

• •

CHAIN LUBRICANTS

•

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.





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. Those are NSF H-1, C-1 and K-1 approved.



- Anti-wear properties
- · Clean operation
- Energy savings

- Lower overall lubricant consumption
- · Increased production and equipment operating reliability
- Decreased maintenance costs
- · Longer chain life

Chain Lubricants

Chains have been used for ages and can literally be found in any type of industry. Many different types of chains are used and they differ in size and dimension. Although the lubrication of chains is often done with general purpose products, selecting the right and dedicated chain lubricant is valid for a properly functioning chain as well as its lifetime.

Matrix Specialty Lubricants therefore offers a very extensive range since all applications, temperatures and running conditions require a specific approach. We are using the latest base oils and additive technology to formulate chain oils which are outperforming many competitive products in the below mentioned fields.

Temperature resistance

- Water resistance
- · Chemical resistance
- By using Matrix Specialty Lubricants chain fluids the equipment operator can achieve;
- Extended service intervals



Chains

In industrial processes several chain types fulfill numerous functions;

Drive Chains

found in, for example motorcycles, construction equipment and bikes

- Lifting Chains found in forklift trucks, elevators, rolling mills and lock gates
- Control Chains machine tools and positioners
- Transport Chains found in food and automotive industries and manufacturing of furniture and steel

The lubrication of chains is an interesting challenge because of several reasons:

- Mechanical motion results in mixed and boundary friction
- No hydrodynamic lubrication possible because of low speeds
- The friction points are relatively difficult to access
- Mainly linear contact of the friction parts
- High surface pressures on the friction parts
- Oscillating friction body movements

An oil film on the outside of the chain will protect against corrosion but will not protect against wear inside the chain. It is very important that lubricants that are chosen actually penetrate well and lubricate the roller, bushing from the inside to prevent wear.

Inadequate lubrication of chains will finally lead to excessive wear, which will result in a longer chain and eventually breaking of the chain and increased operating cost (energy consumption). Whether driving a motorbike at high speed or the tenter chain in a textile production company breaks during the production season, in all cases you do not want to be confronted with the results which are very often caused by inadequate lubrication.

The choice of the right lubricant is vital, the following factors should be considered:

- Correct viscosity (see figure)
- Re-lubrication intervals
- Right quantity and applied to the right place
- Type of application possible
- Temperature range
- · Ability of the lubricant to get between the pin and bushings
- Material pairs
- Different chain drive constructions

Standard values for oil viscosity at 40°C according to DIN 8195

Joint Contact										
Pressure N/mm2	1	1 to 5	>5	<5	≥5					
	ISO VG Grade									
<10	32	46	68	32	46					
10 to 20	46	68	100	46	68					
20 to 30	68	100	150	68	100					
	manua	I or drip feed lub	rication	splash lubrication						

Almost all chains suffer from intense surface contact, this phenomenon is often referred to as boundary friction; from a lubricants point of view this will result in boundary lubrication. Friction can be reduced to a great extent by chosing the right lubricant for the given circumstances.



not fling off.

Detergency

The ability of a chain lubricant to protect the chain against corrosion is especially important for outdoor and corrosive ambient conditions.

Carbon Forming Tendency

Chain lubricants have to be high-performance products and therefore they need to have good technical characteristics. Below the most important are listed and explained in more detail.

Adhesiveness

The ability of a lubricant to stick to the chain. This parameter is very important in case of high-speed chains where the lubricant should

The ability of the lubricant to clean (dissolve) the residues of used chain oil in the difficult to reach parts of the chain.

High-Temperature Resistance

The ability of a lubricant not to create residues in the chain links at operating temperatures above 140 °C. This parameter is extremely important when chains operate at these temperatures. Using a lubricant which is not suitable for high temperatures will result in residues in the vital parts of the chains.

Corrosion Protection

Resistance Against Media

The presence of water, acids and solvents can trigger chemical reactions. Under all circumstances it is important that a lubricant keeps performing the way it should. This parameter is especially important for chains used in the textile, food and paint industry.

Carbon deposits are created in the chain links at high temperatures. These increase wear and reduce chain lifetime; the lubricant should possess very low carbon forming tendencies at high temperatures.

Wetting Ability

The chain lubricant should have the ability to penetrate in the narrow spaces of the chain links in order to lubricate the chain properly.

Load Carrying Capability

A chain lubricant should be formulated in such a way so that it reduces wear and seizure of the chain parts.







Chain Oil Selection Table

			• • • •						
	Working Temperature °C		Application	Remarks and other characteristics	Legenda Base Oils & Solids				
					Mineral	М	Very suitable		
					Synthetic	S	Suitable		
			v Sa ng izer ing ing izer i		Semi-Synthetic	SS	. Suitable with limits		
		eel ater eel eel eel eel eel eel eel eel eel e	[영 아이 아이 아이 아이 아이 아이 아이		Graphite	G			
<u> </u>	-40 -30 -20 -10 0 150 170 200 220 240 250 280 300 500 \breve{o} \breve{e} $ec{u}$	A Carlor A A Co Co			DTEE	P	Short periodo		
Chainmax 100	M 230			Sticky chain oil for lubrication up to 150 degrees °C, provided with good low-noise properties	FILE	F	Sp Short periods		
Chainmax 150	M 230			Sticky chain oil for lubrication up to 150 degrees C, provided with good low-noise properties	MoS ₂	Mo	Dry lubricant		
Chainmax 320 Chainmax 460	M 233			Sticky chain on in hubincation up to 150 degrees C, provided with good low-noise properties	Boron Nitride	Bn			
Chainmax 400	M 280			Sticky chain oil for lubration up to 150 degrees C, provided with good low-noise properties	Boron Ninde	DII			
Chainmax 4200 M	Mo M 260			Sticky chain oil for lubrication up to 150 degrees °C, provided with good low-noise properties: additional EP properties					
Chainmax WR 68	M >200			(Sea)water resistant, non drip, can be applied on wet chains (dewatering properties) administration and the properties					
Chainmax WR 150	M >200			(Sea)water resistant, non drip, can be applied on wet chains (dewatering properties)	Evaporation Beh	avior of Base Oils			
Chainmax WR 460	M >220			(Sea)water resistant, non drip, can be applied on wet chains (dewatering properties)	· ·				
Chainmax Moly 22	M 175		x	Chemically stable chain oil with MoS ₂ , good load carrying and anti-wear properties					
Chaintop MT 50	S 260		x	Medium and high temperature chain oil, low residue anc clean operation	100%	▲ hard	I Minerel Oil		
Chaintop MT 100	S 240		x	Medium and high temperature chain oil, low residue anc clean operation		Ť ·······			
o Chaintop MT 150	S 210		x	Medium and high temperature chain oil, low residue anc clean operation			Low Evaporation Hard Residues		
Chaintop MT 220	S 220			Medium and high temperature chain oil, low residue anc clean operation			That'd Residues		
Chaintop MT 320	S 225			Medium and high temperature chain oil, low residue anc clean operation					
Chaintop MT 4200	S 260			Medium and high temperature chain oil, low residue anc clean operation	£				
Chaintop MT 100 M	Mo S >265			High temperature chain oil with added MoS ₂ , good load and anti wear properties					
Chaintop XL	SP S		x	High performance lubrication at extremely high temperatures with minimum residue	en l	I			
Chaintop XL 100	SP S		x	High performance lubrication at extremely high temperatures with minimum residue	g	I residues			
Chaintop XLE 220	SP S		x	Synthetic high temperature chain and lubricating fluid	la	I	Ester Oil		
Chaintop XLG	DL G S >260			Chemically inert, radiation resistant, almost dry lubrication will therefore not attract dust	i i i i i i i i i i i i i i i i i i i	I	Controlled Evaporation		
Chaintop CLE	S 300			Special PAG oil compatible with water based paints and coating. No craters formed if the oil drips on the surface	, se la		J Son Residues		
Chaintop FS 260	S >280			Special chain oil for the lubrication of film stretching lines in BOPP production (biaxially-oriented polypropylene)	Ľ				
RH 200	S >280			Chain and curve fluid for the printing industry, used in MAN Roland and Heidelberg printing machines					
Chaintop FLX				Inert, chemically and thermically stable high temperature chain oil	Complete Evaporation	\mathbf{N}			
Foodmax Chain 68	SP S >200			Food grade chain oil, H-1, tacky non drip, very water resistant	Few Residues	\ i			
Foodmax Chain 100	SP 5 200			Food grade chain oil, H-1, tacky non drip, very water resistant					
Foodmax Chain 220				Food grade chain oil, H-1, tacky non drip, very water resistant	00/				
Ecodmax Chain 400				Food grade chain oil, H-1, addy find hills, Very water resistant	0%	 still viscous 	Operation Time (h)		
5 Foodmax Chain 320 Heavy				Food grade data to the the states of the sta					
Foodmax Gear PAO 220	Sr 3 - 200			Four grade gear and chain indicating angle point number of the envice.					
E Foodmax DWF	M > 200			Fair of interest grade grade grade grade and particularly cancer for and home and the shares of an of the shares o					
Foodmax Chain HT-X	SP S 280		x	Fond grade high temperature chain oil H-1 non smoke low residue					
Foodmax Chain HT-X 220	SP S >285		x	Food grade high temperature chain oil. H-1. non smoke low residue					
Foodmax Chain LT	S >200		x	Food grade low temperature chain oil, H-1, until - 60°C	Chaintop XL	T = 260°C / t = 9 h	nrs Competitor's Product		
Grease CAS 2 Green	M n/a			Water resistant and adhesive chain grease, high loads and low speeds					
Grease Fluor HT 2	P S n/a			High temperature, resistant to chemical agents, vibrations					
Grease Barium Complex L	M n/a			Water and vapour resistant, high load, low speed					
Performance Chain WR	M 260			(Sea)water resistant, non drip, can be applied on wet chains (dewatering properties)					
Performance TFD	P S		x	Dry and waxy lubricant with added PTFE. Suitable for use at room temperature only					
v Performance X3	P/Bn S		X	Sticky chain lubricant, outstanding EP properties		73			
Ferformance WD				Penetrating oil		14	And a second sec		
Foodmax Multi Spray	P S		X	H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains		States and the second se			
Foodmax Extreme Spray	P S		X	H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains					
5 Foodmax DWF Spray				H-1 dewatering chain lubricant					
Foodmax Grease Spray	SS SS			H-1 chain grease, very suitable at lower temperatures					
Foodmax Grease CAS Spray	S S		X	H-1 chain grease, very suitable at lower temperatures					

• • • •







www.matrix-lubricants.com The Netherlands