



# UNITED STATES WELDING CORPORATION

<b>USW ALLOY DESIGNATION AND DESCRIPTION</b>	<b>6-4 Ti ELI</b>  <b>GTAW SOLID BARE WELDING WIRE TITANIUM BASE</b>	<b>ISSUED</b> JANUARY 2007	<b>DATA SHEET</b>  <b>4956</b>  (6)																																				
		<b>REVISION NO.</b> A																																					
<b>CROSS-REFERENCE CONFORMANCE SPECIFICATIONS</b>	AMS 4956 USWC 4956 (C) UNS R56402  AWS A5.16 ERTi-5 ELI (Formerly ER Ti-6Al-4V-1)																																						
<b>METALLURGICAL BACKGROUND INFORMATION</b>	This ELI grade contains less oxygen than standard 6-4 Ti and can produce excellent fracture toughness for use in aerospace applications, surgical implants and cryogenic vessels.  6-4 Ti is a duplex, alpha-beta alloy.																																						
<b>MATERIALS TO BE WELDED AND APPLICATIONS</b>	6-4 material for critical applications - fuel tanks in rockets for example, compressor disc quality. AMS 4928, 4965, 4967, 4911 AMS 4907 AMS 4930, 4931, 4935.  Carefully controlled welding procedures are required to prevent contamination from oxygen, hydrogen, nitrogen, carbon and iron.																																						
<b>WIRE CHEMISTRY WT%</b>	<table border="0"> <tr> <td>Aluminum</td> <td>5.50</td> <td>6.75</td> <td>Nitrogen</td> <td>-</td> <td>0.012 (120ppm)</td> </tr> <tr> <td>Vanadium</td> <td>3.50</td> <td>4.50</td> <td>Hydrogen</td> <td>-</td> <td>0.005 (50ppm)</td> </tr> <tr> <td>Iron</td> <td>-</td> <td>0.15</td> <td>Yttrium</td> <td>-</td> <td>0.005 (50ppm)</td> </tr> <tr> <td>Oxygen</td> <td>-</td> <td>0.08</td> <td>Other elements</td> <td>-</td> <td>0.03 each</td> </tr> <tr> <td>Carbon</td> <td>-</td> <td>0.03</td> <td>Other elements</td> <td>-</td> <td>0.10 total</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Titanium</td> <td></td> <td>Balance</td> </tr> </table>			Aluminum	5.50	6.75	Nitrogen	-	0.012 (120ppm)	Vanadium	3.50	4.50	Hydrogen	-	0.005 (50ppm)	Iron	-	0.15	Yttrium	-	0.005 (50ppm)	Oxygen	-	0.08	Other elements	-	0.03 each	Carbon	-	0.03	Other elements	-	0.10 total				Titanium		Balance
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<b>WELD PROPERTIES</b>	AlphaBeta - transition: 1825°F Good weldability under controlled conditions.  Density: 9.00 gm/cc																																						
<b>SIZES AND FORMS AVAILABLE</b>	<table border="0"> <tr> <td style="text-align: center;"><b>STRAIGHT LENGTHS</b></td> <td style="text-align: center;"><b>SPOOLED WIRE</b></td> </tr> <tr> <td>5 lb. (2.2kg) packs</td> <td>Precision layer wound, with controlled cast and helix</td> </tr> <tr> <td>36" (914mm) lengths</td> <td>12" (300mm) diameter spools standard</td> </tr> <tr> <td>Flag tagged for traceability.</td> <td>8" (200mm), 4" (100mm) and proprietary spool sizes</td> </tr> <tr> <td>(Double tagging and other lengths on request)</td> <td>on request.</td> </tr> <tr> <td>Wide range of diameters.</td> <td>Wide range of diameters and spool weights.</td> </tr> </table>			<b>STRAIGHT LENGTHS</b>	<b>SPOOLED WIRE</b>	5 lb. (2.2kg) packs	Precision layer wound, with controlled cast and helix	36" (914mm) lengths	12" (300mm) diameter spools standard	Flag tagged for traceability.	8" (200mm), 4" (100mm) and proprietary spool sizes	(Double tagging and other lengths on request)	on request.	Wide range of diameters.	Wide range of diameters and spool weights.																								
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<b>PACKAGING</b>	Sealed, air-evacuated, argon purged Vapor Barrier envelopes with desiccants ensure full protection from atmospheric contamination and prolonged shelf-life.																																						

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