

# Refrigeration Lubricant 冷冻油



## FEATURES:

WARNOCK refrigeration lubricants are specifically designed for use with CFC, HFC and HCFC refrigerants, and widely accepted by major OEM brands. Used in a range of applications, including reciprocating, rotary screw and scroll compressors.

Packaging: 1L, 4L, 18.9L, 200L, 1000L

WARNOCK 冷冻油专为 CFC, HFC 和 HCFC 设计, 产品为各大品牌厂商信赖并为其 OEM 贴牌。产品广泛应用于各类涡旋、转子、螺杆、活塞压缩机, 并适用各类高、低温工况。

包装 (桶) : 1L, 4L, 18.9L, 200L, 1000L

## Cycloalkyl GS series

### FEATURES:

The GS series is formulated from highly refined naphthenic oil. It provides excellent fluidity at low temperatures and is resistant to viscosity loss under pressure for excellent bearing-film thickness and shaft-sealing.

GS 系列冷冻油是由精炼环烷基油调配而成, 在低温条件下仍可保持良好的流动性; 在高温高压工况下的抗稀释性使其具有高强度的油膜。

Item	Viscosity at 40 °C 粘度 @ 40 °C	Viscosity at 100 °C 粘度 @ 100 °C	Pour Point 倾点	Density at 15 °C 密度 @ 15 °C	Flash Point 闪点	Neutralization Value 中和值
Unit	CST	CST	°C	kg/m <sup>3</sup>	°C	mg KOH/g
Test Method	D445	D445	D97	D1298	D92	D974
3GS	32	4.7	-40	0.9	170	0.01
3GSD	32	4.7	-40	0.9	170	0.01
4GS	69	7.3	-36	0.9	190	0.01
4GSD	69	7.3	-36	0.9	190	0.01
5GS	100	8.9	-25	0.9	195	0.01
5GSD	100	8.9	-25	0.9	195	0.01
46	47	5.7	-36	0.9	180	0.01

## AB (Alkylbenzene) 32K, 68K, 100K series

### FEATURES:

Super-performing synthetic alkylbenzene (AB) lubricant has excellent low-temperature fluidity and chemical stability for long oil life. The 32K series is suitable for R22, R502 systems (especially low temperature applications). Compatible with 68K and 100K seals where mineral lubricant was previously used.

烷基苯 (AB) 合成冷冻油具有优越的化学稳定性和低温流动性。其中 32K 适用于 R22, R502 系统, 在低温条件下具有良好的相溶性。而 68K 和 100K 系列与矿物油可相容, 因此可直接添加在原矿物油系统中。

Item	Viscosity at 40 °C 粘度 @ 40 °C	Viscosity at 100 °C 粘度 @ 100 °C	Pour Point 倾点	Flocculation Point 絮凝点	Flash Point 闪点	Acid Value 酸值
Unit	CST	CST	°C	°C	°C	mg KOH/g
Test Method	D445	D445	D97	ASHRAE 86	D92	D974
32K	29.1	4.2	-45	-73	182	0.01
68K	56.04	5.9	-35	-55	179	0.01
100K	95.18	7.98	-30	55	221	0.01

# Refrigeration Lubricant

## 冷冻油



### POE (Polyol Ester) 679 series

#### FEATURES:

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

679 系列是由合成酯基油调配而成的高端冷冻油，得益于多元醇酯（POE）与 HFC 制冷剂良好的相容性，679 系列冷冻油具有优异的热稳定性和化学稳定性，电绝缘性及材料的兼容性，具安全与环保性能好，是 HFC 制冷剂的首选润滑油。

Item	Viscosity at 40 °C 粘度 @ 40 °C	Viscosity at 100 °C 粘度 @ 100 °C	Pour Point 倾点	Density at 20 °C 密度 @ 20 °C	Moisture 含水量	Colour 色度	Flash Point 闪点	Acid Value 酸值
Unit	CST	CST	°C	kg/m <sup>3</sup>	ppm	Hazen	°C	mg KOH/g
Test Method	D445	D445	D97	D1298	E1064-85	D1209	D92	D974
679-32	32.5	5.8	-46	0.977	< 40	60	258	0.02
679-68	65.5	9.3	-39	0.980	< 40	70	270	0.02
679-100	98.8	12.7	-39	0.974	< 40	125	270	0.02
679-120	120	14.0	-35	0.968	< 40	125	280	0.02
679-150	150	14.8	-30	0.968	< 40	125	290	0.02
679-170	170	17.0	-25	0.968	< 40	125	290	0.02
679-220	222	19.5	-25	0.976	< 40	125	280	0.02
679-320	320	24.0	-25	0.980	< 40	125	300	0.02

### Refrigeration Lubricant Selector

#### 冷冻油选型表

Compressor Type 压缩机种类	Lubricant Type 冷冻油种类	Refrigerant 制冷剂	Working Temp. 工作温度	Recommended Model 推荐冷冻油型号	Compressor Manufacturer 压缩机品牌参考
Semi-Hermetic Compressor	Cycloalkyl	R22 HCFC	Medium temp.	3GS	Copeland, RefComp, Dorin, etc.
			Low temp.		
	High temp.	4GS			
Scroll Compressor	Alkylbenzene	R22 HCFC	Medium temp.	32K	Bitzer b5.2, Dock FUSI146, etc.
	Synthetic Grease	R404A / R507 HFC	Low temp.	679-32	Bitzer BSE32, Copeland POE32, Bock FUSI POE 32, etc.
			All range	3GS	Copeland, Danfoss, etc.
Hermetic Recip. Compressor	Synthetic Grease	R404A / R507 HFC	All range	679-32	Copeland POE32, Danfoss 160SZ
	Cycloalkyl	R22 HCFC	High temp.	5GS	Maneurop, Tecumesh, Copeland, etc.
Medium temp.			4GS		
Screw Compressor	Alkylbenzene	R22 HCFC	High temp.	100K	Fusheng FS100M, Hanbell A01, etc.
			Low temp.		Dunham Bush #2, etc.
	Synthetic Grease	R22 HCFC	High temp.	679-320	Fusheng FS300R, Hanbell B01, Bitzer B320SH, RefComp CP-320, etc.
			Medium temp.	679-150	Fusheng FS150R, Hanbell B02, Bitzer B150SH, RefComp CP-150, etc.
			Low temp.		Bitzer BSE170, etc.
R404A / R134a HFC	Medium temp.	679-170			
R134a / R410A HFC	High Temp.	679-220	Hanbell B04, Carrier 110, etc.		