

# ASTM B462 UNS N08020 (Alloy 20) Specification

**Standard:** ASTM B462 / ASME SB462

**Grade:** UNS N08020 (Alloy 20 / Carpenter 20 / 20Cb-3®)

**EN Number:** 2.4660

**Product Forms:** Forged flanges, fittings, valves, and other pressure component

**UNS N08020**, also known as **Alloy 20** or **Carpenter 20**, is a **nickel-iron-chromium austenitic alloy** with **molybdenum and copper** additions. It was developed specifically for **maximum resistance to sulfuric acid attack** while offering excellent performance against **chloride stress corrosion cracking, pitting, and crevice corrosion**.

## 1. Chemical Composition (% by weight):

Element	Wt, %
Carbon [C]	≤0.07
Manganese [Mn]	≤2.00
Phosphorus [P]	≤0.045
Sulfur [S]	≤0.035
Silicon [Si]	≤1.00
Nickel [Ni]	32.00~38.00
Chromium [Cr]	19.00~21.00
Molybdenum [Mo]	2.00~3.00
Copper [Cu]	3.00~4.00
Niobium+Tantalum [Nb+Ta]	8xCarbon~1
Iron	Remainder

## 2. Mechanical Properties

Alloy	Tensile Strength, min.		Yield Strength, min.		Elongation, min.	Reduction of Area, min.
	ksi	MPa	ksi	MPa	%	%
ASTM B462						
UNS N08020	80	551	35	241	30.0	50.0

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## 3. Heat Treatment:

- **Stabilization Anneal:** 925 - 980 ° C (1700 - 1800 ° F) followed by rapid cooling
  - Niobium-stabilized to prevent intergranular corrosion
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## 4. Corrosion Resistance:

- Excellent resistance to **sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)** in a wide concentration range
  - High resistance to **chloride stress corrosion cracking**
  - Good resistance to **pitting and crevice corrosion**
  - Suitable for **chemical, food, pharmaceutical, and marine applications**
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## 5. Available Flange Types (ASTM B462 N08020):

- ASTM B462 N08020 Weld Neck (WN) Flange
- ASTM B462 N08020 Slip On (SO) Flange
- ASTM B462 N08020 Blind (BLRF) Flange
- Socket Weld (SW) Flange
- Lap Joint (LJ) Flange
- Threaded (TH) Flange
- Ring Type Joint (RTJ) Flange

- Long Weld Neck (LWN) Flange
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## 6. Dimension & Pressure Ratings:

- **Standards:** ASME B16.5, ASME B16.47, MSS-SP-44
  - **Sizes:** ½” to 48” (DN15 - DN1200)
  - **Pressure Classes:** 150#, 300#, 600#, 900#, 1500#, 2500#
  - **Facing:** RF, FF, RTJ
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## 7. Applications:

- Chemical processing equipment (sulfuric & phosphoric acid service)
- Heat exchangers, condensers, reactors
- Food and pharmaceutical industries
- Marine and offshore applications
- Piping systems handling strong acids

ASTM B462 UNS N08020 specification, Alloy 20 flange specification, ASTM B462 flanges, Carpenter 20 forged flange, ASTM B462 chemical composition, Alloy 20 mechanical properties.

