RS-20 (R480A) RETROFIT PROCEDURE AND PHYSICAL PROPERTIES

Composition	%
CO2	5
HF01234ze	86
HFC227ea	9
Type	HFO/HFC blend
Drop-in or long term	Both
Lubricant	POE/PAG
GWP 100 years ITH AR4	291

Physical Properties		RS-20	R134A
Molecular Weight		108.2	102.0
Boiling Point (1atm) [2]	°C °F	-34.09 -29.37	-26.07 -14.93
Temperature Glide [3]	°C	4.5	0
Critical Temperature	°C °F	107.4 225.3	101.1 213.9
Critical Pressure	bara psia	43.51 631.1	40.06 581
Liquid Density at 25 °C [4]	kg/m3	1175	1207
Density of Saturated Vapour at 25°C [5]	kg/m3	28.27	32.35
Specific Heat of Liquid at 25°C [4]	kJ/kg°C	1.391	1.425
Specific Heat of Vapour at 1 atm & 25°C	kJ/kg°C	0.863	0.606
Vapour Pressure at 25°C [4]	bara psia	7.517 109	6.654 96.5
Latent Heat of Vaporisation at Boiling Point [5]	kJ/kg	229.4	217
Global Warming Potential (GWP) AR4	GWP	291	1430
Flammability Limit in Air (1 atm)	vol%	None	None
Inhalation Exposure (8 hr Day & 40 hi Week)	ppm	1000	1000

1. RS-20 refrigerant properties obtained from NIST's REFPROP program.
2. Boiling point at 1 atm (mean of bubble and dew points).
3. Typical evaporator temperature glide from a Rankine cycle calculation.
Midpoints:
45°C condening, 7°C evaporating with 0.5 bar pressure drop; compressor isentropic efficiency: 0.7.
4. Mean of bubble and dew points at 25°C. property calculations on the midpoint liquid and vapour phase compositions as appropriate.
5. Difference between bubble point liquid enthalpy and dew point vapour enthalpy at 1 atm.

For more information visit: www.lowgwpref.com / www.replacementforr22.com / service@comstarproducts.com
1-800-328-0142 / www.comstarproducts.com / ComStar International Inc. New York, USA

RS-20 (R480A) RETROFIT PROCEDURE AND PHYSICAL PROPERTIES

TYPE AND DESCRIPTION

RS-20 is a non-flammable blend of CO2, HFO1234ze & HFC227ea which has a zero ODP and a much lower GWP than R134A. RS-20 is also compatible with the synthetic lubricants commonly with R134A.

Applications

RS-20 can be used in all the main applications where R134A is present including mobile air conditioning, hermetic and semi-hermetic compressor systems, cold stores, refrigerated transport, dairy chillers, vending machines, cellar cooling, etc. RS-20 is not recommended for use systems with flooded evaporators.
RS-20 is an excellent performance match for R134A providing a similar performance in almost every respect.

SERVICE WORK

Because it is a blend, it is recommended that RS-20 be charged into systems in the *liquid* as opposed to the Gaseous phase.

LUBRICANTS

RS-20 is compatible with all materials used in refrigeration systems previously charged with R134A.

MATERIALS COMPATIBILITY

RS-20 is compatible with all materials used in refrigeration systems previously charged with R134A.

ENVIRONMENTAL DATA

None of the components of RS-20 contains chlorine so that it has no ability to deplete the ozone layer.
RS-20 has a GWP of 291 which is 80% less that R134A.

For more information visit: www.lowgwpref.com / www.replacementforr22.com / service@comstarproducts.com
1-800-328-0142 / www.comstarproducts.com / ComStar International Inc. New York, USA

RS-20 (R480A) RETROFIT PROCEDURE AND PHYSICAL PROPERTIES

RETROFIT PROCEDURE

The retrofit procedure for replacing R134A with RS-20 is as follows:

1. Ensure the right is available, e.g. recovery unit and cylinders, container for recovered lubricant, vacuum pump, weighing scales, replacement drier etc.

2. Record baseline data (for non MAC systems) to establish the normal operating conditions for the equipment.

3. Recover and weigh the R134A charge to determine amount of RS-20 to add.

4. RS-20 is compatible with POE and PAG oils, so that there is no need to change the lubricant in the system.

5. Replace the old filter/drier with a new R134A filter/drier.

6. Evacuate the system and liquid charge with RS-20. A similar weight of RS-20 will be required to replace the original R134A charge. Avoid overcharging the system.

7. Start the system and check baseline data.

8. To determine evaporator superheat, measure the suction line temperature and pressure near the evaporator outlet. Use the Pressure/Temperature chart, to determine the dew point for the measured sution pressure. Subtract the determined dew point from the actual temperature and this difference is the evaporator superheat. If a suction line sight-glass is fitted check that no liquid is present.

9. To determine condenser sub-cooling, measure the temperature and pressure of the liquid line near the condenser outlet. Using the Pressure/Temperature chart, determine the bubble point for the measured pressure. Subtract the measured temperature from the determined bubble point and this difference is the condenser liquid sub-cooling. If a liquid line sight-glass is fitted, check that few or no bubbles are present.

10. Check system thoroughly for leaks.

11. Carefully monitor the oil level in the compressor if a sight glass is present & add more oil if required to maintain the correct level.

12. Remove all R134A labels and clearly label systems as being charged with RS-20.

For more information visit: www.lowgwpref.com / www.replacementforr22.com / service@comstarproducts.com
1-800-328-0142 / www.comstarproducts.com / ComStar International Inc. New York, USA