

RS-53 (R470A): Q & A



1.Q: What is RS-53?

A: RS-53 is a non-ozone depleting low GWP replacement for R410A.

2 Q: Yes, but what does RS-53 contain?

A: RS-53 is a blend of R125, CO₂, R32, R227ea, R134a, R1234ze.

3 Q: Can RS-53 be used with the same lubricant when replacing R410A?

A: Yes. RS-53 is fully compatible with synthetic lubricants such as polyol ester (POE) which are commonly used with R410A.

4 Q: Is RS-53 non-flammable and non-toxic?

A; RS-53 is both non-flammable and non-toxic.

5 Q: Is RS-53 approved by compressor manufacturers?

A: The individual components which comprise RS-53 are widely used in compressors produced by major manufacturers.

6 Q: Does RS-53 need to be charged in the liquid or gaseous form?

A: Because RS-53 is a blend, the recommendation is to charge it into the system in the liquid form. However, if the entire contents of the cylinder are being charged, then vapour charging is acceptable.

7 Q: Is RS-53 on the SNAP (Significant New Alternative Policy programme) list in the USA?

A: An application will be made to EPA to be listed on SNAP.

8 Q: Does RS-53 have an ASHRAE number & what is its classification?

A: Yes, ASHRAE number for RS-53 is R470A and has a safety classification of A1, i.e. low toxicity & non-flammable under all conditions of fractionation.

9 Q: How does the pressure rating of RS-53 compare with R410A?

A: The discharge pressure of RS-53 is similar to R410A.

10 Q: How does the capacity of RS-53 compare to R410A?

A: The capacity of RS-53 is similar to R410A.

11 Q: How does the discharge temperature of RS-53 compare to R410A? The predicted discharge temperature is too high.

A: The discharge temperature of RS-53 is similar to R410A.

12 Q: What are the flammability characteristics of RS-53?

A: RS-53 is non-flammable as defined in the ASHRAE EN 681-09 test, and hence does not have a flash point or explosion limits. The auto-ignition temperature of RS-53 has not been determined but is expected to be greater than 750°C.

13 Q: What are the decomposition products resulting from the combustion of RS-53?

A: The decomposition products resulting from subjecting RS-53 to a high temperature source are similar to those when R410A is exposed to fire.. The decomposition products in each case are irritating and toxic, and breathing apparatus should be worn where a possibility to exposure exists.

14 Q: Are there any special precautions with RS-53?

A: There are no specific precautions which must be taken with RS-53. As with all refrigerants, common sense and good housekeeping is always recommended.

15 Q: Is RS-53 compatible with refrigeration and air conditioning systems designed for R410A?

A: Yes. RS-53 is compatible with all materials commonly used in systems that were designed and charged with R410A. Magnesium and zinc alloys should be avoided.

16 Q: Can RS-53 be recovered and recycled?

A: Yes. RS-53 can be recovered and re-used after a cleaning process.

17 Q: What technical guidance do you advise when changing from R410A to RS-53?

A: Use the same type of lubricant which will be polyol-ester, replace the filter/drier and charge the same quantity of RS-53 as manufacturer's recommended charge for R410A after fully evacuating.

18 Q: How does RS-53 compare in price with R410A?

A: RS-53 is competitive in price with R410.

19 Q: What is the main advantage of RS-53?

A: RS-53 has a considerably lower Global Warming Potential less than one half that of R410A.

20 Q: Is RS-53 compatible with hoses, seals, gaskets and O-rings commonly used with R410A?

A: Yes, there is no necessity change any seals, hoses etc when replacing R410A and with RS-53.

21 Q: What is the specification for RS-53?

A: RS-53 complies with the refrigerant specification AHRI 700 for fluorocarbon refrigerants.

22 Q: What is the effect of high exposure by inhalation of RS-53?

A: As is the case with all CFC, HCFC and HFC based refrigerants, high exposure to RS-53 may produce anaesthetic effects. Very high exposures may cause an abnormal heart rhythm and prove suddenly fatal as is the case with all CFC, HCFC and HFC based refrigerants.

23 Q: What types of leak detectors should be used with RS-53?

A: Leak detectors used with HFCs are suitable for use with RS-53.

24 Q: What would be the effect of a large release of RS-53?

A: In common with other refrigerants of this type, the area should be immediately evacuated. The vapour may concentrate at floor level and in poorly ventilated areas may be slow to disperse. Forced ventilation should be provided before entering such areas.

25 Q: Is RS-53 suitable for use with new equipment?

A: Yes. RS-53 can be used in new equipment & has the major advantage of being non-flammable.