



UNITED STATES WELDING CORPORATION

USW ALLOY DESIGNATION AND DESCRIPTION	TURBALOY® 21-6 -9 HQ-GRADE GTAW SOLID BARE WELDING WIRE IRON BASE	ISSUED JANUARY 2007	DATA SHEET 5818 (6)																																				
		REVISION NO. A																																					
CROSS-REFERENCE CONFORMANCE SPECIFICATIONS	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">AMS 5818 Nitronic 40 AWS A5.9 ER219 USWC 5656 (A)</td> <td style="width: 50%; border: none;">9.0Mn 20Cr 6.5Ni 0.27N UNS S21904 XM-10 XM-11 21-6-9</td> </tr> </table>			AMS 5818 Nitronic 40 AWS A5.9 ER219 USWC 5656 (A)	9.0Mn 20Cr 6.5Ni 0.27N UNS S21904 XM-10 XM-11 21-6-9																																		
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METALLURGICAL BACKGROUND INFORMATION	<p>TURBALOY® 21-6-9 undergoes a series of proprietary abrading and cleaning processes to remove all surface contaminants. These manufacturing processes ensure a consistent ultra-clean weld wire surface.</p> <p>TURBALOY® 21-6-9 is a fully austenitic, single phase, high strength, high toughness material which operates over a wide temperature range. The alloy is nitrogen strengthened. The metastable austenite can transform with heavy cold work.</p>																																						
MATERIALS TO BE WELDED AND APPLICATIONS	<p>AMS 5594, 5562, 5561, 5656, 5595. Stainless steel to mild steels. Overlaying mild steel.</p> <p><i>Note:</i> 21-6-9 can be welded using 309, 312, Ni-base as well as AMS 5656.</p> <p>ASTM A276, A580, A666, A412. MIL-T-9821 (XM-10 grade). Avoid copper contamination to prevent cracking susceptibility.</p>																																						
WIRE CHEMISTRY WT%	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Carbon</td> <td style="width: 33%;">-</td> <td style="width: 33%;">0.05</td> <td style="width: 16.5%;">Nickel</td> <td style="width: 16.5%;">5.50</td> <td style="width: 16.5%;">7.00</td> </tr> <tr> <td>Manganese</td> <td>8.00</td> <td>10.00</td> <td>Nitrogen</td> <td>0.10</td> <td>0.30</td> </tr> <tr> <td>Silicon</td> <td>-</td> <td>1.00</td> <td>Molybdenum</td> <td>-</td> <td>0.75</td> </tr> <tr> <td>Phosphorus</td> <td>-</td> <td>0.030</td> <td>Copper</td> <td>-</td> <td>0.75</td> </tr> <tr> <td>Sulfur</td> <td>-</td> <td>0.030</td> <td>Iron</td> <td></td> <td>Balance</td> </tr> <tr> <td>Chromium</td> <td>19.00</td> <td>21.50</td> <td></td> <td></td> <td></td> </tr> </table>			Carbon	-	0.05	Nickel	5.50	7.00	Manganese	8.00	10.00	Nitrogen	0.10	0.30	Silicon	-	1.00	Molybdenum	-	0.75	Phosphorus	-	0.030	Copper	-	0.75	Sulfur	-	0.030	Iron		Balance	Chromium	19.00	21.50			
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WELD PROPERTIES	<p>Hardness annealed: 90-95 HRB Work hardness up to: 37C HRC Readily weldable</p> <p style="text-align: right;">Density: 8.0gm/cc</p>																																						
SIZES AND FORMS AVAILABLE	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> STRAIGHT LENGTHS 5 lb. (2.2kg) packs 36" (914mm) lengths Flag tagged for traceability. (Double tagging and other lengths on request) Wide range of diameters. </td> <td style="width: 50%; border: none;"> SPOOLED WIRE Precision layer wound, with controlled cast and helix 12" (300mm) diameter spools standards 8" (200mm), 4" (100mm) and proprietary spool sizes on request. Wide range of diameters and spool weights. </td> </tr> </table>			STRAIGHT LENGTHS 5 lb. (2.2kg) packs 36" (914mm) lengths Flag tagged for traceability. (Double tagging and other lengths on request) Wide range of diameters.	SPOOLED WIRE Precision layer wound, with controlled cast and helix 12" (300mm) diameter spools standards 8" (200mm), 4" (100mm) and proprietary spool sizes on request. Wide range of diameters and spool weights.																																		
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PACKAGING	Sealed polyethylene envelopes. (Desiccants optional)																																						

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