



# UNITED STATES WELDING CORPORATION

|   |   |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
|---|---|---------------------|-------------------------------|--------|---------|------|--------|------|------|-----------|---|------|------------|------|-------|---------|---|------|----------|------|------|--------|---|-------|------|-------|-------|------------|---|-------|-------|---|-------|----------|-------|-------|--------|---|---------|
| <b>USW ALLOY DESIGNATION AND DESCRIPTION</b>      | <b>TURBALOY<sup>®</sup> X</b><br>HQ-GRADE<br>GTAW SOLID BARE WELDING WIRE<br>NICKEL BASE  | ISO 9001<br>AS 9100 | <b>DATA SHEET</b><br><br>5798 |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
|   |   | Revision A          |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>CROSS-REFERENCE CONFORMANCE SPECIFICATIONS</b> | MSRR 9500/215<br>AMS 5798<br>UNS N06002<br>Hastelloy X<br><br>47.5Ni 22Cr 1.5Co 9.0Mo 0.60W 18.5Fe<br>USWC 5798A<br>OMAT 3/165 A  |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>METALLURGICAL BACKGROUND INFORMATION</b>       | TURBALOY <sup>®</sup> X 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.<br><br>TURBALOY <sup>®</sup> X is a Ni-Cr-Fe alloy having exceptional oxidation resistance and good weldability.   |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>MATERIALS TO BE WELDED AND APPLICATIONS</b>    | Turbine engine tailpipes, combustors and burner-can overhaul, afterburner components, NGV and blade repair, cabin heater ducting and heat exchanger repair, turbine exhaust components.<br>MSRR 7180<br>AMS 5754, 5536, 5587, 5588, 5390.<br>ASTM B572, B435  |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>WIRE CHEMISTRY WT%</b>                         | <table><tr><td>Carbon</td><td>0.05</td><td>0.15</td><td>Cobalt</td><td>0.50</td><td>2.50</td></tr><tr><td>Manganese</td><td>-</td><td>1.00</td><td>Molybdenum</td><td>8.00</td><td>10.00</td></tr><tr><td>Silicon</td><td>-</td><td>1.00</td><td>Tungsten</td><td>0.20</td><td>1.00</td></tr><tr><td>Sulfur</td><td>-</td><td>0.030</td><td>Iron</td><td>17.00</td><td>20.00</td></tr><tr><td>Phosphorus</td><td>-</td><td>0.040</td><td>Boron</td><td>-</td><td>0.010</td></tr><tr><td>Chromium</td><td>20.50</td><td>23.00</td><td>Nickel</td><td>-</td><td>Balance</td></tr></table> |                     |                               | Carbon | 0.05    | 0.15 | Cobalt | 0.50 | 2.50 | Manganese | - | 1.00 | Molybdenum | 8.00 | 10.00 | Silicon | - | 1.00 | Tungsten | 0.20 | 1.00 | Sulfur | - | 0.030 | Iron | 17.00 | 20.00 | Phosphorus | - | 0.040 | Boron | - | 0.010 | Chromium | 20.50 | 23.00 | Nickel | - | Balance |
| Carbon  | 0.05  | 0.15                | Cobalt                        | 0.50   | 2.50    |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| Manganese   | -   | 1.00                | Molybdenum                    | 8.00   | 10.00   |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| Silicon   | -   | 1.00                | Tungsten                      | 0.20   | 1.00    |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| Sulfur  | -   | 0.030               | Iron                          | 17.00  | 20.00   |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| Phosphorus  | -   | 0.040               | Boron                         | -      | 0.010   |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| Chromium  | 20.50   | 23.00               | Nickel                        | -      | Balance |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>WELD PROPERTIES</b>                            | Hardness annealed: 75 - 85 HRB<br>Rapid cooled: 89 - 92 HRB<br><br>Density: 8.22 gm/cc  |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>SIZES AND FORMS AVAILABLE</b>                  | STRAIGHT LENGTHS<br>5 lb. (2.2kg) packs<br>36" (914mm) lengths<br>Flag tagged for traceability.<br>(Double tagging and other lengths on request)<br>Wide range of diameters.<br><br>SPOOLED WIRE<br>Precision layer wound, with controlled cast and helix<br>12" (300mm) diameter spools standard<br>8" (200mm), 4" (100mm) and proprietary spool sizes on request.<br>Wide range of diameters and spool weights.   |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| <b>PACKAGING</b>                                  | Sealed polyethylene envelopes. (Desiccants optional)  |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |
| DFARS Compliant                                   | www.usweldingcorp.com   |                     |                               |        |         |      |        |      |      |           |   |      |            |      |       |         |   |      |          |      |      |        |   |       |      |       |       |            |   |       |       |   |       |          |       |       |        |   |         |