

Overview of oil types

Introduction

This News presents an overview of oil types and their technical specifications for Danfoss Commercial Compressors products. Each Danfoss oil is specifically selected and eventually tuned with additives for optimal performance in the indicated compressor series. When oil top-up is needed, always use the oil type as listed in below table. Otherwise compressor warranty may be voided.

Compressors and oil types

	Compressor series	Refrigerant	Factory charged oil type		Oil type for top-up
Maneurop Reciprocating compressors	NTZ 1 cyl	R404A	Polyolester	160MPZ	160Z / PZ / SZ
	NTZ 2 - 4 cyl	R404A	Polyolester	160Z	160Z / PZ / SZ
	MT / MTM	R22	Mineral	160P	160P
	MTZ	R404A, R134a, R407A, R407C, R407F	Polyolester	160PZ	160PZ
	VTZ	R404A, R134a, R407C	Polyolester	160PZ	160PZ
Scroll compressors	HRM / HLM / HCM	R22	Alkylbenzene	Alkylbenzene	160ABM
	HRP / HLP / HCP	R407C	Polyvinylether	PVE	PVE
	HRH / HLH / HLJ / HCJ	R410A	Polyvinylether	PVE	PVE
	MLM	R22	Alkylbenzene	Alkylbenzene	160ABM
	MLM116*	R22	Mineral	160P	160P
	MLZ	R404A, R134a, R407A, R407C, R407F	Polyvinylether	PVE	PVE
	MLZ116*	R404A	Polyvinylether	PVE	PVE
	LLZ	R404A, R507	Polyvinylether	PVE	PVE
	SM	R22	Mineral	160P	160P
	SY	R22	Polyolester	320SZ	320SZ
	SZ	R407C, R134a	Polyolester	160SZ	160SZ
	SH	R410A	Polyolester	160SZ	160SZ
	PSH	R410A	Polyolester	160SZ	160SZ
	WSH	R410A	Polyolester	160SZ	160SZ
	VSH088-117-170	R410A	Polyolester	160SZ	160SZ
	VZH088-117-170	R410A	Polyolester	160SZ	160SZ
	VZH028-035-044	R410A	Polyvinylether	PVE	PVE

*MLZ116/MLM116 are preliminary products.

Oil Specification

160P		Mineral
Property	Specification	Test method
Viscosity at 40°C	31.5 cSt	NF T 60 100
Viscosity at 100°C	4.6 cSt (min)	NF T 60 100
Density at 15°C	0.9 g/ml	NF T 60 101
Colour	-	
Pour point	-45 °C (max)	NFT 60 105
Flash point	176 °C	NFT 60 118
Dielectric strength at 25°C	35 kV (min)	ASTM D 877
Acid value (Tan)	0.07 mgKOH/g (max)	ASTM D 664

160PZ		Polyolester
Property	Specification	Test method
Viscosity at 40°C	31 - 33 cSt	ASTM D 445
Viscosity at 100°C	5.5 cSt (min)	ASTM D 445
Density at 15.6°C	0.989 g/ml	ASTM D 4052
Colour	200	ASTM D 1209
Pour point	-54 °C (max)	ASTM D 97
Flash point	244 °C	ASTM D 93
Dielectric strength at 25°C	46 kV (min)	ASTM D 1816
Acid value (Tan)	0.12 mgKOH/g (max)	ASTM D 974

160MPZ		Polyolester
Property	Specification	Test method
Viscosity at 40°C	31 - 33 cSt	ASTM D 445
Viscosity at 100°C	5.5 cSt	ASTM D 445
Density at 15°C	0.989 g/ml	ASTM D 4052
Colour	260	ASTM D 1209
Pour point	-54 °C (max)	ASTM D 97
Flash point	244 °C	ASTM D 93
Dielectric strength at 25°C	46 kV (min)	ASTM D 1816
Acid value (Tan)	0.12 mgKOH/g (max)	ASTM D 974

160Z		Polyolester
Property	Specification	Test method
Viscosity at 40°C	30 - 34 cSt	ASTM D 445
Viscosity at 100°C	5.2 - 6.2 cSt	ASTM D 445
Density at 15.6°C	0.975 - 0.981 g/ml	ASTM 1298
Colour	150 (max)	ISO 2210
Pour point	-45 °C (max)	ASTM D 97
Flash point	260 °C	ASTM D 92
Dielectric strength at 25°C	44 kV (min)	
Acid value (Tan)	0.04 mgKOH/g (max)	ASTM D 974

160SZ		Polyolester
Property	Specification	Test method
Viscosity at 40°C	30 - 34 cSt	ASTM D 445
Viscosity at 100°C	5.2 - 6.2 cSt	ASTM D 445
Density at 15°C	0.975 - 0.981 g/ml	ASTM 1298
Colour	150 (max)	ISO 2210
Pour point	-45 °C (max)	ASTM D 97
Flash point	260 °C	ASTM D 92
Dielectric strength at 25°C	44 kV (min)	
Acid value (Tan)	0.04 mgKOH/g (max)	ASTM D 974

160HZ		Polyolester
Property	Specification	Test method
Viscosity at 40°C	27 - 33 cSt	ASTM D 445
Viscosity at 100°C	4.8 - 5.8 cSt	ASTM D 445
Density at 15.6°C	0.986 - 1.00 g/ml	ASTM D 4052
Colour	0.5 (max)	ASTM D 1500
Pour point	-40 °C (max)	ASTM D 97
Flash point	230 °C (min)	ASTM D 92
Dielectric strength at 25°C	25 kV (min)	ASTM D 877
Acid value (Tan)	0.05 mgKOH/g (max)	ASTM D 974

320SZ		Polyolester
Property	Specification	Test method
Viscosity at 40°C	58 - 70 cSt	ASTM D 445
Viscosity at 100°C	8.9 cSt	ASTM D 445
Density at 15°C	0.957 g/ml	ASTM D 1298
Colour	-	
Pour point	-43 °C	ASTM D 97
Flash point	263 °C	ASTM D 92
Dielectric strength at 25°C	49.4 kV	ASTM D 877
Acid value (Tan)	0.05 mg KOH /g (max)	ASTM D 974

160ABM		Alkylbenzene
Property	Specification	Test method
Viscosity at 40°C	39 cSt	NFT 60 100
Viscosity at 100°C	5.2 cSt	NFT 60 100
Density at 15.6°C	0.87 g/ml	NFT 60 100
Colour	Colourless	ASTM D 1500
Pour point	-42 °C (max)	NFT 60 105
Flash point	180 °C	NFT 60 118
Dielectric strength at 25°C	25 kV (min)	
Acid value (Tan)	0.05 mgKOH/g (max)	DIN 51 558

PVE		Polyvinylester
Property	Specification	Test method
Viscosity at 40°C	61.2 - 74.8 cSt	JIS K2263
Viscosity at 100°C	-	
Density at 15°C	0.929 - 0.945 g/ml	JIS K2249
Colour	1.0 (max)	JIS K2580
Pour point	-30 °C (max)	JIS K2269
Flash point	180 °C	JIS K2265
Dielectric strength at 25°C	-	
Acid value (Tan)	0.02 mgKOH/g (max)	JIS K2501

Ordering information

Code n°	Type	Description	Application	Packaging*	
				type	Qty.
7754001	160P	Mineral oil, 160P, 2 litre can	SM with R22, MT with R22	Multipack	8
7754002	160P	Mineral oil, 160P, 5 litre can	SM with R22, MT with R22	Multipack	4
7754019	160PZ	POE lubricant, 160PZ, 1 litre can	MTZ with R404A, R507A, R134a, R407A, R407C, R407F & VTZ with R404A, R507A, R134a, R407C	Multipack	12
120Z0573	160PZ	POE lubricant, 160PZ, 2.5 litre can	MTZ with R404A, R507A, R134a, R407A, R407C, R407F & VTZ with R404A, R507A, R134a, R407C	Multipack	4
7754025	160Z	POE lubricant, 160PZ, 1 litre can	NTZ with R404A	Multipack	12
120Z0574	160Z	POE lubricant, 160PZ, 2.5 litre can	NTZ with R404A	Multipack	4
7754023	160SZ	POE lubricant, 160SZ, 1 litre can	SZ with R407C, R134a, R404A & SH, PSH, WSH with R410A, VZH and VSH all models	Multipack	12
120Z0571	160SZ	POE lubricant, 160SZ, 2.5 litre can	SZ with R407C, R134a, R404A & SH, PSH, WSH with R410A, VZH and VSH all models	Multipack	4
7754121	320SZ	POE lubricant, 320SZ, 1 litre can	SY with R22, R407C, R134a	Multipack	12
120Z0572	320SZ	POE lubricant, 320SZ, 2.5 litre can	SY with R22, R407C, R134a	Multipack	4
120Z5034	320HV	PVE lubricant, 320HV (FVC68D), 1 litre can	HRP, HLP, HCP, HRH, HLH, HLJ, HCJ, HHP, MLZ/LLZ	Single pack	1

* Multipacks refer to deliveries from Danfoss Commercial Compressors to central Danfoss stocks or direct deliveries to OEM customers. These products may be available as single packs for end customers.