SAE International

SURFACE VEHICLE STANDARD

SAE J2844 JAN2013

Issued 2011-02
Revised 2013-01

Superseding J2844 FEB2011

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

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/J2844_201301

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 in^3).

4.1.1.2 HFO-1234yf (R-1234yf) industrial cylinders, cylinders with volumes exceeding 23 liters (1400 in^3), shall comply with the fitting requirements specified by applicable transportation rules and laws.