

ASTM - A182/A182M
Standard Specification for
Forged or Rolled Alloy and Stainless Steel Pipe Flanges,
Forged Fittings, and Valves and Parts for High-Temperature
Service

This specification covers forged low alloy and stainless steel piping components for use in pressure systems. Included are flanges, fittings, valves, and similar parts to specified dimensions or to dimensional standards, such as the ASME specifications that are referenced in Section 2. It also include bars and products machined directly from bar.

Products made to this specification are limited to a maximum weight of 10 000 lb [4540 kg].

A. Manufacture

1. The low-alloy ferritic steels shall be made by the open-hearth, electric-furnace, or basic-oxygen process with the option of separate degassing and refining processes in each case.
2. The stainless steels shall be melted by one of the following processes: (a) electric-furnace (with the option of separate degassing and refining processes); (b) vacuum furnace; or (c) one of the former followed by vacuum or electroslag-consumable remelting. Grade F XM-27Cb may be produced by electron-beam melting.

B. Heat Treatment

1. After hot working, forgings shall be cooled to a temperature below 1000 °F [538 °C] prior to heat treating in accordance with the requirements of Table 1.
2. Low Alloy Steels and Ferritic and Martensitic Stainless Steels—
 - i. The low alloy steels and ferritic and martensitic stainless steels shall be heat treated in accordance with the requirements of point B.1 and Table 1. ii. When more than one heat treatment option is listed for a Grade in Table 1, any one of the heat treatments listed shall be performed. The selection of the heat treatment shall be at the manufacturer's option, unless otherwise stated in the purchase order.
 - iii. Liquid Quenching—Except as permitted in point B.2.iv, for F 1, F 2, and F 3, and in point B.2.v, for F 91, and when agreed to by the purchaser, liquid quenching followed by tempering shall be permitted provided the temperatures in Table 1 for each grade are used.
 - iv. Alternatively, Grade F 1, F 2, and F 12, Classes 1 and 2 may be given a heat treatment of 1200 °F [650 °C] minimum after final hot or cold forming.
 - v. Alternatively, Grade F 91 forged fittings having any section thickness greater than 3 in. [75 mm], at the time of heat treatment, shall be normalized and tempered or quenched and tempered at the manufacturer's option, provided that the temperatures in Table 1 for F 91 are used.
3. Austenitic and Ferritic-Austenitic Stainless Steels—