Fire Test of Valves

API STANDARD 6FA
SIXTH EDITION, APRIL 2026



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Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001, standards@api.org.

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Introduction

This standard is not intended to inhibit a manufacturer from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. When an alternative is offered, the manufacturer should identify any variation from this standard and provide details. The technical revisions that have been made were primarily intended to add clarity and refine requirements.

Informative annexes are for informational purposes only and are not mandatory requirements.

Normative annexes are indispensable and mandatory for the application of this document.

Changes from the 5th to the 6th Edition are as follows:

— inclusion of allowance to form hybrid qualifications where stated requirements are met;

— addition of required definitions and measurement steps to allow for certain hybrid qualifications;

— updates to metallic materials scaling rules;

— addition of section on required records;

— addition of Annex B to allow for modified external leakage-only fire testing.

Fire Test of Valves

1 Scope

This standard establishes the requirements for testing and evaluating the pressure-containing and pressure-controlling 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. At the user's discretion, this standard may be applied to valves that do not meet the requirements of API 6A or API 6D.

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 end connections.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.

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 Latices—Nomenclature*

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

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

ASTM D4065-20, *Standard Practice for Plastics: Dynamic Mechanical Properties: Determination and Report of Procedures*

3 Terms, Definitions, and Abbreviations

3.1 Terms and Definitions

For the purposes of this standard, tthe following terms and definitions apply. For terms not defined below, the definitions given in API 6A and API 6D shall apply.

3.1.1
closure member
Part(s) of a valve that is positioned in the flow stream to permit flow or to obstruct flow, depending on its position, such as a ball, disc, gate, or plug.

NOTE 1 Refer to API 6D for details on closure members in various valve types.

NOTE 2 A closure member is sometimes referred to as an "obturator" and may be comprised of multiple parts.