



# LaserLine<sup>®</sup> Seam Welded Umbilical Tubing



Seam Welded. Sea Approved.

# Meet Our Team



## Kyle Ingram

Kyle Ingram serves as Vice President of the Webco TechCenter, leading technical strategy, engineering innovation, and organizational development across multiple manufacturing sites. With a strong foundation in engineering and extensive experience in process design, equipment development, and team leadership, he drives initiatives that strengthen Webco's capabilities and competitiveness. In his spare time, he enjoys fitness activities, construction projects, and continuing the same passion for personal improvement he brings to his teams at work.

## Amber Rosser

Amber Rosser serves as Commercial General Manager of Umbilical Tubing, where she leads the company's global commercial strategy and advances Webco's Technical & Trusted brand within the umbilical market. With 20 years of experience in the Oil & Gas sector, Amber is known for her ability to create clarity, build trust, and drive excellence across complex, cross-functional initiatives. Her leadership spans customer collaboration, commercial development, and long-term product strategy, consistently delivering high-value solutions that meet the industry's evolving demands. In her spare time...let's face it being a mom of two very active teenagers, there is no spare time and she's loving every second of it!



## Tucker Melvin

Tucker Melvin serves as the Technical Authority for High Tech Alloys within the Technical Services group at Webco Industries, supporting manufacturing operations through metallurgical expertise, technical problem-solving, and failure analysis. With ten years of experience in the steel tube manufacturing industry, Tucker provides technical leadership and application expertise for oil and gas subsea environments. His background includes specialization in stainless steels, with a focus on metallurgy, heat treatment, weld development, corrosion, and failure analysis. Outside of work, he enjoys benchrest shooting, woodworking, sand volleyball, and spending time with his wife and two young children.

## Charlie Conn

Charlie Conn serves as the Stainless Quality Manager, bringing 40 years of steel tube manufacturing experience. In this current role, he focuses on industry standards compliance and quality systems. Throughout his tenure at Webco, he has held leadership roles in both Quality and Technical Services, contributing to various projects throughout Webco's diverse industries. While not at work, you can find him spending time with family and enjoying the outdoors.



# LaserLine® Seam Welded Umbilical Tubing



WEBCO manufactures LASERLINE SD® seam welded super duplex coiled tubing for use in subsea steel tube umbilicals. Working with both the steel tube umbilical manufacturers and the oil & gas client, WEBCO produces umbilical tubing in accordance with a mutually developed production, inspection, and testing plan (PITP) that contains some of the most stringent and comprehensive specifications and verification criteria in the tube making industry. From a purpose-built tube making facility located in Kellyville, Oklahoma (USA), WEBCO can serve the global marketplace with umbilical tubing.

## LaserLine SD® Super Duplex Umbilical Tube Sizes

Design Working Pressure (DWP)	SMYS MPa	SMTS MPa	ID mm	Ave. Wall mm	OD mm	OD Tol. mm (+/-)	Wall Tol. (+/-)	Weight/M (kg)
5 KSI	750	850	9.53	1.00	11.53	0.13	7.5%	0.26
	750	850	12.70	1.00	14.70	0.13	7.5%	0.33
	750	850	15.88	1.00	17.88	0.13	7.5%	0.41
	750	850	19.05	1.08	21.21	0.13	7.5%	0.53
	730	850	25.30	1.43	27.40	0.13	7.5%	0.93
	730	850	31.75	1.77	34.19	0.13	7.5%	1.44
	710	850	38.10	2.15	42.40	0.26	7.5%	2.15
	710	850	50.80	2.55	55.99	0.26	5.0%	2.55
7.5 KSI	750	850	9.53	1.00	11.53	0.13	7.5%	0.26
	750	850	12.70	1.00	14.70	0.13	7.5%	0.33
	750	850	15.88	1.00	17.88	0.13	7.5%	0.41
	750	850	19.05	1.13	21.31	0.13	7.5%	0.55
	730	850	25.40	1.56	28.52	0.13	7.5%	1.02
	710	850	31.75	1.95	35.65	0.13	5.0%	1.60
	710	850	38.10	2.34	42.78	0.26	5.0%	2.30
	710	850	50.80	3.12	57.04	0.26	5.0%	4.09
10 KSI	750	850	9.53	1.00	11.53	0.13	7.5%	0.26
	750	850	12.70	1.08	14.86	0.13	7.5%	0.36
	750	850	15.88	1.34	18.56	0.13	7.5%	0.56
	730	850	19.05	1.66	22.37	0.13	7.5%	0.84
	730	850	25.40	2.15	29.70	0.13	5.0%	1.44
	710	850	31.75	2.78	37.31	0.26	5.0%	2.34
	710	850	38.10	3.34	44.78	0.26	5.0%	3.37
	750	850	9.53	1.39	12.31	0.13	7.5%	0.37
15 KSI	730	850	12.70	1.86	16.42	0.13	5.0%	0.66
	730	850	15.88	2.32	20.52	0.13	5.0%	1.03
	710	850	19.05	2.90	24.85	0.13	5.0%	1.55
	710	850	25.40	3.86	33.12	0.13	5.0%	2.75

- ✓ Tubing shall be produced in compliance with API 17E , Webco CTS-500-SUT, latest rev., and customer/client specifications where applicable and as mutually agreed. NOTE: Wall thicknesses stated are based on ambient temperature only.
- ✓ Laser seam welded and bright annealed.
- ✓ Inquire for other ID/Wall/DWP configurations.

Super Duplex Grade	UNS S32760	UNS S32750
	EN 1.4501	EN 1.4410
Chemical Composition	Range (wt %)	Range (wt %)
Chromium (Cr)	24.0 - 26.0	24.0 - 26.0
Nickel (Ni)	6.0 - 8.0	6.0 - 8.0
Molybdenum (Mo)	3.0 - 4.0	3.0 - 5.0
Tungsten (W)	0.50 - 1.0	-
Silicon (Si)	1.0 max.	0.8 max.
Copper (Cu)	0.50 - 1.0	-
Manganese (Mn)	1.0 max.	1.2 max.
Nitrogen (N)	0.20 - 0.30	0.24 - 0.32
Carbon (C)	0.030 max.	0.030 max.
Phosphorus (P)	0.030 max.	0.035 max.
Sulphur (S)	0.010 max.	0.020 max.
Iron (Fe)	Balance	Balance
	PREw - 42.5	PREn - 42.5
Pitting Resistance Equivalent Formula	Cr + 3.3Mo + 1.65W + 16N	Cr + 3.3Mo + 16N
Density	7.8g/cm3 (.28lb/in3)	7.8g/cm3 (.28lb/in3)



## Applicable Industry Specifications

- ✓ ASTM A789 / API 17E – ISO 13628-5
- ✓ Webco's IMS certified to ISO 9001, 14001, and 45001

# LaserLine® Seam Welded Umbilical Tubing



## LaserLine SD® Test Summary Matrix

Design Pressure (DWP)	ID (mm)	Average Wall (mm)	OD (mm)	SMYS (MPa)	SMTS (MPa)	Minimum Burst PSI	Actual Average Burst PSI	Burst Location	G48 (P/F)	HCF	LCF
5 KSI	9.53	1.00	11.53	750	850	10,000	29,500	Base Metal	P	N	N
	12.70	1.00	14.70	750	850	10,000	21,100	Base Metal	P	N	N
	15.88	1.00	17.88	750	850	10,000	No Data	No Data	No Data	No Data	No Data
	19.05	1.08	21.21	750	850	10,000	16,600	Base Metal	P	N	N
	25.40	1.43	28.26	730	850	10,000	14,400	Base Metal	P	N	N
	31.75	1.77	35.29	730	850	10,000	No Data	No Data	No Data	No Data	No Data
	38.10	2.15	42.40	710	850	10,000	No Data	No Data	No Data	No Data	No Data
	50.80	2.55	55.90	710	850	10,000	No Data	No Data	No Data	No Data	No Data
7.5 KSI	9.53	1.00	11.53	750	850	15,000	29,500	Base Metal	P	N	N
	12.70	1.00	14.70	750	850	15,000	21,100	Base Metal	P	N	N
	15.88	1.00	17.88	750	850	15,000	No Data	No Data	No Data	No Data	No Data
	19.05	1.13	21.31	750	850	15,000	16,600	Base Metal	P	N	N
	25.40	1.56	28.52	730	850	15,000	No Data	No Data	No Data	No Data	No Data
	31.75	1.95	35.65	710	850	15,000	No Data	No Data	No Data	No Data	No Data
	38.10	2.34	42.78	710	850	15,000	No Data	No Data	No Data	No Data	No Data
	50.80	3.12	57.04	710	850	15,000	No Data	No Data	No Data	No Data	No Data
10 KSI	9.53	1.00	11.53	750	850	20,000	29,500	Base Metal	P	N	N
	12.70	1.08	14.86	750	850	20,000	23,300	Base Metal	P	Y	Y
	15.88	1.34	18.56	750	850	20,000	No Data	No Data	No Data	No Data	No Data
	19.05	1.66	22.37	730	850	20,000	23,100	Base Metal	P	N	N
	25.40	2.15	29.70	730	850	20,000	24,000	Base Metal	P	N	N
	31.75	2.78	37.31	710	850	20,000	No Data	No Data	No Data	No Data	No Data
	38.10	3.34	44.78	710	850	20,000	No Data	No Data	No Data	No Data	No Data
	50.80	4.31	57.04	710	850	20,000	No Data	No Data	No Data	No Data	No Data
15 KSI	9.53	1.39	12.31	750	850	30,000	40,500	Base Metal	P	N	N
	12.70	1.86	16.42	730	850	30,000	36,900	Base Metal	P	N	N
	15.88	2.32	20.52	730	850	30,000	35,500	Base Metal	P	N	N
	19.05	2.90	24.85	710	850	30,000	36,400	Base Metal	P	Y	Y
	22.05	3.35	28.75	710	850	30,000	39,100	Base Metal	P	Y	Y
	25.40	3.86	33.12	710	850	30,000	34,300	Base Metal	P	Y	Y

- ✔ Tubing compliant with latest revisions of API 17E, Webco's CTS-500-SUT Umbilical Tube Specification, and customer/client specifications when applicable. NOTE: Wall thicknesses stated are based on ambient temperature only.
- ✔ Document No. CTS-500-002 Webco Umbilical Tube Size Test Reference Table, REV00, 08JAN2026
- ✔ Laser seam welded and bright annealed.
- ✔ Inquire for other ID/Wall/DWP configurations.
- ✔ Webco disclaims warranties for fitness for particular purpose and merchantability. Webco is not an umbilical engineering firm, therefore any communication regarding product parameters are for the customer's consideration and convenience and not recommended, warranted, or sponsored by Webco. It is the customer's responsibility to verify product parameters are fit for a particular use.

## Approved Supplier List

- ✔ Shell
- ✔ ExxonMobil
- ✔ ENI
- ✔ Walter Oil & Gas
- ✔ LLOG
- ✔ Petronas
- ✔ BP
- ✔ Chevron
- ✔ Occidental
- ✔ LLOG
- ✔ Petrobras - Pending
- ✔ Talos
- ✔ Petrobel

# LaserLine® Seam Welded Umbilical Tubing



## Benefits of Seam Welded Tube Versus Seamless

- ✓ Greatly reduced number of orbital welds: Up to 20X fewer orbitals, depending on tube size and wall
- ✓ Cold rolled strip provides for tighter wall tolerance, better concentricity, and less thickness variation
- ✓ In-line heat treatment of single tube production provides better control and monitoring of annealing and cooling
- ✓ Seam welded tube is typically more cost effective than seamless tube
- ✓ Tubing for dynamic sections of umbilical can be free of orbital welds with the use of strip splice welds

WEBCO develops a Production, Inspection and Testing Plan (PITP) for each umbilical tube project in conjunction with the umbilical maker and the end user, if applicable.

## Project Documentation (Data Book) Includes

✓ Material certificates for all raw materials (strip and filler wire)
✓ PMI test records for all raw materials and mill coils used during final coil build-up
✓ Heat treatment records for annealing and cooling of seam welded tube production
✓ Weld records: WPS and PQR for strip splice welds (SSW), longitudinal seam weld (LSW), and orbital welds (OW)
✓ NDT records: EC, UT, radiographic images
✓ Sigma phase detection by EC record
✓ Register of all qualified NDE and welding operators
✓ Mechanical and dimensional test results for all tube and weld types in each coil
✓ Metallurgical lab results for: G48 corrosion testing, ferrite point count, burst test, micro-hardness, macrographic examination, tensile testing, manipulation tests
✓ Hydro-test records for both in-process and FAT pressure tests
✓ Cleanliness test report (particle count), if applicable
✓ Weld map for each finished reel
✓ Shipping reel packaging and loading
✓ Final Dock Audit (prior to shipment)

Testing discs



Prior to and during the processing of an umbilical tube order, WEBCO utilizes its state of the art in-house metallurgical laboratory to perform verification tests that include: tensiles, guided bend, manipulation tests, microhardness, ferrite count, ASTM G48-A, burst testing, PMI, micrographic exam for < 0.05% sigma phase, macrographic dimensional exam of OWs, radiographic exam of SSW/OW, and low cycle fatigue.

# LaserLine® Seam Welded Umbilical Tubing



## Standard Umbilical Tube Production Sequence

Precision slit strip coils are welded together using an autogenous bias laser strip splice weld

↳ Large strip coils (up to 9000 kg ea.) are fed into the tube mill for forming and laser seam welding

↳ In-line and subsequent to seam welding, tubing is bright annealed (OD and ID), then quenched rapidly

↳ Tube outside diameter is measured by an in-line laser micrometer and recorded

↳ Tube then proceeds downstream to an eddy current (EC) system for both sigma phase and flaw detection, then through a UT testing station for flaw detection and wall thickness measurement

- EC calibrated to detect gross sigma phase of 2% or greater (< 0.05% verified micrographically)
- EC calibrated to drill hole and longitudinal/transverse OD notches equal to 10% of wall thickness and transverse notch on ID
- UT calibrated to longitudinal notch equal to 10% of wall thickness or .1 mm, whichever is greater
- Data collection and indication images of EC and UT indications are automatically captured and stored for future reference

↳ Mill coils are then subjected to an in-process hydro-test before being allocated to final coil edit operations

↳ During coil edit, the mill coil tubing is de-coiled through an EC system that is calibrated to the same criteria as the tube mill EC system

↳ Tube-to-tube orbital welding is utilized to join mill coil lengths together using super duplex filler wire and automatic welding machines

↳ All strip splice and orbital welds undergo digital radiography (typically three shots each) in the final tube form. All welding is conducted per an approved WPS/PQR by approved welding operators. Radiographic images are interpreted by qualified inspectors in accordance with ASNT standards and customer requirements.

↳ Tubing is then coiled onto the shipping reel (umbilical bundler steel reel) to the ordered length up to a maximum length equal to approximately 18,000 kg

↳ Final coiled lengths of tubing undergo an FAT hydro-test for (4) hours under controlled atmosphere, typically at 1.5 x DWP. All pressure and temperature values are recorded digitally for verification and reporting purposes

↳ Final coil is dried with nitrogen and capped under low pressure (1-2 bar)

↳ Each reel of finished tubing is then packaged per customer specifications appropriate for the transportation mode, storage, and usage requirements



# LaserLine® Seam Welded Umbilical Tubing



## Strip Splice Welding

Strip Splice Welding (SSW) uses autogenous laser welding to join raw strip material together into longer lengths.

SSW allows for lengths up to 10,000 meters of continuous production.

Welds are solution annealed in-line during tube milling.

### Brief Overview:

- ✓ Strip joints cut at a bias
- ✓ Edges milled for even fit-up
- ✓ Verification of fit up using automatic laser profilometry, stereoscopic examination, and camera seam tracking
- ✓ Laser welding under protective atmosphere per Webco developed WPS per ASME IX
- ✓ Verification of final weld using automatic laser profilometry, visual inspection, and manual measurement

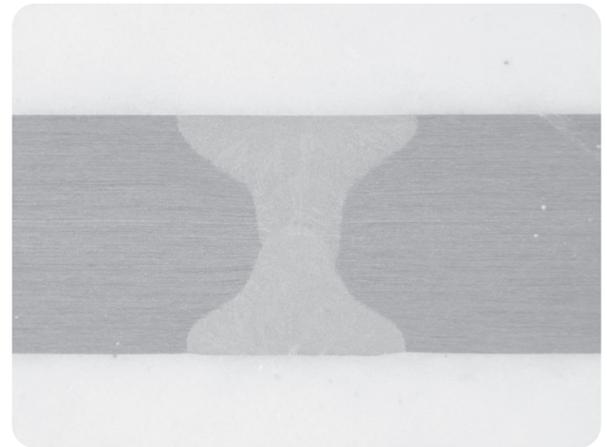
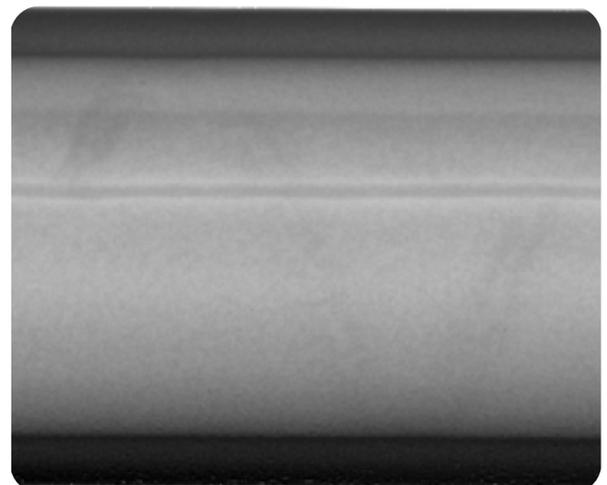


Image of a strip splice weld cross-section before forming the tube.

## Strip Splice Welds (SSW) vs Orbital Welds (OW)

- ✓ G48 Method A: 50°C vs 40°C
- ✓ Improved Mechanical Strength
- ✓ Smaller Fusion Zone and HAZ Size
- ✓ Superior Corrosion Resistance
- ✓ Order of Magnitude Better Fatigue Life
- ✓ Increased Minimum Distance Between Orbital Welds
- ✓ Eliminate OWs in Hang-Off and Touchdown Zones
- ✓ All Welds 100% Radiographically Inspected



Radiograph of a strip splice weld exhibiting a consistent weld profile that blends well into the base metal.

# LaserLine® Seam Welded Umbilical Tubing

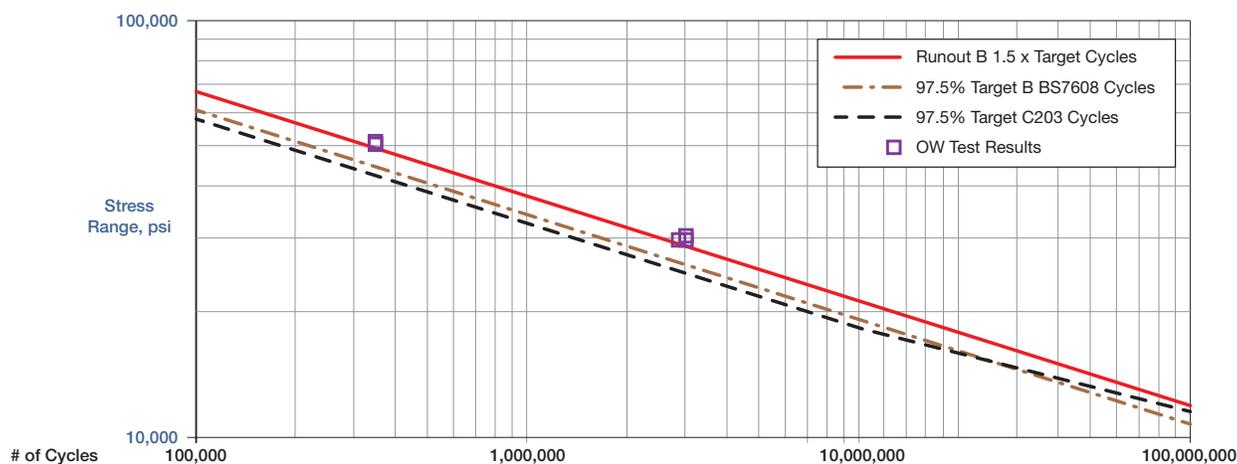
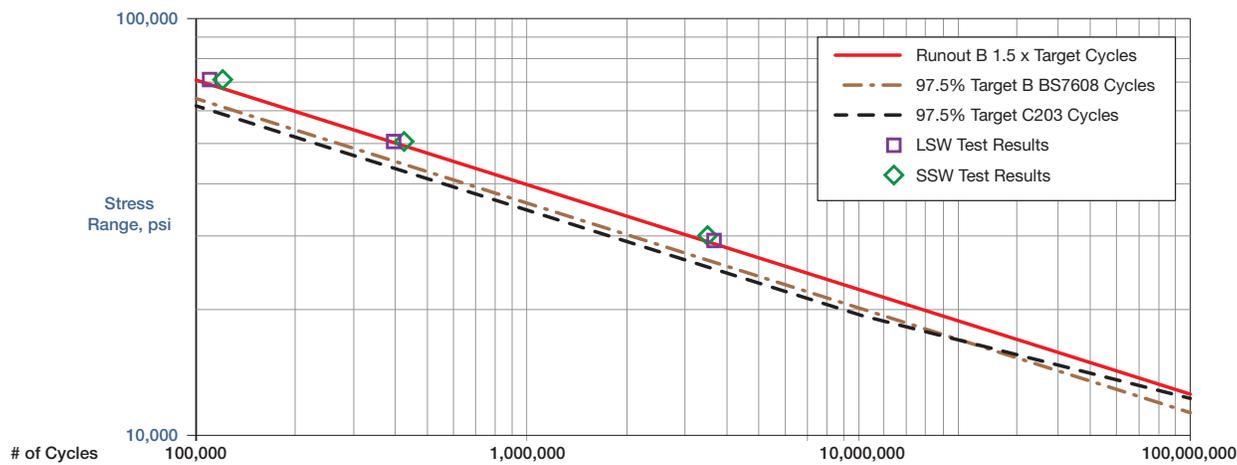


## Fatigue Results

The tables below illustrate the S-N curve results conducted on WEBCO's longitudinally seam welded super duplex umbilical tubing. The testing was conducted by Stress Engineering Services of Houston Texas using a resonance fatigue testing fixture.

- ✔ All tube samples reached target and runout (1.5x target) with no leaks. The run-out curve was calculated at three standard deviations above the mean curve
- ✔ Samples labeled "SSW" identify results for tubes containing a strip splice weld near the center of the tube sample
- ✔ Samples labeled "LSW" identify results for tubes containing a longitudinal seam weld along the entire length of the tube sample
- ✔ Samples labeled "OW" identify results for tubes containing an orbital weld near the center of the tube sample
- ✔ Tubes were not subjected to cumulative plastic strain prior to testing. Testing was conducted at 200 psi.

## 19.05mm ID x 3.14mm WT x 15KSI DWP Seam Welded 2507 Fatigue Test Results



## Contact Information for Seam Welded Umbilical Tube Products

Amber Rosser	General Manager - Oil & Gas	918-293-1908 (office)	918-764-5492 (cell)	arosser@webcotube.com
webcotube.com   13301 W Hwy 51   Sand Springs, OK 74063 USA		918-245-2211   Umbilical Tube Plant   Kellyville, OK USA		

SCAN HERE FOR MORE INFO

