orbia | Fluor & Energy Materials

Klea®

# Klea® 456A

## Next Generation Refrigerant for the Automotive Aftermarket

Orbia Fluor & Energy Materials has over 70 years of experience delivering trusted solutions, with innovation, sustainability and customer focus driving our approach.

Our latest innovation for the automotive aftermarket, Klea® 456A is our new, direct replacement for R-134a. R-456A extends refrigerant availability* with 50%** of the global warming potential of R-134a.

Compatible*** with R-134a servicing equipment, R-456A's ease of use and low GWP supports the ever-increasing demand for sustainable solutions now and into the future.

**Application**

Automotive Aftermarket

***

*R-456A allows older vehicles previously charged with R-134a to age gracefully over the vehicle's lifetime.

**R-456A enables a 50% global warming potential reduction vs R-134a resulting in increased availability in regions with HFC phasedowns.

# R-456A | Physical Properties

| Property | S.I. Units | Value | British Units | Value |
|---|---|---|---|---|
| Molecular Weight | kg/kmol | 101.42 | lbm/lbmol | 101.42 |
| Critical Temperature | °C | 102.1 | °F | 215.9 |
| Critical Pressure | bara | 41.38 | psia | 600 |
| Critical Density | $kg/m^3$ | 491 | $lb/ft^3$ | 30.7 |
| Normal Boiling Point | °C | -30.8 | °F | -23.4 |
| Latent Heat of Vapourisation at Atmospheric Pressure | kJ/kg | 217 | $BTU_{IT}/lb$ | 93.4 |
| Saturated Vapour Density at Atmospheric Pressure | $kg/m^3$ | 5.2 | $lb/ft^3$ | 0.325 |
| Liquid Vapour Pressure at 25°C | bara | 7.36 | psia | 106.7 |
| Coefficient of Volumetric Thermal Expansion for Saturated Liquid at | $°C^{-1}$ | 0.00323 | $°F^{-1}$ | 0.0018 |
| Speed of Sound* for Saturated Vapour at 25°C | m/s | 145 | ft/s | 477 |
| Adiabatic Exponent* for Saturated Vapour at 25°C | | 1.22 | | 1.22 |
| Latent Heat of Vapourisation at 25°C | kJ/kg | 176 | $BTU_{IT}/lb$ | 75.8 |
| Saturated Vapour Density at 25°C | $kg/m^3$ | 31 | $lb/ft^3$ | 1.93 |
| Saturated Vapour Density at 0°C | $kg/m^3$ | 13.8 | $lb/ft^3$ | 0.864 |

* Vapour composition as per bulk refrigerant at dew

# Key Benefits

Direct replacement for R-134a that is compatible with existing R-134a air conditioning systems

Same efficiency and cooling performance as R-134a

Non-flammable – easy conversion, same safety classification as R-134a

Over 50% reduction in GWP – good news for future availability to service R-134a fleets



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