



Previous Name: **Shell Clavus Oil R**

Shell Refrigeration Oil **S4 FR-F**

Advanced Synthetic Refrigerator Compressor Lubricant

- **RELIABLE PERFORMANCE**
- **FOR USE WITH HFC REFRIGERANTS**

Shell Refrigeration Oil S4 FR-F is a synthetic refrigeration lubricant with a polyol ester base fluid. It has been developed for use with R134a and other HFC refrigerants.

Performance benefits

- **Extended maintenance intervals**
Shell Refrigeration Oil S4 FR-F has excellent high temperature and oxidation stability providing long service life even where high compressor discharge temperatures are found.
- **Wear protection**
Shell Refrigeration Oil S4 FR-F has been designed to minimise the wear in bearings and pistons – the most critical parts of a reciprocating compressor.

Applications

- **Refrigerator compressors**
Shell Refrigeration Oil S4 FR-F is recommended for use in open-, semi-open and hermetic compressors in domestic, commercial and industrial refrigeration systems. It can be used in both rotary and reciprocating compressor types
- **Refrigerant compatibility**
Shell Refrigeration Oil S4 FR-F is recommended for use with R 134a and other types of HFC refrigerant.
- **Seal compatibility**
Shell Refrigeration Oil S4 FR-F is compatible with all sealing materials commonly used with HFC refrigerant systems.

Specifications and Approvals

Shell Refrigeration Oil S4 FR-F meets the requirements of DIN 51503 KD.

Special note: Product Handling

Due to the hygroscopic nature of the base fluid it is recommended that, when filling the system, air contact should be avoided as much as possible. Once an oil pack has been opened it must be sealed carefully after use and the remaining contents should be used within a few days.

Health and Safety

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from your Shell representative.

Protect the environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Advice

Advice on applications not covered in this leaflet may be obtained from your Shell representative



Typical Physical Characteristics

Viscosity grade		ISO 3448	32	46	68	100
Refrigerator oil group		DIN 51503			KD	
Kinematic viscosity		ISO3104				
at 40°C	mm ² /s		31	42	66	94
at 100°C	mm ² /s		6	6.2	8.8	10.7
Density at 15°C	kg/m ³	ISO 12185	1018	973	991	984
Flash point (COC)	°C	ISO 2592	>220	>230	>230	>230
Pour point	°C	ISO 3016	-54	-48	-42	-42
Neutralisation number	mg KOH/g	ASTM D 664 (TAN)	<0,06	<0,06	<0,06	<0,06
Characteristics when used with R134a						
Floc-point	°C	DIN 51351	<-50	<-30	<-30	<-15
Refrigerant stability (250°C)		DIN 51593	>96	>96	>96	>96
Miscibility			Miscible over the whole range of typical refrigeration temperatures			

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

For more information please contact your Shell Marine Products Representative or refer to the Port Services Guide on our website: www.shell.com/marine. Shell is not liable for application/advice errors when Product Data Sheets/Material Safety Data Sheets are obtained from non-official sources/sites other than the official website as shown above.