



UNITED STATES WELDING CORPORATION

USW ALLOY DESIGNATION AND DESCRIPTION	TURBALOY® 802 HQ-GRADE GTAW SOLID BARE WELDING WIRE IRON BASE	ISSUED JANUARY 2007	DATA SHEET 1680 (6)																																				
		REVISION NO. A																																					
CROSS-REFERENCE CONFORMANCE SPECIFICATIONS	USW 1680 ER 80S-D2 (AWS A5.28 Reference) BS 2901 Part 1 - A31 (Reference) <p style="text-align: right;">1.85 Mn .50 Mo 0.6 Si (0.07 - .12 C) Available in MC-GRADE</p>																																						
METALLURGICAL BACKGROUND INFORMATION	<p>TURBALOY® 802 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® 802 is a 2Mn 0.5Mo versatile low alloy steel filler metal which is widely used to weld a range of high strength steels, giving tough, ductile joints. The high ductility and useful strength produced by TURBALOY® 802 is a beneficial feature when AISI 4*** grade steels are repair welded.</p>																																						
MATERIALS TO BE WELDED AND APPLICATIONS	Rocket motor casings in low alloy steels of the type Cr Mo C and Cr Mo. Used for ordnance and defense applications and general engineering applications. Multi-purpose filler metal for all grades of low alloy steel repair welds using GMAW and GTAW. Suitable for CO ₂ gas shielding, although premium property values are obtained using GTAW process.																																						
WIRE CHEMISTRY WT%	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Carbon</td> <td style="text-align: center;">0.07</td> <td style="text-align: center;">0.12</td> <td>Nickel</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.15</td> </tr> <tr> <td>Manganese</td> <td style="text-align: center;">1.60</td> <td style="text-align: center;">2.10</td> <td>Copper</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>Silicon</td> <td style="text-align: center;">0.50</td> <td style="text-align: center;">0.80</td> <td>Other elements total</td> <td></td> <td style="text-align: center;">0.50 max</td> </tr> <tr> <td>Sulfur</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.015</td> <td>Iron</td> <td></td> <td style="text-align: center;">Balance</td> </tr> <tr> <td>Phosphorus</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.020</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Molybdenum</td> <td style="text-align: center;">0.40</td> <td style="text-align: center;">0.60</td> <td></td> <td></td> <td></td> </tr> </table>			Carbon	0.07	0.12	Nickel	-	0.15	Manganese	1.60	2.10	Copper	-	0.50	Silicon	0.50	0.80	Other elements total		0.50 max	Sulfur	-	0.015	Iron		Balance	Phosphorus	-	0.020				Molybdenum	0.40	0.60			
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WELD PROPERTIES	Minimum Tensile, as welded: 80 ksi Minimum Yield, as welded: 68 ksi <p style="text-align: right;">Density 7.82 gm/cc</p>																																						
SIZES AND FORMS AVAILABLE	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; vertical-align: top;"> 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="text-align: center; vertical-align: top;"> SPOOLED WIRE Precision layer wound, with controlled cast and helix 12" (300mm) diameter spools standard 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 standard 8" (200mm), 4" (100mm) and proprietary spool sizes on request. Wide range of diameters and spool weights.																																		
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PACKAGING	Sealed, air-evacuated, argon purged Vapor Barrier envelopes with desiccants ensure full protection from atmospheric contamination and prolonged shelf-life.																																						

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