Technical Data Sheet

Formerly Known As: **Shell Clavus Oil AB**

Shell **Refrigeration Oil** ***S4 FR-V 68***

- Reliable Performance
- Compatible with most standard Refrigerants

Advanced Synthetic Refrigerator Compressor Lubricant

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.

DESIGNED TO MEET CHALLENGES

Performance, Features & 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.

Main 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. Because of its solvency power and compatibility with mineral oils it can be used as a flushing fluid in turbine circuits. For more information contact your local Shell representative.

Specifications, Approvals & Recommendations

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

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Compatibility & Miscibility

- **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^{o}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.

Typical Physical Characteristics

Properties			Method	Refrigeration Oil S4 FR-V 68
ISO Viscosity Grade			ISO 3448	68
Refrigerator Oil Group			DIN 51503	KAA, KC
Kinematic Viscosity	@40°C	mm^2/s	ISO 3104	68
Kinematic Viscosity	@100°C	mm^2/s	ISO 3104	6.2
Density	@15°C	kg/m^3	ISO 12185	871
Flash Point (COC)		°C	ASTM D92	190
Pour Point		°C	ASTM D97	-39
Neutralisation Number		mg KOH/g maximum	ASTM D664 (TAN)	0.04
Characteristics when used with R12 - Floc-point		°C maximum	DIN 51351	-30
Characteristics when used with R12 - Refrigerant Stability	@250°C	minimum	DIN 51393	96
Characteristics when used with R22 - Floc-point		°C maximum	DIN 51351	-30
Characteristics when used with R22 - Refrigerant Stability	@250°C	minimum	DIN 51393	96
Miscibility				Miscible over the whole range of typical refrigeration temp.
Characteristics when used with R290 - Floc-point		°C maximum	DIN 51351	-30
Characteristics when used with R290 - Refrigerant Stability	@250°C	minimum	DIN 51393	96

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-V 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 Safety Data Sheet, which can be obtained from https://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

- **Advice**

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