UNITED STATES WELDING CORPORATION

USW ALLOY DESIGNATION AND DESCRIPTION	**TURBALOY® 903** **MC-GRADE** **GTAW SOLID BARE WELDING WIRE** **IRON BASE**	**ISSUED** JANUARY 2007 REVISION NO. A	**DATA SHEET** 5806 (23)

CROSS-REFERENCE CONFORMANCE SPECIFICATIONS

AMS 5806
UNS N19903
USWC 5806 (V)

Incoloy 903
42Fe 38Ni 15Co 3Cb+Ta 1.4Ti 0.92Al (VM)

METALLURGICAL BACKGROUND INFORMATION

TURBALOY® 903 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.
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.
TURBALOY® 903 is a low expansion, high temperature, high strength nickel-cobalt-iron filler metal used to produce high quality welds in matching base metals. Large amounts have been used for space shuttle rockets and similar vessels.

MATERIALS TO BE WELDED AND APPLICATIONS

UNS N19903
IN 903

Stringer beads with controlled low heat input and ultra clean weldment conditions are essential for sound welds.

WIRE CHEMISTRY WT%

Carbon	-	0.06	Columbium	2.40	3.50
Manganese	-	1.00	Titanium	1.20	1.60
Silicon	-	0.35	Aluminum	0.70	1.15
Sulfur	-	0.008	Boron	-	0.003
Phosphorus	-	0.015	Copper	-	0.20
Chromium	-	1.0	Calcium	-	0.0010 (10ppm)
Nickel	36.00	40.00	Oxygen	-	0.0025 (25ppm)
Molybdenum	-	0.20	Nitrogen		0.0050 (50ppm)
Cobalt	13.00	17.00	Iron		Balance

WELD PROPERTIES

Melting Range: 2400° - 2540°F

Density: 8.25gm/cc

SIZES AND FORMS AVAILABLE

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.

PACKAGING

Sealed, air-evacuated, argon purged Vapor Barrier e nvelopes with desiccants ensure full protection from atmospheric contamination and prolonged shelf-life.

DISTRIBUTED BY:

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