

ANSI/ASHRAE Standard 63.2-1996 (RA 2010)
(Reaffirmation of ANSI/ASHRAE Standard 63.2-1996 [RA 2006])



ASHRAE STANDARD

Method of Testing Liquid-Line Filter Drier Filtration Capability

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

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FOREWORD

This is a reaffirmation of Standard 63.2 1996 (RA 2006). 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.

The changes made for the 2010 reaffirmation were:

- Updating the titles of Appendix A and Appendix B to Informative Annex A and Informative Annex B, respectively.
- Updating the disclaimers preceding the Informative Annexes.
- Removing the numbering of the paragraphs in Informative Annex A.
- Making other minor editorial changes.

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_l): 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 coarse 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), which is an ozone-depleting substance. Take care to minimize evaporation or loss of test fluid.

4.3 Clean-Up Filter. The clean-up filter shall be a filter membrane of 0.8 μm pore size, which is used to estimate the amount of contaminant that passed through the filter under test.

TABLE 1 Wt% in Various Size Ranges, μm

	0-5	5-10	10-20	20-40	40-80	80-200
As received	12	12	14	23	30	9
Blend	6	6	7	11	32	38