

ASTM B564 UNS N06625 Inconel 625 Flanges

Specification

The ASTM B564 UNS N06625 Flange is widely used in various industries, including oil and gas, chemical, petrochemical, fertilizer, pharmaceutical, and power generation. It is commonly used in applications where the environment contains corrosive substances such as sulfuric acid, hydrochloric acid, and seawater.

Material Overview

Property	Description
Standard	ASTM B564 / ASME SB564
UNS Designation	N06625
Trade Name	Inconel® 625
Material Type	Nickel-Chromium-Molybdenum alloy with Niobium
Form	Forged flanges, rings, bars, discs
Delivery Condition	Solution Annealed & Pickled

Chemical Composition (% by weight)

Element	% Composition
Nickel (Ni)	≥ 58.0 (Balance)
Chromium (Cr)	20.0 – 23.0
Molybdenum (Mo)	8.0 – 10.0
Niobium (Nb) + Ta	3.15 – 4.15
Iron (Fe)	≤ 5.0
Cobalt (Co)	≤ 1.0
Carbon (C)	≤ 0.10
Manganese (Mn)	≤ 0.50
Silicon (Si)	≤ 0.50
Sulfur (S)	≤ 0.015

Mechanical Properties

(At room temperature, per ASTM B564 requirements)

Material and Condition	Maximum Section Thickness, in. (mm)	Tensile Strength, min, ksi (MPa)	Yield Strength, 0.2% Offset, min, ksi (MPa)	Elongation in 2 in. or 50 mm or 4D, min, %
Nickel-chromium-molybdenum-columbium alloy UNS N06625, annealed	Up to 4 (102), incl	120 (827)	60 (414)	30
	Over 4 ^{<sup>B</sup>} (102) to 10 (254), incl	110 (758)	50 (345)	25

ASTM B564 N06625 Flange Types

ASTM B564 N06625 flanges are manufactured in:

- ASTM B564 N06625 **Weld Neck Flange (WN)**
- ASTM B564 N06625 **Slip-On Flange (SO)**
- ASTM B564 N06625 **Blind Flange (BL)**
- **Socket Weld Flange (SW)**
- **Threaded Flange (TH)**
- **Lap Joint Flange (LJ)**
- **Long Weld Neck Flange**
- **Orifice / Custom Flanges**

ASTM B564 N06625 flange Dimensions & Standards

Specification	Details
Size Range	½" to 48" (DN15 - DN1200)
Pressure Ratings	Class 150 to Class 2500 / PN10 - PN400
Standards	ASME B16.5, B16.47 Series A/B, MSS SP-44, EN 1092-1
Facing Types	Raised Face (RF), Ring Type Joint (RTJ), Flat Face (FF)
Dimensional Tolerances	As per ASME B16.5 / B16.47 / ASTM B564

Heat Treatment

- **Annealing** temperature: $\sim 980 - 1038^{\circ} \text{C}$ ($1800 - 1900^{\circ} \text{F}$), air or rapid quench
- Material is typically **solution annealed** before final machining

Testing Requirements

Test	Requirement
Visual / Dimensional	As per ASME B16.5 / customer spec
Mechanical Tests	Tensile, Yield, Elongation, Hardness
Chemical Composition	Confirmed per ASTM B564 limits
PMI Test	Optional, for alloy verification
Nondestructive Testing (optional)	RT, UT, PT, or MT
IGC (Intergranular Corrosion) Test	If specified (ASTM A262 Practice C/E)

Marking Requirements

Each flange is marked with:

- ASTM B564
- UNS N06625 / Inconel 625
- Size, Pressure Class
- Heat Number
- Manufacturer' s Identification

