



How to use this refrigeration lubricant selector

- 1 Obtain/confirm the following information:**
- a.** REFRIGERANT FLUID in use (ASHRAE designation)
 - b.** Evaporator is of dry type (oil carryover less than 15%) and EVAPORATOR TEMPERATURE in °C
 - c.** COMPRESSOR TYPE and outlet temperature

- 2 To identify the suitable Mobil™-branded lubricant(s)** refer to the row that corresponds to the refrigerant fluid and the evaporator temperature.

- 3 If mineral and synthetic lubricants** are both indicated, synthetic lubricants will in general offer a higher level of performance than mineral oils with respect to equipment protection, particularly at high and low operating temperatures, compressor efficiency, and oil life.

- 4 For information on builder approvals** for Mobil-branded refrigeration lubricants, please refer to Table 2 on the back page.

- 5 For further clarification, please** contact your local ExxonMobil lubricants representative or the Technical Help Desk.

NOTE:

- a.** For equipment under warranty, please refer to equipment builder recommendations.
- b.** In changing refrigeration oil technology or brands, ensure thorough flushing of the system to minimize contamination with the previous technology or brand.

This guide is for refrigeration lubricant selection for industrial systems with dry type evaporators (i.e., oil carryover into evaporator is less than 15%). To select a lubricant for other types of refrigeration systems, please contact the Technical Help Desk on TechDeskEurope@exxonmobil.com or visit mobil.com/industrial

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Mobil™-branded Refrigeration Lubricant Selection Guide for Industrial Systems

Energy lives here



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Health and Safety
Based on available information, these products are not expected to produce adverse effects on health when used for the applications referred to above and the recommendations provided in the Material Safety Data Sheets (MSDSs) are followed. MSDSs are available upon request through your sales contact office or via the Internet. These products should not be used for purposes other than the applications referred to above. If disposing of used product, take care to protect the environment.

Mobil™-branded Refrigeration Lubricant Selection Guide for Industrial Systems

High performance Mobil™ industrial lubricants for refrigeration applications are listed below, each one formulated to offer outstanding equipment protection and extended oil life. These charts are designed to help you determine which lubricant is most suitable for your system, based on the type of refrigerant fluid, evaporator temperature and compressor type. Please visit mobil.com/industrial for more information.

Mobil Gargoyle Arctic SHC™ 200 Series

Supreme performance synthetic lubricants for refrigeration compressors and heat pumps

Features and Benefits

Superb low temperature capability provides excellent fluidity at low temperatures. Resistance to viscosity loss due to refrigerant absorption under pressure for excellent bearing-film thickness and shaft-sealing properties.

N°	Lubricant	Technology	ISO VG
1	Mobil Gargoyle Arctic SHC™ 224	PAO (Polyalphaolefin)	32
2	Mobil Gargoyle Arctic SHC™ 226 E	PAO (Polyalphaolefin)	68
3	Mobil Gargoyle Arctic SHC™ 228	PAO (Polyalphaolefin)	100
4	Mobil Gargoyle Arctic SHC™ 230	PAO (Polyalphaolefin)	220
5	Mobil Gargoyle Arctic SHC™ 234	PAO (Polyalphaolefin)	400 cSt at 40°C

Mobil Glygoyle™ 22

Synthetic Polyalkylene Glycol–based (PAG) lubricant suitable for specific refrigeration applications

Features and Benefits

Shear-stable with outstanding resistance to thermal degradation and the formation of sludge and deposits. Suitable for HC (hydrocarbon) or CO₂ refrigerant fluid applications.

N°	Lubricant	Technology	ISO VG
15	Mobil Glygoyle™ 22	PG (Polyglycol)	150

Mobil Zerice™ S Series

Premium synthetic refrigeration compressor lubricants for ultralow temperature applications

Features and Benefits

Outstanding solubility with halocarbon refrigerants, helping avoid oil separation and congealing on the valve and heat-transfer surfaces of the refrigeration system. Very low pour and floc points prevent harmful wax precipitation blocking expansion valves.

N°	Lubricant	Technology	ISO VG
16	Mobil Zerice™ S 32	AB (Alkylbenzene)	32
17	Mobil Zerice™ S 68	AB (Alkylbenzene)	68
18	Mobil Zerice™ S 100	AB (Alkylbenzene)	100

Mobil SHC Gargoyle™ 80 POE

New generation synthesized Polyol Ester (POE) of moderate solubility with HFCs and CO₂ refrigerants

Features and Benefits

Specifically designed for use with CO₂ and ozone-friendly HFC refrigerant fluids when moderate solubility is required to keep proper viscosity at application. Provides outstanding lubricity and wear protection, as well as chemical and thermal stability.

N°	Lubricant	Technology	ISO VG
19	Mobil SHC Gargoyle™ 80 POE	POE	80 cSt at 40°C

Mobil Gargoyle™ Arctic 155 & 300

High performance naphthenic mineral oils for refrigeration compressors

Features and Benefits

Low pour point and good fluidity at very low temperatures. Good chemical stability. Suitable for both cylinder and bearing lubrication.

N°	Lubricant	Technology	ISO VG
7	Mobil Gargoyle™ Arctic Oil 155	MN (Mineral Naphthenic)	32
8	Mobil Gargoyle™ Arctic Oil 300	MN (Mineral Naphthenic)	68

Mobil EAL Arctic™ Series

High performance Polyol Ester (POE) for refrigeration compressors and systems

Features and Benefits

Specifically designed for use with ozone-friendly HFC refrigerant fluids. Formulated from synthesized Polyol Esters to provide outstanding lubricity and wear protection, as well as chemical and thermal stability.

N°	Lubricant	Technology	ISO VG
9	Mobil EAL Arctic™ 22 or 22C***	POE (Polyol Ester)	22
10	Mobil EAL Arctic™ 32	POE (Polyol Ester)	32
11	Mobil EAL Arctic™ 46	POE (Polyol Ester)	46
12	Mobil EAL Arctic™ 68	POE (Polyol Ester)	68
13	Mobil EAL Arctic™ 100	POE (Polyol Ester)	100
14	Mobil EAL Arctic™ 220	POE (Polyol Ester)	220

Mobil Gargoyle™ Arctic 68 NH

New generation Mineral Paraffinic

Higher performance mineral lubricant for refrigeration compressors with ammonia refrigerant

Features and Benefits

Specifically designed for ammonia application, excellent low temperature performance and oxidation stability. Good lubricity and wear protection.

N°	Lubricant	Technology	ISO VG
20	Mobil Gargoyle™ Arctic 68 NH	Mineral Paraffinic	68

TABLE 1 : REFRIGERATION LUBRICANT SELECTOR												
Refrigerant fluid			Evaporator temperature		Compressor type							
ASHRAE Name	Type	Transition or Substitute of	From (°C)	To (°C)	Piston		Screw		Centrifugal			
R22	HCFC		-25	+10	16	2	18		8			
R22	HCFC		-50	+10	16		18		8			
R123	HCFC	R11	0	+20					8			
R124	HCFC	R114	0	+80	8		18					
R401A	HCFC	R12	-20	+10	7	16						
R402A	HCFC	R502	-50	-30	16							
R408A	HCFC	R502	-50	-30	16		18					
R409A	HCFC	R12	-20	+10	7	16						
R290	C3H8(propane)		-30	+20	8		15		15			
R600/600a	Butane, Iso Butane		-30	+20	8		15		15			
R1270	Propene(=propylene)		-40	+10	2		4		3			
R717	NH3 (ammonia)		-40	+10	20	2	6**	20	2	6**	20	
R717	NH3 (ammonia)		-50	+10		2	6**		2	6**	20	
R744(1)	CO2	Non miscible	-55	-10			2					
R744(1)	CO2	Miscible	-55	-10	19							
R23	HFC		-100	-40	9							
R134a	HFC	R12	-20	+10	10		14		12			
R134a	HFC	R12	-30	+10	9		13		12			
R404A	HFC	R502	-40	-30	10		14		12			
R404A	HFC	R502	-50	-30	9		13		12			
R407C	HFC	R22	0	+10	12		14					
R407F	HFC	R22	-40	0	9		13		12			
R410A	HFC		-45	+10	9		13		12			
R410A	HFC		-25	+10	10		14		12			
R410B	HFC		-25	+10	10		14		12			
R417A (IseconM059)	HFC	R22	-15	+15	12		14		12			
R422A (IseconM079)	HFC	R22	-45	-5	9		13		12			
R422A (IseconM079)	HFC	R22	-25	-5	10		14		12			
R422D (IseconM029)	HFC	R22	-45	+10	9		13		12			
R422D (IseconM029)	HFC	R22	-25	+10	10		14		12			
R427A(FX100)	HFC	R22	-40	+10	9		13		12			
R427A(FX100)	HFC	R22	-20	+10	11		14		12			
R507/507A	HFC		-40	0	9		13		12			
R507/507A	HFC		-20	0	11		14		12			
R1234ze (E)	HFO	R134a	-20	+10	13		14		13			

TABLE 2: Builder Approvals for Mobil-branded Refrigeration Oils												
Mobil™-branded refrigeration lubricant product recommendations, according to equipment builder approvals and refrigerant type.												
Builder	Country	Builder-approved refrigeration oil technology (colour) and mobil-branded refrigeration oil(s) (text)										
		HCFC		HFC	NH ₃		HC	CO ₂				
Johnson Controls (Sabroe)	Denmark	18	3	12,13,14	6	2,3,4			Misc			
Bitzer	Germany	8(P)	17(P)	9 ^{***} ,10,12(P)	8(P)	1,2(S)			Misc	N Misc		
GEA Grasso	Netherlands	8(S,P)	16(S) 17(S,P)	6(S)	12(S,P) 13(S)	8(S)	14(S)	2(S)	6	15	Misc	N Misc N Misc
Carrier	France	7(P) 8(P)	16(P)		12(P)							
Frascold	Italy				10,12(P)							
Dorin	Italy				10,11						Misc	N Misc
Emerson Copeland	USA		(S)	(S)	9 ^{***}						Misc	
Carrier	USA				9 ^{***} (Scr),12							
Wuhan McQuay	China				11,12							

TABLE 3: Builders with Specific Lubricant Technology Requirements

Mobil™-branded refrigeration lubricant product technology recommendations, according to equipment builder. When under warranty, please refer to equipment manual.

Builder	Country	Builder-approved refrigeration oil technology (colour)									
		HCFC	HFC	NH ₃	HC	CO ₂					
Johnson Controls (York)	Denmark					Misc					
Johnson Controls (Frick)	Denmark					N Misc	N Misc				
Danfoss	Denmark										
Howden	UK					N Misc					
Bristol	USA										
Mycom	USA					Misc	N Misc				
Vilter	USA					N Misc					
Daikin	Japan					N Misc					
MHI	Japan										
Kobe Steel	Japan										
Chongqing General Industry Co	China										

N Misc = Non Miscible Application Misc = Miscible Application
P = Piston compressor S = Screw compressor Scr = Scroll

Some product may not be available locally. * For new units ** For existing units *** For Emerson Copeland pistons compressors or where indicated ***, use only 22CC

Some products may not be available locally. (1) CO2 Subcritical –cascade- applications
* For new units ** For existing units *** For Emerson Copeland pistons compressors or where indicated ***, use only 22CC

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