



Standard Specification for Packing Material, Graphitic or Carbon Braided Yarn¹

This standard is issued under the fixed designation F2191/F2191M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers staple or continuous filament carbon/graphite yarn valve stem compression packing, suitable for use as end-rings on packing systems for valves. Intended services include steam, hydrocarbons, water and non-oxidizing chemicals. Where this specification is invoked as ASTM F2191, Sections 1 – 18 apply. Where this specification is invoked as ASTM/DoD F2191, Sections 1 – 18 and the Supplementary Requirements shall be applicable.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- C135 Test Method for True Specific Gravity of Refractory Materials by Water Immersion
- C561 Test Method for Ash in a Graphite Sample
- C562 Test Method for Moisture in a Graphite Sample
- C816 Test Method for Sulfur in Graphite by Combustion-Iodometric Titration Method
- C889 Test Methods for Chemical and Mass Spectrometric Analysis of Nuclear-Grade Gadolinium Oxide (Gd_2O_3) Powder
- D129 Test Method for Sulfur in Petroleum Products (General High Pressure Decomposition Device Method)

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.02 on Insulation/Processes.

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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.

- D512 Test Methods for Chloride Ion in Water
- D1179 Test Methods for Fluoride Ion in Water
- D1246 Test Method for Bromide Ion in Water
- D3178 Test Methods for Carbon and Hydrogen in the Analysis Sample of Coal and Coke (Withdrawn 2007)³
- D3684 Test Method for Total Mercury in Coal by the Oxygen Bomb Combustion/Atomic Absorption Method (Withdrawn 2014)³
- D3761 Test Method for Total Fluorine in Coal by the Oxygen Bomb Combustion/Ion Selective Electrode Method
- D3951 Practice for Commercial Packaging
- D4239 Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High-Temperature Tube Furnace Combustion

2.2 Military Standards:

- MIL-STD-129 Marking for Shipment and Storage⁴
- MIL-P-24583 Packing Material, Graphitic or Carbon Braided Yarn⁴
- MIL-P-24503 Packing Material, Graphitic, Corrugated Ribbon or Textured Tape and Preformed Ring⁴

2.3 Fluid Sealing Association Handbook:

- Guidelines for the Use of Compression Packings, Copyright 1997⁵

3. Terminology

3.1 *base fiber density*—bulk density of the base fiber before being coated or impregnated and braided into packing.

3.2 *braided flexible graphite*—a braid constructed of continuous strands or strips of expanded flexible graphite tape or ribbons, which have been overwrapped or have imbedded reinforcing fibers.

3.3 *carbon fibers*—fibers used in braided packing are produced from viscose rayon, pitch, or polyacrylonitrile (PAN) and are defined as a yarn with a carbon assay of less than 99 %.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

⁵ Available from the Fluid Sealing Association, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866.