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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Specification for Steel Sheet and Strip, Chromium-Molybdenum Alloy, for Pressure Vessels¹

This standard is issued under the fixed designation A 873/A 873M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers chromium-molybdenum alloy steel sheet and strip intended primarily for use in coil form in the construction of welded layered pressure vessels designed for elevated temperature service.

1.2 Sheet and strip are available under this specification in one grade, 2¼ Cr-1 Mo, and in five Classes, or strength levels, as in Table 1.

1.3 Material of Classes 1, 2, 3, and 4 is intended for use in the subcritical-annealed condition. Material of Class 5 is intended for use in the as-hot-rolled condition.

1.4 Material of Classes 1, 2, 3, and 4 may be furnished in the heat-treated condition. However, the material is usually furnished in the as-hot-rolled condition, being qualified on the basis of tensile test specimens that have been subjected to a simulated heat treatment as specified by the purchaser.

1.5 Material of Class 5 is supplied in the as-hot-rolled condition.

1.6 Material of Class 5 cannot be subjected to temperatures above 800°F [425°C] without sustaining significant loss in strength. Therefore, hot-forming and postweld heat treatment are not applicable to Class 5 material.

1.7 Material is usually furnished in coil form within the following size limits:

	in. [mm]
Thickness	0.070–0.230 [1.8–6.0]
Width	22–83 [550–2100]

1.8 The values stated in either inch-pound units or SI units are to be regarded as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.9 This specification is expressed in both inch-pound units and SI units. However, unless the order specifies the applicable “M” specification designation [SI units], the material shall be furnished to inch-pound units.

¹ This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel, and Related Alloys, and is the direct responsibility of Subcommittee A1.19 on Steel Sheet and Strip.

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TABLE 1 Strength Levels

Class	Yield Strength, min		Tensile Strength, min	
	ksi	MPa	ksi	MPa
1	30	205	60	415
2	45	310	75	515
3	60	415	85	585
4	75	515	95	655
5	100	690	130	895

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 505 Specification for Steel, Sheet and Strip, Alloy, Hot-Rolled and Cold-Rolled, General Requirements for²

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

3. Ordering Information

3.1 Orders for material under this specification shall include the following information, as required, to adequately describe the material:

3.1.1 Specification designation, including year date,

3.1.2 Name of material (for example, hot-rolled sheet),

3.1.3 Class,

3.1.4 Dimensions, including type of edge, and

3.1.5 Special requirements, if any (for example: heat treatment of material; simulated heat treatment to be applied to test coupons).

4. Manufacture

4.1 *Melting*—The steel may be made by any of the following processes: open-hearth, basic-oxygen, electric-furnace, vacuum arc remelt, or electroslag remelt.

4.2 *Rolling*—The material shall be hot-rolled.

4.3 *Heat Treatment*:

4.3.1 Class 1, 2, 3, and 4 material shall be subjected to a subcritical anneal, either by the material manufacturer or by the fabricator. (The postweld heat treatment (PWHT) applied by the fabricator may constitute the subcritical anneal.)

² Annual Book of ASTM Standards, Vol 01.03.