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Koura

Lenz

Klea® Edge™ 444A

Sustainable Refrigerant for the Automotive Aftermarket

Economical alternative to R-1234yf

Koura has over 50 years of experience delivering high-performing, sustainable refrigerant solutions to solve thermal management challenges. We leverage our technical and market expertise to deliver the best outcome for both our customers and their consumers.

Introducing Kleå EdgeTM 444A, a new, direct replacement for R-1234yf for the automotive aftermarket. Klea® EdgeTM 444A is a more economical option than R-1234yf* and cools faster** for enhanced passenger comfort.

*Based on market conditions as of September 2024.
** Independant test lab data shows an improvement in pull down times.

Klea® Edge ™ 444A provides the market options to meet current and future US regulations for carbon emissions, while maintaining ease of use and recovery for service technicians and vehicle owners.

Klea® Edge™ 444A | Physical Properties

Pull Down Rate: Third party testing data showed R-444A has a pulldown rate Pressure Temperature Chart of 4 minutes faster than R-1234yf

Property	Units	R-1234yf	R-444A
ASHRAE 34 Classification		A2L	A2L
GWP		1	93
Relative COP*		100%	105%*
Relative Volumetric Capacity*		100%	* 112%
Typical Temperature Glide*	K	0	7
Liquid Density (20°C)	kg/m3	1110	1140
Bubble Point	°C	-29.5	-30
Saturated Vapor Pressure (20°C)	kPa	592	712

*Thermodynamic cycle calculation conditions: Single-stage, isentropic efficiency 65%, volumetric efficiency 100%, zero pressure drop Mean evap T = 10°C, Mean cond T = 40°C, Subcool = 5K, SH = 5K

**105% for drop in for R-1234yf system, up to 112% if the system is optimized

Black - Vapor Bold - Liquid

		R-444A		R-1234yf	
°F	**°C**	**(psig)**	**(barg)**	**(psig)**	**(barg)**
-20	-28.9			0.4	0.0
0	-17.8	4.9	0.3	9.2	0.6
20	-6.7	16.0	1.1	21.6	1.5
40	4.4	31.6	2.2	38.4	2.6
60	15.6	**76.3**	**5.3**	60.6	4.2
80	26.7	**109.1**	**7.5**	89.0	6.1
100	37.8	**150.0**	**10.3**	124.9	8.6
120	48.9	**199.9**	**13.8**	169.2	11.7
140	60.0	**259.9**	**17.9**	223.4	15.4
150	65.6	**294.1**	**20.3**	254.7	17.6

FAQ

Can you drop R-444A into an R-1234yf vehicle?
Yes. Klea® EdgeTM 444A is a direct replacement for R-1234yf vehicles. No system changes are needed.

Does Klea® Edge™ 444A require a unique fitting?

R-444A uses a unique fitting, just like other refrigerant options. Fitting details are included in the application guide. For service, the existing refrigerant should be fully evacuated and replaced with R-444A. A label denoting R-444A is required.

Will Klea® Edge™ R-444A work in EVs?

Yes, R-444A will work for a wide range of YF-containing electric vehicles. R-444A has undergone extensive testing in laboratory and car scenarios and consistently demonstrated potential for improved performance and efficiency compared with R-1234yf. Improved efficiency can lead to improved EV driving range.

What are the environmental benefits of R-444A?
R-444A produces minimal Tri-fluoro acetic acid (TFA) compared with R-1234yf*. TFA is a persistent material in nature. Performance cycle calculation modeling shows that R-444A provides a 5-12% COP improvement over R-1234yf, delivering higher system efficiency and the same or better carbon emissions over the full life cycle.

What is the chemical composition of R-444A?
R-444A is composed of R-32/R-152a/R-1234ze(E) (12/5/83% by weight)

Does Koura have a solution for R-134a vehicles?
Yes. Koura has a wide portfolio of refrigerant solutions to meet market needs. Klea® 456A our non-flammable refrigerant is a direct drop-in replacement for R-134a vehicles. Please contact your sales representative for more details.

*R-444A produces 2+/-2% TFA vs. 100% for R-1234yf

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