

FORANE® 407C

Forane® 407C refrigerant (R-407C) is a non-ozone depleting blend of HFC refrigerants R-32, R-125, and R-134a. It has been formulated to closely match the properties of R-22.

- Application** Applications include residential and commercial air conditioning systems, non-flooded evaporator chillers, and some commercial refrigeration systems. Since R-407C has similar properties to R-22, it is possible (with modifications) to use it in the same equipment designed for R-22 today.
- Properties & Performance** R-407C is designed to meet the needs of many new and existing air conditioning and refrigeration systems. R-407C is a zeotropic HFC refrigerant blend rated A1 by ASHRAE (lowest levels of toxicity and flammability), having zero ozone depletion potential.
- Lubrication** POE lubricants must be used with R-407C since its components are not miscible with the mineral oil or alkylbenzene lubricants found in most R-22 systems. When retrofitting, a lubricant flush procedure is necessary to reduce the original oil content below 5%. New R-407C equipment will be charged with the OEM recommended lubricant, ready to use with R-407C.
- Charging** Due to the zeotropic nature of R-407C, it should be charged as a liquid to prevent fractionation (changes in refrigerant composition due to vapor charging. See Definitions- Fractionation). In situations where vapor is normally charged into a system, a valve should be installed in the charging line to flash the liquid to vapor while charging.
- Retrofit** R-407C can be used to retrofit existing R-22 systems in positive displacement, direct expansion refrigeration, and air conditioning equipment. R-407C should not be used in centrifugal chillers or other equipment that uses a flooded evaporator, due to its high temperature glide.

Retrofit Procedure

1. Establish baseline performance. Note the oil type in use and any system operating data (if system is operating properly). Check for existing leaks and identify any needed repairs.
2. Recover the existing refrigerant charge (DO NOT vent to atmosphere). Weigh the amount of refrigerant removed.
3. Drain existing oil from the compressor sump, suction line accumulators, etc. Record the amount of oil removed. Add an equivalent amount of OEM recommended POE oil.
4. Recharge the system with the recovered R-22 charge and run the system (at least 1 hour) to circulate the new lubricant.
5. Recover the R-22 charge again and check the residual oil content of the lubricant. The amount of the original lubricant in the POE must be less than 5%.
6. Repeat steps 3 – 5, as needed, until the required oil purity level is reached. Once the oil flushes are completed, standard maintenance should be conducted (i.e., filter-drier change, leak repairs).
7. Evacuate the system (less than 500 microns) and ensure it maintains a vacuum. If vacuum is lost, it may indicate that leaks are present in the system.
8. Charge system with R-407C refrigerant. Remove refrigerant as liquid only from cylinder. The initial charge weight should be approximately 90% of the standard charge for R-22, charging up to 95% if necessary.
9. Adjust TXV set point and/or refrigerant charge to achieve the desired superheat. Low side pressure control settings may also need to be adjusted.
10. Monitor oil level in the compressor. If necessary, adjust oil amount to attain normal operating level (mid-sight glass).
11. Label system clearly, indicating the type and amounts of system refrigerant and oil.

PROPERTIES	R-407C
Average Molecular Weight (g/mol)	86.2
Normal Boiling Point (°F)	-46.5
Critical Temperature (°F)	186.9
ASHRAE Safety Group Classification	A1
Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP)	1,774