

**R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements
for Use in Mobile Air-Conditioning Systems****RATIONALE**

This standard is being updated to add the requirements for certification according to SAE J2911.

1. SCOPE

This SAE Standard applies to new refrigerant used in motor vehicle passenger air-conditioning (A/C) systems designed to use R-1234yf, including belt and electrically driven compressors. Refrigerant for use in hermetically sealed, refrigerated cargo systems is not covered by this document.

2. REFERENCES**2.1 Applicable Documents**

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J639	Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems
SAE J2099	Standard of Purity for Recycled HFC-134a (R-134a) and HFO-1234yf (R-1234yf) or Use in Mobile Air-conditioning Systems
SAE J2911	Procedure for Certification that Requirements for Mobile Air Conditioning System Components, Service Equipment, and Service Technician Training Meet SAE J Standards

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2.1.2 AHRI (ARI) Publications

Available from Air-Conditioning, Heating and Refrigeration Institute, 4100 North Fairfax Drive, Suite 200, Arlington, VA 22203, Tel: 703-524-8800, www.ahri.org.

AHRI Standard 700-2006 with Addendum 1: Specification for Fluorocarbon Refrigerants

2.1.3 Compressed Gas Association Publications

Available from Compressed Gas Association, 4221 Walney Road, 5th Floor, Chantilly VA 20151-2923, Tel: 703-788-2700, www.cganet.com.

3. PURITY SPECIFICATION

The refrigerant referred to in this document shall fulfill the purity specification limits below, and shall be tested according to the normative methods of test described in AHRI 700-2006 and follow the detailed test procedures included in AHRI 700-2008 Appendix C [with modifications for R-1234yf when added to Appendix C of the AHRI 700 Standard].

3.1 Volatiles

3.1.1 Volatile Impurities Including Other Refrigerants

3.1.1.1 Method

The amount of volatile impurities including other refrigerants in the subject refrigerant shall be determined by gas chromatography as described in Appendix C to AHRI Standard 700.

3.1.1.2 Limits

The test sample shall not contain more than 0.5% by weight of volatile impurities including other refrigerants.

3.2 Other Impurities

3.2.1 Moisture shall not exceed 25 ppm by weight.

3.2.2 High boiling residue shall not exceed 0.01% by volume.

3.2.3 Particulates/solids shall be visually clean to pass.

3.2.4 Acidity shall not exceed 1 ppm as expressed in ppm by weight as HCl.

3.2.5 Air and other non-condensables shall not exceed 1.5% gas phase by volume at 23.9 °C.

4. CONTAINER REQUIREMENTS AND IDENTIFICATION

4.1 Standard valve outlet connection shall utilize the left hand thread, ½ inch, 16 threads per inch ACME or CGA 166 fitting, FIGURE 1 and TABLE 1. The fitting shall not contain a core valve pin.

4.1.1 The left hand thread, ½ inch, 16 TPI ACME fitting applies to HFO-1234yf (R-1234yf) refrigerant cylinders used for only MAC system servicing.

4.1.1.1 HFO-1234yf (R-1234yf) service cylinders shall have a volume less than or equal to 23 liters (1400 in³).

4.1.1.2 HFO-1234yf (R-1234yf) industrial cylinders, cylinders with volumes exceeding 23 liters (1400 in³), shall comply with the fitting requirements specified by applicable transportation rules and laws.

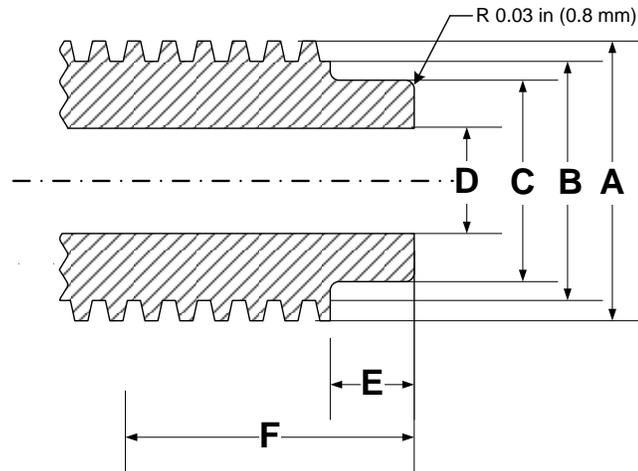


FIGURE 1 - HFO-1234YF (R-1234YF) CYLINDER CONNECTION SCHEMATIC

TABLE 1 - DIMENSIONS OF HFO-1234YF (R-1234YF) CYLINDER CONNECTION

0.500-16 ACME-2G-LH-EXT	SI units	English units
Major Diameter (A)	12.700 – 12.573 mm	0.5000 – 0.4950 in
Minor Diameter (B)	10.858 – 10.707 mm	0.4275 – 0.4215 in
Relief Diameter (C)	9.14 ± 0.25 mm	0.360 ± 0.010 in
Bore Diameter (D)	4.78 ± 0.05 mm	0.188 ± 0.002 in
Cutback (E)	4.1 ± 0.25 mm	0.16 ± 0.01 in
Full Thread (F)	13.51 mm (min.)	0.532 in (min.)

4.2 DOT Identification R-1234yf (2,3,3,3-tetrafluoro-1-propene).

4.3 Container external color for new refrigerant shall be white with a red band on the shoulder or top of the container to designate a Class IV flammable refrigerant.

4.3.1 The cylinder color shall not be used as the sole means of identification. Cylinders, shipping containers, and packaging shall be labeled as shown in Section 6.

4.3.1.1 Containers shall meet DOT Title 49CFR requirements.

5. SHIPPING CARTON MARKING REQUIREMENTS

5.1 R-1234yf, 2,3,3,3-Tetrafluoro-1-propene

5.2 DOT Label Flammable gas CAS Number 754-12-1

5.3 Hazard class 2.1

6. CONTAINER AND SHIPPING CARTON IDENTIFICATION REQUIREMENTS

- 6.1 Refrigerant meeting the requirements identified in this document shall be shipped in containers with a marking on the container and shipping carton.
- 6.2 The label or imprint marking shall be bold, having a minimum height of 5 mm, and shall state: "Cylinder contents comply with purity requirements of SAE J2844."

7. CERTIFICATION

- 7.1 In order to label any product(s) they shall meet SAE J2844, and the certification process as described in SAE J2911 must be followed and the documentation described in the appendix shall be submitted to SAE

8. NOTES

8.1 Marginal Indicia

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