UNITED STATES WELDING CORPORATION

USW ALLOY DESIGNATION AND DESCRIPTION	**TURBALOY® 100** **MC-GRADE** **GTAW SOLID BARE WELDING WIRE** **IRON BASE**	**ISSUED** JANUARY 2007 REVISION NO. A	**DATA SHEET** 1580 (4)

CROSS-REFERENCE CONFORMANCE SPECIFICATIONS

USW 1580 Rev A
TURBALOY® 100
ER 100S-1 (AWS A5.28 nearest equivalent)
2 Ni 0.5Mo 1.5Mn 0.07C - Trace element controlled.

METALLURGICAL BACKGROUND INFORMATION

TURBALOY® 100 is produced by vacuum induction melting and re-melting 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® 100 is a 2Ni 0.5Mo high strength low alloy steel filler alloy for welding matching materials of similar strength, giving consistent, reproducible X-ray quality welds.

MATERIALS TO BE WELDED AND APPLICATIONS

Originally developed to supplement existing commercial grade wires in order to obtain superior weld properties when fabricating HY 80 military ship steels and alloys of similar designation.

Also used for steam turbine components manufacture and repair.

WIRE CHEMISTRY WT%

Carbon	0.06	0.08	Zirconium	-	0.10
Manganese	1.40	1.70	Aluminum	-	0.10
Silicon	0.20	0.35	Copper	-	0.15
Sulfur	-	0.008	Antimony	-	0.0015
Phosphorus	-	0.010	Tin	-	0.0050
Chromium	0.05	0.17	Arsenic	-	0.0050
Nickel	1.80	2.10	Oxygen	-	0.0030 (30ppm)
Molybdenum	0.40	0.55	Nitrogen	-	0.0050 (50ppm)
Vanadium	-	0.05	Hydrogen	-	0.0003 (3ppm)
Titanium	-	0.10	Iron		Balance

WELD PROPERTIES

0.2% offset yield strength: 95 ksi (min.) Density 7.83 gm/cc
MC - GRADE TURBALOY® 100 will normally produce ductility values considerably in excess of the 15% elongation specified.

SIZES AND FORMS AVAILABLE

STRAIGHT LENGTHS	SPOOLED WIRE
5 lb. (2.2kg) packs 36” (914mm) lengths Flag tagged for traceability. (Double tagging and other lengths on request) Wide range of diameters.	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 envelopes with desiccants ensure full protection from atmospheric contamination and prolonged shelf-life.

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