Standard for Fire Test for Valves

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Errata 2

Table 4: The first three rows should read as follows (red box indicates corrected values):

Table 4—Qualification by Valve Size from Test of 6D Valve

Size [a] of Test Valve		Other Valve Sizes Qualified	
NPS	**DN [b]**	**Nominal Size [c]/NPS**	**DN[b]**
1/2	15	API 6D ½, ¾ ,1	15, 20, 25
1	25	API 6D 1¼, 1½, 2	25, 32, 40, 50
		API 6A $1^{13}/_{16}$, $2^{1}/_{16}$	—

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Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the standard.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the standard.

May: As used in a standard, “may” denotes a course of action permissible within the limits of a standard.

Can: As used in a standard, “can” denotes a statement of possibility or capability.

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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.

Precautions

Warning—Fire testing of valves involves potential hazards. Depending on the design of the test valve and/or the nature of the fire test itself, the potential exists for a rupture of the pressure boundary components during testing. Protection for test personnel must be provided. Additionally, hazardous byproducts may be generated during the fire test as a result of decomposition of organic materials. Training of personnel on proper handling of any hazardous byproducts may be required.

Warning—The system relief pressure must be low enough to preclude the rupture of the valve at the expected test temperatures.

Warning—Elements, such as lead, tin, antimony, bismuth and cadmium that cause liquid metal embrittlement shall not be used in areas that are subjected to elevated temperatures.

Caution—A rupture of the pressure boundary components during the performance of a fire test may occur. The performance of a fire test may require additional safety precautions to be taken to minimize the likelihood of damage to surrounding equipment or the test environment.

Important Information Concerning Use of Asbestos or Alternative Materials

Asbestos is specified or referenced for certain components of the equipment described in some API standards. It has been of extreme usefulness in minimizing fire hazards associated with petroleum processing. It has also been a universal sealing material, compatible with most refining fluid services.

Certain serious adverse health effects are associated with asbestos, among them the serious and often fatal diseases of lung cancer, asbestosis, and mesothelioma (a cancer of the chest and abdominal linings). The degree of exposure to asbestos varies with the product and the work practices involved.

Consult the most recent edition of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, Occupational Safety and Health Standard for Asbestos, Tremolite, Anthophyllite, and Actinolite, 29 *Code of Federal Regulations* Section 1910.1001; the U.S. Environmental Protection Agency, National Emission Standard for Asbestos, 40 *Code of Federal Regulations* Sections 61.140 through 61.156; and the U.S. Environmental Protection Agency (EPA) rule on labeling requirements and phased banning of asbestos products (Sections 763.160-179).

There are currently in use and under development a number of substitute materials to replace asbestos in certain applications. Manufacturers and users are encouraged to develop and use effective substitute materials that can meet the specifications for, and operating requirements of, the equipment to which they would apply.

SAFETY AND HEALTH INFORMATION WITH RESPECT TO PARTICULAR PRODUCTS OR MATERIALS CAN BE OBTAINED FROM THE EMPLOYER, THE MANUFACTURER OR SUPPLIER OF THAT PRODUCT OR MATERIAL, OR THE MATERIAL SAFETY DATA SHEET.

Contents

Introduction

This standard is under the jurisdiction of the API Subcommittee on Valves and Wellhead Equipment (API Subcommittee 6). This standard is the result of updating the requirements from API Specification 6FA, Third Edition. This standard covers the requirements for testing and evaluating the performance of API Specification 6A and Specification 6D valves when exposed to specifically defined fire conditions.

Standard for Fire Test for Valves

1 Scope

The purpose of this standard is to establish the requirements for testing and evaluating the pressure-containing performance of API 6A and API 6D valves when exposed to fire. The performance requirements of this standard establish qualification criteria for all sizes and pressure ratings.

This standard applies to valves with one or more closure members.

This standard establishes acceptable levels for leakage through the test valve and external leakage after exposure to a fire for a 30-minute time period. The fire exposure test period has been established on the basis that it represents the maximum time required to extinguish most fires. Fires of greater duration are considered to be of a major magnitude, with consequences greater than those anticipated in this test.

This standard is not intended to address the qualification of valve actuators (including manually operated gearboxes). This standard does not cover check valves, pressure boundary penetration, external fittings, or end connections.

2 Normative References

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies, except that new editions may be used on issue and shall become mandatory upon the effective date specified by the publisher or six months from the date of the revision (where no effective date is specified).

API Specification 6A, *Specification for Wellhead and Tree Equipment*

API Specification 6D, *Specification for Pipeline Valves and Piping Valves*

ASTM D1414, *Standard Test Methods for Rubber O-Rings*

ASTM D1418, *Standard Practice for Rubber and Rubber Lattices—Nomenclature*

ASTM D412, *Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension*

ASTM D4000, *Standard Classification System for Specifying Plastic Materials*

ASTM D4065, *Standard Practice for Plastics: Dynamic Mechanical Properties: Determination and Report of Procedures*

3 Terms, Definitions, Acronyms, Abbreviations, Symbols, and Units

3.1 Terms and Definitions

For the purposes of this standard, the definitions in API 6A/6D shall apply. When identical terms are defined in API 6A/6D and this standard, the following definitions shall apply.

3.1.1
class
pressure class
Numerical pressure design class expressed in accordance with either the nominal pressure (PN) class or the ASME rating class.