

# Datasheet

904L

## Introduction

UNS N08904, commonly known as 904L, is a high alloy austenitic stainless steel which is widely used in applications where the corrosion properties of AISI 316L and AISI 317L are not adequate.

The alloy content of this material gives it corrosion resistant properties superior to the conventional chrome nickel stainless steels. In brief 904L has:

- a high resistance to general corrosion, in particular sulphuric, phosphoric and acetic acids
- a high resistance to pitting in chloride solutions
- a high resistance to crevice corrosion
- a good resistance to stress corrosion cracking
- good formability and weldability

## Metallurgical Characteristics

904L is a fully austenitic stainless steel which has greater resistance to precipitation of ferrite and sigma phases on cooling/welding than other stainless steels containing molybdenum such as 316L and 317L.

### Specification

In tube and pipe 904L material can be supplied to the following specifications and analyses:

ASTM B677 UNS08904 Seamless Tube & Pipe

ASTM B674 UNS08904 Welded tube

Werkstoff Nr. 1.4539

Swedish Norm SS 2562

French Norm Z1NCDU 25-20

Fine Tubes Production Specification F 1090

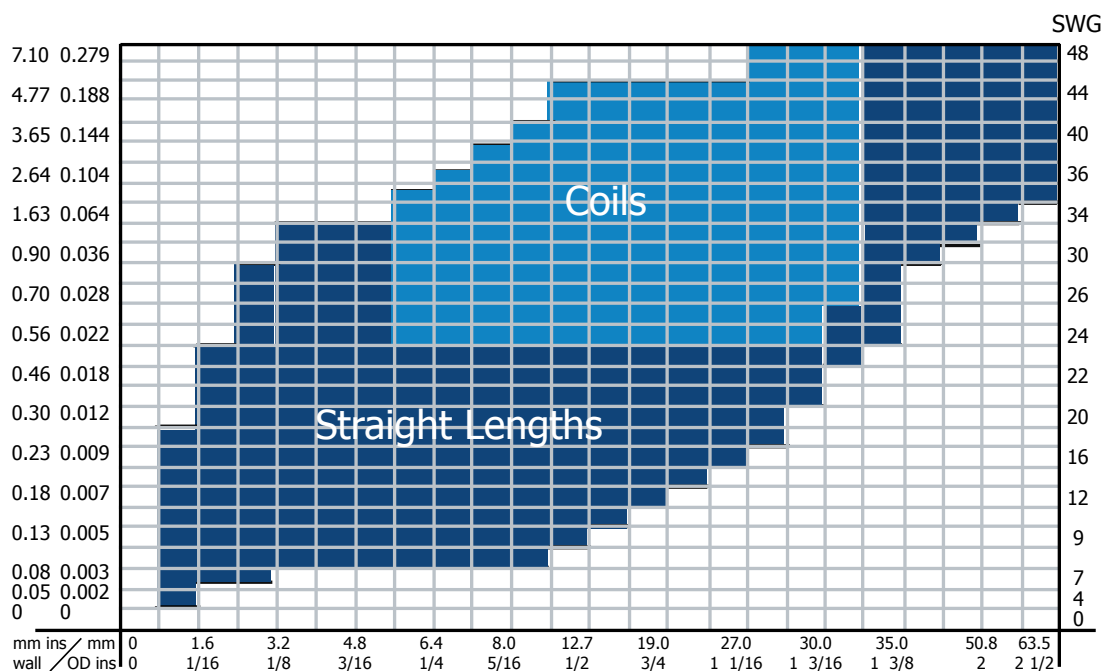
### Corrosion Resistance

There is no risk of intercrystalline corrosion on cooling or welding due to the low carbon content. Pitting and crevice corrosion resistance is better than other austenitic steels due to the higher nickel and molybdenum content.

The high chromium content promotes and maintains a passive film which protects the material in many corrosive environments. The general corrosion resistance, especially in sulphuric and organic acids, is good.

It should be noted, however, that although it has a better resistance than other low alloy stainless steels, it has a limited use with hydrochloric acids.

## Size Range for Seamless Tubing



# Datasheet

9041

## Mechanical Properties - Solution Annealed

Tensile Strength (min)		0.2% Proof Stress (min)		Elongation 2" GL (min)
MPa	ksi	MPa	ksi	
520	75	220	32	35%

## Physical Properties

At room temperature (20°C):

Density	8.0 gm/cm <sup>3</sup>
Specific Heat	500 J/kg.K
Thermal Conductivity	13.0 W/m.K
Electrical Resistivity	0.85 Ωmm <sup>2</sup> /m
Thermal Expansion	(10 <sup>-5</sup> /K) 20-300°C - 17.5
Modulus of Elasticity	103N/mm <sup>2</sup> - 195

## Chemical Composition

(% by weight)

Carbon	0.020% max
Chromium	19 - 23%
Nickel	23 - 28%
Molybdenum	4 - 5%
Copper	1 - 2%



Fine Tubes Ltd.  
 Plymbridge Road, Estover  
 Plymouth, Devon, PL6 7LG, UK

Sales Tel: +44 (0) 1752 697216  
 General Tel: +44 (0) 1752 735851  
 Fax: +44 (0) 1752 733301  
 Email: sales@finetubes.co.uk

Fine Tubes  
 Sales Office Europe  
 Zeppelinstr. 73, D-81669 Munich  
 GERMANY

Tel: +49 (0) 89 458355-43  
 Fax: +49 (0) 89 458355-53  
 Email: sales@finetubes.de

Fine Tubes  
 Sales Office Western Europe  
 10 Place Charles Béraudier, Immeuble l'Orient  
 F-69428 Lyon Cedex 03, FRANCE

Tel: +33 (0) 426687-108  
 Fax: +33 (0) 426687-109  
 Email: sales@finetubes.fr

