

	SURFACE VEHICLE STANDARD	SAE J2844 OCT2011
		Issued 2011-02 Revised 2011-10
		Superseding J2844 FEB2011
R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements for Use in Mobile Air-Conditioning Systems		

RATIONALE

The updates to this standard are required due to a change in direction for the refrigerant cylinder fitting that was recommended by the Interior Climate Control Standards Committee.

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

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

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2011 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
 Tel: +1 724-776-4970 (outside USA)
 Fax: 724-776-0790
 Email: CustomerService@sae.org
 SAE WEB ADDRESS: <http://www.sae.org>

**SAE values your input. To provide feedback
on this Technical Report, please visit
http://www.sae.org/technical/standards/J2844_201110**

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.

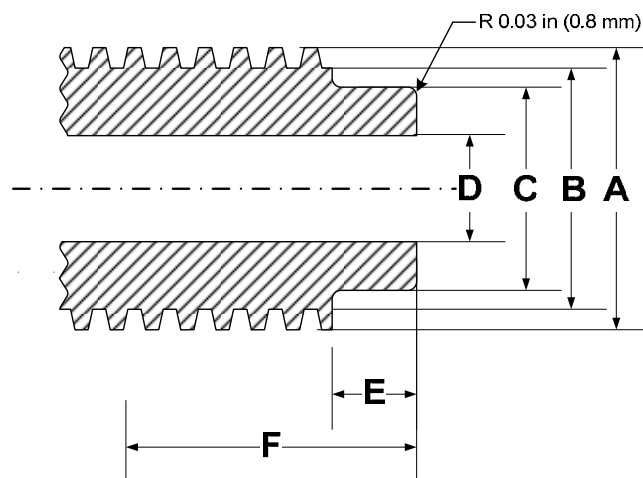


FIGURE 1 HFO-1234YF (R-1234YF) CYLINDER CONNECTION SCHEMATIC

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