



Designation: A890/A890M – 18a

## Standard Specification for Castings, Iron-Chromium-Nickel-Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application<sup>1</sup>

This standard is issued under the fixed designation A890/A890M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope\*

1.1 This specification covers a group of cast duplex stainless steels (austenitic/ferritic).

1.2 The duplex stainless steel alloys offer a combination of enhanced mechanical properties and corrosion resistance when properly balanced in composition and properly heat treated. Ferrite levels are not specified, but these alloys will develop a range of approximately 30 to 60 % ferrite with the balance austenite. It is the responsibility of the purchaser to determine which grade shall be furnished depending on design and service conditions, mechanical properties, and corrosion-resistant characteristics.

NOTE 1—Because of the possibility of precipitation of embrittling phases, the grades included in this specification are not recommended for service at temperatures above 600 °F [315 °C].

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.3.1 Within the text, the SI units are shown in brackets.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**A781/A781M** Specification for Castings, Steel and Alloy, Common Requirements, for General Industrial Use

**A957/A957M** Specification for Investment Castings, Steel and Alloy, Common Requirements, for General Industrial Use

**E562** Test Method for Determining Volume Fraction by Systematic Manual Point Count

**E1245** Practice for Determining the Inclusion or Second-Phase Constituent Content of Metals by Automatic Image Analysis

### 3. Ordering Information

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

3.1.1 Description of casting by pattern or drawing number (dimensional tolerance shall be included on the casting drawing),

3.1.2 Specification designation and grade, including year of issue,

3.1.3 Options in the specification (see 9.1), and

3.1.4 Supplementary requirements desired, including the standards of acceptance.

### 4. Process

4.1 The steel shall be made by the electric furnace process, with or without separate refining such as argon-oxygen-decarburization (AOD).

### 5. Heat Treatment

5.1 Castings shall be heat treated in accordance with the requirements in **Table 1**.

NOTE 2—Proper heat treatment of these alloys is usually necessary to enhance corrosion resistance and, in some cases, to meet mechanical properties. Minimum heat-treat temperatures are specified; however, it is

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings.

Current edition approved Sept. 1, 2018. Published October 2018. Originally approved in 1988. Last previous edition approved in 2018 as A890/A890M – 18. DOI: 10.1520/A0890\_A0890M-18A.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

\*A Summary of Changes section appears at the end of this standard