Type Testing of Process Valve Packing for Fugitive Emissions

API STANDARD 622
SECOND EDITION, OCTOBER 2011

AMERICAN PETROLEUM INSTITUTE

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Downstream Segment

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

Contents

Introduction

The purpose of this API standard is to establish a uniform procedure for evaluation of process valve stem packing. The testing approaches defined within this standard provide a method for evaluating packing systems. This testing program shall provide a basis for the comparison of the emissions and life cycle performance of packing.

Use of this standard assumes the execution of its provisions is entrusted to appropriately qualified and experienced personnel because it calls for procedures that can be injurious to health if adequate precautions are not taken. This standard refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage of the procedure.

Type Testing of Process Valve Packing for Fugitive Emissions

1 Scope

This standard specifies the requirements for comparative testing of valve stem packing for process applications where fugitive emissions are a consideration. Packing(s) shall be suitable for use at service temperatures –29 °C to 538 °C (–20 °F to 1000 °F). Factors affecting fugitive emissions performance that are considered by this standard include temperature, pressure, thermal cycling, mechanical cycling, and corrosion.

This standard is not intended to replace type testing of valve assemblies or valve production testing.

This standard establishes requirements and parameters for the following tests:

a) fugitive emissions,

b) corrosion, and

c) packing material composition and properties.

Test methods apply to packing for use in on-off valves with the following stem motion(s):

a) rising stem, and

b) rotating stem.

The test for fugitive emissions is based upon elements of EPA Method 21, providing comparative values of packing performance.

2 Reference Publications

The following standards contain provisions that, through reference in this text, constitute provisions of this API standard. At the time of the publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ASME B16.5[1], *Pipe Flanges and Flanged Fittings*

ASME B16.20, *Metallic Gaskets for Pipe Flanges—Ring Joint, Spiral-wound, and Jacketed*

ASME B16.34, *Valves—Flanged, Threaded and Welding End*

ASME SECT VIII DIV2, *ASME Boiler and Pressure Vessel Code*

EPA[2] Method 21, *Determination of Volatile Organic Compound Leaks*

FSA[3]-G-604-07, *Oxidation Test Standard for Flexible Graphite Gasket Materials*

MSS[4] SP-120, *Flexible Graphite Packing System for Rising Stem Steel Valves—Design Requirements*

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1 ASME International, 3 Park Avenue, New York, New York 10016-5990, www.asme.org.
2 U.S. Environmental Protection Agency, 109 TW Alexander Drive, Durham, North Carolina 27709, www.epa.gov.
3 Fluid Sealing Association, 994 Old Eagle School Road, Suite 1019, Wayne, Pennsylvania 19087-1866, www.fluidsealing.com.
4 Manufacturers Standard Society, 889 North Freedom Boulevard, Suite 100, Provo, Utah 84604, www.normas.com.