



Previous Name: Shell Clavus Oil AB

Shell Refrigeration Oil **S4 FR-V**

Advanced Synthetic Refrigerator Compressor Lubricant

- **RELIABLE PERFORMANCE**
- **COMPATIBLE WITH MOST STANDARD REFRIGERANTS**

Shell Refrigeration Oil S4 FR-V is a synthetic refrigeration lubricant based on alkylated benzenes. It offers a universal solution to the lubrication requirements of most refrigeration compressors and is compatible with all commonly used refrigerants with the exception of HFCs.

Performance benefits

- **System efficiency**
Shell Refrigeration Oil S4 FR-V has high solvency and is designed to maintain refrigerant cleanliness and efficiency.
- **Extended maintenance intervals**
Shell Refrigeration Oil S4 FR-V has excellent high temperature and oxidation stability providing long service life even where high compressor discharge temperatures are found.
In addition it is formulated to provide excellent control of deposit and sludge formation resulting in extended oil drain intervals in comparison with mineral oil based refrigerator oils.

Applications

- **Refrigerator compressors**
Shell Refrigeration Oil S4 FR-V 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-V is designed for use with most commonly occurring refrigerants:

Ammonia (R717) systems where it offers excellent performance, even under high compressor discharge temperatures or down to evaporation temperatures of -33°C or lower.

Carbon dioxide (R744) systems.

CFC and HCFC systems (R12 and R22)

Hydrocarbon systems such as propane (R290).

- **Seal compatibility**
Shell Refrigeration Oil S4 FR-V is compatible with all commonly used sealing materials used with mineral oils.
- **Lubricant compatibility**
Shell Refrigeration Oil S4 FR-V is completely miscible with mineral oil, other alkylated benzene and PAO based lubricants.

Specifications and Approvals

Shell Refrigeration Oil S4 FR-V meets the requirements of DIN 51503 KAA and KC.

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	KAA , KC			
Kinematic viscosity	ISO 3104				
at 40°C	mm ² /s	29	46	68	107
at 100°C	mm ² /s	4.1	5.3	6.2	7.2
Density at 15°C	kg/m ³ ISO 12185	870	869	871	869
Flashpoint COC	°C	180	180	190	200
Pourpoint	°C	-45	-42	-39	-36
Neutralisation number	mg KOH/g ASTM D 664 (TAN)	<0,04	<0,04	<0,04	<0,04
Characteristics when used with R12					
Floc-point	°C DIN 51351	<-50	<-30	<-30	<-15
Refrigerant stability (250°C)	DIN 51593	>96	>96	>96	>96
Characteristics when used with R22					
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			
Characteristics when used with R290					
Floc-point	°C DIN 51351	<-50	<-30	<-30	<-15
Refrigerant stability (250°C)	DIN 51593	>96	>96	>96	>96

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.