

Name: _____ Score: _____

Refrigerant Recovery and Recycling Quiz - Part 2

Matching Questions

- | | |
|----------------------------|---|
| ____ 1. Retrofitting | A. SAE Standard for Motor Vehicle Refrigerant Vapor Compression System; Used to help standardize A/C system designs and service |
| ____ 2. ASHRAE | B. This agency establishes numerical designation of refrigerants; also known as American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| ____ 3. Standard J2064 | C. SAE Standard for R-1234yf Service Hose, Fittings and Couplers for Mobile Refrigerant Service Equipment covers hardware specifications for fittings, couplers and hoses |
| ____ 4. Standard J639 | D. Department of Transportation approved ratings for refrigerant storage tanks |
| ____ 5. SDS | E. SAE Standard for R-1234yf Refrigerant Identifier Installed in Recovery and Recycling Equipment for Use with Mobile A/C Systems |
| ____ 6. DOT-4BA or DOT-4BW | F. The process of changing – for example, older R-12 systems to R-134a or different accepted refrigerant |
| ____ 7. Standard J2888 | G. SAE Standard for Recommended Service Procedures for the Containment of R-134a |
| ____ 8. Standard J2927 | H. This agency establishes purity standards for refrigerants; also known as Air Conditioning Heating and Refrigeration Institute |
| ____ 9. Standard J2211 | I. SAE standard for MVAC hoses on R-134a or R-1234yf systems |
| ____ 10. AHRI | J. Safety Data Sheet for each refrigerant |

Short Answer Questions

11. Name five (5) retrofitting label requirements when using alternative refrigerants (p.14)...

- | | | |
|----------|----------|----------|
| A. _____ | B. _____ | C. _____ |
| D. _____ | E. _____ | |

12. List four (4) safety rules in Section 609 Legislation when servicing air conditioning systems (p.17)

- A. _____
- B. _____
- C. _____
- D. _____

13. List four (4) safety precautions **(things you should never do*)** found in Section 609 Legislation when handling refrigerant (p.17)...

- A. _____
- B. _____
- C. _____
- D. _____

* Note - Electrical switches must be at least 18' above the floor to prevent fires from flammable refrigerants

14. Name four (4) methods stated in SAE Standard J1989 (R-12) and J2211 (R-134a) to ensure that discharged refrigerant is kept to a minimum when recovering from an A/C system (p.20)...

- A. _____
 B. _____
 C. _____
 D. _____

Use the chart below to answer the following questions...

	REFRIGERANT FITTING SIZES	
Refrigerant	Low Side	High Side
R-12 (Post – 1987)	Threaded 7/16 in. x 20	Threaded 3/8 in. x 24
R-134a	Quick-coupler Unthreaded 13mm O.D.	Quick-coupler Unthreaded 16mm O.D.
R-152a	Quick-coupler Unthreaded 14.1mm O.D.	Quick-coupler Unthreaded 15mm O.D.
R-744	Quick-coupler Unthreaded 16.6mm O.D.	Quick-coupler Unthreaded 18.1mm O.D.
R-1234yf	Quick-coupler Unthreaded 14mm O.D.	Quick-coupler Unthreaded 17mm O.D.

15. What is the Quick-couple O.D. for R-134a Low Side? _____
 16. What is the Quick-couple O.D. for R-134a High Side? _____
 17. Does R-12 use a threaded fitting on the high and low side? ____ yes ____ No
 18. What is the Quick-couple O.D. for R-1234yf Low Side? _____
 19. What is the Quick-couple O.D. for R-1234yf High Side? _____
 20. Does R-744 use an unthreaded Quick-coupler? ____ yes ____ No
 21. Which MVAC refrigerant system uses a 14.1 mm O.D. Low Side Quick-coupler? _____
 22. What is the Quick-couple O.D. for R-152a High Side? _____
 23. Does R-12 use a Quick-couple on the high and low side? ____ yes ____ No
 24. Why are different thread sizes and coupler sizes used with different refrigerants?

 25. Does R-12 use a threaded fitting on the high and low side? ____ yes ____ No

26. In the chart below, write-in the service hose colors for R-12, R-134a and R-1234yf.

Look under Recovery/Recycling/Recharge Equipment on p.17 of the ASE Section 609 Booklet...

Types of Refrigerants *	Low Side Service Hose Color	High Side Service Hose Color
R-12		
R-134a		
R-1234yf		

*Note – R-152a and R-744 is not included because systems are not prevalent as of this date

27. What does Section 609 Legislation say about “Used R-134a Refrigerant from Non-Mobile Sources?”
 Write a brief statement or summarize your response on p.19...

True / False Questions

- ____ 22. It is illegal to use any refrigerant with flammable characteristic in a MVAC system
- ____ 23. Refrigerant storage tanks for R-12 and R-134a should not be filled more than 60% of its gross weight
- ____ 24. To recover R-12 and R-134a, service hoses must have a shut-off valve within 12 inches of the service end
- ____ 25. MVAC systems for R-12 and R-134a must hold a vacuum for 5 minutes before approved EPA 609 Recover and Recycling equipment will allow you to charge the system.
- ____ 26. When refrigerant is recovered, no oil is lost and there is no need to measure or record oil losses.
- ____ 27. If icing occurs during R-12 and R-134a recovery, it is acceptable to heat the recovery tank with a torch.
- ____ 28. Recovery equipment for R-1234yf must meet SAE Standard J2843 which includes a refrigerant identifier to ensure 98% purity.

Multiple Choice Questions

____ 29. Technician A says retrofitting one refrigerant to another requires unique fittings and different labels. Technician B says refrigerant mixing is acceptable when retrofitting as long as the new labels and fittings match the installed refrigerants. Who is correct?

- a. Technician A only
- b. Technician B only
- c. Both Technician A and B
- d. Neither Technician A or B

____ 30. Technician A says that the Quick-couple O.D for the low side service port on R-1234yf is Unthreaded 17mm. Technician B says that R-134a uses a Quick-coupler Unthreaded 13mm O.D. on the low side service port.

Who is correct?

- a. Technician A only
- b. Technician B only
- c. Both Technician A and B
- d. Neither Technician A or B

____ 31. When testing Recycled R-134a refrigerant stored in portable tanks or containers, all of the following procedures must be followed EXCEPT:

- a. Keep the container at 115 degrees F or above
- b. Connect a pressure gauge and calibrate in 1 psi divisions
- c. Measure the air temperature within 4 inches of the tank
- d. Compare the pressure to the chart to see if it is at or below the prescribed limit

**Standard
Temperature
Pressure
Chart**

Using this chart, determine if the R-134a refrigerant in this storage tank is OK to use or if it has to be recycled...

Here's the service procedures –

If the recycled refrigerant (R-134a) and the pressure exceeds the limits in this chart, shake the container and let it stand for several minutes. If the pressure falls below the limit – it is OK to use. If the pressure inside the tank or container still exceeds the limit, recycle the entire contents.

- ____ 32. Technician A says Reuse the Refrigerant.
Technician B says Recycle the Entire Contents. Who is correct?
- a. Technician A only
 - b. Technician B only
 - c. Both Technician A and B
 - d. Neither Technician A or B

- ____ 33. When using service hoses (p.22) to charge, recover, and recycle refrigerant – what requirement should be observed when connecting and removing hoses...
- a. Hose with manual shut-off valves should be closed before removing hoses
 - b. Manual shut-off valves should be closed when hoses are not connected to the A/C system or charging source
 - c. Both A and B
 - d. d. Neither A or B

Essay Questions

34. When servicing R-1234yf systems EPA standard J2845 stresses the importance of key safety practices (p.22 right column).

List at least five (5) of them...

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

35. What specific safety procedures should be observed when servicing Hybrid MVAC systems?
