Valve Selection Guide

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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 recommended practice (RP) aids in selection of valves for the hydrocarbon processing industry (HPI) and may also assist in the selection of valves for other industrial processes, such as power or general industry process applications. The task force members who developed this document represent many years of experience in the design and selection of valves and are composed of professionals from manufacturing, engineering contractors, and end users.

The objective of this RP is to disseminate suggested information on valve selection recommendations as an aid to reduce operational problems and maintenance costs.

Although this RP provides guidance on the selection of valves, the valve specifier or end user is required to pay particular attention to, and is ultimately responsible for, all aspects of the application involving process, metallurgical, and mechanical considerations.

Typical purchase descriptions are provided in Annex B to assist in the complete definition of valve details to help ensure that the correct product is specified for the intended application.

Of prime importance, however, is that this RP is a general guideline for valve selection; the final responsibility is that of the user of this document.

Valve Selection Guide

1 Scope

This recommended practice (RP) provides general guidance on valve selection for the hydrocarbon processing industry (HPI), which includes refineries, petrochemical, chemical, liquefied natural gas (LNG) plants and their various associated processes. Selection guidance is provided for valve types covered by ASME B16.34 [19] and API valve standards for the downstream segment, which include gate, ball, plug, butterfly, check, and globe valves.

Modulating control valves and pressure relief valves are outside the scope of this RP.

2 Normative References

There are no normative references in this document.

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1
abrasive service
Abrasive service is a term used to identify fluids containing particulates that are likely to damage a valve's pressure boundary or internals through erosion. Fluids containing rust, scale, welding slag, sand, catalyst fines, grit, and hydrocarbon particles (coke) may fall in this category.

3.2
bellows seal
A flexible metal bellows used in place of or in addition to valve stem packing to provide a positive seal against leakage to atmosphere.

3.3
chlorine service
Services containing liquid or vapor chlorine in concentrations higher than 1 ppm as defined in 29 *CFR* 1910[26]. This does not include water services containing chlorine for pH balancing or as a biocide.

3.4
clean service
Clean service is a term used to identify fluids free from solids or contaminants that could interfere with proper valve operation and/or closure. Clean fluids include most light hydrocarbons, instrument air, nitrogen, water, steam, lube oil, diesel oil, methanol, etc.

3.5
closure member
This refers to the component in the valve that serves to stop flow (internal disc, ball, and plug, for example). A closure member may also be referred to as the valve obturator.

3.6
CWP (cold working pressure)
The maximum fluid pressure at which a valve or fitting is allowed to be used at ambient temperature.

3.7
cryogenic service
The lower end of low-temperature service (such as liquefied gas) typically between –73 °C to –254 °C (–100 °F to –425 °F).