

| NPS | DN |
|----------------|-----|
| $\frac{1}{4}$ | 8 |
| $\frac{3}{8}$ | 10 |
| $\frac{1}{2}$ | 15 |
| $\frac{3}{4}$ | 20 |
| 1 | 25 |
| $1\frac{1}{4}$ | 32 |
| $1\frac{1}{2}$ | 40 |
| 2 | 50 |
| $2\frac{1}{2}$ | 65 |
| 3 | 80 |
| 4 | 100 |

For NPS ≥ 4 , the related DN = 25 \times NPS number.

(17) 1.6 Cryogenic Service

Valves in cryogenic service shall meet the additional requirements specified in MSS SP-134.

1.7 References

Codes, standards, and specifications, containing provisions to the extent referenced herein, constitute requirements of this Standard. These reference documents are listed in [Mandatory Appendix VIII](#).

2 PRESSURE-TEMPERATURE RATINGS

2.1 General

Pressure-temperature ratings are designated by class numbers. Each class number is further identified as Standard, Special, or Limited Class.

- (17) **2.1.1 Rating Designations.** Pressure-temperature ratings are tabulated for Standard and Special Class Pressure Rating Designation numbers 150, 300, 600, 900, 1500, 2500, and 4500 in [Table 2-1.1](#) through [Table 2-3.19](#) in metric units and in [Mandatory Appendix VII](#) in U.S. Customary units. Ratings for Limited Class are determined by the method in

(d) Threaded and socket welding-end valves larger than NPS $2\frac{1}{2}$ are beyond the scope of this Standard.

(e) Except as provided in [para. 2.5](#), the tabulated ratings are the maximum allowable working pressures, expressed as gage pressure, at the temperatures shown.

(f) Ratings intermediate to tabulated values are determined by linear interpolation between temperatures within a class number or between class numbers, except that for flanged-end valves interpolation between tabulated classes is not permitted. A further exception is that Class 400 valves having ASME B16.5 or ASME B16.47 flanged ends shall use the intermediate rating method of [para. 2.1.5](#).

(g) In all cases, valves shall be constructed so that the body, bonnet or cover, body bolting, and bonnet or cover bolting meet the 38°C (100°F) pressure rating requirements for the designated pressure class or pressure-temperature rating. However, pressure-temperature ratings for the valve may be otherwise limited by construction details or material design considerations, in which case the requirements of [paras. 4.3.3](#) and [7.2.6](#) shall be met.

2.1.2 Standard Class Valves. Valves conforming to the requirements of this Standard, except for those meeting the additional requirements of [section 8](#) for Special Class valves or of [Mandatory Appendix V](#) for Limited Class valves, shall be designated Standard Class valves. Ratings shall not exceed the values that are listed in [Table 2-1.1](#) through [Table 2-3.19](#) with an identifying label "A — Standard Class."

2.1.3 Special Class Valves. Threaded- or welding-end valves that conform to all the requirements of [para. 2.1.2](#), and in addition have successfully passed the examinations required by [section 8](#), may be designated Special Class valves. Pressure-temperature ratings shall not exceed the values that are listed in [Table 2-1.1](#) through [Table 2-3.19](#) with an identifying label "B — Special Class." Special Class ratings shall not be used for flanged-end valves.

7.3 Leakage Detection Devices

Leakage detection devices, e.g., pressure decay devices, may be used for detecting leakage provided that they are used at the pressures required for the shell and closure tests of [paras. 7.1](#) and [7.2](#). When used, the valve manufacturer shall have demonstrated that the test results are equivalent to the requirements of [paras. 7.1](#) and [7.2](#).

7.4 Surface Protection

Valves shall not be painted or otherwise coated with materials capable of sealing against leakage before the shell tests are completed except that

- (a) internal linings or coatings included in the design, e.g., nonmetal butterfly valve linings, are permitted
- (b) chemical corrosion protection treatment is permitted
- (c) assembled valves having bodies and bonnets or cover plates that have been separately tested in accordance with [para. 7.1](#), prior to having been painted or coated, may be painted or coated prior to final testing in accordance with [para. 7.1](#)

8 REQUIREMENTS FOR SPECIAL CLASS VALVES

8.1 Scope

This section defines the nondestructive examination (NDE) requirements and the rules for defect removal and repair for cast, forged, rolled, wrought, and fabricated valve bodies and bonnets or covers that are intended for use in Special Class valves.

is required, is expressed in multiples of t_m where t_m is the minimum wall thickness requirement as determined by [para. 6.1](#). The value for film coverage of A is intended to be the greater of $3t_m$ or 70 mm (2.75 in.). It should be recognized, however, that in some cases the specified value of A will exceed the intent of the film coverage area as illustrated in [Figures 7](#) through [17](#). For example, in [Figure 12](#) the body neck or run sections may not accommodate the full value of A as defined. In such cases the requirement may be satisfied by providing film coverage substantially as shown in the sketches. Also, if the full defined coverage width A would result in the film running substantially into an adjacent fillet or crotch section, the value of A may be reduced to a practical maximum value. Small variations in coverage are permitted when necessary to accommodate standard film sizes. Film coverage shall include the following areas:

(a) Body

- (1) a band around each weld end extending back from the body end a distance equal to the greater of $3t_m$ or 70 mm (2.75 in.)
- (2) a band around the bonnet neck extending down from the top of body on pressure seal valves and from back of the flange on bolted bonnet valves a distance equal to the greater of $3t_m$ or 70 mm (2.75 in.)

(3) a band in the area of the junction between each seat and body shell having a width equal to the greater of $3t_m$ or 70 mm (2.75 in.) and an encompassing girth extending between the fillets of the intersecting sections, e.g., as shown approximately 210 deg for [Figure 7](#)

(b) Bonnet. The junction of the stem seal chamber with the bonnet closure plate or flange.