ISCEON® MO29

ISCEON® MO29 (R-422D) is a “near drop-in” for R-22 in medium and low temperature direct expansion (DX) commercial and industrial refrigeration systems. It also can be used in DX air conditioning applications, including water chillers.

ASHRAE #: R-422D

Applications
• Medium and low temperature DX refrigeration:
  – Supermarkets
  – Food service
  – Cold storage
  – Industrial process
• Commercial and Residential air conditioning:
  – Package rooftop units
  – DX water chillers

Benefits
• Provides easy, quick, cost-effective retrofits – easier retrofit than R-404A and R-507
• 32% lower Global Warming Potential (GWP) vs. R-404A and R-507
• Field testing has been successful in over 1,200 refrigeration systems with minimal TXV changes and equivalent energy performance to R-22
  – An assessment of TXV loading is required to determine if TXV change is required
• Non-ozone-depleting HFC
  – Not subject to phase-out under the Montreal Protocol
• Significantly lower discharge temperature than R-22
  – Likely to prolong compressor life
• Compatible with MO, AB and POE lubricants
• Retrofit Guidelines available from OEMs

Expected Performance After Retrofit
(Based on field experience, calorimeter testing and thermodynamic property data. Actual results may vary due to system design and operating conditions.)

Broad field experience has shown that ISCEON® MO29 provides similar cooling capacity and energy efficiency to R-22 in most systems, while operating at significantly lower compressor discharge temperature.
**ISCEON® MO29 Performance Compared to R-22 in Refrigeration Systems**

*Performance with subcooling based on thermocycle calculations from calorimeter data and does not include heat transfer effects*

<table>
<thead>
<tr>
<th></th>
<th>Low Temperature</th>
<th>Med Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–25°F (–32°C) evaporator</td>
<td>20°F (–7°C) evaporator</td>
</tr>
<tr>
<td></td>
<td>105°F (41°C) condenser</td>
<td>120°F (49°C) condenser</td>
</tr>
<tr>
<td></td>
<td>65°F (18°C) return gas</td>
<td>65°F (18°C) return gas</td>
</tr>
<tr>
<td></td>
<td>with 10°F (6°C) subcooling</td>
<td>with 10°F (6°C) subcooling</td>
</tr>
<tr>
<td>Discharge Temperature, °F (°C)</td>
<td>–33 (–18)</td>
<td>–64 (–36)</td>
</tr>
<tr>
<td>Discharge Pressure, psi (kPa)</td>
<td>+10 (+69)</td>
<td>+10 (+69)</td>
</tr>
<tr>
<td>Refrigeration Cooling Capacity, %</td>
<td>+8</td>
<td>–5</td>
</tr>
<tr>
<td>Energy Efficiency, %</td>
<td>+14</td>
<td>Same</td>
</tr>
</tbody>
</table>

+ is increase and – is decrease for ISCEON® MO29 vs. R-22
R-22 assumes liquid injection with discharge temperature of 275°F (135°C)

**Retrofit Considerations**
ISCEON® MO29 is compatible with traditional and new lubricants – mineral oil, alkylbenzene and polyol ester – in most cases no change of lubricant type during retrofit is needed. Oil return is determined by a number of operating and design conditions – in some systems with complex piping configurations, POE may need to be added. Minor equipment modifications (e.g., seal replacement) or expansion device adjustments (or replacement in a small percentage of cases) may be required in some applications. DuPont recommends a pre-retrofit system evaluation be performed. Refer to the ISCEON® MO29 Retrofit Guidelines for details.

**Product Composition**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFC-134a</td>
<td>31.5</td>
</tr>
<tr>
<td>HFC-125</td>
<td>65.1</td>
</tr>
<tr>
<td>Isobutane</td>
<td>3.4</td>
</tr>
</tbody>
</table>

---

**For Further Information: (800) 235-7882**

www.isceon.com

DuPont Fluorochemicals
Wilmington, DE 19880-0711