Matrix
specialty lubricants

REFRIGERATION 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.

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.







Refrigeration Lubricants

The refrigeration industry has been on the move for a number of years. Being a relatively conservative industry, they have been faced with many changes since the Montreal protocol came in place. New type of refrigerants require new type of lubricants. Retro-fit procedures were (and still are) needed to change over systems from old refrigerants to new HFC and blended refrigerants. In order to make this change special attention is required to the lubricant of choice. Matrix Specialty Lubricants BV has a very extensive range of refrigeration compressor fluids. This brochure highlights the majority of our products. For any special product request do not hesitate to seek the assistance of your local Matrix representative.

Coolmax CFC

Coolmax CFC is a standard refrigeration lubricant using naphthenic base oils.

Coolmax AB

Coolmax AB is an Alkyl Benzene based refrigeration lubricant normally used for R 22 systems which require improved low temperature performance in comparison with Naphthenic based refrigeration fluids. Also suitable for halo carbon refrigeration.

Coolmax CO 85

Coolmax CO 85 is a product specially designed to lubricate CO2 compressor units. It provides excellent miscibility with CO2 refrigerants and has excellent thermal and oxidation stability and long life in CO2 systems.

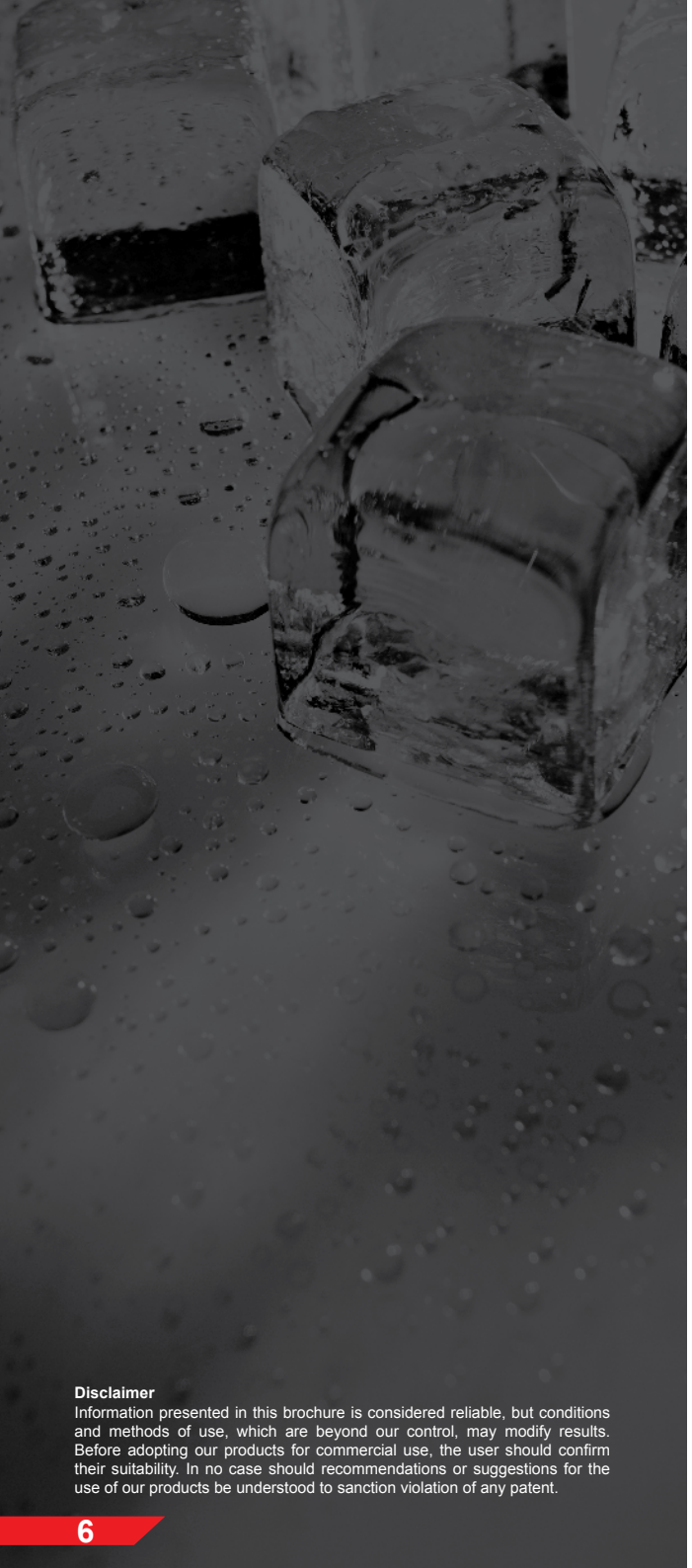
Matrix specialty lubricants

Coolmax CFC	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	Pour Point °C	Flash Point °C
Coolmax CFC 32	Naphthenic	32	30	-40	168
Coolmax CFC 46	Naphthenic	46	43	-37	175
Coolmax CFC 68	Naphthenic	68	68	-36	179

Coolmax AB	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	Pour Point °C	Flash Point °C
Coolmax AB 32	Alkylbenzene	32	34	-40	190
Coolmax AB 46	Alkylbenzene	46	46	-36	196
Coolmax AB 68	Alkylbenzene	68	68	-32	200

Coolmax CO 85	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	VI	Pour Point °C	Flash Point °C
Coolmax CO 85	PAO/POE blend	N/A	80	120	-39	> 282

PAO = Poly Alpha Olefin, POE = Polyolester



Coolmax HTA

Coolmax HTA is a refrigeration compressor fluid (based on a 2 stage hydrotreated base oil) specially designed for the use in ammonia refrigeration systems. In comparison with Naphthenic based refrigeration lubricants up to 80% less oil consumption can be realized. This will contribute to a better efficiency of the system (oil which remains in the system is isolating).

Coolmax PAO

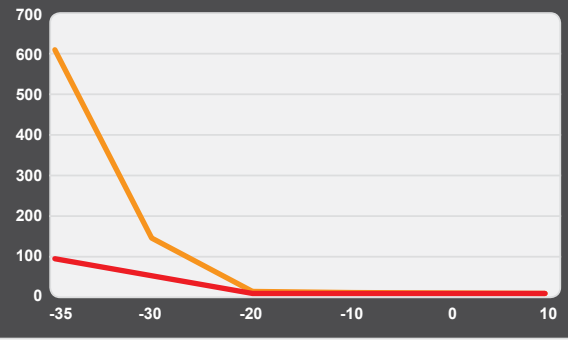
Coolmax PAO is a fully synthetic fluid with extreme low temperature properties in, for example Ammonia systems which are operated below -30 °C. For colder temperatures Coolmax PAO XL is recommended, providing decreased pour points down to -50 °C.

Coolmax PAG

Coolmax PAGs are double end capped, polyaklylene, glycol based refrigeration lubricants suitable for automotive compressors in which a PAG-based lubricant is used, as well as for HC (hydrocarbon) or CO2 refrigerant fluid applications. Coolmax PAG 4455 is a special OEM formulated cool compressor oil for use in Friotherm cool compressors which operate on a 134a HFC refrigerant gas.

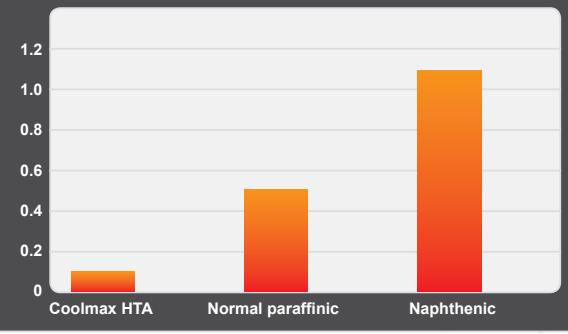
Low temperature viscosity Coolmax HTA

Temperature	Naphthenic	Coolmax HTA
-35	600	85
-30	170	50
-20	34.3	8.7
-10	8.5	2.2
0	2.2	0.9
10	1.3	0.4



Volatility of different type of refigeration oils compared to Coolmax HTA

	% Loss 22hrs @ 100°C
Coolmax HTA	0.1
Normal paraffinic	0.5
Naphtenic	1.1



Coolmax HTA, HTA XL	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	VI	Pour Point °C	Flash Point °C
Coolmax HTA	Hydrotreated	N/A	60	114	-41	> 237
Coolmax HTA XL	Hydrotreated	N/A	47	115	-63	> 230

Coolmax PAO	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	VI	Pour Point °C	Flash Point °C
Coolmax PAO 32	PAO/GR II	32	34	128	-30	> 227
Coolmax PAO 46	PAO/GR II	46	45	129	-30	> 232
Coolmax PAO 68	PAO/GR II	68	67	131	-30	> 260
Coolmax PAO 100	PAO/GR II	100	104	130	-30	> 265
Coolmax PAO XL 68	PAO	68	68	150	-53	> 250

Coolmax PAG	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	VI	Pour Point °C	Flash Point °C
Coolmax PAG 46	PAG	46	42	182	-48	> 215
Coolmax PAG 68	PAG	68	70	165	-48	> 225
Coolmax PAG 100	PAG	100	95	187	-47	> 230
Coolmax PAG 150	PAG	150	136	185	-43	> 230

PAO = Poly Alpha Olefin, PAG = Polyalkylene Glycol

Coolmax POE

Coolmax POE is a range of Polyol Ester based lubricants for improved miscibility when used with ozone-friendly HFC and blended refrigerants. Provides excellent anti-wear properties.

Coolmax POE

Coolmax POE is formulated to make conversions easier. Converting a HCFC (i.e. R-22) system to HFC (i.e. R-507, R-134a) often requires flushing of any mineral oil fluid from the system. Most competitive fluids will require no more than 5% of the existing mineral oil remaining in the system. To reach this 5% level multiple flushes are often required, which can be very time consuming and costly. Coolmax POE makes systems conversions easier by being able to accommodate much higher levels of residual mineral oil.

Coolmax POE Hybrid

Coolmax POE Hybrid is a fluid specially formulated for electrically driven Airco compressor seen in Hybrid cars like Toyota Prius. Commonly used compressor fluids, like PAG and PAO based, can create short circuits. Coolmax POE Hybrid provides excellent properties to safely lubricate and isolate compressors used in hybrid cars.

Coolmax LD Dye

Coolmax LD Dye has been formulated to assist in detecting the location of potential leakage in refrigeration systems. Can be added to almost all types of base oils and will not affect the performance of the refrigeration compressor fluids. In case of a leakage, Coolmax LD Dye will highlight leaks when exposed to UV light.

Coolmax POE	Type of Base Oil	ISO VG	Kinematic Viscosity 40 °C	VI	Pour Point °C	Flash Point °C
Coolmax POE 22	POE	22	22	125	< -50	> 240
Coolmax POE 32	POE	32	32	125	< -50	> 240
Coolmax POE 46	POE	46	46	120	< -50	> 250
Coolmax POE 68	POE	68	68	120	< -45	> 250
Coolmax POE 100	POE	100	100	110	< -30	> 260
Coolmax POE 150	POE	150	150	95	< -30	> 270
Coolmax POE 170	POE	N/A	170	95	< -32	> 270
Coolmax POE 220	POE	220	220	120	< -30	> 260

Coolmax POE Hybrid	Type of Base Oil	ISO VG	Kinematic Viscosity 100 °C	VI	Pour Point °C	Flash Point °C
Coolmax POE Hybrid	POE	N/A	91	135	-37	> 271

Coolmax LD Dye	Kinematic Viscosity 40 °C	Flash Point °C	Treat Rate
Coolmax LD Dye	34	232	1%

POE = Polyolester

Refrigerant Oil Selection Table

Matrix Product	Abbreviation
Coolmax CFC 32	CFC 32
Coolmax CFC 68	CFC 68
Coolmax HTA 60	HTA 60
Coolmax HTA XL	HTA XL
Coolmax AB 32	AB 32
Coolmax AB 68	AB 68
Coolmax AB 100	AB 100
Coolmax PAO XL 32	PAO 32
Coolmax PAO XL 46	PAO 46
Coolmax PAO XL 68	PAO 68
Coolmax PAO XL 100	PAO 100
Coolmax PAO XL 220	PAO 220
Coolmax POE 32	POE 22
Coolmax POE 32	POE 32
Coolmax POE 46	POE 46
Coolmax POE 68	POE 68
Coolmax POE 100	POE 100
Coolmax POE 170	POE 170
Coolmax POE 220	POE 220
Coolmax PAG 150	PAG 150
Coolmax PAG 46	PAG 46

Remarks

For more technical Information for the Coolmax products please consult Technical Data Sheets @ www.matrix-lubricants.com

Recommendations are given to our best knowledge, however they are guidelines Consult OEM manual

Refrigerant			Evaporator Temp.		Compressor Type					
ASHRAE Name	Type	Replacement for	From (°C)	To (°C)	Recip			Rotary Screw		Centrifugal
R12	CFC		-40	+40	CFC 32			CFC 68		
R502	CFC		-50	-20	CFC 32	AB 32		CFC 68	AB 100	
R22	HCFC		-25	+10	CFC 32	AB 32	PAO 68	CFC 68	AB 100	
R22	HCFC		-30	+10		AB 32	PAO 68		AB 100	
R22	HCFC		-40	+10		AB 32			AB 100	
R22	HCFC		-50	+10		AB 32			AB 68	
R123	HCFC	R11	0	+20						CFC 68
R124	HCFC	R114	0	+80	CFC 68	AB 68		AB 100		
R401a	HCFC	R12	-20	+10	CFC 32	AB 32				
R402a	HCFC	R502	-50	-30	AB 32					
R408a	HCFC	R502	-50	-30	AB 32			AB 100		
R409a	HCFC	R12	-20	+10	CFC 32	AB 32				
R290	C3H8(propane)		-30	+20	CFC 68			PAG 150		PAG 150
R600/600a	Butane & Iso But.		-30	+20	CFC 68			PAG 150		PAG 150
R717	NH3(ammonia)		-30	+10	CFC 68	HTA 60	PAO 68	CFC 68	PAO 68	CFC 68
R717	NH3(ammonia)		-50	+10		HTAL XL	PAO 68		PAO 68	CFC 68
R744	CO2		-55	-10				PAG 150		PAG 150
R23	HFC		-100	-40	POE 22					
R134a	HFC	R12	-20	+10	POE 32			POE 220		POE 68
R134a	HFC	R12	-30	+10	POE 22			POE 100		POE 68
R404a	HFC	R502	-40	-30	POE 32			POE 220		POE 68
R404a	HFC	R502	-50	-30	POE 22			POE 100		POE 68
R407c	HFC	R22	0	+10	POE 68			POE 220		
R410a	HFC		-45	+10	POE 22			POE 100		POE 68
R410a	HFC		-25	+10	POE 32			POE 220		POE 68
R410b	HFC		-25	+10	POE 32			POE 220		POE 68
R417a (Isceon M059)	HFC	R22	-15	+15	POE 68			POE 220		POE 68
R422a (Isceon M079)	HFC	R22	-45	-5	POE 22			POE 100		POE 68
R422a (Isceon M079)	HFC	R22	-25	-5	POE 32			POE 220		POE 68
R422d (Isceon M029)	HFC	R22	-45	+10	POE 22			POE 100		POE 68
R422d (Isceon M029)	HFC	R22	-25	+10	POE 32			POE 220		POE 68
R427a (FX 100)	HFC	R22	-40	+10	POE 22			POE 100		POE 68
R427a (FX 100)	HFC	R22	-20	+10	POE 46			POE 220		POE 68
R507/507a	HFC		-40	0	POE 22			POE 100		POE 68
R507/507a	HFC		-20	0	POE 46			POE 220		POE 68
R1234yf	HFO	R134a			PAG 46					

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.

UK version III

www.matrix-lubricants.com
The Netherlands