

Alloy 20

A nickel-iron-chromium grade, Alloy 20 is ideal for a wide range of corrosive environments.

With the addition of copper, molybdenum and niobium, Alloy 20 is the alloy of choice for sulphuric acid applications.

PRODUCT FORMS

PRODUCT FORM	SIZE RANGE FROM	SIZE RANGE TO
Alloy 20 sheet & plate	1.6 mm	76.2 mm
Alloy 20 round bar	10 mm	279.4 mm
Alloy 20 pipe	0.5 in	10 in
Alloy 20 pipe fittings	0.5 in	10 in
Alloy 20 flanges	0.5 in	10 in

Can't find the size you need? **Please contact us at onsales@neonickel.com**

CHEMICAL ANALYSIS

%	NI	CR	MO	MN	CU	SI	C	S	P	NB+TA	FE
Min	32.5	19	2	-	3	-	-	-	-	8.0 x C 1.0	-
Max	35	21	3	2	4	1	0.06	0.035	0.035	-	Balance

APPLICATIONS

- Sulfuric acid pickling tanks, racks and heating coils
- Phosphate coating drums and racks
- Heat exchangers
- Process piping
- Tanks
- Pumps and valves
- Gaskets
- Mechanical seals
- Process equipment for manufacture of bullet-proof fibre, Kevlar

ABOUT ALLOY 20

Alloy 20 contains niobium for stabilization which enhances its corrosion resistance. The alloy is an iron-base, austenitic alloy with excellent corrosion resistance to a wide range of media. With the high nickel content, Alloy 20 shows good resistance to chloride-induced stress corrosion cracking. In addition the alloy also has good resistance to pitting and crevice corrosion. In the chemical process market, key applications of Alloy 20 are in sulphuric, phosphoric and nitric acid environments. The alloy is also commonly used in the food industry for the manufacture of food preservatives (phosphorus oxychloride and phosphorus trichloride). For complete list of inventory items [contact us](#), or fill in our online quote form.

PROPERTIES

Density: 7.695 g/cm³ annealed

Melting range: 1385-1443°C

Electrical resistivity: 1.08 x 10⁻⁶ Ω·m

Poisson's Ratio: 0.31

MECHANICAL & PHYSICAL PROPERTIES

MECHANICAL & PHYSICAL PROPERTIES	21.1°C	49.4°C	100°C	150°C	200°C	300°C	350°C	400°C	450°C	500°C	900°C
Ultimate Tensile Strength /MPa	551.6	-	-	-	-	-	-	-	-	-	-
0.2% Yield Strength /MPa	241.3	-	-	-	-	-	-	-	-	-	-
Reduction of area % (for bar)	50	-	-	-	-	-	-	-	-	-	-
Elongation %	30	-	-	-	-	-	-	-	-	-	-

Coefficient of Thermal Expansion $\mu\text{m}/\text{m}^\circ\text{C}$	-	-	14.7	14.9	15.1	15.5	15.7		15.9	16	17.2
Thermal Conductivity /kcal/(hr.m. $^\circ\text{C}$)	-	125.9	135.1		153.3	169.6		187.5			

AQUEOUS CORROSION DATA

MEDIA	COMMON NAME	TEMP $^\circ\text{F}$ ($^\circ\text{C}$)	CORROSION RATE (MPY)
5% $\text{CH}_3\text{CO}_2\text{H}$ w/Air	Acetic Acid	70 (21)	40
10% $\text{CH}_3\text{CO}_2\text{H}$	Acetic Acid	86 (30)	3.4
56% $\text{CH}_3\text{CO}_2\text{H}$	Acetic Acid	176 (80)	66
85% $\text{CH}_3\text{CO}_2\text{H}$ w/Air	Acetic Acid	70 (21)	400
98% $\text{CH}_3\text{CO}_2\text{H}$	Acetic Acid	241 (116)	12
50% NaOH	Caustic Soda	195 (90)	0.55
50% NaOH	Caustic Soda	310 (155)	0.5
75% NaOH	Caustic Soda	250 (120)	1.0
90% CH_2O_2	Formic Acid (Liquid)	70 (21)	4
90% CH_2O_2	Formic Acid (vapour)	70 (21)	7
1% HCL	Hydrochloric Acid	214 (101)	680
10% HCL	Hydrochloric Acid	86 (30)	80
10% HCL	Hydrochloric Acid	221 (105)	8000
10% HNO_3	Nitric Acid	216 (102)	12000
10% H_3PO_4	Phosphoric Acid	75 (24)	0.6
10% H_3PO_4	Phosphoric Acid	214 (101)	154
40% H_3PO_4	Phosphoric Acid	75 (24)	1
500ppm NaClO	Sodium Hypochlorite	77 (25)	0.8
2% H_2SO_4	Sulfuric Acid	70 (21)	2

5% H ² SO ⁴	Sulfuric Acid	140 (60)	10
5% H ² SO ⁴ w/Air	Sulfuric Acid	86 (30)	61
19% H ² SO ⁴	Sulfuric Acid	223 (106)	110
20% H ² SO ⁴	Sulfuric Acid	70 (21)	4
50% H ² SO ⁴ w/Air	Sulfuric Acid	86 (30)	16
5% H ² SO ⁴	Sulfuric Acid	255 (124)	1000
93% H ² SO ⁴ w/Air	Sulfuric Acid	86 (30)	10

SPECIFICATIONS

UNS Number: N08020

W.Nr.Number: 2.4660

Standards: ASTM A240, B463, B473, B366, B464, B468, B462, B729, B775