



Standard Specification for Filters Used in Air or Nitrogen Systems¹

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1. Scope

1.1 This specification covers the design, construction, test, and performance requirements for air or nitrogen system filters, referred to hereinafter as filters. These filters are intended to be installed in-line to protect equipment from particular contamination.

1.2 The values stated in this specification in inch-pounds units are to be regarded as the standard. The SI equivalent shown in parentheses are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:²

F992 Specification for Valve Label Plates

2.2 American Society of Mechanical Engineers (ASME):

B1.1 United Screw Threads (UN and UNR Thread Form)³

B1.20.1 Pipe Threads, General Purpose (Inch)³

B16.11 Forged Steel Fittings, Socket-Welding and Threaded³

B16.25 Buttwelding Ends³

B16.34 Flanged, Threaded, and Welded End³

2.3 Society of Automotive Engineers (SAE):

ARP 901 Aerospace Recommended Practice—Bubble-Point Test Method⁴

2.4 Military Standards and Specifications:

MIL-STD-167-1 Mechanical Vibrations of Shipboard Equipment (Type I—Environmental and Type II—Internally Excited)⁵

MIL-STD-740-1 Airborne Sound Measurements and Acceptance Criteria of Shipboard Equipment⁵

MS16142 Boss, Gasket Seal Straight Thread Tube Fitting, Standard Dimensions for⁵

MIL-S-901 Shock Tests, H.I. (High-Impact); Shipboard Machinery, Equipment and Systems, Requirements for⁵

MIL-F-1183 Fittings, Pipe, Cast Bronze, Silver-Brazing, General Specifications for⁵

2.5 Naval SEA Systems Command (NAVSEA): Government Drawings:

NAVSEA 803-1385884 Unions, Fittings and Adapters Butt and Socket Welding 6000 PSI, WOG, NPS⁵

NAVSEA 803-1385943 Unions, Silver Brazing 3000 PSI, WOG, NPS, for UT Inspection⁵

NAVSEA 803-1385946 Unions, Bronze Silver Brazing, WOG for UT Inspection⁵

3. Terminology

3.1 Definitions:

3.1.1 *absolute contaminant removal rating*—the smallest size of contaminant as defined in ARP 901 that the filter will retain with 100 % efficiency by weight.

3.1.2 *bubble point*—the pressure differential across a submerged filter element required to produce a visible and steady stream of air bubbles. Correlation between bubble point and contaminant removal capability provides an economical means to test for contaminant removal capability on a production basis. The bubble point indicates the maximum pore size of the filter media under static conditions.

3.1.3 *bubble-tight*—no visible leakage over a 3-min period using either water submersion or the application of bubble fluid for detection.

3.1.4 *clean filter element pressure drop*—the pressure drop across the filter element when it is new or uncontaminated.

3.1.5 *cleanable filter element*—a filter element that, after being contaminated to its dirt-holding capacity (contaminated filter element pressure drop), can be restored by cleaning to operational condition and with a pressure drop not exceeding the required clean filter element pressure drop.

3.1.6 *contaminant removal rating*—this is a measure of the size of contaminants that the filter can remove from the flow stream.

3.1.7 *contaminated filter element pressure drop*—the pressure drop across the filter element when it is contaminated to the point where cleaning or replacement is required.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990.

⁴ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.