

MACSTEEL VRN

STAINLESS STEEL WELDING FILLER METALS SUGGESTED FOR WELDING STAINLESS STEELS

AUSTENITIC STAINLESS STEELS

304	As-welded or fully annealed	308	Type 308 weld metal is also referred to a 18-8 and 19-9 composition. Actual weld analysis requirements are 0.08% max C, 19.0% min Cr and 9.0 min Ni. Type 310 weld metal may be used, but the pickup of silicon from the base metal may result in weld hot cracking.
301 304L	As-welded As-welded or stress- relieved	309L 347 308L	
309 309S	As-welded	309	
310 310S	As-welded	309 310	
316 316L 316Ti 317L	As-welded or fully annealed As-welded or stress- relieved As-welded or after stabilizing and stress- relieving heat treatment As-welded or stress relieved	316 310 316Nb 316L 316Nb 317Nb	<p>Welds made with types 316, 316L, 317Nb, and 318 electrodes may occasionally display poor corrosion resistance in the "as-welded" condition.</p> <p>In such cases, corrosion resistance of the weld metal may be restored by the following heat treatments:</p> <ol style="list-style-type: none"> 1) For types 316 and 317L base metal, full anneal at 1065 - 1120°C. 2) For types 316L and 317L base metal, 870°C stress relief. 3) For 316Nb base metal, 870 - 900°C stabilizing treatment.
	As-welding or after		

321	stabilizing and stress relieving heat treatment	347	Type 321 covered electrodes are not regularly manufactured because titanium is not readily recovered during deposition.
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FERRITIC STAINLESS STEEL

430	Annealed As-welded	430 308 309 310	Annealing employed to improve weld joint ductility. Weld metal is soft and ductile, but base metal heat-affected zones have limited ductility.
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Welding Guidelines

1. Pre-weld cleaning stainless steel plate with organic solvent or cloth is required.
2. Avoid mild steel contamination.
3. Minimise heat input during welding by correct selection of welding parameters and technique.
4. Post-weld cleaning and passivation is important to ensure optimum corrosion resistance and aesthetic appearance.
 - (i) Remove scale from entire weld area, either mechanically or chemically.
 - (ii) Mechanical cleaning - Use dedicated discs, iron-free abrasive, e.g. silica sand.
 - (iii) Chemical cleaning - Pickle weld with HNO_3 + HF formulation followed by thorough washing with clean cold water.
 - (iv) Exercise care during pickling to prevent localised corrosion of the heat-affected zone.
 - (v) Passivation of the entire fabrication may be required in marginal applications or to remove mild steel contamination.