

RS-52 (R428A) Q & A



1.Q: What is RS-52?

A: RS-52 is a non ozone depleting Drop-in replacement for R502, the interim R502 ozone depleting blends and also for R22 at low temperatures.

2 Q: Yes, but what does RS-52 contain?

A: A: RS-52 is a blend of HFC143a, HFC125, isobutane & propane.

3 Q: Does RS-52 have an ASHRAE number & what is its classification?

A: Yes. RS-52 has been designated an ASHRAE number of R428A with a classification of A1, which is low toxicity & non flammable under all conditions of fractionation.

4.Q: Is RS-52 subject to a phase out programme under any regulations as is the case with CFCs and HCFCs?

A: No. None of the components of RS-52 is subject to a phase out schedule under the Montreal protocol or any regulations.

5 Q: Can RS-52 be used with mineral and alkylbenzene lubricants?

A: Yes. There is no need to change to a synthetic polyol ester (POE) oil with RS-52 which operates satisfactorily with traditional lubricants.

6 Q: What is the temperature glide of RS-52?

A: Less than 1°C

7.Q: Is RS-52 non flammable and non toxic?

A; RS-52 is both non flammable and non toxic. RS-52 has been awarded a safety classification of A1 by ASHRAE.

8 Q: Is RS-52 approved by compressor manufacturers?

A: The individual components which comprise RS-52 are widely used in compressors produced by major manufacturers.

9 Q: Is RS-52 as efficient as R22?

A: Tests show that RS-52 has a similar Coefficient of Performance to R502.

10 Q: Does RS-52 need to be charged in the liquid or gaseous form?

A: Because RS-52 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.

11 Q: Does the RS-52 disposable cylinder have a dip tube?

A: No. The disposable should be inverted to discharge RS-52 in the liquid form.

12 Q: Is RS-52 on the SNAP (Significant New Alternative Policy programme) list in the USA?

A: Yes. RS-52 is approved by the US Environmental Protection Agency as a replacement for R22 & is on the SNAP list.

13 Q: How does the pressure rating of RS-52 compare with R502?

A: The discharge pressure of RS-52 is about 1 bar higher than R502 and similar to R507.

16 Q: How does the capacity of RS-52 compare to R502?

A: The capacity of RS-52 is the same as R502.

17 Q: How does the capacity of RS-52 compare to R22.

A: The capacity of RS-52 is about 17% higher than R22.

18 Q: How does the temperature rating of RS-52 compare to R22?

A: The discharge temperatures of RS-52 are slightly higher than R502 and lower than R22.

19 Q: What are the flammability characteristics of RS-52?

A: RS-52 is non flammable at room temperature and atmospheric pressure, and has the same classification as R12, R134a, R404A, R409A (FX56), R507 (AZ-50) etc.

20 Q: What are the decomposition products resulting from the combustion of RS-52?

A: The decomposition products resulting from subjecting RS-52 to a high temperature source are similar to those when R22 is exposed to fire conditions. The decomposition products in each case are irritating and toxic, and breathing apparatus should be worn where a possibility to exposure exists.

21 Q: Are there any special precautions with RS-52?

A: There are no specific precautions which must be taken with RS-52. As with all refrigerants, common sense and good housekeeping is always recommended. Because the use of hygroscopic synthetic POE lubricants are avoided with RS-52, scrupulous attention to preventing moisture contamination is not necessary, although the ingress of moisture should be avoided at all times.

22 Q: Is RS-52 compatible with refrigeration and air conditioning systems designed for R502?

A: Yes. RS-52 is compatible with all materials commonly used in systems that were designed and charged with R502. As in the case of R502, magnesium and zinc alloys should be avoided.

23 Q: Can RS-52 be recovered and recycled?

A: Yes. RS-52 can be recovered and re-used after a cleaning process such as reclamation.

24 Q: What technical guidance do you advise when changing from R22 to RS-52?

A: The procedure for converting from R502 to RS-52 is straightforward. Use the same type of lubricant, replace the filter/drier and charge approximately 15% less RS-52 as the original R502 charge after fully evacuating.

25 Q: What is the main advantage of RS-52?

A: RS-52 is a long term alternative for R502 & R22, and its main advantage is that it can be used to replace both these refrigerants without the need to change the original mineral oil in the system. There is, therefore, no necessity to retrofit to a synthetic lubricant such as POE.

26 Q: Is RS-52 compatible with hoses, seals, gaskets and O-rings commonly used with R502 & R22?

A: RS-52 is compatible with all materials commonly used in refrigeration systems previously charged with R22 or R502. In general, materials which are compatible with R22 and R502 can be used with RS-52. It is recommended to check equipment manufacturer's retrofit literature and obtain recommendations from equipment manufacturers with regard to materials' compatibility. In older systems which have been operating on R22 for many years, replacement of some seals may be required due to the different composition of RS-52 which contains HFCs.

27 Q: How does the Coefficient of Performance (COP) of RS-52 compare with R502?

A: Tests show that RS-52 provides a similar COP to R502 .

28 Q: What is the specification for RS-52?

A: RS-52 complies with the refrigerant specification ARI 700 – 95 for fluorocarbon refrigerants.

29 Q: What is the effect of high exposure by inhalation of RS-52?

A: As is the case with all CFC, HCFC and HFC based refrigerants, high exposure to RS-52 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.

30 Q: What is the flash point, flammability explosion limits and auto-ignition temperature for RS-52?

A: RS-52 is non flammable as defined in the ASHRAE EN 681-98 test, and hence does not have a flash point or explosion limits. The auto-ignition temperature of RS-52 has not been determined but is expected to be greater than 750°C.

31: Can RS-52 be used in flooded evaporators?

A: Tests continue in this application & the results are encouraging

32: What types of leak detectors should be used with RS-52?

A: Leak detectors used with HFCs are suitable for use with RS-52.

33: What would be the effect of a large release of RS-52?

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.

34 Q: Is RS-52 available in both returnable and disposable cylinders:

A: Yes.

35 Q: Is RS-52 suitable for use with new equipment?

A: RS-52 has the potential to replace R502 & R22 in new equipment because it has an equivalent or higher capacity, lower discharge temperature than R22, can be used with traditional lubricants, a low temperature glide, zero ODP and is energy efficient.