

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.



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.

Cleaner

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.

















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
- Anti-wear properties
- Clean operation
- Energy savings
- Water resistance
- · Chemical resistance

By using Matrix Specialty Lubricants chain fluids the equipment operator can achieve;

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



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.

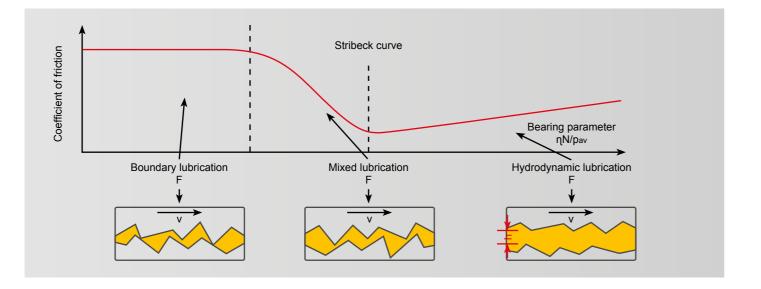
The choice of the right lubricant is vital, the following factors should be considered:

- 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		Chain Speed (m/s)						
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		
		manual or drip feed lubrication			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.



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 not fling off.

Detergency

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

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

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 Forming Tendency

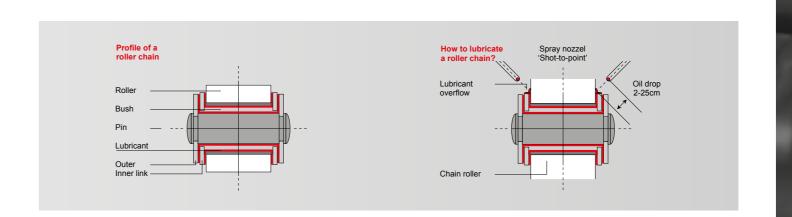
Carbon deposits are created in the chain links at high temperatures. These increase wear and reduce chain lifetime; the lubricant should possess very low carbon forming tendencies at high temperatures.

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.



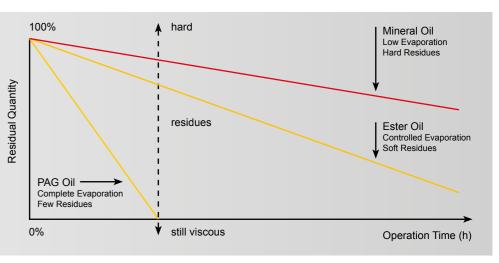
4

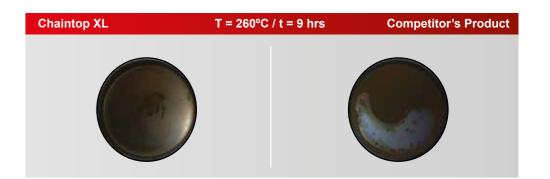
Chain Oil Selection Table

Commence 10			Working Temperature °C	Compatible With	Application	Remarks and other characteristics	
Charmen 19 Cha			ase Oil 1	copper co	Srushing Diler Aportzer Aripping		
Charters - 151		Observer 400				Of the shair of facilities are to 450 decrease ⁹ 0 annial doubth and become in	
Columnic 200 Colu							
Common 609 Com							
Carrier M K 6 Carrier M K 7 Carrier M K							
Comment Will 150 Comment Wil							
Claramine NR1 460							
Claritory ATT 50 Claritory A							
Claration Miles Mile							
Chartop MT 28	spi						
Chartery MT 200	ᇛ						
Charriery M. 1 30	_					·	
District 1							
Chairesy XL 100 Chairesy XL 220 Chairesy XL 22						•	
Charlop XLE 200 Charlop XLE 201 Charlop XLE 20				00			
Chaintop XLG Ch				00		, , ,	
Chamboo CLE Foodmax Chain 98 Foodmax Chain 100 F							
Foodmax Chain 100 SP S 200 S Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J. Ledy non dip, very water resistant Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier package for cortar water resistance Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive tabulier Food grade chain oil, H. J., contains extensive F							
Foodgrax Chan 100							
Foodmax Chain 20 Food grade chain oil, H-1, lady, non drip, very water resistant			5.				
Foodmax Chain AG Heavy Foodmax Chain AG Heavy Foodmax Chain CH, It, Eachy non dip, very water resistance Foodmax Chain AG Heavy Heavy Heavy Foodmax Chain AG Heavy Heav							
Foodmax Chain A20 Heavy Foodmax Chain HTX 200 Foodmax Chain HTX 20							
Foodmax Gear PAQ 220 Foodmax G			<u> </u>				
Foodmax Coler PAO 1000 Foodmax OWF Foodmax Chain HT-X 20 Foodmax C	ade		SD S 22	60		•	
Foodmax Chain HT.X Foodmax Chain HT.X Foodmax Chain HT.X 200	5		S 226	65			
Foodmax Chain HT-X Foodmax Chain LT-X Foodmax Chain	р						
Foodmax Chain HT-X 220 Foodmax Chain HT-X 460 Foodmax Chain HT-X 460 Foodmax Chain HT-X 460 Foodmax Chain HT-X 460 Foodmax Chain LT Foodmax Ch	ě					•	
Foodmax Chain HT-X 460 Foodmax Chain LT-X Foodmax C						, , ,	
Foodmax Chain LT Foodmax Chain LT-X Foodmax Chain L							
Foodmax Chain LT-X Grease CAS 2 Green Grease CAS 2 Green Grease Fluor HT 2 Grease Barium Complex L Performance Chain WR #56 Performance CA3 #74 Performance X3 #74 Performance WD #71 Foodmax Multi #21 Foodmax Multi #21 Foodmax Extreme 10x temperature chain oil, H-1 X Foodmax Extreme low temperature chain oil, H-1 Water resistant, ind inject chain inject case, list, lock chain grease, plist, lo						• • •	
Grease CAS 2 Green Grease Fluor HT 2 Grease Fluor HT 2 Fefformance Chain WR #56 Performance TFD #69 Fefformance WD #71 Foodmax Extreme #16 Foodmax Extreme #16 Foodmax DWF #14 Grease Fluor HT 2 M n/a M			-55 S 15	59		·	
Grease Fluor HT 2 Grease Barium Complex L Performance Chain WR #56 Performance TFD #99 Performance X3 #74 Performance WD #71 Foodmax Multi #21 Foodmax Extreme #16 Foodmax DWF #14 Figh temperature, resistant to chemical agents, vibrations M na M n	Ф		M n/s	a la			
Grease Barium Complex L Performance Chain WR #56 Performance TFD #69 Performance TFD #69 Performance WB #76	as		P S n/2	a			
Performance Chain WR #56 Performance TFD #69 Performance X #74 Performance X #74 Performance WD #71 Performance X #74 Performance Y #75 Performance Y	5		M n/s	a			
Performance TFD #69 Performance X #74 Performance X #74 Performance WD #71 Foodmax Multi #21 Foodmax Extreme #16 Foodmax DWF #14 Performance TFD #69 X Dry and waxy lubricant with added PTFE. Suitable for use at room temperature only X Sticky chain lubricant, outstanding EP properties X Sticky chain lubricant, outstanding EP properties X H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains X H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains X H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains X H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains X H-1 dewatering chain lubricant			M 26	60			
Performance X3 #74 Performance WD #71 Performance WD #71 Foodmax Multi #21 Foodmax Extreme #16 Foodmax DWF #14 Performance WD #74 Performance WD #75 M Penetrating oil X H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains H-1 dewatering chain lubricant M H-1 dewatering chain lubricant H-1 dewatering chain lubricant			P S				
Performance WD #71 Foodmax Multi #21 Foodmax Multi #21 Foodmax Extreme #16 Foodmax DWF #14 Penetrating oil A H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains A H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains A H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains B H-1 dewatering chain lubricant	co.		P/Bn S)	·	
Foodmax Multi #21 Foodmax Extreme #16 Foodmax DWF #14	an		M			•	
Foodmax Extreme #16 P S Foodmax DWF #14 H-1 adherent chain lubricant with added PTFE. Excellent penetrating properties. Also suitable for motorcycle chains M H-1 dewatering chain lubricant	0	Foodmax Multi #21	P S			·	
60 Foodmax DWF #14 H-1 dewatering chain lubricant	ıray		P S				
	တ္တ		M				
FOODMAX Grease #17 H-1 chain grease, very suitable at lower temperatures		Foodmax Grease #17	SS			H-1 chain grease, very suitable at lower temperatures	
Foodmax Grease CAS #18 S S X H-1 chain grease, very suitable at lower temperatures			S			•	

				s & Solids	Legenda Base Oils
le	Very suitable		M		Mineral
	Suitable		S		Synthetic
h limits	. Suitable with		SS		Semi-Synthetic
			G		Graphite
as	Short period		Р		PTFE
nt	Dry lubricant		Мо		MoS ₂
			Bn		Boron Nitride
h limits ds	Suitable ! Suitable with	_	S SS G P Mo		Synthetic Semi-Synthetic Graphite PTFE MoS ₂

Evaporation Behavior of Base Oils





 $\overline{}$

