Opteon™ XP40 (R-449A) is a non-ozone depleting, low global warming potential (GWP), hydrofluoro-olefin (HFO)-based refrigerant with an optimal balance of properties to replace R-404A/R-507, R-22, or R-407 series in positive displacement, direct expansion, low- and medium-temperature commercial and industrial applications.

Opteon™ XP40 is suitable for new installations, as well as for retrofit of existing systems, offering improved energy efficiency and environmental properties.

Applications
Low- and medium-temperature commercial and industrial DX refrigeration
- Supermarkets
  - Centralized rack systems
  - Distributed systems
  - Walk-in coolers/freezers, prep rooms, etc.
- Food service (e.g., condensing units)
- Cold storage
- Self-contained systems
- New equipment/retrofit of existing systems

Benefits
- Low GWP: 67% reduction compared to R-404A/R-507(1)
- Up to 12% lower energy consumption compared to R-404A/R-507
- Safe and nonflammable (ASHRAE® A1)
- Approved by major equipment and component manufacturers
- Alternative to R-407 series low- and medium-temperature refrigerants (equivalent capacity)
- Can be topped off after leaks
- Extensively field tested and proven
  - No lubricant or seal changes required when retrofitting from R-404A/R-507. Superheat adjustments likely.
  - Compatible with existing R-22/R-407 series equipment. For R-22 retrofits, oil change and seal replacements are recommended.

(1)According to Assessment Report 5 (AR5)
(2)American Society of Heating, Refrigerating, and Air-Conditioning Engineers
Opteon™ XP40 Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHRAE Number</td>
<td>R-449A</td>
</tr>
<tr>
<td>Composition</td>
<td>R-32/R-125/HFO-1234yf/R-134a</td>
</tr>
<tr>
<td>Weight %</td>
<td>24.3/24.7/25.3/25.7</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>87.2 g/mole (87.2 lb/lb mole)</td>
</tr>
<tr>
<td>Boiling Point at 1 atm</td>
<td>–46.0 °C (-50.7 °F)</td>
</tr>
<tr>
<td>Critical Pressure</td>
<td>4447 kPa [abs] (655.0 psia)</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>81.5 °C (178.7 °F)</td>
</tr>
<tr>
<td>Liquid Density at 21.1 °C (70 °F)</td>
<td>1113.3 kg/m³ (69.5 lb/ft³)</td>
</tr>
<tr>
<td>Ozone Depletion Potential (CFC-11 = 1.0)</td>
<td>0</td>
</tr>
<tr>
<td>AR5 Global Warming Potential</td>
<td>1282</td>
</tr>
<tr>
<td>ASHRAE Safety Classification</td>
<td>A1</td>
</tr>
<tr>
<td>Temperature Glide</td>
<td>-4 K (-7 °R)</td>
</tr>
</tbody>
</table>

What to expect after retrofitting

The data below was obtained from a display case/condensing unit converted to Opteon™ XP40 from R-404A with only adjustments to the EEV (updated for R-449A PT curve) during low- and medium-temperature operation at indoor conditions specified by AHR Standard 1200. Test setup was in accordance with ASHRAE Standard 72-2005.(4)

<table>
<thead>
<tr>
<th>Ambient Temperature</th>
<th>Medium Temperature</th>
<th>Low Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28 °C (82 °F)</td>
<td>35 °C (95 °F)</td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>-8%</td>
<td>-12%</td>
</tr>
<tr>
<td>Relative Mass Flow</td>
<td>-16%</td>
<td>-17%</td>
</tr>
<tr>
<td>Suction Pressure</td>
<td>-27.5 kPa (-4.0 psi)</td>
<td>-31.0 kPa (-4.5 psi)</td>
</tr>
<tr>
<td>Discharge Pressure</td>
<td>-48.2 kPa (-7 psi)</td>
<td>-34.5 kPa (-5 psi)</td>
</tr>
<tr>
<td>Discharge Temperature</td>
<td>+3 K (+5.4 °R)</td>
<td>+2 K (+3.6 °R)</td>
</tr>
</tbody>
</table>

+ is an increase, - is a decrease relative to R-404A

(4) Actual performance for a specific system depends on a number of factors, including equipment conditions and operating environment.

For more information on the Opteon™ family of refrigerants, or other refrigerants products, visit opteon.com or call (800) 235-7882.