304LV

Melt Practice

This austenitic stainless steel is initially electric-arc melted. Then as a refinement to the purity and homogeneity of the metal, 304LV is Vacuum Arc Remelted (VAR). This process yields a more uniform chemistry with minimal voids and contaminants. The "L" means low carbon as compared to 304V.

Typical Chemistry

	FWM Avg. Wt. %
Carbon	.018
Manganese	1.280
Silicon	.46
Phosphorus	.018
Sulphur	.005
Chromium	18.55
Nickel	9.87
Molybdenum	.24
Copper	.24
Nitrogen	.042
Iron	Balance
Cobalt	.13

FWM chemistry is for reference only, and is not to be used for specification purposes.

Physical Properties

Density	0.285 lbs/in^3
Modulus of Elasticity	28.0 psi x 10^6
Electrical Resistivity	720 µohms-mm
Thermal Conductivity	16.3 W/m K (100°C)

Thermal Treatment

A reducing atmosphere is preferred for thermal treatment but inert gas can be used. 304LV will fully anneal at 1010-1121°C in just a few minutes. The precipitation of carbides that decreases corrosion resistance in other 300 series alloys is controlled by a reduced carbon content in 304LV.

Applications

The chemistry of 304LV makes it less susceptible to "sensitization." This means when exposed to elevated temperatures, the corrosion resistance of the material is reduced. Because of this feature, this material is recommended when exposure to 427-649°C is likely. End uses include: catheters, guide wires, small parts made from straightened and cut wire and orthodontic uses.

Mechanical Properties

% CW	Y.S. (psi)	U.T.S. (psi)	% Elongation (10" gage length)
0%	48,000	90,000	40%
20%	81,500	106,000	27%
37%	116,000	147,000	5.9%
50%	147,000	173,000	3.2%
60%	167,000	191,000	2.8%
68%	158,000	206,000	2.8%
75%	183,000	217,000	2.7%
80%	203,000	223,000	2.6%
84%	211,000	232,000	2.5%
90%	220,000	240,000	2.5%
93%	248,000	270,000	2.5%
95%	258,000	281,000	3.1%

Values are typical and may not represent all diameters. Test method will affect results.

Surface Conditions

Stainless steels develop a highly polished appearance as they are drawn to fine diameters. Surface roughness can be less than 5 RMS when processed using SCND* dies and measured with a profilometer. Diameters over .040" will not have as smooth a finish because of poly-crystaline dies. Diameters over .100" have an even rougher surface because they are drawn with carbide dies. Additional finish treatments can enhance the surface of the wire.

* SCND means single crystal natural diamond.