Repsol guarantee: an **integrated global energy company** which carries out exploration, production, refining, distribution and marketing activities in **more than 90 countries**. It provides millions of people and companies all over the world with the most efficient, responsible, and innovative, energy solutions.

You also get the **most innovative** products. At Repsol, we have a cutting-edge **Repsol Technology Lab** that is at the forefront of R&D&I worldwide. There, our technicians and researchers are constantly striving to improve every product we offer to ensure maximum efficiency, as well as enhanced technical and environmental quality.

In order to guarantee excellent performance from your machinery, the Repsol team offers you the latest **catalogue of high-performance lubricating greases**. This full range meets the needs of the most diverse industrial sectors, as well as the requirements of equipment used in agriculture, mining, and other public works. We have also launched a new range suitable for use in the food industry with NSF category H1 certification.

This catalogue allows you to select everything from **multi-purpose greases**, which meet the lubrication needs of the majority of facilities, to **special products** that are able to work in extremely demanding load, temperature or environmental contamination conditions. Compliant with the most stringent quality standards, the exclusive formulation of our greases provides excellent performance in all types of machinery, **increasing its service life and providing extra reliability**. This makes the Repsol range of greases the best investment for your company.





1. General criteria for selecting a grease

A grease is a semi-fluid product which consists of dispersion of a thickening agent in a liquid lubricant, together with other ingredients that give the grease special properties [additives].

The structure of the grease allows the lubricant to remain in a solid state until the **shear stress** between surfaces reaches a certain level, and **the grease begins to flow** and becomes a mobile compound.

Lubricating greases may be selected on the basis of a number of different criteria.

Some of these criteria are shown below:

- 1. Industry segment
- 2. Operating conditions

1. INDUSTRY SEGMENT				
Off-Road/ Mining Construction	Agriculture/ Public Works	Paper Industry	Steel Industry	Food Industry
Grasa Lítica EP Grasa Molibgras EP Grasa OGL Grasa Hammer Grasa Complex Therm	Grasa Cálcica Grasa Lítica MP Grasa Lítica EP Grasa Especial EP 2/3 Grasa Lítica Agr 00 Bio Grasa Cálcica EP 2	Grasa Calcium Sulfonate Grasa Lítica Compleja Industria	Grasa Lítica EP Grasa Calcium Sulfonate Grasa Lítica Compleja Industria	FG Calcium Sulfonate FG Aluminium Complex

2. OPERATING CONDITIONS				
Very high temperatures	Low temperatures	Greases with molybdenum disulphide	Low speeds/ High loads	Water resistant
Grasa Lítica Compleja Industria Grasa Lítica Compleja Automoción Grasa Complex Therm Grasa Complex Synt Grasa Calcium Sulfonate FG Aluminium Complex FG Calcium Sulfonate	Grasa Complex Synt	Grasa Molibgras EP Grasa Complex Therm	Grasa Lítica EP Grasa Lítica Especial EP 2/3 Grasa Molibgras EP Grasa Complex Therm FG Aluminium Complex	Grasa Cálcica Grasa Calcium Sulfonate Bio Grasa Cálcica EP 2 FG Calcium Sulfonate

To select the correct grease, the three components that it is comprised of must be taken into account: **the lubricating base oil, the thickener, and the additives.**

The most important properties to be considered when choosing the greases are as follows:

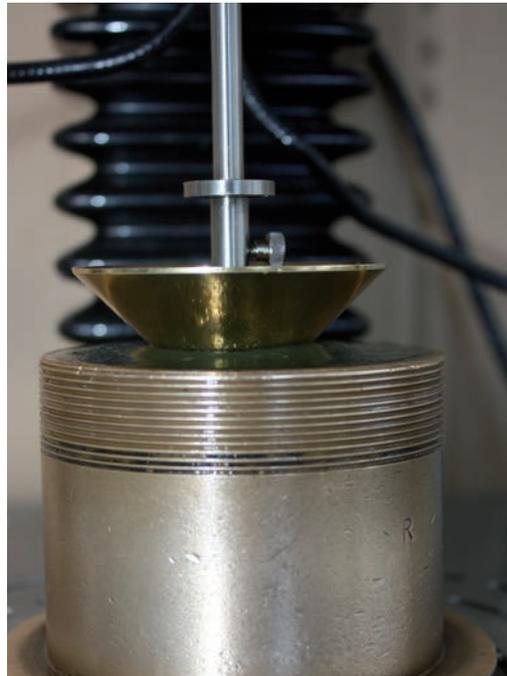
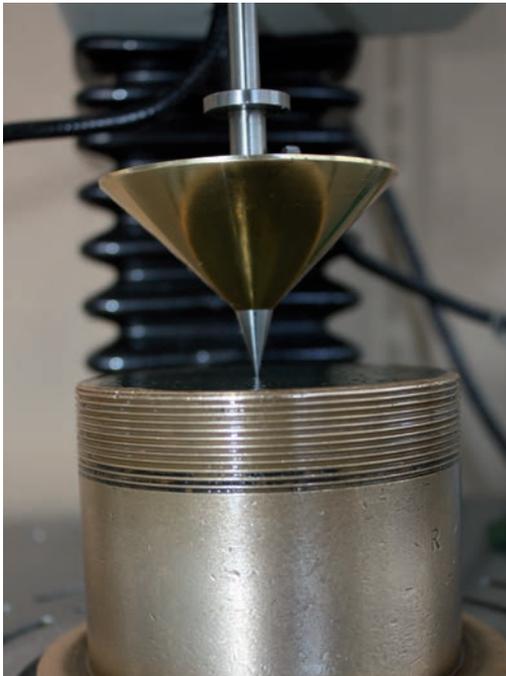
- Consistency
- Base oil viscosity
- EP and anti-wear additives
- Dropping point
- Resistance to high/low temperatures
- Resistance to environmental working conditions

CONSISTENCY

The consistency determines the thickness of the grease and is influenced by the type and percentage of the thickener used. It also provides the structure (like a sponge) that stores the lubricant base oil.

The NLGI (National Lubricating Grease Institute) grades show the penetration of a standard cone in a sample of grease under certain conditions. A low value indicates a high level of penetration, while a high NLGI value will be obtained for a harder grease.

As general recommendations, we use consistency grades 1 and 2 for general lubrication, the lowest grades [0 and 00] for centralised systems and gear lubrication, and the highest grades [3] for elements in high temperature conditions.



CONSISTENCY [NLGI grade]	PENETRATION [60w, 25°C] ASTM D-217 [0.1 mm]	APPEARANCE	APPLICATIONS
000	445 to 475	Very light, like a viscous oil	Gears
00	400 to 430	Very light, like a viscous oil	Gears and centralised systems
0	355 to 385	Soft	Bearings and centralised systems
1	310 to 340	Soft	Bearings and centralised systems
2	265 to 295	Creamy	Bearings
3	220 to 250	Almost solid	Bearings
4	175 to 205	Hard	Plain bearings. Briquettes
5	130 to 160	Very hard, like soap	Plain bearings. Briquettes
6	85 to 115	Very hard, like soap	Plain bearings. Briquettes

BASE OIL VISCOSITY

The selection of the base oil viscosity will depend on the load and speed conditions of the application, as well as the degree of separation of the oil and pumpability of the grease.

Greases formulated with high viscosity base oils offer advantages such as greater adhesion and water resistance, as well as lower oil separation, and are therefore well suited to applications with high loads.

However, low viscosity base oils give the grease better heat transfer and enhanced performance at low temperatures and are therefore the best option for equipment with light loads and high speeds.

ISO VG [cSt@40°C]	APPLICATIONS	LOAD	SPEED	OIL SEPARATION	PUMPABILITY
100	High speeds Electric motors	↓	↑	↑	↑
150	Wheel bearings		↑	↑	↑
220	Paper industry Industrial applications		↑	↑	↑
460	Paper and steel industry		↑	↑	↑
1000	Mining equipment		↑	↑	↑
1500	High loads/vibrations		↓	↑	↑

DROPPING POINT

The dropping point is defined as the **temperature at which the grease changes from a semi-solid to a liquid state**. It is a qualitative indication of the grease's resistance to heat in those instances where a semi-solid lubricant is required.

Complex soaps [lithium complex, aluminum complex, calcium complex sulfonate, etc.] have higher dropping points than their simple soap equivalents.

RESISTANCE TO HIGH AND LOW TEMPERATURES

The maximum working temperature is determined both by the **nature of the base oil** and the thickener used. The base oil's **viscosity** and the grease's **consistency** are decisive in terms of their performance at low temperatures.

DIN 51825 classifies greases according to their operating temperature range.

AW AND EP PROPERTIES

The presence of an adequate layer of lubricating oil to **prevent direct contact of the surfaces protected by the grease** is essential. For this purpose, it is necessary to select the right viscosity of the base oil, as well as special anti-wear and extreme-pressure additives.

RESISTANCE TO ENVIRONMENTAL WORKING CONDITIONS

The presence of humidity or extremely dirty environments has a huge influence on the nature of the grease to be used. Aspects such as **anti-rust or anti-corrosion protection, water resistance, biodegradability, and equipment noise limitation requirements** are crucial when it comes to selecting the right grease.



2. High-performance lubricating greases

EXTREME-PRESSURE GREASES

Lítica EP

Multi-purpose grease for extreme pressure applications and maximum temperatures of 120°C. Designed to meet general greasing requirements in industrial applications: all types of bearings that **support loads and vibrations** (steel, rolling, mining, public work machinery), couplings, chains, guideways, shear bearings, rolling mills (chocks, bearings, brackets, etc.).

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA EP 0	Mineral Base (150 cSt)	Simple lithium	0	185°C	-20°C 100°C	DIN 51502 GP OG-20 US Steel 370 and 375
GRASA LÍTICA EP 1	Mineral Base (150 cSt)	Simple lithium	1	190°C	-20°C 120°C	DIN 51825 KP1K-20 US Steel 370 and 375
GRASA LÍTICA EP 2	Mineral Base (150 cSt)	Simple lithium	2	195°C	-20°C 120°C	DIN 51825 KP2K-20 US Steel 370 and 375
GRASA LÍTICA EP 3	Mineral Base (150 cSt)	Simple lithium	3	200°C	-20°C 120°C	DIN 51825 KP3K-20 US Steel 370 and 375

Lítica especial EP 2/3

For general lubrication of **agricultural machinery, public works, and automotive applications** (rolling bearings, bolts, ball joints, bearings, etc.). The adherence and 2/3 intermediate consistency of the grease reduces running off during applications. Its extreme pressure characteristics make it ideal to withstand heavy loads and vibrations.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA ESPECIAL EP 2/3	Mineral Base (100 cSt)	Simple lithium	2/3	200°C	-20°C 120°C	DIN 51825 KP 2/3K-20

Molibgras EP 2

Lithic grease incorporates a special extreme pressure additive: molybdenum disulfide. These small particles provide extra security for those points where there are greasing difficulties or extreme operating conditions. Recommended for lubrication of **mechanisms exposed to very severe conditions** involving sliding, extremely high loads, and long lubrication periods (plain bearings, hydraulic hammer bearings, fifth wheel, rolling mills, etc.).

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA MOLIBGRAS EP 2	Mineral Base (150 cSt)	Simple lithium	2	185°C	-20°C 120°C	DIN 51825 KPF 2K-20

Molibgras Especial EP

Greases formulated from a lithium thickener complex, designed to satisfy the most extreme mining industry machine requirements. A highly water resistant grease. Its various percentage charges of molybdenum disulfide along with the EP and AW additives mean that this grease achieves excellent performance under the most severe conditions.

Product	Base	Thickener	NLGI	% Molybdenum disulfide	Working temperature	Dropping point	Quality level
MOLIBGRAS ESPECIAL EP 1	Mineral Base (680 cSt)	Complex lithium	1	5%	-10°C 150°C	>250°C	DIN 51502 KPF 1P-10
MOLIBGRAS ESPECIAL EP 2	Mineral Base (320 cSt)	Complex lithium	2	3%	-10°C 150°C	>260°C	DIN 51502 KPF 2N-10



GREASES FOR HIGH/LOW TEMPERATURES

Lítica Compleja Automoción

Grease for lubrication of bearings working at high temperatures (truck wheel hubs, electric brakes, railway wheel boxes, public work, and agricultural machinery). The working temperature range is very wide, and it can work at peaks of up to 200°C.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA COMPLEJA AUTOMOCIÓN	Mineral Base [130 cSt]	Complex lithium	3/2	290°C	-20°C 140°C	DIN 51825 KP 3/2N-20 Caterpillar MPGL

Lítica Compleja Industria

Grease for the lubrication of all types of mechanisms and bearings subjected to high temperatures and heavy loads (rolling bearings, presses, paper industry, etc.). Recommended for industrial machinery working continuously up to 140°C and it can work at peaks of up to 160°C.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA COMPLEJA INDUSTRIA	Mineral Base [220 cSt]	Complex lithium	2	295°C	-20°C 140°C	DIN 51825 KP2N-20 US Steel 370 and 375

Complex Synt

Lubrication of electric motor and fan bearings at medium and medium-high speeds and high temperatures. The nature of the base oil makes it very resistant to thermo-oxidative degradation and, therefore, it is suitable for lifetime lubrication. In addition, it has an excellent low temperature pumpability and a low pour point, which makes it perform well in cold conditions.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA COMPLEX SYNT	PAO [85 cSt]	Complex lithium	2/3	288°C	-50°C 150°C	DIN 51825 KPEHC 2/3N-40

Complex Therm

Designed for low speed under vibrating load, dust contamination, and high humidity conditions. Recommended for bearings and bolts with slow and oscillating movements subjected to high loads and aggressive environments such as: machinery for public works and agriculture, mining, quarries, etc. It was specifically designed to lubricate the head bearing seal of tunnel boring machines.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA COMPLEX THERM	Mineral Base [680 cSt]	Complex lithium	2	260°C	-10°C 160°C	DIN 51825 KPF 2P-10

WATER-RESISTANT GREASES

Cálcica

Lubrication of mechanisms working in **outdoor or wet environments**, such as automotive chassis, industrial and automotive water pumps, rails for cranes and washing gantries, public work machinery, and agricultural machinery.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA CÁLCICA 2	Mineral Base [68 cSt]	Anhydrous calcium	2	150°C	-20°C 100°C	DIN 51825 K 2G-20
GRASA CÁLCICA 3	Mineral Base [68 cSt]	Anhydrous calcium	3	150°C	-20°C 100°C	DIN 51825 K 3G-20

Calcium Sulfonate

It is a grease designed for use in humid and highly corrosive environments, due to its high resistance to corrosion (even salt water), total insolubility, and water repellency, extreme adherence, and envelopment capacity. In addition, it is very suitable for lubricating rolling mill bearings in the steel industry and paper machines in the wet and dry part.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA CALCIUM SULFONATE	Mineral Base [220 cSt]	Calcium sulfonate complex	2	280°C	-15°C 140°C	DIN 51825 KP 2N-10



GREASES FOR SPECIAL APPLICATIONS

Lítica AGR 00

Agricultural and industrial applications where a product with very low viscosity and high performance at low temperatures is required. Widely used in the spindles of cotton harvesting machines.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA AGR 00	Mineral Base (24 cSt)	Simple lithium	00	160°C	-30°C 100°C	DIN 51502 GOOG-30



OGL

It is a sprayable semi-fluid grease especially recommended for lubrication of heavily-loaded **open gears and cogwheels** in the cement, steel, mining, and chemical industries

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA OGL	Semi-synthetic base (1.500 cSt)	Complex aluminium	00	160°C	-10°C 120°C	DIN 51502 OGP OOK-10

Hammer

Lubrication of **hydraulic breaker hammer pointers and chisels** under high loads, vibrations, and high temperatures.

Also suitable for batteries, welding machinery, and electrical installation connections. Its copper content makes it not suitable for bearings lubrication.

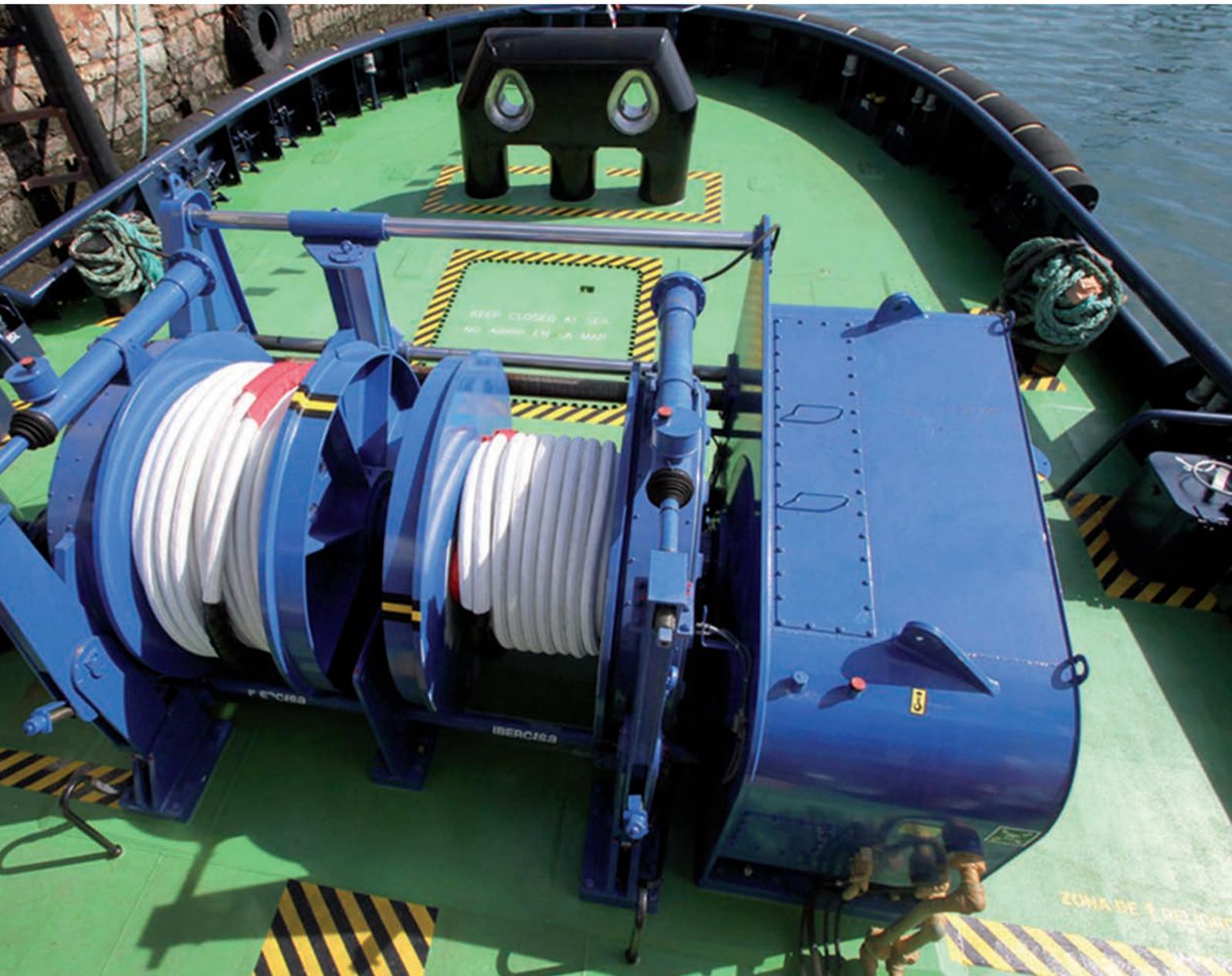
Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA HAMMER	Semi-synthetic base (1.000 cSt)	Complex lithium	2	240°C	-20°C 250°C	Meets KRUPP, MONTABER, ATLAS COPCO, INDECO and RAMMER specifications

BIO GREASES

Bio Grasa Cálctica EP 2

Grease formulated from biodegradable oils for applications where it is necessary to lubricate elements with the possibility of leakages or spills, such as dam gates, agricultural machinery, and forestry works. Suitable for application with extreme pressure requirements.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
BIO GRASA CÁLCICA EP 2	Semi-synthetic base (200 cst)	Anhydrous calcium	2	150°C	-20°C 90°C	DIN 51825 KPF 2E-20





GREASES FOR CENTRALISED SYSTEMS

Lítica Centralizados 00

Centralised lubrication of trucks (pivots, spring shafts, connecting shafts, brake cam bearings, etc.), off-road vehicles used in agriculture, public work, and industrial machinery.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA CENTRALIZADOS 00	Mineral Base [100 cSt]	Simple lithium	00	170°C	-20°C 100°C	DIN 51502 GP 00G-20

FOOD-GRADE GREASES

Greases classified as **category H1 lubricants** [suitable for use in environments where there is the possibility of accidental contact with food].

FG Aluminium Complex

Lubrication of bearings subjected to **severe temperature conditions**. Grease with very good adhesive and lubricating capacity. Carefully balanced and enhanced additives with solid PTFE additives ensure proper performance in the most demanding applications.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
FG ALUMINIUM COMPLEX	Synthetic [150 cst]	Complex aluminium	2	240	-40°C 180°C	NSF H1 registration no. 157624

FG Calcium Sulfonate

Lubricant with excellent mechanical load performance in **environments with high humidity**. Excellent sealing power which is ideal for working in the lubrication of bearings subjected to extreme working conditions: high pressure and temperature, high water presence.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
FG CALCIUM SULFONATE	Semi-synthetic base [220 cst]	Calcium sulfonate	1/2	270°C	-30°C 170°C	NSF H1 registration no. 155358





MULTI-PURPOSE GREASES

Lítica MP

Multi-use grease for the **general lubrication of mechanisms which are not highly demanding** and operate at temperatures of up to 100°C, for all types of industries, as well as automotive applications, chassis, wheel bearings, railways, and machinery. It incorporates antioxidant, anticorrosive, and adhesion additives.

Product	Base	Thickener	NLGI	Dropping point	Working temperature	Quality level
GRASA LÍTICA MP 2	Mineral Base [150 cSt]	Simple lithium	2	190°C	-10°C 120°C	DIN 51825 K 2K-10
GRASA LÍTICA MP 3	Mineral Base [150 cSt]	Simple lithium	3	195°C	-10°C 120°C	DIN 51825 K 3K-10



3. Grease performance

NAME	Load and wear resistance	Mechanical stability and shear resistance	Performance at low temperatures	Rust resistance	Thermal stability	Corrosion resistance	Water resistance
GRASA LÍTICA MP	*	**	*	**	**	*	**
GRASA LÍTICA EP	**	**	**	**	**	**	**
GRASA LÍTICA ESPECIAL EP 2/3	**	**	**	**	**	**	**
GRASA MOLIBGRAS EP 2	**	**	**	**	**	*	**
GRASA MOLIBGRAS ESPECIAL EP 1	***	***	**	**	**	*	**
GRASA MOLIBGRAS ESPECIAL EP 2	***	***	**	**	**	*	**
GRASA LÍTICA COMPLEJA AUTOMOCIÓN	*	***	**	***	***	**	**
GRASA LÍTICA COMPLEJA INDUSTRIA	**	***	**	***	***	**	**
GRASA COMPLEX THERM	***	**	*	***	***	***	***
GRASA COMPLEX SYNT	**	**	***	***	***	*	**
GRASA CÁLCICA	*	**	**	*	*	*	**
GRASA CALCIUM SULFONATE	**	**	**	**	**	***	***
GRASA LÍTICA CENTRALIZADOS 00	**	*	**	**	**	*	*
GRASA LÍTICA AGR 00	*	*	***	**	**	*	*
GRASA OGL	**	*	*	**	**	**	**
GRASA HAMMER	**	**	*	**	**	*	***
BIOGRASA CÁLCICA EP 2	*	**	**	*	*	*	**
GRASA FG CALCIUM SULFONATE	*	*	*	*	*	***	***
GRASA FG ALUMINIUM COMPLEX	***	*	***	***	***	*	*

* Good

** Very Good

*** Excellent

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