

Introduction to Stainless Steel

Stainless steel is a durable, versatile and hygienic material that is resistant to corrosion and looks good!

Technically, “stainless steel” is the name given to steels containing a minimum of 11% chromium. In practice, most stainless steels contain 18% chromium to improve corrosion resistance. Most stainless steels also contain nickel, to increase corrosion resistance still further.

There are over 200 different types of stainless steel, each with a different range of properties. However, five types account for the bulk of usage, and Adelphi Coldstream products are generally made from two of these types, known as 304 and 316L grade.

304 is an excellent general grade of stainless steel. 316L contains molybdenum and has a low carbon content (less than 0.03%), and has even better corrosion resistance than 304 grade. 316L is preferred in many instances, particularly in pharmaceutical, cosmetic, food and dairy applications.

Stainless steel has outstanding resistance to corrosion and attack from a very wide range of chemicals and products. However, there are some situations where it is not suitable. Corrosion resistance depends on the temperature and concentration as well as the chemical composition of the product in contact with the stainless steel.

Corrosion Chart

Notes to table opposite

Corrosion resistance depends on the temperature and composition as well as the chemical composition of the product in contact with the stainless steel.

The information in the chart opposite is given only as a general guide and is not a warranty of performance or corrosion resistance of any product in this brochure, or elsewhere.

Adelphi Coldstream accept no liability for the performance of products in individual applications chosen on the basis of the information provided here.

Key:

- ✓ = Can be considered corrosion proof
- C = Depends on concentration of solution
- M = Risk of pitting corrosion in presence of moisture
- P = Risk of pitting corrosion
- S = Use 316L grade if sulphur dioxide is used as a preservative

Corrosion Chart

Corrosion Chart	304 Grade Stainless Steel			316L Grade Stainless Steel		
	20°C	60°C	100°C	20°C	60°C	100°C
ACETIC ACID (10%)	✓	✓		✓	✓	✓
ACETIC ANHYDRIDE	✓			✓	✓	✓
ACETONE	✓	✓	✓	✓	✓	✓
ALUM	✓	C			✓	
ALUMINIUM CHLORIDE	P,C			P,C		
AMMONIUM CARBONATE	✓	✓	✓	✓	✓	✓
AMMONIUM CHLORIDE	P			P	P,C	
AMYL ALCOHOL	✓	✓	✓	✓	✓	✓
ANILINE	✓	✓	✓	✓	✓	✓
BEER	✓	✓	✓	✓	✓	✓
BENZOIC ACID	✓	✓	✓	✓	✓	✓
BLOOD	✓			✓		
BORIC ACID	✓	✓	✓	✓	✓	✓
CALCIUM CHLORIDE	P,C	P,C	P,C	P,C	P,C	P,C
CARBON DISULPHIDE	✓	✓		✓	✓	
CARBON TETRACHLORIDE	M	M		M	M	
CHLOROFORM	P	P		P	P	
CHLOROSULPHONIC ACID				P		
CITRIC ACID	✓	✓		✓	✓	✓
COPPER SULPHATE	✓	✓	✓	✓	✓	✓
DETERGENTS (alkaline, chloride free)	✓	✓	✓	✓	✓	✓
ETHER	✓	✓	✓	✓	✓	✓
FATTY ACIDS	✓	✓	✓	✓	✓	✓
FORMALDEHYDE	✓	✓	✓	✓	✓	✓
FORMIC ACID	✓			✓	✓	
FRUIT JUICES	S	S	S	✓	✓	✓
GELATINE	✓	✓	✓	✓	✓	✓
GLYCERINE	✓	✓	✓	✓	✓	✓
GLYCOLS	✓	✓	✓		✓	✓
HYDROCHLORIC ACID				P,C		
HYDROCYANIC ACID	✓			✓		
HYDROGEN PEROXIDE	✓	✓	✓	✓	✓	✓
INK (synthetic, chloride free)	✓	✓	✓	✓	✓	✓
LACTIC ACID	✓			✓	✓	
LEAD ACETATE	✓	✓	✓	✓	✓	✓
MALIC ACID	C	C	C	✓	✓	✓
MERCURY	✓	✓	✓	✓	✓	✓
MILK	✓	✓	✓	✓	✓	✓
MUSTARD	P			P		
NAPHTHALENE	✓	✓	✓	✓	✓	✓
NITRIC ACID	✓	✓		✓	✓	C
OILS, ESSENTIAL	✓	✓	✓	✓	✓	✓
OILS, MINERAL	✓	✓	✓	✓	✓	✓
OILS, VEGETABLE AND ANIMAL	✓	✓	✓	✓	✓	✓
OXALIC ACID	C			C	C	
PARAFFIN	✓	✓	✓	✓	✓	✓
PECTIN	✓	✓	✓	✓	✓	✓
PETROL	✓	✓	✓	✓	✓	✓
PHENOL	✓	✓		✓	✓	✓
PHOSPHORIC ACID	✓	C		✓	C	C
PICRIC ACID	✓	✓	✓	✓	✓	✓
PYRIDINE	✓	✓	✓	✓	✓	✓
SEA WATER	P			P		
SILICONE FLUIDS	✓	✓	✓	✓	✓	✓
SILVER NITRATE	✓	✓	✓	✓	✓	✓
SODIUM BICARBONATE	✓	✓	✓	✓	✓	✓
SODIUM PEROXIDE	✓	✓	✓	✓	✓	✓
SODIUM SILICATE	✓	✓	✓	✓	✓	✓
STARCH	✓	✓	✓	✓	✓	✓
SULPHURIC ACID				C		
SYRUP AND SUGAR	✓	✓	✓	✓	✓	✓
TANNIC ACID (50%)	✓	✓	✓	✓	✓	✓
TARTARIC ACID	✓	✓		✓	✓	C
TEXTILE DYES	✓	✓	✓	✓	✓	✓
TRICHLOROETHYLENE	M	M	M	M	M	M
VINEGAR	✓	✓	✓	✓	✓	✓
WATER, DISTILLED	✓	✓	✓	✓	✓	✓
YEAST	✓	✓	✓	✓	✓	✓