

MaxR100™ Technical Document

Frequently Asked Questions

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The following FAQ's answers commonly asked questions concerning MaxR100 refrigeration oil supplement, along with other related issues.

DOES MAXR100 VOID MANUFACTURERS WARRANTIES?

No. Almost all manufacturer warranties are good for one year. But on top of that, a manufacturer has set limits and specifications that the recommended oil needs to meet. MaxR100 not only meets but exceeds these specifications as shown on our "Spec Sheet".

WHAT ABOUT ACID FORMATION?

Typically acids form when moisture is introduced into the HVAC system. The air that we breathe has enough moisture to create acids if it is introduced. One benefit to MaxR100 is our anti-oxidants, which lab testing has shown that we provide 3 times the oxidation and corrosion protection that untreated oil provides. This has also been seen from spectro-analysis reports in the field.

WHAT ABOUT FILTER CHANGES?

Unlike an automobile, the oil inside a hermetically sealed system will remain in useable condition until contaminants are introduced. These contaminants may be in the form of metal shavings due to direct metal to metal contact or by the introduction of outside foreign materials, such as moisture. In hermetically sealed systems rarely if ever do we come across filters that need to be changed. But on lower temp systems, systems that have had compressor burn outs or semi-hermetic, the chances increase that outside contaminants have been introduced. In these cases we recommend that the filters be monitored for one week, daily after installation. In the long run, it's easier to change a filter than to change out an entire compressor.

IS MAXR100 COMPATIBLE WITH ALL REFRIGERATION OILS?

MAXR100 is compatible and will readily mix with standard refrigeration oils because both MAXR100 and standard refrigeration oils are naphthenic based. MAXR100 is compatible and will mix readily with some synthetic oils. Contact your MAXR100 representative to determine the compatibility of any synthetic oil applications you may have.

DOES MAXR100 AFFECT ELECTRIC MOTORS?

Motors in hermetically sealed units will enjoy similar benefits that compressors receive. 70% of all hermetically sealed motor failures are caused by bearing failures. Although it may appear on the surface that the motor failure is electrical in nature, in most cases it is a bearing failure that causes a motor stator misalignment which, in turn, causes motor winding damage. Since motor bearings receive the same protection as compressor bearings, motor life is extended when MAXR100 is used.

DOES MAXR100 IMPROVE MECHANICAL SEAL LIFE?

Yes. Semi-hermetic units require mechanical shaft seals to retain the valuable refrigerant charge, and to keep out air and moisture. Mechanical seals utilize two ultra-precision machined and polished surfaces to generate a zero leakage shaft seal. The mechanical seal is, by far, the most precisely manufactured and most delicate component in the compressor. The seal's highly polished surfaces

can easily be damaged by dry starts, corrosion, or rough bearings. Since these problems are avoided or at least minimized in units treated with MAXR100, the mechanical seal life is improved.

WILL THE ADDITIVES SETTLE OUT?

No. MAXR100 Refrigeration Oil Supplement contains NO solids. The additives cannot settle out, or be filtered out. They are actually chemically bonded to the naphthenic oil base molecules.

WHAT ELASTOMERS CAN BE CONDITIONED?

The following elastomers can benefit from the conditioning:

Neoprene Nylon® 66

Mylar Viton®

Polypropylene Buna

®Viton is a registered trademark of DuPont Dow Elastomers

WHAT ARE MAXR100'S LIMITATIONS?

Consistent, long-term, cost effective benefits associated with MAXR100 treatments are possible when the operation and maintenance of the refrigeration or air conditioning systems follow established industry practices. Systems that are operated and maintained properly will receive the greatest benefit.

The water content of refrigeration oil is an important variable (with or without MAXR100) in refrigeration systems because water can hydrolyze with refrigerant and form strong corrosive acids. If the water content of refrigeration oil is greater than 200 ppm there are serious system problems (an internal water leak, for example) that MAXR100 cannot fix. It is the industry standard to operate with no more than 120 ppm water in the oil.

Systems that operate with more than 120 ppm water should not be treated with MAXR100 because the additives will not perform as well, nor last as long under these conditions. Properly operating refrigeration and air conditioning systems treated with MAXR100 will receive the greatest benefit and the highest return on investment.

An oil analysis should be performed prior to treatment to insure that water concentrations are acceptable and that maximum benefits can be obtained.

WILL THE PROTECTIVE FILM AFFECT BEARING TOLERANCES?

No. The contact activated barrier that bonds to all metal surfaces is extremely thin. The thickness of this film cannot be measured by the tools available to a machinist. The presence of this film will not affect bearing tolerances of their alignment.

HOW SHOULD MAXR100 BE STORED AND SHELF LIFE?

MaxR100 should be stored in a cool dry place. The shelf life of MaxR100 is indefinite as long as the foil seal has not been broken and has been stored properly. If the foil seal has been broken, we recommend purging the container with Dry Nitrogen before storage and before the next use. If the MaxR100's normal color has darkened (low temp blend dark brown and in mineral and POE blends dark golden brown), it is a sign of oxidation and should not be used in any HVAC equipment.

WHAT TEMPERATURE RANGES CAN MAXR100 BE USED?

This product can be used where temperatures are as low as -65F, or as high as 400



IS MAXR100 COMPATIBLE WITH ALL REFRIGERANTS?

MAXR100 is readily miscible in the following refrigerants;

CFCs					
Color	Gas type	Chemical Name	Container sizes	Application	Oil type
	11	Trichlorofluoromethane	100lb 200lb	Centrifugals	Mineral Alkylbenzene
(white)	12	Dichlorodifluoromethane	12oz 30lb 50lb 145lb	Med & Hi temp Refrig. & Auto	Mineral Alkylbenzene
	13	Chlorotrifluoromethane	9lb 23lb 80lb	Ultra low temp refrigeration	Mineral Alkylbenzene
	113	Trichlorotrifluoroethane	100lb 200lb	Comm. Indust A.C.	Mineral Alkylbenzene
	114	Dichlorotetrafluoroethane	150lb	Ind. Process Centrifugals	Mineral Alkylbenzene
	500	12/152a blend	30lb 125lb	Comm. A.C.	Mineral Alkylbenzene
	502	22/115 blend	30lb 50lb 125lb	Med & low Temp Ref	Mineral Alkylbenzene
	503	13/23 blend	8lb 20lb 80lb	Ultra low temp refrig.	Mineral Alkylbenzene

HCFCs					
Color	Gas type	Chemical Name	Container sizes	Application	Oil type
	22	Chlorodifluoromethane	30lb- singles 30lb- pallets 50lb,125lb	A.C. & Low &Med temp Ref.	Mineral Alkylbenzene Polyol Ester
	123	Dichlorotrifluoroethane	100 lb, 200lb	Low Pressure Centrifugals	Mineral Alkylbenzene
	401A (MP39)	22/124/152a blend	30lb, 125lb	Med Temp refrigeration	Alkylbenzene Polyol Ester
	401B(MP66)	22/124/152a blend	30lb, 125lb	Low Temp refrigeration	Alkylbenzene Polyol Ester
	402A(HP80)	22/125/290 blend	27lb, 110lb	Low & Med Temp refrigeration	Alkylbenzene Polyol Ester
	416A/FR-12	134a/124/600blend	9.6oz 25lb 125lb	Mobile, A.C. & Med. Temp. Ref & Chillers	Mineral Alkylbenzene Polyol Ester

HFCs					
Color	Gas type	Chemical Name	Container sizes	Application	Oil type
	23	Trifluoromethane	9lb 20lb	Ultra Low Temp. Ref.	Polyol Ester
	134a	Tetrafluoroethane	30lb 125lb 1000lb	A.C. & Med. Temp. Ref	Polyol Ester
	404A (FX70/HP62)	125/134a/143a blend	24lb, 100lb	Low & Med. Temp. Ref.	Polyol Ester
	507 (AZ50)	125/143a blend	25lb 100lb	Low & Med. Temp. Ref.	Polyol Ester

There is a tremendous effort in developing environmentally safe refrigerants. As the products come to market, MAXR100 will perform tests to determine product compatibility, and will modify the formulation to meet new requirements as needed. MaxR100 has wonderful results with Ammonia system

