



Previous Name: Shell Clavus Oil R

Shell Refrigeration Oil S4 FR-F 46

- Reliable Performance
- For use with HFC Refrigerants

Advanced Synthetic Refrigerator Compressor Lubricant

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.

DESIGNED TO MEET CHALLENGES

Performance, Features & 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.

- **Refrigerant Compatibility**

Shell Refrigeration Oil S4 FR-F is recommended for use with R134a and other types of HFC refrigerant.
- **Seal Compability**

Shell Refrigeration Oil S4 FR-F is compatible with all sealing materials commonly used with HFC refrigerant systems.

Specifications, Approvals & Recommendations

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

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

Main 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.

Typical Physical Characteristics

Properties	Method	Shell Refrigeration Oil S4 FR-F
ISO Viscosity Grade	ISO 3448	46
Refrigerator Oil Group	DIN 51503	KD
Kinematic Viscosity @40°C	mm ² /s	ISO 3104 42
Kinematic Viscosity @100°C	mm ² /s	ISO 3104 6.2
Density @15°C	kg/m ³	ISO 12185 973
Flash Point (COC)	°C	ISO 2592 >230
Pour Point	°C	ISO 3016 -48
Neutralisation Number	mg KOH/g	ASTM D664 (TAN) <0.06
Characteristics when used with R134a - Floc-point	°C	DIN 51351 <-30
Characteristics when used with R134a - Refrigerant Stability	@250°C	DIN 51393 >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.

Health, Safety & Environment

■ Health and Safety

Shell Refrigeration Oil S4 FR-F is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

■ Protect the Environment

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

Additional Information

■ 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.

■ Advice

Advice on applications not covered here may be obtained from your Shell representative.