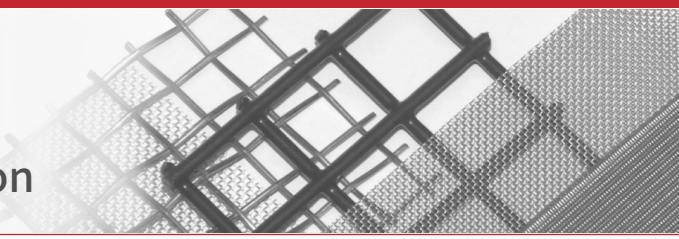
Metal Comparison

Choosing the Best Metal for Your Application



The following general metal comparison is intended as a guide only to help you select the optimum metal for your application. Virtually all metals can be woven into wire cloth. For more information, don't hesitate to reach out to us and one of our technical experts can help you with your application.

Heat Resisting Alloys

High Nickel copper alloys such as Monel and Inconel can withstand temperatures up to 1800°F and resist corrosion in acids, sea water, and caustic solutions.

Aluminum

Light weight, good electrical conductor, and resists atmospheric corrosion; 5056 alloy is used for higher strength.

Brass

Commonly 65% copper/35% zinc. Good formability with lower thermal conductivity and higher tensile strength than copper, yet resists corrosion like copper.

Bronze

Most common 90% copper/10% zinc. Better corrosion resistance and lower strength than brass.

Copper

Good formability with excellent electrical and thermal conductivity. Resists corrosion from fresh and salt water, alkaline solutions, and atmospheric conditions.

Nichrome

An alloy that combines Nickel with Chromium, used primarily in high-temperature applications.

Nickel

Excellent corrosion resistance in most environments except sulfurous conditions. Most commonly used in petrochemical and heat treating applications.

Rare Metals

Such as Tantalum, Molybdenum, Titanium, Silver, and Platinum can be furnished as specified.

Steel

Low carbon (C1008) is most commonly used. For high tensile strength and good abrasion resistance, high carbon/hard drawn is recommended.

Stainless Steel

The benefits of stainless steel are that it has high strength, good heat resistance and resists rusting.

Type 304

This is the basic alloy of this group and is used extensively in the manufacturing of wire cloth. It contains nominally 18% Chromium and 8% Nickel.

Type 316

With the addition of 2% minimum Molybdenum, Type 316 Stainless Steel provides considerably increased resistance to certain corrosive media. It also provides increased strength at high temperatures.

Type 304L & 316L

Lower in carbon content, Type 304L and 316L are frequently used to retain corrosion-resisting properties after welding.

Type 321

Type 321 contains Titanium and is frequently specified where there is a possibility of sensitization with a resulting loss of corrosion resistance.

Type 347

For most welded assemblies which operate in corrosive environments, Type 347 is used to minimize sensitization. It contains Columbium, which does not volatilize during welding.

Type 430

Type 430 Stainless Steel contains 17% nominal Chromium and is more resistant to chemical attack and high temperature scaling. This alloy is magnetic and is not heat treatable.

Corrosion Resistance of Common Metals

Chemical	Brass	Bronze	Copper	Inconel	Monel	Nickel	Nichrome	Stainless Steel	Steel
Alcohol	E	E	E	E	F	G	G	G	G
Alkalis	F	X	X	E	E	E	G	E	E
Ammonia	X	X	X	E	G	F	E	G	G
Ammonia Salts	X	X	X	E	F	F	E	F	F
Brine	G	G	G	E	E	F	G	X	G
Cyanide	X	X	X	G	X	F	E	E	G
Hydrochloric	F	X	X	F	G	F	E	X	X
Hydrofluoric	X	G	F	G	E	F	F	X	X
Nitric	X	E	X	G	X	X	E	E	X
Sulfuric	F	G	F	F	G	F	E	X	X
Ratings: E = Excellent | G = Good | F = Fair | X = Not Recommended									

Monel® Alloy 400
High strength, good weld ability, excellent corrosion resistance over a wide range of temperatures and conditions.

Inconel® Alloy 400
High nickel, high chromium content for resistance to oxidizing and reducing environments; for severely corrosive environments at elevated temperatures. Good oxidation resistance to 2150°F. Good formability.

Hastelloy® Alloy C-276
Outstanding corrosion resistance in reducing and oxidizing environment. Maintains corrosion resistance in welded condition. Excellent resistance to pitting and stress-corrosion cracking.

Hastelloy® Alloy C-22
Better corrosion than C-276 in select environments. Resistance to a wide range of organic acids and the resistance to chloride-induced SSC, and other reducing chemicals. Also has resistance to some oxidizing environments.

Nickel 200/201
Commercially pure wrought nickel, good mechanical properties, excellent resistance to many corrosives. Nickel 201 has low carbon (0.02% max.) for applications over 600°F (315°C).

Approximate Maximum Operating Temperatures
Listed here are alloys that perform well at 1500°F or greater.

Metal	Temperature
Stainless Steel 304	1500 °F
Incoloy	1600 °F
Stainless Steel 330	1650 °F
Nichrome	1700 °F
Inconel	1800 °F
Nichrome V	2000 °F
Nickel	2700 °F
Molybdenum	4700 °F