

Hastelloy® B-3® is a nickel-molybdenum alloy with excellent resistance to hydrochloric acid at all concentrations and temperatures. It also withstands sulfuric, acetic, formic and phosphoric acids, and other nonoxidizing media. B-3 alloy has a special chemistry designed to achieve greater thermal stability than B-2 alloy, resulting in easier fabrication.

Because this alloy contains no significant chromium addition it should NOT be used in oxidizing media or in presence of oxidizing salts, such as ferric or cupric salts. The latter may form when iron or copper is present in a system containing hydrochloric acid. Likewise alloy B-3 does not withstand wet chlorine gas or hypochlorite bleach.

Specifications

UNS: N10675 **ASTM:** B 333, B 335, B 619, B 622, B 626, B 366, B 472 **ASME:** SB-333, SB-335, SB-619, SB-622, SB-626, SB-366

Chemical Composition, %

	Ni	Cr	Mo	Mn	Cu	Si	C	S	P	Ti	Al	Co	Nb	V	Fe
MIN	65.0	1.0	27.0	—	—	—	—	—	—	—	—	—	—	—	1.0
MAX	—	3.0	32.0	1.0	0.2	0.1	0.01	0.01	0.03	0.2	0.5	3.0	0.2	0.2	3.0

Features

- Resists hydrochloric acid at all concentrations and temperatures
- Withstands wet HCl gas, sulfuric, acetic and phosphoric acids
- Excellent resistance to pitting and to stress corrosion cracking

Applications

- Acetic acid production, initial phase in presence of iodide catalyst
- Methyl methacrylate production with hot 98% H₂SO₄
- Production of herbicides, insecticides, ethylene glycol, ethyl benzene

Physical Properties

Density: 0.333 lb/in³ **Melting Range:** 2500-2585°F **Electrical Resistivity:** 651 Ohm-circ mil/ft

Temperature, °F	200	400	600	800	1000	1200	1400	1600
Coefficient* of Thermal Expansion, in/in°F x 10⁻⁶	5.7	6.1	6.3	6.5	6.6	6.5	7.1	7.6
Modulus of Elasticity Dynamic, psi x 10⁶	30.9	30.1	29.3	28.3	27.2	26.5	24.9	23.3

* 70°F to indicated temperature.

Mechanical Properties

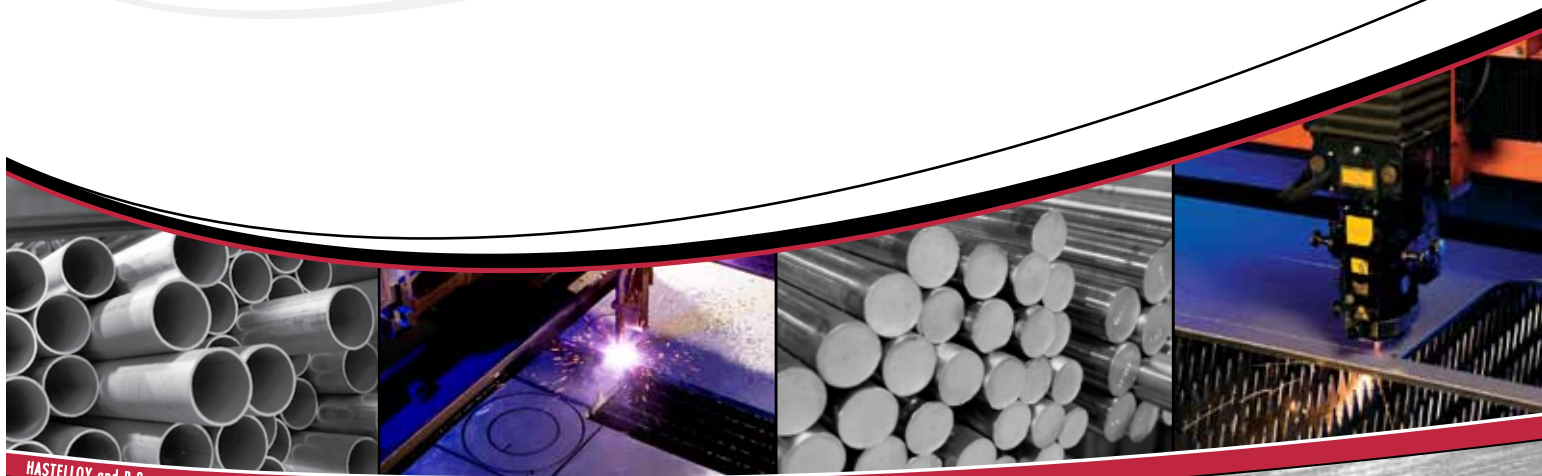
Average Tensile Data, Sheet*

Temperature, °F	70	200	400	600	800	1000
Ultimate Tensile Strength, ksi	125.0	120.7	110.0	104.4	102.0	97.8
0.2% Yield Strength, ksi	60.6	55.3	47.0	43.5	42.4	39.0
Elongation, %	53.4	56.9	59.7	63.4	62.0	59.0

* Limited data for 0.125" bright annealed sheet



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