



# UNITED STATES WELDING CORPORATION

<p align="center"><b>USW ALLOY DESIGNATION AND DESCRIPTION</b></p>	<p align="center"><b>TURBALOY® 520</b> MC-GRADE <b>GTAW SOLID BARE WELDING WIRE</b> IRON BASE</p>	<p align="center"><b>ISSUED</b> JANURAY 2007</p>	<p align="center"><b>DATA SHEET</b> <b>1508</b> (3)</p>																																																
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<p align="center"><b>METALLURGICAL BACKGROUND INFORMATION</b></p>	<p>TURBALOY® 520 is produced by vacuum induction melting and remelting techniques. The final wire is manufactured by special lubricant-free, roller-die forming followed by surface abrasion and cleaning processes.</p> <p>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>The alloy is a precipitation hardening, martensitic, stainless engineering alloy giving high strength and oxidation resistance. It is used for fabricating base alloys of similar composition.</p>																																																		
<p align="center"><b>MATERIALS TO BE WELDED AND APPLICATIONS</b></p>	<p>MSRR 6537, 6629, 6596, 6642, 6603, 6596. BS 3146 - ANC 20, HC 101, HC 102. BS S143, S144, S145.</p> <p>Preheat to 212 - 302° F is recommended and PWHT will optimize properties for thick section joints. <i>NOTE:</i> AMS 5825 (17/4 PH) and AMS 5826 (15/5 PH) are also used to weld FV 520B base material.</p>																																																		
<p align="center"><b>WIRE CHEMISTRY WT%</b></p>	<table border="0"> <tr> <td>Carbon</td> <td>-</td> <td>0.07</td> <td>Molybdenum</td> <td>1.20</td> <td>2.00</td> </tr> <tr> <td>Silicon</td> <td>-</td> <td>0.70</td> <td>Nickel</td> <td>5.00</td> <td>6.00</td> </tr> <tr> <td>Manganese</td> <td>-</td> <td>1.00</td> <td>Copper</td> <td>1.20</td> <td>2.00</td> </tr> <tr> <td>Sulfur</td> <td>-</td> <td>0.020</td> <td>Columbium</td> <td>0.20</td> <td>0.50</td> </tr> <tr> <td>Phosphorus</td> <td>-</td> <td>0.020</td> <td>Oxygen</td> <td>-</td> <td>0.005 (50ppm)</td> </tr> <tr> <td>Chromium</td> <td>13.20</td> <td>14.70</td> <td>Nitrogen</td> <td>-</td> <td>0.0100 (100ppm)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Hydrogen</td> <td>-</td> <td>0.0010 (10ppm)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Iron</td> <td></td> <td>Balance</td> </tr> </table>			Carbon	-	0.07	Molybdenum	1.20	2.00	Silicon	-	0.70	Nickel	5.00	6.00	Manganese	-	1.00	Copper	1.20	2.00	Sulfur	-	0.020	Columbium	0.20	0.50	Phosphorus	-	0.020	Oxygen	-	0.005 (50ppm)	Chromium	13.20	14.70	Nitrogen	-	0.0100 (100ppm)				Hydrogen	-	0.0010 (10ppm)				Iron		Balance
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<p align="center"><b>WELD PROPERTIES</b></p>	<p>Hardness (hardened condition) 277- 341 HV</p> <p align="right">Density 7.82 gm/cc</p> <p>Readily weldable</p>																																																		
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<p align="center"><b>PACKAGING</b></p>	<p>Sealed, air-evacuated, argon purged Vapor Barrier envelopes with desiccants ensure full protection from atmospheric contamination and prolonged shelf-life.</p>																																																		

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