

# 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

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\*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 <sup>3</sup> | 491     | lb/ft <sup>3</sup>    | 30.7   |
| Normal Boiling Point                                                | °C                | -30.8   | °F                    | -23.4  |
| Latent Heat of Vapourisation at Atmospheric Pressure                | kJ/kg             | 217     | BTU <sub>IT</sub> /lb | 93.4   |
| Saturated Vapour Density at Atmospheric Pressure                    | kg/m <sup>3</sup> | 5.2     | lb/ft <sup>3</sup>    | 0.325  |
| Liquid Vapour Pressure at 25°C                                      | bara              | 7.36    | psia                  | 106.7  |
| Coefficient of Volumetric Thermal Expansion for Saturated Liquid at | °C <sup>-1</sup>  | 0.00323 | °F <sup>-1</sup>      | 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 <sub>IT</sub> /lb | 75.8   |
| Saturated Vapour Density at 25°C                                    | kg/m <sup>3</sup> | 31      | lb/ft <sup>3</sup>    | 1.93   |
| Saturated Vapour Density at 0°C                                     | kg/m <sup>3</sup> | 13.8    | lb/ft <sup>3</sup>    | 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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