

## ER2594

### MIG, TIG and sub-arc wire for superduplex stainless steel

Product name	IABCO ER2594																								
Classification EN ISO	14343-A: G/W/S 25 9 4 N L																								
Classification AWS	A5.9: ER2594																								
Applications	<p>For welding ferritic-austenitic superduplex stainless steel base materials. The welding wire is over-alloyed with nickel compared to the base material to ensure the optimum combination of microstructure, mechanical properties and corrosion resistance. The wire has additions of Cu and W which provides enhanced corrosion resistance to sulphuric and hydrochloric acids.</p> <p>The superduplex stainless steel base materials have a microstructure consisting of nominally 50% austenite in a ferrite matrix. Normal service temperature range is -50°C to +250°C. Superduplex stainless steels combine higher strength than standard duplex stainless steels with excellent corrosion properties, particularly resistance to pitting in chloride environments and resistance to stress corrosion cracking (SCC).</p> <p>Superduplex stainless steels find widespread use in many industries including: offshore, oil &amp; gas, pulp &amp; paper, chemical, petrochemical, flue gas desulphurisation (FGD) and desalination.</p>																								
Base materials	<p>For welding superduplex ferritic-austenitic stainless steels: ASTM: A182 grades F53 &amp; F55, A890 grades 5A &amp; 6A. EN: 1.4410, 1.4469, 1.4501, 1.4508. UNS: S32750, S32760, S32550, S39274, J93380, J93404. Also used for welding supermartensitic stainless steels.</p>																								
Typical analysis of wire, weight %	<table> <tr> <td>C:</td> <td>0.01</td> <td>Si:</td> <td>0.30</td> <td>Mn:</td> <td>0.75</td> </tr> <tr> <td>Cr:</td> <td>25.3</td> <td>Ni:</td> <td>9.4</td> <td>Mo:</td> <td>3.60</td> </tr> <tr> <td>N:</td> <td>0.23</td> <td>Cu:</td> <td>0.60</td> <td>W:</td> <td>0.60</td> </tr> <tr> <td>PREN:</td> <td>40.9</td> <td>PREW:</td> <td>41.9</td> <td></td> <td></td> </tr> </table> <p>Available with 3ppm maximum hydrogen on request.</p>	C:	0.01	Si:	0.30	Mn:	0.75	Cr:	25.3	Ni:	9.4	Mo:	3.60	N:	0.23	Cu:	0.60	W:	0.60	PREN:	40.9	PREW:	41.9		
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Typical weld procedure <sup>(1)</sup>	<p>Preheat: Not required. Interpass temperature: 100°C, for some applications 150°C may be acceptable. Heat input: Recommended range 0.75-1.50 kJ/mm; on thicker components up to 1.75 kJ/mm may be acceptable. PWHT: None.</p>																								
Mechanical properties of weld deposit <sup>(2)</sup>	<table> <tr> <td>0.2% proof stress, Rp0.2%:</td> <td>≥550MPa.</td> </tr> <tr> <td>Tensile strength, Rm:</td> <td>≥750MPa.</td> </tr> <tr> <td>Elongation, 4d/5d:</td> <td>≥25%.</td> </tr> <tr> <td>Impact ISO-V, -50°C:</td> <td>≥100J (TIG), ≥27J (MIG &amp; SAW).</td> </tr> </table>	0.2% proof stress, Rp0.2%:	≥550MPa.	Tensile strength, Rm:	≥750MPa.	Elongation, 4d/5d:	≥25%.	Impact ISO-V, -50°C:	≥100J (TIG), ≥27J (MIG & SAW).																
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**Notes** (1) Application codes and project specifications should always be referred to for specific requirements.

(2) Actual mechanical properties will be dependent on specific welding procedure (including shielding gas, flux, PWHT etc) and should always be confirmed by approval of an appropriate welding procedure.