

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

TETRAFLUOROETHANE REFRIGERANT

WSH-M17B19-A

1. SCOPE

The material defined by this specification is a 1,1,1,2-tetrafluoro-ethane refrigerant (HFC-134a).

2. APPLICATION

The material was released originally as the refrigerant fluid for automotive air conditioning units. This is the refrigerant of choice to replace dichlorodifluoromethane (CFC-12).

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 APPEARANCE

Clear, colorless liquid gas

3.3 CHARACTERIZATION

3.3.1 Boiling Point, at 760 mm Hg (ASTM D 2887, modified) - 26.3 +/- 0.2 °C

3.3.2 Boiling Range, max (for 15 % to 85 % by volume distilled) 0.5 °C

The test method shall be that described in the Federal Specification for Fluorocarbon Refrigerants, BB-F-1421B Section 4.4.3. Gas Chromatography (GC) is an acceptable alternate test method which can be used to characterize this refrigerant.

3.4 CONTAMINANTS LIQUID PHASE

3.4.1 Water Content, max (ASTM E 700) 10 ppm

3.4.2 Chloride Ions Pass

Test Method: Add 5 mL of absolute methyl alcohol and 3 - 4 drops of a saturated silver nitrate-alcohol solution to 50 mL Nessler tube, or similar container. Add 5 mL of liquid refrigerant and allow the solution to stand for a few minutes. Any precipitate or turbidity shall constitute a failure.

3.4.3 Acidity by Weight, max (ASTM D 2989) 1.0 ppm

Date	Action	Revisions
2002 10 11	Revised	Updated and renumbered
1992 06 10	CE001E10109215	Revised C.C. Gray
1990 08 20	885100 – 308	Released C.C. Gray

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3.4.4 High Boiling Residue, by volume, max 0.01 %

Test Method: Measure the residue after evaporation of a standard volume of refrigerant at a temperature 10.0 °C above the boiling point of the sample using a Goetz tube as specified in Federal Specification BB-F-1421B.

3.4.5 Particulates/Solids Pass

During the Boiling Range test, a measured amount of sample is evaporated from the Goetz bulb under controlled conditions. The particulates/solids shall be determined by visual examination of the empty Goetz bulb after the sample has evaporated completely. Presence of dirt, rust or other particulate contamination is reported as "fail".

3.5 CONTAMINANTS VAPOR PHASE

3.5.1 Non-Condensables, by volume, max 1.5 %

The test method shall be that described in the Federal Specification for Fluorocarbon Refrigerant BB-F-1421B Section 4.4.2 (perchloroethylene method). Gas Chromato-graphy is an acceptable alternate test method.

3.5.2 Purity, min 99.8 %
(Vapor Phase Gas Chromatography Method)

4. GENERAL INFORMATION

The information below is provided for clarification and assistance in meeting the requirements of this specification.

4.1 REFERENCE STANDARDS

ARI Standard 700-88
Air Conditioning & Refrigeration Institute
1501 Wilson Boulevard
Arlington, Virginia 22209