

FORANE® 134a

Forane® 134a refrigerant (R-134a) is a non-ozone depleting HFC refrigerant with properties very similar to R-12. It can be used both as a pure refrigerant in a number of traditional R-12 applications and as a component in refrigerant blends targeted to replace R-502 and R-22.

Application

Applications include automotive air conditioning, chillers, medium temperature commercial refrigeration, refrigeration appliances, and transport refrigeration.

Compressor and system manufacturers are selling new equipment specifically designed for R-134a. In addition, Arkema's laboratory testing and field trials have indicated R-134a will work in the retrofit of many existing R-12 and R-500 installations.

Properties & Performance

R-134a is designed to meet the needs of many air conditioning and medium temperature refrigeration systems. R-134a is a single component refrigerant rated A1 by ASHRAE (lowest levels of toxicity and flammability), having zero ozone depletion potential.

Lubrication

POE or PAG (for auto A/C only) lubricants must be used with R-134a since it is not miscible with mineral oil or alkylbenzene lubricants found in many systems. Special care must be taken when using POE or PAG oils due to their hygroscopicity (moisture absorption) when left exposed to the atmosphere. When retrofitting, a lubricant flush procedure is necessary to reduce the original oil content below 5% of the total oil charge. New R-134a equipment will be charged with the OEM recommended lubricant, ready to use with R-134a.

Charging

Charging with R-134a can be done either as a vapor or a liquid. End-users should check with their equipment manufacturers guidelines for specific charging instructions.

Retrofit

R-134a can be used to retrofit certain, existing R-12 systems. Applications include refrigeration, automotive A/C, and many commercial A/C systems.

When retrofitting R-12 systems to R-134a, it is necessary to replace the existing lubricant with POE oil, except in some automotive retrofit applications, which require PAG oil. In most cases, the mineral oil or alkylbenzene oil levels must be reduced below 5% of the new POE charge. Check with OEMs for any specific recommendations regarding oils or procedures. Remove as much of the existing lubricant as possible, add POE, and run the system on R-12 for some time. When the residual oil concentration is appropriate, remove R-12, replace the filter-drier, and charge R-134a.

PROPERTIES	R-134a
Average Molecular Weight (g/mol)	102.0
Normal Boiling Point (°F)	-14.9
Critical Temperature (°F)	213.9
ASHRAE Safety Group Classification	A1
Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP)	1,430