



UNITED STATES WELDING CORPORATION

USW ALLOY DESIGNATION AND DESCRIPTION	TURBALOY® 702 MC-GRADE GTAW SOLID BARE WELDING WIRE IRON BASE	ISSUED JANUARY 2007	DATA SHEET 1398 (2)																																				
		REVISION NO. A																																					
CROSS-REFERENCE CONFORMANCE SPECIFICATIONS	USW 1398 TURBALOY® 702 1.2Mn 0.6Si 0.2Ti 0.07Zr 0.1Al AWS A5.18 ER 70S-2 USWC 1398 (V) Available in HQ-GRADE																																						
METALLURGICAL BACKGROUND INFORMATION	<p>TURBALOY® 702 is a low carbon mild steel alloy. The final wire is manufactured by special lubricant-free, roller-die forming followed by surface abrasion and cleaning processes. These manufacturing processes ensure consistent metallurgical integrity of the alloy with regard to control of trace elements and physical purity of the welding wire surface.</p> <p>TURBALOY® 702 is a triple deoxidized steel filler metal for producing sound welds in semi-killed and rimmed steels as well as killed steels of various carbon levels. Once package has been opened remaining wire must be protected from contamination. High purity grades are furnished bare and therefore supplied in special protective packs.</p>																																						
MATERIALS TO BE WELDED AND APPLICATIONS	<p>Alloy originally developed for rusty and soiled surface components. Suitable for semi-automatic GMAW out of position using short-circuiting transfer because of ease of operation.</p> <p>The MC-GRADE is used in nuclear fabrication activities.</p>																																						
WIRE CHEMISTRY WT%	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Carbon</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.07</td> <td>Titanium</td> <td style="text-align: center;">0.05</td> <td style="text-align: center;">0.15</td> </tr> <tr> <td>Manganese</td> <td style="text-align: center;">0.90</td> <td style="text-align: center;">1.40</td> <td>Zirconium</td> <td style="text-align: center;">0.02</td> <td style="text-align: center;">0.12</td> </tr> <tr> <td>Silicon</td> <td style="text-align: center;">0.40</td> <td style="text-align: center;">0.70</td> <td>Aluminum</td> <td style="text-align: center;">0.05</td> <td style="text-align: center;">0.15</td> </tr> <tr> <td>Sulfur</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.025</td> <td>Other elements</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.50 total (max)</td> </tr> <tr> <td>Phosphorus</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.025</td> <td>Iron</td> <td></td> <td style="text-align: center;">Balance</td> </tr> <tr> <td>Copper</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.50</td> <td></td> <td></td> <td></td> </tr> </table>			Carbon	-	0.07	Titanium	0.05	0.15	Manganese	0.90	1.40	Zirconium	0.02	0.12	Silicon	0.40	0.70	Aluminum	0.05	0.15	Sulfur	-	0.025	Other elements	-	0.50 total (max)	Phosphorus	-	0.025	Iron		Balance	Copper	-	0.50			
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WELD PROPERTIES	Minimum Yield strength, all - weld metal 60.9 ksi Minimum Tensile strength all - weld metal 79 ksi Minimum Ductility, all - weld metal 22% elongation																																						
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.																																						
DISTRIBUTED BY:																																							