

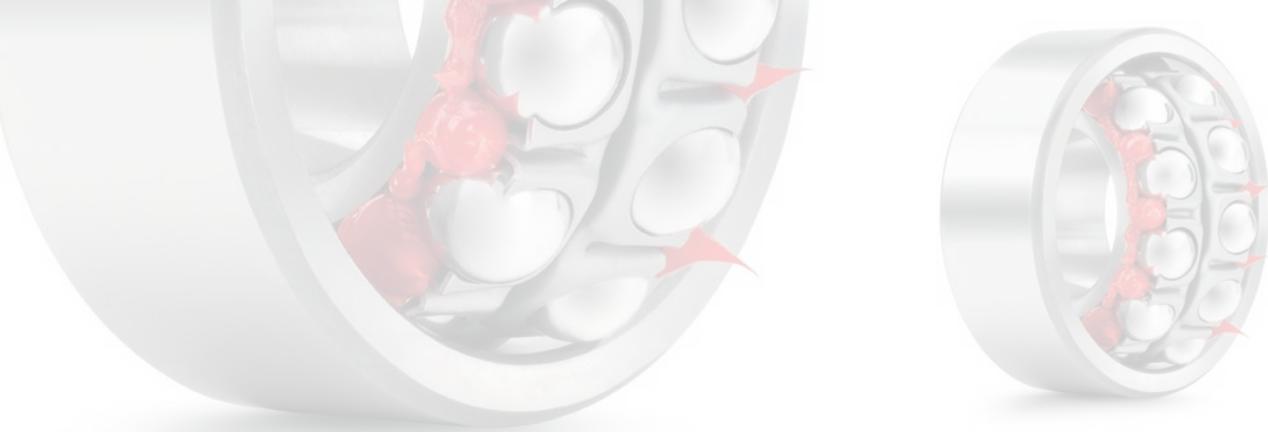


LUBRICANTS

**GREASES**



Your world, more efficient.



## BASIC PRINCIPLES OF LUBRICATION WITH GREASES

A grease is a **lubricant which, under a certain load, shows properties of a semi-solid body, undergoes plastic stresses and begins to flow like a liquid**. Once the load reaches its critical point and is removed, the grease recovers its properties of a solid body.

It consists of a **base oil, a thickener or soap and special additives**. This mixture forms a matrix that gives the product a solid character in order to resist positional changes.

The main characteristics of greases are **corrosion inhibition and lubrication, sealing and load capacity**. They also protect **against dusty and humid atmospheres**, maximising the re-greasing interval and retaining the oil so that it stays in the place where lubrication is needed.

**The most important characteristics when choosing a grease** are its consistency, the viscosity of the base oil, the thickener and its field of application.

- **The consistency** is the rigidity provided by the matrix that makes up the grease. This is measured in NLGI grades, determined according to the depth in millimetres that a cone penetrates into the grease sample. Depending on the consistency, the cone will penetrate to a greater or lesser depth.

WORKED PENETRATION (mm <sup>-1</sup> )	NLGI GRADE	STRUCTURE
445-475	000	VERY FLUID
400-430	00	FLUID
355-385	0	SEMI-FLUID
310-340	1	VERY SOFT
265-295	2	SOFT
220-250	3	MEDIUM HARD
175-205	4	HARD
130-160	5	VERY HARD
85-115	6	EXTREMELY HARD

- **According to the speeds involved in the application**, a grease with a particular base oil viscosity will be used. With **low viscosities** there is better heat transfer and good performance at low temperatures, while **high viscosities** provide better adhesion and water resistance.
- The **range of application temperatures** is determined by the dropping point, where the grease liquefies and begins to suffer losses of the base oil, which eventually escapes from the matrix.
- **The resistance to adverse environmental conditions**, also determined by the field of application, is provided by the additives included in the mixture that makes up the grease, for anticorrosion, extreme pressure, water resistance or biodegradability purposes, among others.

# CALCIUM AND LITHIUM GREASES

## CEPSA ARGALCALCIO 2 PLUS



### DESCRIPTION

- Grease made with **mineral oil and anhydrous calcium soap**.
- With the necessary additives to provide good corrosion protection and great stability to oxidation at temperatures not higher than recommended.
- Easily injectable and pumpable.
- Excellent adhesiveness and envelopment capacity.
- Insoluble and water resistant.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-20° C to 100° C

### APPLICATIONS

- Multipurpose anhydrous calcium soap grease for moderate automotive, marine and industrial use, in a wide temperature range (-20° C to 100° C).
- Specially indicated for general lubrication of mechanisms exposed to the action of water, being resistant even to saline environments.
- Protection of metal surfaces against oxidation and corrosion.

## CEPSA ARGACL



### DESCRIPTION

- **Extreme pressure lithium grease** for bearings in centralized gear systems, for industrial and public works vehicles.
- Excellent fluidity in long and low-section lines.
- Highly stable at high temperatures, applied in a wide range: -50° C to 120° C.
- Excellent resistance to washing with water and anticorrosives.
- High load-bearing capacity, with high protection against metal wear.
- Environment-friendly product

### CONSISTENCY GRADE

00

### WORKING TEMPERATURE

-50° C to +120° C

### APPLICATIONS

- Bearings with automatic systems in heavy vehicles and machinery for public works.
- Applied directly to tanks in centralized automatic greasing systems.

## CEPSA ARGALITIO 2 MOLY



### DESCRIPTION

- A multipurpose grease, made with highly refined base oil using **lithium soap** as a thickener. Contains molybdenum disulphide, which provides excellent anti-wear and extreme pressure properties. Also has additives that inhibit oxidation, rust and corrosion.
- Has great mechanical stability and high resistance to washing with water.
- Excellent pumpability in centralized greasing systems.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-25° C to +130° C (max. 140° C)

### APPLICATIONS

- This grease is especially recommended for the lubrication of mechanisms subject to slipping, vibrations or high loads, such as spherical plain bearings, drive joints, wheel bearings of automotive and industrial equipment, gears, etc. in a wide temperature range. It is also recommended for use in machine tools, electric motors, conveyors, lifts, etc.

## CEPSA ARGALITIO



### DESCRIPTION

- Lithium greases made with high-grade refined mineral oil and lithium soap.
- With the necessary additives to provide good anti-rust, anticorrosive and antioxidant protection.
- Highly resistant to humidity and practically insoluble in water.

### CONSISTENCY GRADE

2 3

### WORKING TEMPERATURE

-20° C to 120° C

### APPLICATIONS

- Multipurpose greases prepared for use in all types of bearings and plain bearings, centralized systems and Tecalemit, Stauffer or hand greasers, for industrial, marine or automotive equipment.
- **L-2:** General greasing including bearings, plain bearings, joints, guides, axles, splines, spindles, etc. For use in centralized greasing systems and Tecalemit, Stauffer or other greasers.
- **L-3:** General greasing of mechanisms. As a grade 3 grease, especially recommended in cases where a harder than normal grease consistency is required.

## CEPSA ARGA EP



### DESCRIPTION

- Multipurpose greases prepared for use in all types of bearings and plain bearings, centralized systems and Tecalemit, Stauffer or hand greasers, for industrial, marine or automotive equipment.
- Manufactured with high-grade refined mineral oil, lithium soap and extreme pressure additives.
- Contain the necessary additives to provide good anti-rust, anticorrosive, antioxidant and anti-wear protection.
- Highly resistant to humidity and practically insoluble in water.

### CONSISTENCY GRADE



### WORKING TEMPERATURE

-30° C to +130° C

### APPLICATIONS

- **EP-00:** Mechanisms subjected to high loads and high speeds where a very low consistency product is required.
- **EP-0:** Mechanisms subjected to high loads where a very low consistency product is required.
- **EP-0/1:** Mechanisms subjected to high loads where a low consistency product is required.
- **EP-1:** Mechanisms subjected to high loads in conventional applications by pumping or centralized greasing.
- **EP-2:** Mechanisms subjected to high loads in conventional applications by pumping or centralized greasing.

## CEPSA ARGA PAG 00



### DESCRIPTION

- Polyglycol-based fluid synthetic grease, with high performance and recommended for industrial applications. Formulated from a lithium soap with integrated anti-wear properties and extreme pressure characteristics. Due to its formulation with polyglycols, it provides a very low friction coefficient, significantly reducing the working temperature.
- Heavy load support and shock load capacity, obtaining shear stability and low friction that reduce the temperature and prolong equipment life.
- High protection against corrosion and oxidation.
- Excellent performance at low temperatures and high resistance to thermal degradation.

### CONSISTENCY GRADE



### WORKING TEMPERATURE

-40° C to +130° C

### APPLICATIONS

- Especially recommended for systems that require a fluid grease for lubricating roller bearings, ball bearings, closed gears, guides, gear racks and chains.
- Suitable for industrial equipment such as machine tools and metal machining centres that operate with high loads and temperatures.
- Not recommended for use in mechanisms containing soft metals (aluminium, zinc). Not to be mixed with greases formulated with mineral or synthetic base oils other than polyglycol.
- Good pumpability, making it suitable for centralized greasing systems.

## COMPLEX GREASES

## CEPSA ARGA SYNT



### DESCRIPTION

- A synthetic grease that combines the unique characteristics of a **high viscosity PAO synthetic base with those of a high quality lithium complex thickener**.
- Contains antioxidants, corrosion inhibitors and extreme pressure and anti-wear additives, providing excellent protection at both high and low temperatures.
- The use of a synthetic base (rather than mineral) provides excellent pumpability at low temperature and very low starting and running torque.
- The lithium complex thickener contributes to excellent adhesion, structural stability, mechanical stability and water resistance.
- High capacity for resistance to high loads.
- Highly resistant to humidity and practically insoluble in water.

### CONSISTENCY GRADE



### WORKING TEMPERATURE

From -40° C to 150° C (max. 220° C)

### APPLICATIONS

- Where high protection against wear, oxidation and corrosion is required.
- Due to its high resistance to (fresh and salt) water and humid environments, recommended for use in marine and off-road applications.
- Provides protection especially suited for bearings supporting heavy loads at moderate speeds and in applications where water resistance is a critical factor.
- For applications in a wide temperature range.

## CEPSA ARGA COMPLEX LITIO 2

### DESCRIPTION

- High-temperature, **lithium complex soap-based** grease for applications in all types of bearings subjected to high temperatures.
- The complex thickening technology allows the grease stuck to the rolling elements of the bearing to remain fluid, while the rest forms a protective "shield" against the action of external contaminants (dust, moisture, etc.).
- Its advanced formulation prevents the "hardening" suffered by conventional greases.
- Prolonged duration of effective lubrication in a wide temperature range: from -20 to 140° C, allowing peaks of 150° C.
- The absence of heavy metals and other harmful substances in its formulation makes it environment-friendly.
- Highly resistant to humidity and practically insoluble in water.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-20° C to +140° C

### APPLICATIONS

- Lubrication of bearings subjected to high temperatures (plastic, paint, rubber, paper, iron and steel industries).
- In heavy transport vehicles (fleets in the mining, cement and public works industries).

## CEPSA ARGA COMPLEX LITIO EP

### DESCRIPTION

- Grease using advanced **lithium complex soap technology**, which, together with a balanced package of additives, provides excellent EP properties and high water resistance.
- Recommended for application in a temperature range of -30 to +150° C, retaining its consistency even at temporary peaks of 225° C.
- Has exceptional mechanical and shear resistance, a high dropping point (+250° C) and extraordinary resistance to washing with water.

### CONSISTENCY GRADE

2-3

### WORKING TEMPERATURE

-30° C to +150° C

### APPLICATIONS

- Lubrication of large bearings and bearings subjected to heavy loads on a continuous basis as well as to heavy impacts or shocks, where conventional lithium soap greases do not make it possible to achieve the desired results.
- A multipurpose grease specially developed for marine and industrial applications where a water-resistant grease is required.
- Lubrication of small and medium sized bearings subjected to light to medium loads over a very wide temperature range.

## SPECIAL GREASES

## CEPSA ARGA BIOGREASE

### DESCRIPTION

- EAL (environmentally acceptable lubricant) quality premium grease especially developed for applications requiring a biodegradable product that meets VGP 2013 legislation. Formulation based on **synthetic ester and a special lithium-calcium complex thickening soap** with integrated anti-wear properties and extreme pressure ratings. Also contains antioxidants and anticorrosives, as well as an optimized blend of non-metallic solids.
- Extreme load capacity, obtaining shear stability and low friction that reduce the temperature and prolong equipment life.
- High protection against corrosion and oxidation. Excellent resistance to washing with cold or hot water.
- Excellent adhesion, greasiness and lubricity, without accumulation of solid particles, which prevents vibrations.
- Excellent thermal stability.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-30° C to +120° C (max. 130° C)

### APPLICATIONS

- The perfect choice for open gears, winches, cranes and forklifts subjected to heavy loads, as well as similar marine applications.
- For use in forestry and mining machines, O.P., water purification plants and other industrial applications.
- Also recommended for use where uncontrolled grease leaks into the ground or aquifers may occur.
- Suitable for high-pressure centralized greasing systems (> 250 bar).

## CEPSA ARGASUX



### DESCRIPTION

- Latest-generation high-performance grease, recommended for industrial, marine and off-road applications. Formulated from a **calcium sulfonate complex thickening soap** with integrated anti-wear and extreme pressure characteristics, as well as excellent anticorrosion properties.
- Heavy load support and shock load capacity, obtaining shear stability and low friction that reduce the temperature and prolong equipment life.
- High protection against corrosion and oxidation.
- Excellent resistance to washing with cold or hot water.
- Excellent adhesion, greasiness, lubricity and sealing capability.
- Excellent thermal and mechanical stability.

### CONSISTENCY GRADE

1-2

### WORKING TEMPERATURE

-20 to +140° C (max. +180° C).

### APPLICATIONS

- The perfect choice for highly demanding applications due to severe temperature, load and humidity conditions: paper industry, mining, bearings in the iron and steel industry, etc.
- Due to its high resistance to (fresh and salt) water and humid environments, also recommended for use in marine and off-road applications.
- Good pumpability, making it suitable for centralized greasing systems.

## CEPSA ARGAFORCE OGW



### DESCRIPTION

- Special high-performance semi-synthetic grease for open gears and cables. Includes **solid lubricants and other additives** specially developed to provide total stability under the highest pressures and loads.
- Free from lead compounds, heavy metals, asphalts or bitumen, solvents and other compounds harmful to the environment.
- Has good fluidity while simultaneously providing a tough film capable of withstanding extreme loads, with low consumption and minimizing wear and vibration.
- High adhesion that avoids pitting and scuffing on the flanks of the teeth.
- Excellent water-resistance properties and protection against rust and corrosion.
- Wide range of usage temperatures.

### CONSISTENCY GRADE

00

### WORKING TEMPERATURE

-10 to +120° C

### APPLICATIONS

- Recommended for all types of open gears subjected to extreme loads, installed in ship deck machinery, construction and public works machinery, chemical and paper industry, lifting and transport machines in ports, rotary kilns and mills in the mining, ceramics and cement industries, rubber manufacturing machinery, etc.
- Due to its special adhesion, can also be used for the lubrication of trawling cables in fishing vessels and tugs, cams and rollers, sliding bands, sides of gantry crane rails, etc.
- Can be applied either by means of spraying systems or by bathing or bubbling.

## CEPSA ARGAHAMMER



### DESCRIPTION

- Product specially developed to lubricate and maintain tools and percussion systems in hydraulic hammers.
- Thanks to the **solid additives (copper and graphite)** that exert an excellent synergic anti-seizure and lubricant action, the tool can be kept in perfect condition even under the most adverse conditions (extreme temperatures, presence of water and dust, strained working positions, vibrations). Micronized copper charges offer resistance to seizure at temperatures around 250° C.
- Reduces wear and eliminates seizure.
- Allows for longer re-greasing intervals.
- High adhesion. Does not run or drip thanks to the solid additives.
- Meets the requirements of the leading hydraulic breaker manufacturers.

### CONSISTENCY GRADE

1-2

### WORKING TEMPERATURE

Up to 250° C

### APPLICATIONS

- Grease developed for the continuous lubrication of hammers with centralized greasing systems.
- Grease for maintenance and lubrication of chisels and lubricators in high performance hydraulic breakers, in services such as public works, quarries and mining.

## CEPSA ARGA WR EP



### DESCRIPTION

- **Calcium-lithium grease** with high film tenacity and reinforced lubricity, with excellent water repellent and EP properties.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-20 to +150° C

### APPLICATIONS

- For applications where a combination of high loads and resistance to washing with water is required.
- Recommended in the lubrication of ball and roller bearings, and bearings subjected to heavy loads and slow speeds, open gears and cables in marine environments.
- Indicated for the lubrication of on-deck machinery, especially in fishing vessels and dredgers where a grease with high resistance to washing with water is required.
- Not recommended for use in bearings at high speeds, as the internal friction of a heavy base oil can generate an undesirable temperature rise effect.

## CEPSA BLAMEDOL GB-2



### DESCRIPTION

- Non-toxic silica gel universal grease, especially recommended for use in machinery for the food, cosmetics and pharmaceutical industries. NLGI consistency grade: 2.
- Consists of a blend of medicinal grade white oils and (physiologically harmless) additives approved by the FDA and classified as H1.
- Excellent resistance to oxidation and ageing.
- Good resistance to wear and high temperatures, water resistant and highly adhesive.
- Contains carefully selected additives that ensure excellent behavior under moderate loads, as well as good performance and wear resistance at high temperatures.
- Excellent pumpability even at low temperatures.
- Rationalization, safety and cleanliness of use.

### CONSISTENCY GRADE

2

### WORKING TEMPERATURE

-10 to +150° C



### APPLICATIONS

- Generally in the pharmaceutical and cosmetics industry, as well as in all the food industry, where grease may come into direct or indirect contact with food or processed products.
- Bearings, gears, pumps, guides, and any friction element in mechanisms of food industry machinery (blenders, mixers, dispensers, refining mills, etc.)

## SUMMARY TABLES

### COMPATIBILITY OF THICKENERS

Thickener	Aluminium Complex	Barium Complex	Hydrated Calcium	Calcium Anhydrous	Complex Calcium	Calcium Sulfonate Complex	Clay	Lithium	Lithium Complex	Polyurea	Sodium
Aluminium Complex	✓	✓	✗	✓	●	✗	✗	✗	✓	✗	✗
Barium Complex	✓	✓	●	●	✗	●	●	●	●	●	✓
Hydrated Calcium	✗	●	✓	✓	✗	✓	●	●	✓	●	●
Calcium Anhydrous	✓	●	✓	✓	●	●	✓	✓	✓	✗	✗
Complex Calcium	●	✗	✗	●	✓	✓	●	✗	✓	✓	●
Calcium Sulfonate Complex	✗	●	✓	●	✓	✓	✗	✓	✓	✓	✗
Clay	✗	●	●	✓	●	✗	✓	●	✗	●	●
Lithium	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
Lithium Complex	✓	●	✓	✓	✓	✓	✗	✓	✓	✗	●
Polyurea	✗	●	●	✗	✓	✓	●	●	✗	✓	●
Sodium	✗	✓	●	✗	●	✗	●	✗	●	●	✓

✓ COMPATIBLE

● REQUIRES TESTING

✗ INCOMPATIBLE

COMPATIBILITY OF THICKENERS / CEPESA PRODUCTS

PRODUCT/ THICKENER	Aluminium Complex	Barium Complex	Hydrated Calcium	Calcium Anhydrous	Complex Calcium	Calcium Sulfonate Complex	Clay	Lithium	Lithium Complex	Polyurea	Sodium
CEPSA ARGA HAMMER	✓	✓	✗	✓	●	✗	✗	✗	✓	✗	✗
CEPSA ARGA FORCE 0GW	✓	✓	✗	✓	●	✗	✗	✗	✓	✗	✗
CEPSA ARGA CALCIO 2 PLUS	✓	●	✓	✓	●	●	✓	✓	✓	✗	✗
CEPSA ARGA CASUX	✗	●	✓	●	✓	✓	✗	✓	✓	✓	✗
CEPSA ARGA LITIO 2	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO 3	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO 2 MOLY	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO EP 0	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO EP 1	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO EP 2	✗	●	●	✓	✗	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO EP 0/1	✗	●	●	✓	✓	✓	●	✓	✓	●	✗
CEPSA ARGA LITIO EP 00	✗	●	●	✓	✓	✓	●	✓	✓	●	✗
CEPSA ARGA PAG 00	✗	●	●	✓	✓	✓	●	✓	✓	●	✗
CEPSA ARGA CLS	✗	●	●	✓	✓	✓	●	✓	✓	●	✗
CEPSA ARGA COMPLEX LITIO 2	✓	●	✓	✓	✓	✓	✗	✓	✓	✗	●
CEPSA ARGA SYNT	✓	●	✓	✓	✓	✓	✗	✓	✓	✗	●
CEPSA ARGA COMPLEX LITIO EP	✓	●	✓	✓	✓	✓	✗	✓	✓	✗	●
CEPSA ARGA BIOGREASE	●	✗	✗	●	✓	✓	✗	✗	✓	✗	●
CEPSA ARGA WR EP	✗	●	●	✓	✗	●	●	✓	✓	✗	✗
CEPSA BLAMEDOL GB-2	✗	●	●	✗	✓	✓	●	●	✗	✓	●

- ✓ COMPATIBLE
- REQUIRES TESTING
- ✗ INCOMPATIBLE

## TECHNICAL CHARACTERISTICS

Property	NLGI consistency	Thickener	Base oil viscosity (40° C)	Dropping point	Application temperature	Penetration at 60 hits	4-ball EP test	Sea water EMCOR test	CLASSIFICATION		COLOUR
									DIN	ISO	
Units/test	ASTM D 217	-	cSt	°C	°C	0.1 mm	DIN 51350:4 (N) IP 239 (Kg)	ISO 11007	DIN	ISO	
CEPSA ARGA BIOGREASE	2	Lithium Complex - Calcium Complex	700	>260	-30 to 120	265-295	6000N	0-0	OGFPE2K-30	-	Beige
CEPSA ARGA CALCIO 2 PLUS	2	Anhydrous Calcium	68	>145	-20 to 100	265-296	-	-	K2G-20	-	Light yellow
CEPSA ARGA CASUX	1-2	Calcium Sulfonate Complex	390	>280	-20 to 140	290-320	6500N	< 1-1	KP1.5N-20	L-XB(F)DIB1.5	Brown
CEPSA ARGA CLS	00	Lithium	40	>160	-50 to 120	400-430	2000N	< 2-2	KP00K-50	L-XE(F) CCA00	Light green
CEPSA ARGA COMPLEX LITIO 2	2	Lithium complex	150	>280	-20 to 140	265-295	>250 kg	0-0	KP2N-20	L-XBDHB2	Blue
CEPSA ARGA COMPLEX LITIO EP	2-3	Lithium complex	215	>260	-30 to 140	245-275	2800N	2-2	KP2.5N-30	L-XCDIB2.5	Brown
CEPSA ARGA FORCE OGW	00	Aluminium Complex	1500	>260	-10 to 120	400-430	850 kg	-	OGPF 00K-10	-	Black
CEPSA ARGA HAMMER	1-2	Aluminium complex with copper and graphite additives	460	>250	<250	270-300	750 kg	-	-	-	Copper black
CEPSA ARGA LITIO 2	2	Lithium	100	>190	-20 to 120	265-295	-	-	K2K-20	L X BCHA2	Light brown
CEPSA ARGA LITIO 2 MOLY	2	Lithium with Molybdenum	175	>190	-25 to 130	265-295	>300 kg	-	KPF2K-20	L-X BCHB2	Dark grey
CEPSA ARGA LITIO 3	3	Lithium	100	>190	-15 to 130	220-250	-	-	K3K-10	L X ACHA3	Light brown
CEPSA ARGA LITIO EP 0	0	Lithium	64	>160	-30 to 120	355-385	250 kg	<= 2-2	KP0K-30	L-XCCIB0	Light brown
CEPSA ARGA LITIO EP 0-1	0-1	Lithium	64	>160	-30 to 120	355-375	250 kg	<= 2-2	KP0K-30	-	Light brown
CEPSA ARGA LITIO EP 00	0	Lithium	60	>160	-30 to 120	400-430	250 kg	<= 2-2	KP00K-30	L-XCCIB00	Light brown
CEPSA ARGA LITIO EP 1	1	Lithium	129	>180	-20 to 130	310-340	250 kg	<= 2-2	KP1K-20	L-XBCIB1	Light brown
CEPSA ARGA LITIO EP 2	2	Lithium	120	>190	-20 to 130	265-295	285 kg	<= 2-2	KP2K-20	L-XBCIB2	Light brown
CEPSA ARGA PAG 00	00	Lithium	150	-	-40 to 130	415	>220 kg	-	-	-	Blue
CEPSA ARGA SYNT	1-2	Lithium complex	460	>260	-40 to 140	290-320	3200N	2-2	KPHC1.5N-40	L-XD(F)DIB1.5	Light yellow
CEPSA ARGA WR EP	2	Calcium-Lithium	1100	>190	-20 to 150	265-295	5500N	2-2	KP2K-20	L-XBCIB2	Brown
CEPSA BLAMEDOL GB-2	2	Bentonite	233	None	-10 to 150	265-295	-	-	-	-	Translucent

# ISO CLASSIFICATION 6743-9

L X C C I B 2

LUBRICANT

GREASE

## CONSISTENCY

NLGI  
000  
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0  
1  
2  
3  
4  
5  
6

## EP CHARACTERISTICS

EP PROPERTIES	SYMBOL
NO	A
YES	B

## CONTAMINATION WITH WATER

ENVIRONMENTAL CONDITIONS	ANTICORROSION PROTECTION	SYMBOL
L	L	A
L	M	B
L	H	C
M	L	D
M	M	E
M	H	F
H	L	G
H	M	H
H	H	I

## MAXIMUM OPERATING TEMPERATURE

TEMPERATURE	SYMBOL
60	A
90	B
120	C
140	D
160	E
180	F
180	G
<180	H
	I

## MINIMUM OPERATING TEMPERATURE

TEMPERATURE	SYMBOL
0	A
-20	B
-30	C
-40	D
<40	E

# DIN CLASSIFICATION 515202

K P E 2 G 20

## APPLICATION

K: GREASES FOR  
SLIDING BEARINGS  
GREASES FOR  
G: CLOSED GEARS  
GREASES FOR  
OG: OPEN GEARS  
GREASES FOR SLIDING  
M: BEARINGS AND SEALS

## ADDITIVE

P: EP ADDITIVES  
F: SOLID LUBRICANTS

## MINIMUM OPERATING TEMPERATURE

FIGURE	TEMPERATURE
-10	-10°C
-20	-20°C
-30	-30°C
-40	-40°C
-50	-50°C
-60	-60°C

## MAXIMUM OPERATING TEMPERATURE

TEMPERATURE	WATER RESISTANCE	SYMBOL
+60°C	0.40 or 1.40	C
	2.40 or 3.40	D
+80°C	0.40 or 1.40	E
	2.40 or 3.40	F
+100°C	0.90 or 1.90	G
	2.90 or 3.90	H
+120°C	0.90 or 1.90	K
	2.90 or 3.90	M
+140°C		N
+160°C		P
+180°C		R
+200°C	BY AGREEMENT	S
+220°C	BY AGREEMENT	T

## CONSISTENCY

NLGI  
000  
00  
0  
1  
2  
3  
4  
5  
6

## TYPE OF BASE OIL

E: SYNTHETIC ESTERS  
FK: PERFLUOROALKYLS  
HC: POLYALPHAOLEFINS  
PH: PHOSPHATE ESTERS  
PG: POLYALKYLENE GLYCOLS  
SI: SILICONE OILS  
X: OTHERS



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