Matrix
specialty lubricants

GREASES & PASTES

Matrix Specialty Lubricants

Matrix Specialty Lubricants is a company based in The Netherlands, producing and marketing specialty lubricants and greases.

Matrix Specialty Lubricants was created by a nucleus of industry specialists with a collective experience of many years working for major oil companies. Our vision is to harness new technology and, with the expertise of our chemists, provide the correct lubricant for each application. It is just a matter of knowledge.

Specific product information is available in our brochures and most of the technical data sheets can be found on our website;
www.matrix-lubricants.com. Our main products are divided into groups with the most common being presented in our brochures. The most up to date information can always be found on our website.

ISO 21469:2006 ISO 9001:2015 ISO 14001:2020

Bio Lubricants

This group of products includes biodegradable hydraulic, gear, and other lubricants as well as a range of greases and concrete mould release agents. High performance, long life, low toxicity and biodegradabilty are key factors within this product group.

Compressor, Vacuum and Refrigeration Fluids

A comprehensive range of gas and refrigeration compressor fluids providing long life and low maintenance costs in combination with high efficiency. The range consists of mineral, and synthetic (hydro treated, PAO, POE, Alkyl Benzenes, Di-Ester, Ester, PAG, PFPE) based lubricants with performance up to 12.000 hour drain intervals.

Food Grade Lubricants

A complete range of fluids, lubricants and greases for applications whenever a food grade lubricant is required. The high performance Foodmax® line is NSF and InS approved and includes a range of spray cans.

Industrial Specialty Products

This product group includes a range of specialty chain lubricants, gear oils, transformer oils and many more products. All the products exceed performance expectations contributing to lower maintenance costs.

Greases and Pastes

An extensive range of specialty greases and pastes, including polyurea, calcium sulphonate, aluminium, barium, silicon, inorganic and PFPE. By using the latest technology and materials we are able to provide high performance and problem solving products.

Metal Working Fluids and Rust Preventatives

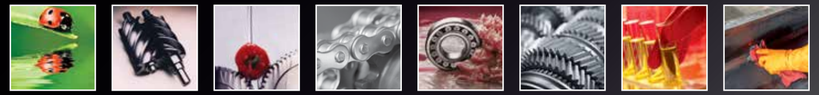
This line of products includes the latest technology soluble metal working fluids, neat cutting oils, cold and hot forging, quenching, drawing and stamping products.

Specialty Base Oils and Dispersions

These base oils are used in the formulation of metalworking fluids, biodegradable hydraulic fluids, top tier 2 stroke engine oils, mould release agents and many more. They include DTO, TOFA and various types of esters. Another range includes both technical and pharmaceutical white oils. The Matrix line of D-MAX colloidal dispersions contains products based on graphite, MoS2, PTFE and Boron Nitride (hBn). These can be used as additives, lubricants and processing products.

Cleaners

A range of process and workplace cleaners, both for the industry as well as for food processing plants. The cleaners for the Food Industry are NSF H-1, C-1 and K-1 approved.



Greases

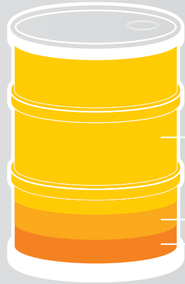
Greases are the result of dispersing a thickening agent in a liquid lubricant. Depending on the type of thickener and the type of base oil and the additive technology used, properties of greases vary. Matrix Specialty Lubricants uses almost all available components in the production of greases, this has resulted in a very extensive range of greases suitable for all sorts of applications. In this brochure the properties or the core range of greases are illustrated and explained. There can be very specific circumstances which require fine tuning or even a complete new formulation. It is our challenge to provide you with the right lubricant (grease) for the right application, so please feel free to contact us.

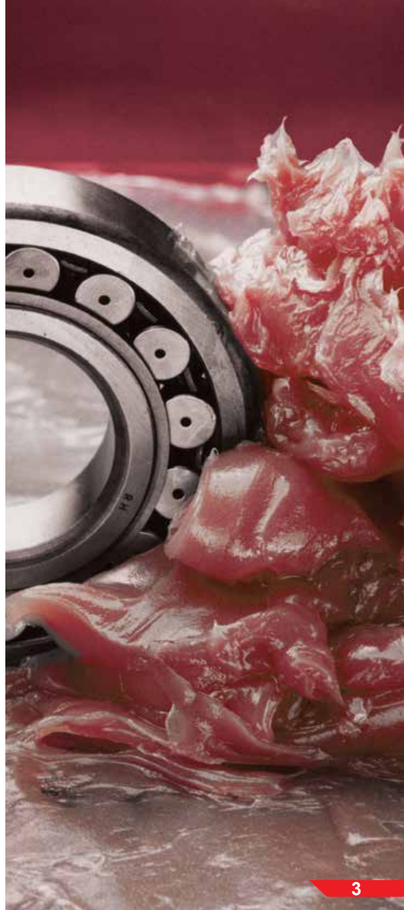
Why the use of Grease?

There are a number of reasons why grease is preferred over oil:

- Grease can act as a sealant to prevent lubricant leakage and keep deteriorated seals effective in cases where oil would leak out of the application
- It avoids corrosive contaminants and foreign material to enter
- Solids such as graphite, calcium carbonate, molybdenum disulphide, PTFE and hBN will be held in suspension, while these solids tend to settle out of oil
- Grease-demanding equipment is simple in design, requires less space and they weigh substantially less than similar equipment. This will result in reducing the cost of the equipment, both for purchase and maintenance
- Grease has a much longer service life than liquid lubrication before replenishment is required. This is a critical benefit for hard-to-reach or hazardous locations

A typical lubricating grease general contains 80-85% base oil, 10-15% thickener and 5-10% additives.

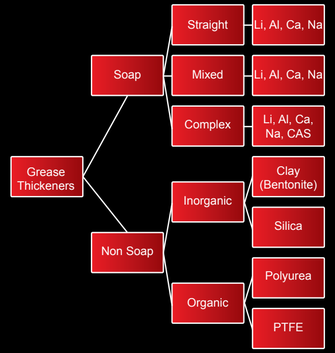




Thickeners

The most easy way to illustrate the working of a grease thickener is the comparison with a sponge. It is a structure which holds the base oil. The nature of the thickener is essential for the final product. Properties such as dropping point, mechanical stability, water resistance, lubricity, re-lubrication intervals, running temperatures and sealing properties can all be attributed to the thickener system.

Thickeners can be divided into two different types: soap and non-soap based.



Straight Soap Based Thickeners

Calcium Grease

Calcium greases are made by chemically reacting hydrated lime with tallow fatty acid in the presence of mineral oil. They are smooth and buttery in texture, have excellent water resistance, a fair mechanical stability, are easy to apply and have melting points just under the boiling point of water. Their lower temperature characteristics are governed by the mineral oil. Their maximum temperature is usually limited to about 65 °C, while they may survive 95 °C for short periods of time. Applications are found in the automotive and farm industries. Other uses include chassis lube, mine car grease, fifth wheel grease, track roll grease and water pump grease.

Calcium 12 Hydroxy Stearate Grease

This grease is made by reacting 12-hydroxy-stearic acid with hydrated lime and diluting with mineral oil. It is sometimes referred to as anhydrous calcium grease. It has excellent water resistance, good mechanical stability, and its low temperature properties are also dependent on the mineral oil used. The melting or dropping point is usually around 120 °C and can be used in areas where conventional calcium can not.

Lithium Soap Thickened Grease

These greases hold the highest value as a true multipurpose grease at a reasonably inexpensive cost. Lithium greases are buttery in texture, with high melting points above 175 °C. When blended with 12-hydroxy-stearates and complexing agents, good qualities can be obtained. Those include very high melting points, good water resistance and excellent resistance to breakdown or softening by working.

Sodium Soap Thickened Grease

Sodium soap greases present several drawbacks, such as age hardening, solubility in water and poor lubricity, and have therefore relatively low usage, mostly limited to rolling contact bearings.

Complex Soap Based Thickeners

Calcium Complex Grease

Calcium complex grease is made by reacting two dissimilar acids with hydrated lime to form a complex molecule. These dissimilar acids, acetic and stearic, when increased to the proper amounts, will yield a natural, high, extreme-pressure rating, usually around a 55 on the Timken O.K. Load. This is one of their advantages. They also have the advantage of good stability at higher temperatures and are extremely resistant to water washout. The disadvantages are that they harden considerably at elevated temperatures, separate under pressure, cause caking when used in pressurized central systems, have poor pump ability and mechanical stability, softening rapidly when sheared. Calcium complexes should not be considered as multipurpose greases. They are very useful, but should be considered carefully beforehand.

Calcium Sulfonate Grease

Calcium sulfonates, also referred to as overbased calcium sulfonate complex, are the most versatile of the calcium greases. Calcium Sulfonate is a high temperature grease (dropping point > 300°C) with many excellent properties such as shear stability, superb sealing, corrosion prevention, water resistance and an inherent high load carrying capability. Calcium Sulfonate is the only one of the calcium greases that can be considered a multipurpose grease. This type grease is considered the “last generation” greases and can be used in marine applications, the offshore and onshore industries, heavily loaded equipment applications and food machinery. Because of its’ unique properties, Calcium Sulfonate grease find their way to the market as real problem solving solutions.

Barium Complex Grease

Barium complexes were one of the first multipurpose greases. They are made by reacting barium hydroxide in a crystalline form with a fatty acid, complexing the soap with stabilizing substances and then blending with the desired amount of oil. Textures can vary from buttery to fibrous depending on the complexing agent used. The fibrous is the most common. The dropping points range from 200 °C - 250 °C, and is fairly stable to shear and working. They are water resistant and act as fair rust preventatives. They are not very pumpable at cool temperatures, but can be made so by adjusting the base oil. Barium complex is a fairly good multipurpose grease, but is relatively expensive. These greases work very well in wheel bearings, water pumps, chassis and universal joints. They also work well as an outside gear lubricant because of water resistance and have excellent adhesive properties.

Aluminium Complex Grease

They are made from two dissimilar acids reacted with aluminum iso-propoxide to form a complex soap molecule. They have high dropping points, excellent water resistance and good pump ability depending on the mineral oil used. They respond well to additive treatments which fortifies the grease for high loads. There are two main drawbacks, namely poor shear stability and poor corrosion protection against rust and corrosion. Applications are typically found in heavy industries, steel mills and food machinery.

Lithium Complex Grease

The first lithium complex grease was invented in 1959. It is an all round high temperature lubricating grease with excellent pump ability and shear stability properties. Depending on the base fluid the, the actual working temperature may exceed 220 °C for intermediate periods. There has been a growing trend in the worldwide use of this grease.

Mixed Soap Thickened Grease

These greases are made with two or more metallic soaps in combination to produce a lubricant that contains some of the desired properties of both. The most successful combination is Lithium-Calcium and Polyurea-PTFE. Other combinations have been used, such as aluminum-sodium, calcium-zinc, lithium-calcium-sodium and lithium-sodium, however, most of these have been developed for highly specialized use, and some are still in the experimental stage.

Non-Soap Thickened Grease

There are numerous types of these non-soap thickeners, but primarily the most common is bentone with polyurea being a distant second runner-up.

Inorganic Thickened Grease

Organic Clay (Bentone)

Commercial bentone powder used as a thickener is basically an organophillic montmorillonite type of clay. They are formed by slurrying in the bentone powder in a portion of the oil, pre-gelling by adding a dispersant and stirring, then heating to drive off the remainder of the dispersant. Finally, the oil is blended in to adjust to the proper consistency. Bentones have a buttery texture, virtually no melting point, good adhesiveness, fair mechanical stability and poor rust preventative properties. They are valuable in high temperature applications and can be used as a multipurpose grease. The greatest disadvantage occurs if maintenance is neglected and an offing-out or breakdown of the grease occurs. The end result is bentonite clay in the bearing which will cause a rapid catastrophic failure of the system.

Silica

Silca based greases display very good pumpability and can be used in a wide range of applications, including aviation and at very high temperatures. The lack of fibrous structure can, however, result in excessive oil separation under pressure. This happens for example in centralized lubrication systems.

Organic Thickened Grease

Polyurea

Polyureas are made with ashless organic thickeners and have a good resistance to oxidation. They provide very good high temperature performance since the consistency will not drop that much at elevated temperatures. This makes the grease very suitable where potential leakage from the bearings is seen due to high temperature thinning of the grease. Polyurea greases are very suitable for long line centralized systems. Therefore polyurea greases are popular greases in steel and paper processes.

PTFE

Polytetrafloureten (PTFE) is a polymer (plastic) with a very low friction coefficient. PTFE is used as a thickener in high temperature and chemically inert greases.

Polymer Greases

Polymer greases are the result of blending a base fluid in a polymer gel thickener system. The special polymer thicker technology is providing characteristics which allow relatively low viscosity base oils, however it is possible to replace conventionally thickened greases which need a thicker base oil to warrant proper lubrication, as a result of the lower base oil a temperature reduction in the bearings can be achieved resulting in lower energy consumption. They are suitable for a variety of applications where long life is a specific requirement. The non-ionic thickener is very suitable for sensitive materials like aluminum, ceramics and elastomers. The inertness of the thickener system makes the grease compatible with most type of greases but makes it also suitable for applications where water and aggressive chemicals are an issue.

Base Oils

Grease consists for 80-85% of base oils, therefore the properties of a grease depend a lot on the selected base oil to formulate the grease. Although mineral oils are far the most common used, synthetic oils are generally superior to mineral oils providing better oxidation stability, higher viscosity index and lower friction coefficient. Synthetic fluids are also used for extreme temperatures. In the table mentioned below some basic properties of various base oils are displayed.

Basic Base Oil properties

Properties	Mineral Oil	HT	PAO	Esters	PAG	Silicone	PFPE
Density at 200C, g/ml	0.9	0.85	0.85	0.9	0.9-1.1	0.9-1.05	1.9
Viscosity Index	80-100	100-120	130-160	140-175	150-270	190-500	50-140
Flash point ^{0}C	< 200	< 250	< 200	200-230	150-300	150-350	non flammable
Oxidation stability	medium	good	good	good	good	very good	excellent
Thermal stability	medium	good	good	good	good	very good	very good
Lubricity	good	good	good	good	excellent	poor	good
Compartibility with seals	good	good	good	poor	poor to good	good	good

Base Oil Viscosity Selection

Base oils used in greases typically have viscosities in the range of 20-500 mm2/s at 40 °C. However viscosity selection depends on the application of the grease. Generally spoken, low viscosity oils can be suitable for use in low temperature applications while higher viscosity oils are preferable for heavy loads and higher working temperatures thanks to their film thickness and lower volatility.

Base oil viscosity selection is very important in relation to speed. Low speed requires a high viscosity base oil in order to warrant the required hydrodynamic lubrication while for high speed applications low viscosity oils are preferable.

Base Oil Viscosity Selection in Relation to Speed

The speed factor is a term that helps define the relationship of the speed at which a bearing rotates with the size of the bearing. Theoretically it can be calculated through the following formula:

$$DmN = \left(\frac{d+D}{2}\right) * N$$

d- Inner diameter, mm
D- Outer diameter, mm
Dm- Median diameter of the bearing, mm
N- Rotation speed, rpm

Important note: our Calcium Sulfonate Complex greases have high thickener content compared to all other thickener types – 2 to 3 times the level, in fact. This adds a level of complexity to determining the DN value / speed factor of a specific grease, for which there is no actual method. For more information, please consult the Technical Info Sheet ‘Speed Factor of Foodmax Grease CAS’.

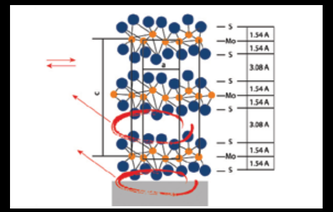
Speed factor	Lubricating regime	Base oil viscosity @ 40°C, cSt	Typical applicatons	Grease examples
50000	Mixed lubrication (wear)	1000-1500	Heavy duty equipment	Grease Lithium Complex EHG 2
			Enclosed gears	Grease Lithium GL 00
200000		400-500	Mining equipment	Grease MoS2 EH 2
			Pellet presses	Grease Lithium Complex EP 2 blue
400000	Hydrodynamic lubrication	150-200	Textile equipment bearings	Grease Barium Complex M 2
			Paper machine bearings	Grease Poly HT plus 2
700000		70-100	Electrical motor bearings	Grease Poly ALN 2
	Hydrodynamic lubrication (friction, heat)		Turbine bearings	Grease Barium Complex L 2 S
1000000		10-30	Metals machining	Grease Lithium Complex L 2 S

Additives

The oil additives used in greases are very similar to the additives used in liquid lubricants. In the table on the right you will find an overview of the most common used additives. Additives are used to give specific properties to a grease.

Graphite

Molydenum Disulfide



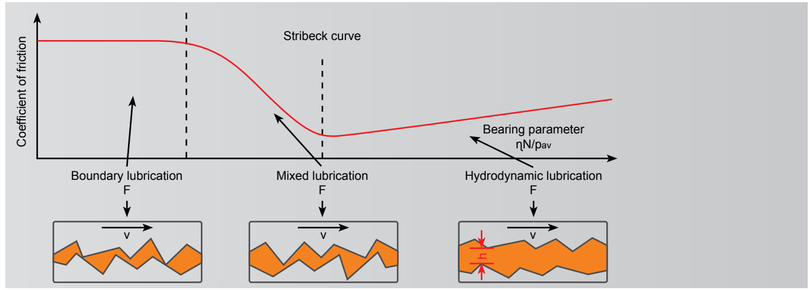
NLGI: Classifying Stiffness

The best way to define the consistency or stiffness of the grease is set out by the NLGI (National Lubricating Grease Institute). A test method defines the following grades according to a level of penetration measured at a temperature of 25 °C.
The consistency of the grease will change as soon as the temperature of the application will increase or decrease. When temperature falls below 25 °C, the NLGI grade rises and the grease will appear more stiff. On the other hand, as soon as the temperature will go beyond 25 °C, the NLGI grade is reduced and the grease becomes less stiff.

Additives	Function
Anti-oxidant	Retards oxidation of base stock for longer lubricant life
Rust Inhibitor	Protect ferrous surfaces from rusting
Anti-wear	Provide wear protection during boundary lubrication
Extreme Pressure	Provide protection during high load and shock loading conditions
Tackifiers/Polymers	Enhance water resistance and metal adhesiveness
Molybdenum Disulfide/Graphite/PTFE/hBN	Solid lubricants providing protection and friction reduction under high load/sliding conditions at low speeds

Solid lubricants like MoS2 (Molybdenum Disulfide), Graphite, PTFE and hBN (Boron Nitride) can be used in greases to provide a lower friction and protect heavy loaded equipment against excessive wear in ‘boundary’ lubrication circumstances. In the picture below the different lubricating regimes are illustrated.

Lubricating Regimes



NLGI Class	Worked Penetration	General Consistency
000	445-475	Liquid
00	400-430	Mildly liquid
0	355-385	Semi liquid
1	310-340	Very weak
2	265-295	Weak
3	220-250	Semi solid
4	175-205	Solid
5	130-160	Very solid
6	085-110	Firm

Grease Compatibility

Not all thickeners and base oils are compatible with each other. It is important to determine this before changing over from one type of grease to another if compatibility might be an issue. In the thickener and base oil compatibility tables some basic information about the compatibility can be found. In case of greases and or base oils are expected to be incompatible please consult the Matrix Specialty Lubricants technical department for advice on the suitable change-over procedure.

Compatibility of Greases

		Metal Soap			Complex Soap							Greases		
		AL	Ca	Li	Na	AL	Ba	Ca	Li	CAS	Na	Bentonite	Polyurea	PTFE
Metal Soap	AL		p	m	p	m	p	m	m	p	p	m	m	m
	Ca	p		m	m	m	m	m	p	m	m	m	m	m
	Li	m	m		n	m	m	m	m	m	n	p	p	m
	Na	p	m	n		m	m	p	p	n	m	n	p	p
Complex Soap	AL	m	m	m	m		m	p	m	n	p	p	p	m
	Ba	p	m	m	m	m		p	p	n	m	m	p	m
	Ca	m	m	m	p	p	p		m	m	m	p	m	m
	Li	m	p	m	p	m	p	m		m	p	m	p	m
	CAS	p	m	m	n	p	n	m	m		n	n	n	m
	Na	p	m	n	m	p	m	m	p	n		n	m	m
Greases	Bentonite	m	m	p	n	p	m	p	m	n	n		m	m
	Polyurea	m	m	p	m	p	m	p	m	n	m	m		m
	PTFE	m	m	m	m	m	m	m	m	n	m	m		

m = miscible / p = partially miscible / n = not miscible

Compatibility of Base Oils

	Mineral Oil	Synthetic HC	Ester Oil	Polyglycol	Silicone Oil (methyl)	Perfluoralkyl Ether Oil	Silicone Oil (Phenyl)	Polyphenyl Ether Oil
Mineral Oil	m	m	m	n	n	n	p	m
Synthetic HC	m	m	m	n	n	n	n	m
Ester Oil	m	m	m	m	n	n	m	m
Polyglycol	n	n	m	m	n	n	n	n
Silicone Oil (Methyl)	n	n	n	n	m	n	p	n
Perfluoralkyl Ether	n	n	n	n	n	m	n	n
Silicone Oil (Phenyl)	p	n	m	n	p	n	m	m
Polyphenyl Ether Oil	m	m	m	n	n	n	m	m

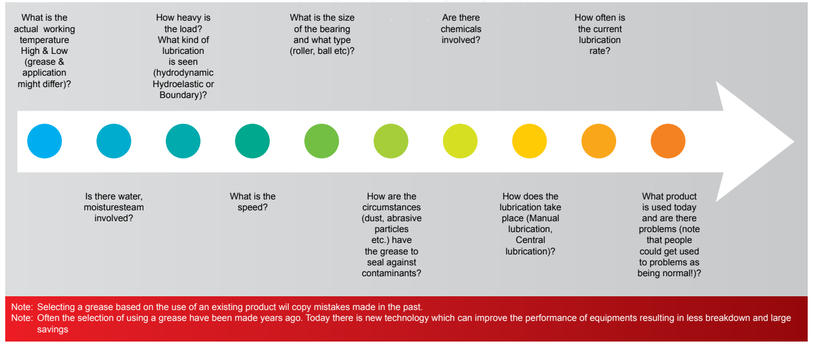
m = miscible / p = partially miscible / n = not miscible

Selecting the Right Grease for the Right Appliction?

Knowing that all different components in greases provide unique properties it is difficult to select the right grease for the right application. Very often people tend to stick to 'general purpose' greases because of lack of knowledge. This can result in poor lubrication and unnecessary equipment failure. Matrix Specialty Lubricants has a very extensive range of greases.

In the grease selection the core line of our products is listed. The information in this brochure should allow you to better understand the different properties. In the figure below a number of questions is listed which need to be answered first in order to get the necessary information about the circumstances and condition concerning a specific application. When this information is available selecting the right grease by using the Matrix grease selection table or downloading the 'GreaseChoice' mobile application from your online App store will allow you to select the right grease.

How to Select the Right Grease in Practice?



Note: Selecting a grease based on the use of an existing product wil copy mistakes made in the past.
Note: Often the selection of using a grease have been made years ago. Today there is new technology which can improve the performance of equipments resulting in less breakdown and large savings

Matrix specialty lubricants

Notes:

Grease Selection Table 1/3

Product	Thickener	Base Oil	BO Visc. @ 40 °C	Solid Lub.	Remarks and other characteristics
Grease Calcium	Ca	M	320		Water resistant chassis lubrication
Grease Calcium Complex	Cca	M	220		Water resistant, extremely suitable for central lubrication systems
Grease Calcium LT	Ca	M	20		Automotive applications with low temperatures and start-stop motion
Grease Calcium LXT	Ca	S	25		Grease for low temperature
Grease USG 2	LiCal	M	220		Universal Shipping Grease
Grease CAS 2 green	Cas	M	420		NLGI 1,5, Very water resistant grease, high temperature applications
Grease CAS 2 extra	Cas	M	250		For the lubrication of heavy loaded mechanisms
Grease CAS plus	Cas	M	420		For the lubrication of heavy loaded mechanisms
Grease CAS plus M	Cas	M	420	Mo	Industrial grease with added MoS2 for extreme conditions (shocks, temperature, boundary lubrication)
Grease Lithium EP	Li	M	150		General purpose grease suitable for most applications
Grease TF 2	Li	M	100	P	General purpose grease suitable for most applications, fortified with PTFE
Grease Lithium EX7 2	Li	S	32		High & medium speed long life applications (automotive)
Grease Lithium GL 00	Li	M	680		Heavy duty grease for gears, slides, guides and drive trains. Suitable for centralised lub systems
Grease CGL LS	Li	S	220		Fully synthetic closed gear grease
Grease Lithium RBT 00	Li	SS	36		Specially designed for the lubrication of welding robots, provides long life in gear boxes
Grease Lithium Calcium	LiCal	M	220		Multipurpose lithium calcium grease
Grease Lithium Complex EP Blue	CLi	M	150		General purpose grease when a higher temperature limit is required, blue coloured
Grease Lithium Complex EH	CLi	M	1000		Heavy duty, high load
Grease Lithium Complex EHG	CLi	M	1500	G	Heavy duty, high load, vibrations, for metal working processes (cold rolling)
Grease Lithium Complex HLM	CLi	M	220	Mo	High loads, temperature, water
Grease Lithium Complex S HT	CLi	S	250		General purpose grease with synthetic base oil, long life HT temp resistance
Grease Lithium Complex S HTH	CLi	S	460		General purpose grease with synthetic base oil, long life HT temp resistance
Grease Lithium Complex TFS	CLi	S	32	P	General purpose grease fortified with PTFE
Grease Lithium Complex TFS EP	CLi	S	100	P	General purpose grease fortified with PTFE, high EP properties

Legenda Grease Types		Legenda base oils & solids	
Calcium	Ca	Silicon	Si
Calcium Complex	Cca	Mineral	M
Calcium Sulphonate	Cas	Synthetic	S
Lithium	Li	Semi Synthetic	SS
Lithium Complex	CLi	Ester	E
Lithium Calcium	LiCa	Graphite	G
Inorganic	I	PTFE	P
Polyurea	P	MoS2	Mo
Aluminium Complex	AC	Boron Nitride	hBN
Sodium Complex	CS		
Bentone	B		
Organic	O		
Barium Complex	BC		

Very suitable
Suitable
! Suitable with limitations

* NLGI 1/2
** NLGI 0/1
*** NLGI 000/00
Base Oil Viscosity @ 25°C

Grease Selection Table 2/3

Product	NLGI (printed marks)	Operating temperature °C (printed marks)	Thickener	Base Oil	BO Visc. @ 40 °C	Solid Lub.	Behaviour to Chemical Agents – Acid (printed marks)	Applications – Valves & Taps (printed marks)	Remarks and other characteristics
Grease Fluor HT-CP			I	S	243	P			High temperature grease for corrugated paper production equipment
Grease Fluor HT			I	S	500	P			Extreme temperature, resistant to chemical agents, vibrations, contains special anti-oxidants
Grease Fluor H			I	S	500	P			Extreme temperature, resistant to chemical agents, vibrations
Grease Fluor Hybrid 2			P	S	400	P			More economic alternative to Grease Fluor HT 2
Grease Poly HT plus			P	M	220				Water resistant grease, very stable, high temperature resistant, steel industry
Grease Poly HT extra			P	M	460				Water resistant grease, very stable, high temperature resistant, steel industry, continuous casting
Grease Poly HT G			P	S	320	G			Roller mill bearings (strong temperature variations)
Grease Poly HT MS			P	S	400				Semi synthetic based polyurea grease
Grease Poly HT XS			P	S	460				High efficiency organic thickened lubricating grease with HVI synthetic base oil
Grease Poly ALN			P	S	100				High temperature, long life, electrical motor bearings
Grease Poly HT S			P	S	320				Water resistant grease, very stable, high temperature resistant, steel industry, continuous casting
Grease Poly SC-A			P	S	100				Silicone free synthetic polyurea grease
Grease Inor M 2			I	M	160				Bentonite based high temperature grease, frequent relubrication required
Grease Inor H 2			I	M	460				Bentonite based high temperature grease, frequent relubrication required
Grease Barium Complex L			BC	M	100		!	!	Water, alkalis, loads
Grease Barium Complex L 2 S			BC	S	22		!	!	High speed, water, long life. Spindle grease for MWF equipment
Grease Barium Complex M	* (1)		BC	M	220		!	!	Water, vapour, high load
Grease Barium Complex H			BC	M	460		!	!	Water, vapour, high load, low speed
Grease EC		-70	Li	S	12				Prevents salt or surface oxides from interrupting the electrical power circulation in electrical contacts
Grease MoS2 EH			LiCa	M	500	Mo			Heavy duty grease for mines which are exposed to dust and water. Anti-wear properties.
Grease MoS2			Li	M	96	Mo			Multipurpose grease fortified with Moly for HD circumstances
Grease OGL			I	SS	750				Special open gear grease, pin & bush
KBL	*** (000)		I	M	820	Mo			Wire rope lubrication, drip free, low dust collection, fully water resistant, very low consumption

Column groups of the table: Category (Water resistant, Multipurpose, Low temperature <-30 °C, High temperature >120 °C, Heavy duty, Low speeds, Medium speeds, High speeds, Food grade, Biodegradable); NLGI (000, 00, 0, 1, 2, 3); Operating temperature °C (-50, -40, -30, -20, -10, 0, 50, 80, 120, 160, 180, 220, 280, 300); Grease type (Thickener, Base Oil, BO Visc. @ 40 °C, Solid Lub.); Behaviour to – Physical Agents: Loads (Low, Medium, High), Vibrations, Speed (Low, Medium, High); Chemical Agents: Water (Cold, Hot, Salt, Vapour), Alkali, Acid, MWF, Hydrocarbons; Applications (Bearings, Slider Bearings, Open gears, Closed gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets, Wires); Remarks and other characteristics.

Legenda Grease Types		Legenda base oils & solids	
Calcium	Ca	Silicon	Si
Calcium Complex	Cca	Mineral	M
Calcium Sulphonate	Cas	Synthetic	S
Lithium	Li	Semi Synthetic	SS
Lithium Complex	CLi	Ester	E
Lithium Calcium	LiCa	Graphite	G
Inorganic	I	PTFE	P
Polyurea	P	MoS2	Mo
Aluminium Complex	AC	Boron Nitride	hBN
Sodium Complex	CS		
Bentone	B		
Organic	O		
Barium Complex	BC		

- Very suitable
- Suitable
- ! Suitable with limitations
- * NLGI 1/2
- ** NLGI 0/1
- *** NLGI 000/00
- Base Oil Viscosity @ 25°C


Take off the cap


Push the grease up until the neck is filled


Insert the cartridge


Screw the cartridge into the grease gun and start greasing!

Grease Selection Table 3/3

Product	NLGI	Operating temperature °C	Thickener	Base Oil	BO Visc. @ 40 °C	Solid Lub	Behaviour to	Applications	Remarks and other characteristics
							Physical Agents: Loads, V, Speed; Chemical Agents: Water		
Inomax H-00R	00	-10 to 50	AC	M	550	G	High; Low; Medium	Open gears	Large crown lubrication, running inn fluid
Inomax H1/R	0	-10 to 50	AC	M	1000	G	High; Low; Medium	Slideways	Priming grease
Inomax H-0	0	-10 to 80	AC	M	650	G	High; Low; Medium	Slider Bearings, Open gears, Closed gears !, Chains & Joints !, Slideways !	Service lub for steel, cement & mining induatry. girth mills & open gearsets, high adherence, sprayable
Inomax H-0 Plus	0	-10 to 80	AC	M	750	G	High; Low; Medium	Slider Bearings, Open gears, Chains & Joints, Slideways	Lubricating grease for open gears
Inomax H-3000	0	-10 to 80	AC	M	3500	G	High; Low; Medium	Slider Bearings, Open gears, Slideways	Service lub for steel, cement & mining induatry. girth mills & open gearsets, high adherence, sprayable
Inomax R-Fluid	000	-10 to 50	AC	M	n/a	G	High; Low; Medium	Slider Bearings, Open gears, Chains & Joints !, Slideways !	Running in lubricant for open gears
Inomax M-Fluid	000	-10 to 50	AC	SS	n/a	G	High; Low; Medium	Slider Bearings, Open gears, Slideways !	Bubbling lubrication
Inomax H HM	000	0 to 80	AC	M	21000	G	High; Vibrations; Low; Medium	Open gears	Heavy duty mills & open gear sets. Very suitable for preheated rotary ball mills for carbon milling in electricity plants
Inomax R2 Fluid	00	-10 to 80	AC	M	19000	G	Low; Medium !; Low; Medium	Slider Bearings, Open gears	Crown repair fluid
Foodmax© Grease ALU M	00	-10 to 80	AC	S	220		High; Low; Medium; Cold; Hot; Vapour	Slider Bearings, Open gears, Closed gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	H1 approved, water and steam resistant
Foodmax© Grease ALU P	1	-40 to 80	AC	S	460		High; Low; Medium; Cold; Hot; Vapour	Slider Bearings, Open gears, Closed gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	H1 approved, water and steam resistant, low temperature
Foodmax© Grease ASP	1	-30 to 120	AC	S	220		High; Low; Medium; High; Cold; Hot; Salt; Vapour	Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	H1 approved, water and steam resistant, very good EP properties
Foodmax© Grease HD	1	-20 to 120	AC	S	460		High; Low; Medium; High; Cold; Hot; Salt; Vapour	Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	H1 approved, water and steam resistant, very good EP properties. Pellet press lubrication
Foodmax© Grease CAS M	1	-10 to 160	Cas	S	95		High; Low; Medium; Cold; Hot; Salt	Slider Bearings, Open gears	H1 approved, water and high temperature resistant, very suitable for infrequent lubrication
Foodmax© Grease CAS S HS	000	-40 to 180	Cas	S	100		High; Low; Medium; Cold; Hot; Salt	Slider Bearings, Open gears	H1 approved, water and high temperature resistant, very suitable for infrequent lubrication. NLGI 00 for central lubrication
Foodmax© Grease CAS S LS	1	-40 to 160	Cas	S	400		High; Low; Medium; Cold; Hot; Salt	Slider Bearings, Open gears	H1 approved, water and high temperature resistant, very suitable for infrequent lubrication
Foodmax© Grease TF-S	1	-30 to 120	I	S	320	P	High; Vibrations; Low; Medium; Cold; Hot	Slider Bearings, Open gears, Slideways, Joints & Gaskets	H1 approved, contains PTFE for boundairy lubrication, very suitable for sliding surfaces
Foodmax© Grease LT	2	-60 to 50	Ca	S	36		Low; Medium; High; Cold; Alkali	Slider Bearings, Open gears, Chains & Joints, Slideways, Joints & Gaskets	Low temperature applications non toxic grease
Foodmax© Grease SI	000	-20 to 160	I	SI	3000	P	Low; Medium; High; Cold; Hot; Vapour; Alkali; Acid; MWF; Hydrocarbons	Bearings !, Open gears, Slideways, Joints & Gaskets	Water resistant and resistant to chemical agents, non-toxic H1 approved, water taps NLGI 3 for boom lubrication
Foodmax© Grease Inor 3-H	*	-20 to 120	I	M	100		High; Low; Medium; Cold; Hot; Salt; Vapour; Alkali; Acid; MWF; Hydrocarbons	Slider Bearings, Open gears, Slideways, Joints & Gaskets	3H grease for direct contact with food
Foodmax© Grease Clear	1	-10 to 80	I	SI	330		Low; Medium; Cold; Hot; Salt; Vapour; Alkali; Acid; MWF; Hydrocarbons	Slider Bearings, Open gears, Closed gears	Translucent food grade grease
Foodmax© Grease Fluor HT	1	-20 to 180	I	S	500	P	High; Low; Medium; High; Cold; Hot; Salt; Vapour; Alkali; Acid; MWF; Hydrocarbons	Bearings, Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	High temperature, resistant to chemical agents, vibrations, contains special anti-oxidants
Foodmax© OGL	0	-20 to 80	Cas	S	190		High; Low; Medium; Cold; Hot; Salt; Vapour	Open gears	Food grade open gear grease
Grease Bio M WR	0	-10 to 50	Ca	E	250		Low; Medium; Cold; Hot; Vapour !	Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	Biodegradable water resistant
Grease Bio MG G	000	-20 to 50	Li	E	130	G	Low; Medium; Cold; Hot; Vapour !	Bearings, Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	Biodegradable water resistant, fortified with graphite
Grease Bio HT	1	-10 to 50	Li	S	350		Low; Medium; Cold; Hot; Vapour !	Bearings, Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	Biodegradable water resistant
Grease Bio KBL	000	-10 to 120	I	S	820	G	High; Low; Medium; Cold; Hot; Salt; Vapour; Alkali; Acid; MWF; Hydrocarbons	Open gears, Slideways, Joints & Gaskets	Biodegradable wire rope grease
Grease Silcon	1	-60 to 50	I	SI	5000		Low; Medium; High !; Cold; Alkali !; Acid !	Bearings, Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	Silicon grease
Grease Silcon L	2	-73 to 50	Li	SI	10000		Low; Medium; High !; Cold; Alkali !; Acid !	Bearings, Slider Bearings, Open gears, Chains & Joints, Valves & Taps, Slideways, Joints & Gaskets	Low temperature lubrication

Legenda Grease Types		Legenda base oils & solids	
Calcium	Ca	Silicon	Si
Calcium Complex	Cca	Mineral	M
Calcium Sulphonate	Cas	Synthetic	S
Lithium	Li	Semi Synthetic	SS
Lithium Complex	CLi	Ester	E
Lithium Calcium	LiCa	Graphite	G
Inorganic	I	PTFE	P
Polyurea	P	MoS2	Mo
Aluminium Complex	AC	Boron Nitride	hBN
Sodium Complex	CS		
Bentone	B		
Organic	O		
Barium Complex	BC		

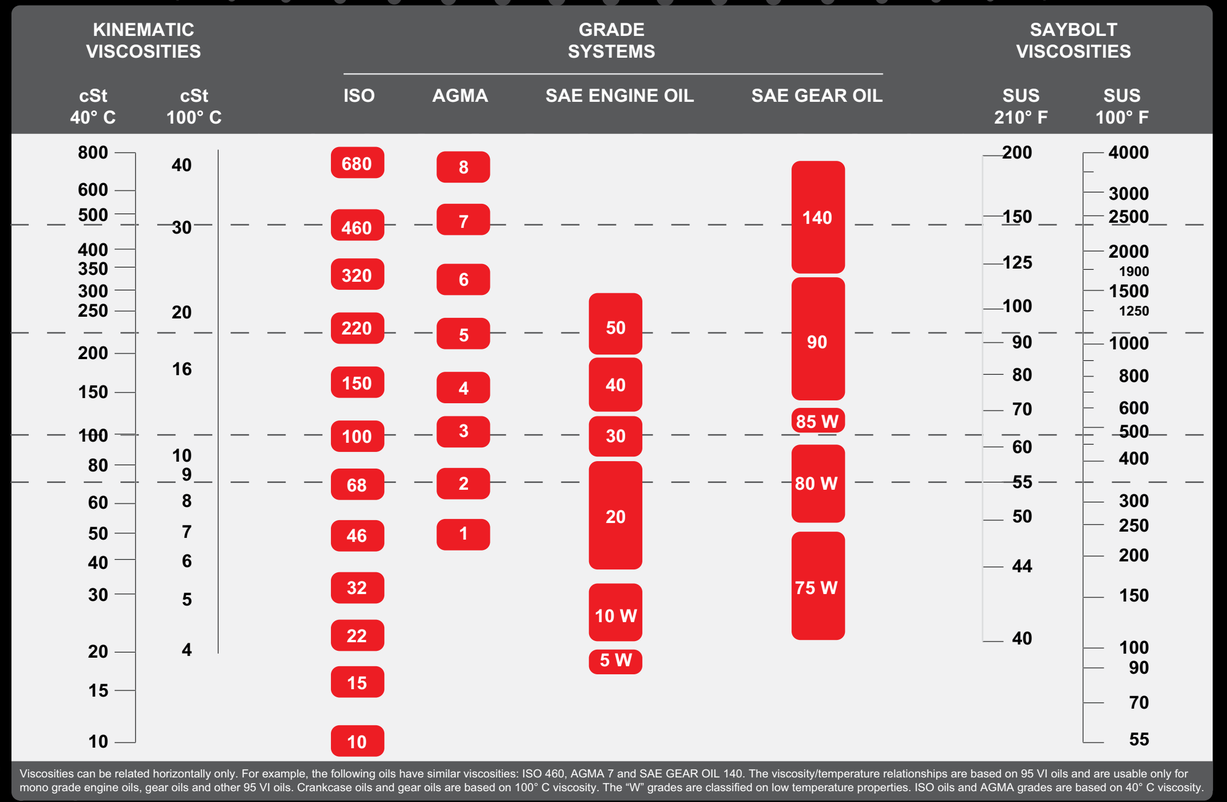
- Very suitable
- Suitable
- ! Suitable with limitations
- * NLGI 1/2
- ** NLGI 0/1
- *** NLGI 000/00
- Base Oil Viscosity @ 25°C

Paste Selection Table

Product	NLGI				Operating Temperature °C															Grease Type						Behaviour to												Applications									Remarks and other characteristics
																									Physical Agents						Fluids															
																									Loads			V	Speed																	
Category	00	0	1	2	-50	-40	-30	-20	-10	0	50	80	120	140	160	180	200	280	300	Anti-seize	Thickener	Base Oil	BO Visc. @ 40 °C	Solid Lub.	% Solids	Low	Medium	High	Vibrations	Low	Medium	High	Water	Alkali	Acid	MWF	Hydrocarbons	Anti Seize & Assembly	Thermal conductor	Electrical conductor	Food grade	Pneumatic & Hydraulic tools	Electrical Insulation	Mould release	Tapping & Drilling Paste	
Grapag Compound	■			■																600	I	S	680	G	20	■	■	■	■	■	■		■				■			■						Special high temperature compound
Foodmax Assembly Paste				■																1100	I	S	320	P	30-40	■	■	■	■							■		■			■				■	Foodgrade Assembly Paste
Paste Anti Seize				■																1100	I	M	100	Mix	35-40	■	■	■	■									■								Anti seize and anti corrosive paste
Paste HTA			■																	1000	I	SS	700	G	50	■	■	■	■	■	■							■		■						Special product for pre-treatment of gears, toothed wheels, slideways, bearings, joints, threaded connections and valves
Paste Drill M-2 ZN			■																	450	Li	M	150	G	15	■	■	■	■			■						■		■						Special paste for the protection of threaded couplings of i.e. drilling equipment and high voltage electrical connectors
Paste Meissel			■																	1200	I	E	32	Mix	37	■	■	■	■		■	■									■					Biodegradable paste for sockets and pneumatic & Hydraulic tools by e.g. Krupp, Montabert, Rammer, Indeco
Paste Inor CK			■																	1100	I	M	100	Mix	20	■	■	■	■			■						■	■	■						Conductive assembly paste for applications such as switches, circuit breakers, sliding contacts
Paste C				■																1200	I	M	100	Mix	>40	■	■											■								Economic Anti seize paste fortified with ceramic components, suitable for assembly and running-in purposes
Paste Copper 1.5			*	*																1200	I	M	100	C	10	■	■	■	■									■								High temperature copper compound
Paste GAL			■																	1180	I	M	460	Al	6	■	■	■	■									■	■	■			■			Anti-adherent agent in aluminum diecasting, anti seize, anti corrosive and conductive
Paste TLS				■																400	Li	S	55	P	50	■	■	■	■	■	■		■					■								High resistance to fretting corrosion, long life lubricant
Paste Silicon				■																	I	Si	10000									■					■					■	■		Silicone paste

Legenda Grease Types		Legenda base oils & solids		
Calcium	Ca	Silicon	Si	■ Very suitable
Calcium Complex	Cca	Mineral	M	■ Suitable
Calcium Sulphonate	Cas	Synthetic	S	! Suitable with limitations
Lithium	Li	Semi Synthetic	SS	
Lithium Complex	CLi	Graphite	G	* NLGI 1/2
Lithium Calcium	LiCa	PTFE	P	** NLGI 0/1
Inorganic	I	MoS2	Mo	
Polyurea	P	Boron Nitride	hBN	Base Oil Viscosity @ 25 °C
Aluminium Complex	AC	Copper	C	
Sodium Complex	CS	Mix of solids	Mix	
Bentone	B	Aluminium	Al	
Organic	O	Ester	E	

Notes


KINEMATIC VISCOSITIES
cSt 40° C
cSt 100° C
GRADE SYSTEMS
ISO
AGMA
SAE ENGINE OIL
SAE GEAR OIL
SAYBOLT VISCOSITIES
SUS 210° F
SUS 100° F
800
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125
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70
60
55
50
44
40
4000
3000
2500
2000
1900
1500
1250
1000
800
600
500
400
300
250
200
150
100
90
70
55
Viscosities can be related horizontally only. For example, the following oils have similar viscosities: ISO 460, AGMA 7 and SAE GEAR OIL 140. The viscosity/temperature relationships are based on 95 VI oils and are usable only for mono grade engine oils, gear oils and other 95 VI oils. Crankcase oils and gear oils are based on 100° C viscosity. The "W" grades are classified on low temperature properties. ISO oils and AGMA grades are based on 40° C viscosity.

Glossary of terms

Additive
A chemical added in small quantities to a product to improve certain properties. Among the more common petroleum product additives are: oxidation inhibitors for increasing the product's resistance to oxidation and for lengthening its service life; rust and corrosion inhibitors to protect lubricated surfaces against rusting and corrosion, demulsifiers to promote oil-water, separation, VI improvers to make an oil's viscosity less sensitive to changes in temperature, pour-point depressants to lower the cold temperature fluidity of petroleum products, oiliness agents, anti-wear agents, and EP additives to prevent high friction, wear, or scoring under various conditions of boundary lubrication, detergents and dispersants to maintain cleanliness of lubricated parts, anti-foam agents to reduce foaming tendencies, and tackiness agents to increase the adhesive properties of a lubricant, improve retention, and prevent dripping or spattering.

Anhydrous
Free of water, especially water of crystallization.

Anti-Foam Agent
An additive that causes foam to dissipate more rapidly. It promotes the combination of small bubbles into large bubbles which burst more rapidly.

Anti-Oxidant
A chemical added in small quantities to a petroleum product to increase its oxidative resistance in order to prolong its storage and/or service life. The additive activates in two ways: by combining with the peroxides formed initially by oxidation paralyzing their oxidizing influence, or reacting with a catalyst to coat it with an inert film.

Anti-Wear Agent
An additive that minimizes wear caused by metal-to-metal contact by reacting chemically with the metal by forming a film on the surfaces under normal operating conditions.

Acid Number
Also referred to as NEUT or NEUTRALIZATION number: the specific quantity of reagent required to 'neutralize" the acidity or alkalinity of a lube oil sample. In service, the oil will, in time, show increasing acidity as the result of oxidation and, in some cases, additive depletion. Though acidity is not, of itself, necessarily harmful, an increase in acidity any be indicative of oil deterioration, and NEUT number is widely used to evaluate the condition of an oil in service. The most common measurement is ACID NUMBER, the specific quantity of KOH (potassium hydroxide) required to counterbalance the acid characteristics. How high an acid number can be tolerated depends on the oil and the service conditions, and only broad experience with the individual situation can determine such a value.

Auto-Ignition Temperature
Minimum temperature at which a combustible fluid will burst into flame without the assistance of an extraneous ignition source. This temperature is typically several hundred degrees higher than the flash and fire point.

Base Oils
Base stocks or blends used as an inert ingredient in the manufacturing of automotive and industrial lubricants.

Base Stocks
Refined petroleum oils that can either be blended with one another or supplemented with additives to make lubricants.

Base Oil Viscosity in a Grease
Because oil does the lubricating in a grease, and viscosity is the most important property of the lubricant, the viscosity of the base oil needs to be designed correctly for the application.

Boundary Lubrication
A form of lubrication effective in the absence of a full fluid film. Made possible by the inclusion of certain additives in the lubricating oil that prevent excessive friction and scoring by forming a film whose strength is greater than that of oil alone. These additives include oiliness agents, compounded oils, anti-wear agents, and extreme pressure agents.

Carbon Residue
Coked material formed after lubricating oil has been exposed to high temperatures.

Copper Strip Corrosion
Evaluation of a product's tendency to corrode copper or copper alloys. ASTM D130. Test results are based on the matching of corrosion stains.

Corrosion Inhibitor
A lubricant additive for protecting surfaces against chemical attack from contaminants in the lubricant.

Compatibility of a Grease
This is one of the most important grease properties. Whenever two incompatible thickeners are mixed, grease usually becomes soft and runs out of the bearing. When mixing different thickener types, consult supplier on compatibility. Some incompatible thickeners are aluminum and barium soaps, clay and some polyureas.

Consistency
NLGI grade is based on amount of thickener. Consistency describes the stiffness of the grease. NLGI 2 is the most common grade.

Demulsibility
A lubricant's ability to separate from water, an important consideration in the lubricant maintenance of many circulating systems.

Detergent
An additive which chemically neutralizes acidic contaminants in the oil before they become insoluble and fall out of the oil forming sludge. Particles are kept finely divided so that they can remain dispersed throughout the lubricant.

Dropping point
The temperature at which a grease changes from semi-solid to a liquid state under test conditions. It may be considered an indication of the high temperature limitation for application purposes.

Entrainment
Describing a state of an immiscible fluid component. Minute quantities of a fluid (typically water) can be dissolved or absorbed into the oil, but excess quantities can be most harmful to equipment due to the entrainment leaving gaps in the lubricated areas.

Emulsion
A mechanical mixture of two mutually insoluble liquids (such as oil and water).

EP agent
An additive to improve the extreme pressure properties of a lubricant.

Flash Point
Lowest temperature at which the air vapor from a sample of a petroleum product or other combustible fluid will "flash" in the presence of an ignition source. The flash can be seen in the form of a small spark over the liquid.

Fire Point
Lowest temperature at which a combustible fluid will burst into flame in the presence of an extraneous ignition source. Very little additional heat is required to reach the fire point from the flash point.

Foaming
A possible reaction of an oil when mixed with air. This entrained air can result in reduced film strength and performance reduction.

Foam Inhibitor
An additive which causes foam to dissipate more rapidly. It promotes the combination of small bubbles into large bubbles which burst more easily.

Four-Ball Tests
Two test procedures on the same principle. The Four Ball Wear Test is used to determine the relative wear-preventing properties of lubricants operating under boundary lubrication conditions. The Four Ball Extreme Pressure Test is designed to evaluate performance under much higher unit loads.

Hydrocarbons
Compounds of hydrogen and carbon of which petroleum products are typically examples. Petroleum oils are generally grouped into two parts: Naphthenics, which possess a high proportion of unsaturated cyclic molecules; and paraffinic, which possess a low proportion of unsaturated cyclic molecules.

Glossary of terms continued

Hydro Treating
A Gulf patented process used to make lubricant base stocks. In the process, lubricant feedstocks are reacted with hydrogen in the presence of a catalyst at very high temperature (400°C) and pressure (3000 plus psi). The process displaces impurities and unsaturated hydrocarbons.

Hydrodynamic Lubrication
A type of lubrication effected solely by the pumping action developed by the sliding of one surface over another in contact with an oil. Adhesion to the moving surface draws the oil into the high-pressure area between the surfaces, and viscosity retards the tendency to squeeze the oil out. If the pressure developed by this action is sufficient to completely separate the two surfaces, full-fluid-film lubrication is said to prevail.

ISO
International Standard Organization

Load Carrying Ability
Under high-load conditions, high-viscosity base stock is required and usually with an EP additive or solid additive like molybdenum disulfide.

NLGI· classifying stiffness of a Grease
The best way to define the consistency or stiffness of the grease is set out by the NLGI (National Lubricating Grease Institute). A test method defines the following grades according to a level of penetration measured at a temperature of 25°C. The consistency of the grease will change as soon as the temperature of the application will increase or decrease. When temperature falls below 25°C, the NLGI grade rises and the grease will appear more stiff.

On the other hand, as soon as the temperature will go beyond 25°C, the NLGI grade is reduced and the grease becomes less stiff.

Oxidation
A form of chemical deterioration to which all petroleum products are subject to, and involves the addition of oxygen atoms resulting in degradation. It is accelerated by higher temperatures above 25°C, with the rate of oxidation doubling by each 10°C increase. With fuels and lubricant oils, oxidation produces sludges, varnishes, gums, and acids, all of which are undesirable.

Oxidation Inhibitor
A chemical added in small quantities to a petroleum product to increase its oxidation resistance in order to prolong its storage and/or service life. The additive activates in two ways: by combining with the peroxides formed initially by oxidation, paralyzing their oxidizing influence, or reacting with a catalyst to coat it with an inert film.

Oil Separation of a Grease
For a grease to be effective, a small amount of oil must separate from the thickener (usually less than 3%).

Pumpability of a Grease
This is an important property when pumping grease in centralized systems at low temperatures. Most common test is Lincoln Ventmeter.

Pour Point
A widely used low temperature flow indicator, depicted as -15°C above the temperature to which a normal liquid petroleum product maintains fluidity. It is a significant factor in cold weather start-up. Paraffinic oils typically have higher pour points due to the formation of wax crystals, while many other lubricants reach their low pour points through an increase in viscosity.

Rust Inhibitor
A lubricant additive for protecting ferrous (iron and steel) components from rusting caused by water contamination or other harmful materials from oil degradation.

Shear Stress
A unit of frictional force overcome in sliding one layer of fluid along another. This is typically measured in pounds per square foot, with pounds representing the frictional force, and square feet representing the area of contact between the sliding layers.

Shear Stability
Grease needs to maintain its consistency under high shear conditions. The shear stability test measures the softening of grease when sheared for 10,000 or 100,000 double strokes with a grease worker. Loss of less than one NLGI grease grade signifies a stable thickener under high shear conditions.

Sludge
The collective name for contamination in a compressor and on parts bathed by the lubricating oil. This includes decomposition products from the fuel, oil, and particulates from sources external to the compressor.

Solvency
The ability to dissolve into a solution producing a homogeneous physical mixture. The degree of solvency varies along with the rate of dissolution depending on the amount of heat added to the solution.

Synthetic lubricants
Lubricants manufactured by a process, where a chemical conversion or transformation of one complex mixture of molecules into another complex mixture takes place.
Common types of synthetic base oil include: Polyalpha olefins (PAO), Hydrocracked/Hydroisomerized, Unconventional Base Oils (UCBO), Organic Esters, Polyglycols (PAG).

Timken OK load
Measure of the extreme pressure properties of a lubricant.

Thickener for Grease
A grease consists of a base oil, additives and a thickener. There are soap and non-soap thickeners. Each thickener type provides unique characteristics to the grease.

Vapor Pressure
The measure of a liquid's volatility. The higher the pressure at a standard test temperature, the more volatile the sample, and the more readily it will evaporate.

Varnish
A deposit resulting from oxidation and polymerization of fuels and lubricants. Similar to but softer than lacquer.

Viscosity
Measure of a fluid's resistance to flow. This is typically measured as the time required for a standard quantity of fluid at a certain temperature to flow through a standard orifice. The higher the value, the more viscous the fluid. Viscosity varies inversely with temperature, so the measurements are always expressed together. Tests are typically conducted at 40°C and 100°C.

Viscosity Index
The measure of the rate of change of viscosity with temperature. Heating tends to make lubricants thinner, cooling makes them thicker. The higher a VI is on a particular fluid, the less of a change in viscosity there will be over a given temperature range. In determining the VI, two temperatures of viscosity are taken, one at 40°C and the other at 100°C.

Volatility
The property of a liquid that defines its evaporation characteristics. Of two liquids, the more volatile one will boil at a lower temperature and will evaporate faster when both liquids are at the same temperature. The volatility of petroleum products can be evaluated with tests for flash point, vapor pressure, distillation, and evaporation rate.

Water Resistance
Water washout test measures ability of a thickener to remain intact in bearing when submerged in water. Water spray-off measures ability of a thickener to remain in bearing in presence of water spray. Both of these tests measure percent grease removed.

UK version 4.0

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