Shell Refrigeration Oil S2 FR-A 68

Refrigerator Compressor Lubricant

Shell Refrigeration Oil S2 FR-A is a low miscibility compressor lubricant intended for use in refrigeration compressors using Ammonia refrigerant. It is formulated from specially refined paraffinic base oils in combination with additives selected to minimise system deposits and provide long service life.

Performance, Features & Benefits

- System efficiency
  Shell Refrigeration Oil S2 FR-A has been specially optimised for use in systems where oil separation is required. It has been designed to reduce "light end" oil carryover; this minimises oil thickening in the compressor and reduces oil coating of internal evaporator surfaces thus maintaining overall system efficiency.

- Extended maintenance intervals
  Shell Refrigeration Oil S2 FR-A 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 conventional mineral oil based refrigerator oils.

Main Applications

- Refrigerator compressors
  Shell Refrigeration Oil S2 FR-A 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 S2 FR-A is recommended for use with ammonia (R717) based refrigeration systems where it offers excellent performance, even under high compressor discharge temperatures, or down to evaporation temperatures of -30°C. It can also be used in systems using hydrocarbons such as propane (R290).
  Shell Refrigeration Oil S2 FR-A is not recommended for use with CFC, HCFC or HFC refrigerants such as R12, R22 or R134a.

Specifications, Approvals & Recommendations

- Shell Refrigeration Oil S2 FR-A meets the requirements of DIN 51503 KAA and KE.
  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

Compatibility & Miscibility

- Seal Compatibility
  Shell Refrigeration Oil S2 FR-A is compatible with all commonly used sealing materials designed for use with mineral oils.

- Lubricant Compatibility
  Shell Refrigeration Oil S2 FR-A is completely miscible with mineral oil, alkylated benzene and PAO based lubricants.
Typical Physical Characteristics

<table>
<thead>
<tr>
<th>Properties</th>
<th>Method</th>
<th>Shell Refrigeration Oil S2 FR-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Viscosity Grade</td>
<td>ISO 3448</td>
<td>68</td>
</tr>
<tr>
<td>Refrigerator Oil</td>
<td>DIN 51503</td>
<td>KAA, KE</td>
</tr>
<tr>
<td>Kinematic Viscosity @40°C</td>
<td>mm²/s</td>
<td>68</td>
</tr>
<tr>
<td>Kinematic Viscosity @100°C</td>
<td>mm²/s</td>
<td>9</td>
</tr>
<tr>
<td>Flash Point (CO C)</td>
<td>°C</td>
<td>232</td>
</tr>
<tr>
<td>Pour Point</td>
<td>°C</td>
<td>-39</td>
</tr>
<tr>
<td>Density @15°C</td>
<td>kg/m³</td>
<td>862</td>
</tr>
<tr>
<td>Neutralisation Number</td>
<td>mg KOH/g</td>
<td>ASTM D664 (TAN)</td>
</tr>
<tr>
<td>Miscibility with R290</td>
<td>Complete miscible with hydrocarbon based refrigerants</td>
<td></td>
</tr>
</tbody>
</table>

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 S2 FR-A 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

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