ANSI/ASHRAE Standard 63.2-1996 (RA 2006)
Reaffirmation of ANSI/ASHRAE Standard 63.2-1996

ASHRAE STANDARD

Method of Testing Liquid-Line Filter Drier Filtration Capability

Approved by the ASHRAE Standards Committee on June 26, 1996, and reaffirmed on June 24, 2006; by the ASHRAE Board of Directors on June 27, 1996, and reaffirmed on June 29, 2006; and by the American National Standards Institute on September 6, 1996, and reaffirmed on June 30, 2006.

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NOTE

When addenda, interpretations, or errata to this standard have been approved, they can be downloaded free of charge from the ASHRAE Web site at http://www.ashrae.org.

(This foreword is not a part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process.)

FOREWORD

This is a reaffirmation of ANSI/ASHRAE Standard 63.2-1996.

This standard was prepared under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform standards throughout the industry.

This standard prescribes a method for measuring the filtration capability of liquid-line filters and filter driers for use in refrigerant systems.

It is recognized that the test contaminant, the test fluid, the test equipment, and the method in the prescribed test do not fully represent the conditions that can exist in the liquid line of a refrigerant system.

The specified test contaminant was chosen as the most nearly representative controlled-particle-size test contaminant commercially available. The wide range of controlled particle sizes used provides a satisfactory degree of repeatability of test results. However, it is recognized that seldom, if ever, will the composition, particle size, and mix of the test contaminant be duplicated in an actual system. Therefore, the filtration capability of a filter determined by this test does not necessarily predict its exact capability in actual service in a refrigerant liquid line.

This test, however, serves as a useful means of comparing filter capabilities and implementing quality control to maintain uniformity of products.

The changes made for the 2006 reaffirmation were that the references were updated.

1. PURPOSE

The purpose of this standard is to prescribe a laboratory test method for evaluating the filtration capability of filters and filter driers used in liquid lines of refrigeration systems.

2. SCOPE

2.1 This laboratory test method evaluates the capability of liquid-line filters and filter driers only for removing and retaining solid particles of a standard test contaminant.

2.2 The test method may be applied to all hermetic refrigerant liquid-line filters and filter driers up to and including Model 417S (line size 23 mm maximum).

2.3 The technique employed in this standard is the one-pass test method. In this test, a clean-up filter is installed downstream of the test sample and is designed to retain and prevent recirculation of most of the contaminant particles that are not collected by the test sample in the first pass.

2.4 Filter driers have the added capability of removing and retaining certain dissolved contaminants. This standard does not provide measurement of this capability.

3. DEFINITIONS

contaminant capacity (M_c): the mass in grams of test contaminant that is retained by the filter under test.

contaminant loading (M_t): the mass in grams of test contaminant that is added to the test apparatus.

filter efficiency (E_f): contaminant capacity divided by contaminant loading, expressed as a percent.

filter under test: liquid-line filter or liquid-line filter drier that is under evaluation.

liquid-line filter: a device for removing and retaining solid contaminants from the liquid line of a refrigeration system.

liquid-line filter drier: a filter containing a desiccant capable of removing moisture and other dissolved contaminants in the refrigerant stream.

pressure drop (ΔP): the difference in pressure between the filter inlet and filter outlet, including fittings, expressed in kilopascals.

test flow rate: the flow of clean test fluid, expressed in kilograms per second, that is specified for the filter under test.

4. MATERIALS AND APPARATUS

4.1 Test Contaminant

4.1.1 General. The test contaminant will be a blend of 50% coarse test dust as received and 50% retained in a 200-mesh screen. Prepare this blend from SAE coarse test dust described in SAE J726 JUN93. Sources for the coarse test dust may be found by contacting the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001; (724) 776-4841.

4.1.2 Preparation of Test Contaminant. To prepare the blend of contaminant, first wet-screen a quantity of coarse test dust on a US (ASTM) or Tyler 200-mesh screen (particle retention = 74 μm). This is done by placing a portion of the coarse test dust on a 200-mesh screen and running water through the screen while stirring the course test dust with the fingers. Discard the fine particles passing through the screen. The +200-mesh particles collected on the screen are removed and dried for one hour at 110°C. The test contaminant is prepared by mixing 50% by mass of the coarse test dust as received (after drying for one hour at 110°C) with 50% by mass of the +200-mesh-screened dust.

4.1.2.1 Particle Size Analysis. The coarse test dust as received and the blend used as the test contaminant have the approximate particle sizes listed in Table 1.

4.2 Test Fluid. The test fluid shall be Refrigerant 113. R-113 is an ozone-depleting substance. Take care to minimize evaporation or loss of test fluid.