



MarineTuff® Offshore and Marine Cable Solutions



CATALOG



Belden offers the industry's largest selection of industrial cables for offshore and marine certified applications



Whether you are handling oil, natural gas or petrochemicals, working onshore or offshore, Belden's cable, connectivity and networking solutions will solve your toughest problems.





MarineTuff®

About Our MarineTuff Cable Offering



MarineTuff - Safe, Robust Cable for Offshore Applications

Thank you for choosing Belden's MarineTuff cables for your offshore cable needs. Belden is known for providing highly reliable, rugged signal transmission solutions for some of the most demanding applications. With the MarineTuff line of cables, Belden's heritage of rugged signal transmission solutions now extends to offshore applications.

All MarineTuff cables are certified by the American Bureau of Shipping (ABS) and/or DNV (Det Norske Veritas).

The American Bureau of Shipping (ABS) is one of the governing bodies overseeing the safe construction and operation of ABS-classed vessels, modular offshore drilling units (MODUs) or facilities. Belden MarineTuff cables meet or exceed the requirements set for by ABS for offshore applications.

In addition to ABS certification, our HaloarrestXLink (low smoke zero halogen) cables meet numerous requirements for harsh offshore environments. These include UL 1309 (Marine Shipboard Cable), IEEE 1580 Type P insulation (IEEE Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Facilities) UL Oil Resistance II, IEEE 1202 & FT4 (Flame Resistance), IEC 60754-1 (Compliant for Halogen Content), and IEC 60754-2 (Compliant for Acid Gas Emissions). In other words, we make the toughest cables around and we've got the certifications to prove it!

DNV (Det Norske Veritas) applies to some products in this catalog. The DNV logo at the top of the page indicates there are DNV certified products on that page.

For complete details on all of the certifications each product family meets, please see the individual sections contained later in this catalog.



MarineTuff®

About Belden



Peace of Mind with Zero Downtime

Belden is a long-time leader in offering high-performance data and signal transmission solutions for the industrial environment where reliability is absolutely required to maintain safe operations with zero unplanned downtime.

That's why solutions for the industrial environment – one that imposes harsh or severe working conditions on active devices and media installations – are vital. At one time or another, the signaling components at these facilities will have to withstand the destructive effects of temperature extremes, humidity/moisture, dust, oil and solvents, and the potentially corrosive effects of chemicals. As if those weren't enough, add to the list ultraviolet radiation caused by extensive sunlight, electromagnetic interference and the ever-present danger of fire and explosion.

Whether you are handling oil, natural gas or petrochemicals, working onshore or offshore, Belden's cable, connectivity and networking solutions will solve your toughest problems.

Always the Right Solution

Belden is the world's leading supplier of signal transmission solutions including cable, connectivity and active components for mission-critical applications ranging from industrial automation and alternative power generation through to professional broadcasting. Belden offers an extensive portfolio of highly specialized products for steering, control and field level, which the company produces and markets under its proprietary Belden, Hirschmann™, and Lumberg Automation™ brands. We would be glad to introduce to you our integrated product palette for industrial applications and the worldwide Belden Service.

You will find further information and technical details online at www.belden.com or contact Belden Technical Support directly: Tel. 1.800.235.3361



MarineTuff®

Table of Contents



About our MarineTuff Cable Offering	3
About Belden	4
Table of Contents	5
Product Characteristic Symbols	6
Fiber Optic Cables	7
Loose Tube Indoor/Outdoor Low Smoke Zero Halogen (LSZH)	8
Breakout Style Cable Tight Buffer - LSZH Indoor/Outdoor.....	9
Industrial Ethernet Cables	10-12
Category 6 DataTuff Cables Unshielded, 4-Pair, 23 AWG.....	11-12
UL Control Cables	13-34
600 V Type TC Cables, 18 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	14-17
600 V Type TC Cables, 18 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	17
600 V Type TC Cables, 16 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	18-20
600 V Type TC Cables, 16 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	20
600 V Type TC Cables, 14 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	21-23
600 V Type TC Cables, 14 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	23
600 V Type TC Cables, 12 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	24-26
600 V Type TC Cables, 10 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	27-28
600 V Type TC Cables, 8 AWG, - 10 AWG Uninsulated Ground Wire, Thermoset Low Smoke Zero Halogen Jacket.....	29
600 V Type TC Cables, 6 AWG, - 8 AWG Uninsulated Ground Wire, Thermoset Low Smoke Zero Halogen Jacket.....	30
600 V Type TC Cables, 4 AWG, - 8 AWG Uninsulated Ground Wire, Thermoset Low Smoke Zero Halogen Jacket.....	31
600 V Type TC Cables, 2 AWG, - 6 AWG Uninsulated Ground Wire, Thermoset Low Smoke Zero Halogen Jacket.....	32
600 V Type TC Cables, 1 AWG to 4/0 AWG, Thermoset Low Smoke Zero Halogen Jacket.....	33-34
UL Instrumentation Cables	35-42
600 V Type TC Cables, 18 AWG, Shielded, Thermoset Low Smoke Zero Halogen Jacket.....	36-37
600 V Type TC Cables, 16 AWG, Shielded, Thermoset Low Smoke Zero Halogen Jacket.....	38-40
600 V Type TC Cables, 14 AWG, Shielded, Thermoset Low Smoke Zero Halogen Jacket.....	41
600 V Type TC Cables, 12 AWG, Shielded, Thermoset Low Smoke Zero Halogen Jacket.....	42
Variable Frequency Drive (VFD) Cables	43-47
Classic Foil/Braid Design Thermoset Low Smoke Zero Halogen.....	44-45
Classic Symmetrical Design Thermoset Low Smoke Zero Halogen.....	46-47
Foundation Fieldbus Cables	48-52
PROFIBUS DP Cables	53-55
RS-485 Cables	56-58
ControlNet Cables	59-61
Blue Hose Cables	62-64
DeviceNet Cables	65-67
A/V and Electronic Cable	68-78
Electronic Audio, Control and Instrumentation Cable.....	69-70
Audio and Speaker Cable.....	71-72
Coaxial Broadcast AV Cable.....	73-74
DataTwist® Nonbonded Pair	75-76
Security Composite Cable	77-78
Part Number Index	79-82



MarineTuff®

Product Characteristic Symbols



Type P Insulation



Zero Halogen Jacket



Flame Retardant



Oil Resistant



Low Toxicity



Low Smoke



Low Corrosion



MarineTuff® Industrial Fiber Cables

The demand for enhanced security and high quality data, audio, and video is increasing in the offshore environment. Therefore, the quality and reliability of your fiber optic cables is of increasing importance. MarineTuff fiber products offer quality data, audio, and video functions for offshore structures. For instance, in the event of an electromagnetic surge, fiber guarantees 100% of your communication and the network infrastructure remains available. Furthermore, fiber decreases latency and better supports the high bandwidth demands of your growing auxiliary and surveillance networks. Cost efficiency with bidirectional fiber decreases latency and expenditures of commissioning expansive networks.

In addition to offshore rigs and control room applications, Belden products are widely used in separator stations, metering stations, pumping/compressor stations, LNG processing plants, transportation/storage, refining facilities and shipboards.

The MarineTuff fiber line features all-dielectric cable, but metallic armoring can be added when needed for a specific installation. Cable designs feature flame retardant, thermoplastic buffers/tubes, aramid yarn strength members, optional aluminum armor, overall water-blocking tape and low smoke zero halogen jackets (LSZH).

Key Attributes

- Low smoke zero halogen jacketed
- Aluminum interlock (for tight buffer) or steel corrugated (for loose tube) armoring optional
- Flame retardant
- 10 year warranty



MarineTuff® Industrial Fiber Cables

Loose Tube Indoor/Outdoor

Low Smoke Zero Halogen (LSZH)



Featured Options:

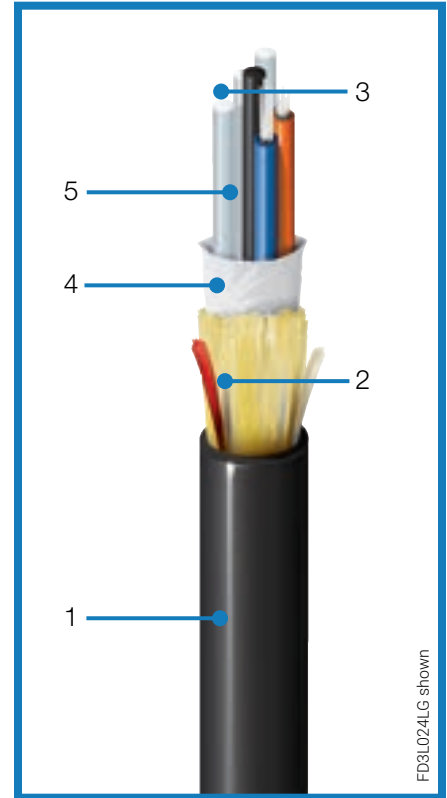
- Sunlight resistance
- Fully water-blocked
- Singlemode and multimode riser rated LSZH

Certifications/Compliance

- NEC/CEC
- UL Type OFNR/OFCR
- cUL OFNR/OFCR FT-4
- Marine approvals: ABS type approval

Construction:

1. LSZH Outer Jacket
2. Aramid Yarn
3. Central E-Glass Strength Member
4. Water Blocking Tape
5. Loose Tube Buffer



No. of Fibers	Fibers/ Bundle	Part No.				OD (Nom)	
		OM1 (62.5/125) Std. 1Gb	OM3 (50/125) 10 Gb - 300 m	OM4 (50/125) 10 Gb - 550 m	OS2 Single-mode Enhanced	Inch	mm
6	6	FD1L006LF	FD3L006LF	FD4L006LF	FDSL006LF	.38	9.65
12	12	FD1L012LG	FD3L012LG	FD4L012LG	FDSL012LG		
24	12	FD1L024LG	FD3L024LG	FD4L024LG	FDSL024LG		
36	12	FD1L036LG	FD3L036LG	FD4L036LG	FDSL036LG		
48	12	FD1L048LG	FD3L048LG	FD4L048LG	FDSL048LG	.48	12.18

* Indicates common part numbers.

Standard Jacket Color: Black (non-standard jacket colors are available).



MarineTuff® Industrial Fiber Cables

Breakout Style Cable

Tight Buffer - LSZH Indoor/Outdoor

Featured Options:

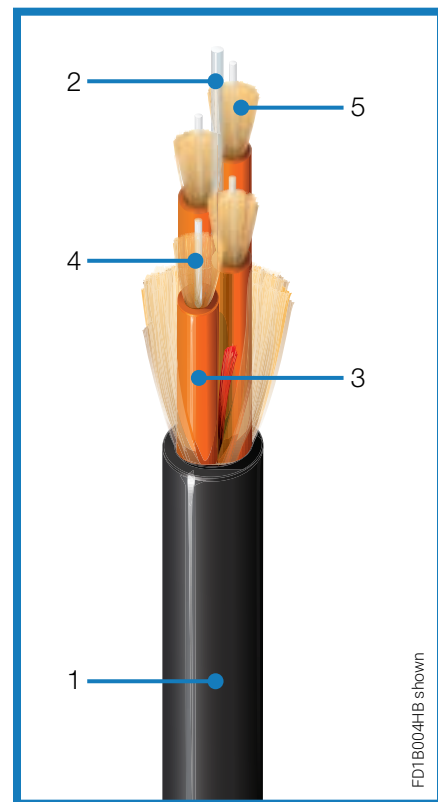
- LSZH
- 900 um tight buffer fibers
- Flame retardant
- Direct connectorization
- Also available in a 2.5mm sub-unit

Certifications/Compliance

- NEC/CEC
- UL Type OFNR (unarmored)/ OFCR (armored)
- cUL OFNR/OFCR FT-4
- Marine approvals: ABS type approval

Construction:

1. Black Outer Jacket
2. Central E-Glass Strength Member
3. 2.0mm Subunits
4. 900 Micron Tight Buffered Fiber
5. Aramid Yarn



FD1B004HB shown



No of Fibers	Fibers/Bundle	Part No.				OD (Nom)	
		OM1 (62.5/125) Std. 1Gb	OM3 (50/125) 10 Gb - 300m	OM4 (50/125) 10 Gb - 550m	"OS2 Single-mode Enhanced"	Inch	mm
2	1	FD1B002LB	FD3B002LB	FD4B002LB	FDSB002LB	.260	6.60
4	1	FD1B004LB	FD3B004LB	FD4B004LB	FDSB004LB	.321	8.15
6	1	FD1B006LB	FD3B006LB	FD4B006LB	FDSB006LB	.358	9.09
10	1	FD1B010LB	FD3B010LB	FD4B010LB	FDSB010LB	.455	11.56
12	1	FD1B012LB	FD3B012LB	FD4B012LB	FDSB012LB	.514	13.06



MarineTuff® Industrial Ethernet Cables



Only Belden offers the most comprehensive range of Industrial Ethernet cabling solutions available in the world today – all specifically engineered and ruggedly constructed to ensure optimum network performance and uptime, even in the harshest settings. Belden Industrial Ethernet cables, the DataTuff cable line, are far and away the industry's top choice for signal transmission integrity and consistently reliable electrical performance. Unlike commercial off-the-shelf (COTS) Ethernet cabling, our Category 6 copper-based cables are built Belden-tough to withstand the harsh environmental conditions and mechanical stresses typically present in offshore environments.

Belden Bonded-Pair Cables feature a patented design that bonds individual conductors along their longitudinal axis. This assures an extremely uniform spacing within each twisted pair which is a key factor in maintaining consistent electrical performance and providing optimal RFI immunity. Ideally, this distance should remain fixed and stable along the length of the twisted pair. Installation and termination of cable disturbs this relationship and therefore also affects the cable's electrical performance. Even minor disturbances in the spacing can have a significant impact on the electrical performance, particularly impedance, return loss and crosstalk. Since the two conductors of a Bonded-Pair cable are bonded together, gaps cannot form in between the conductors. The physical integrity of the pair is maintained, resulting in consistent electrical performance.

The normal cable installation stresses routing around and through tight passages typical of offshore facilities can impact cable reliability. In a recent survey, contractors indicated that Bonded-Pair cables maintain their physical integrity (and electrical performance) requiring less troubleshooting and re-work.

The performance of the entire network in a marine vessel or offshore facility depends on the integrity and reliability of the cables connecting network devices. A weak or compromised section of the cabling puts the entire network in jeopardy. The MarineTuff suite of Industrial Ethernet cabling is the best choice to meet these challenges.

Key Attributes

- LSZH jackets on all cables and options
- Bronze braid options on all cables and options
- ABS certified
- 10 year warranty
- Consistently reliable electrical performance
- Bonded Pair Technology



MarineTuff® Industrial Ethernet Cables

Category 6, DataTuff® Cables

Unshielded, 4-Pair, 23 AWG

Features:

- Sunlight and Oil resistant
- Bonded Pairs
- Oil Res II (Thermoset)

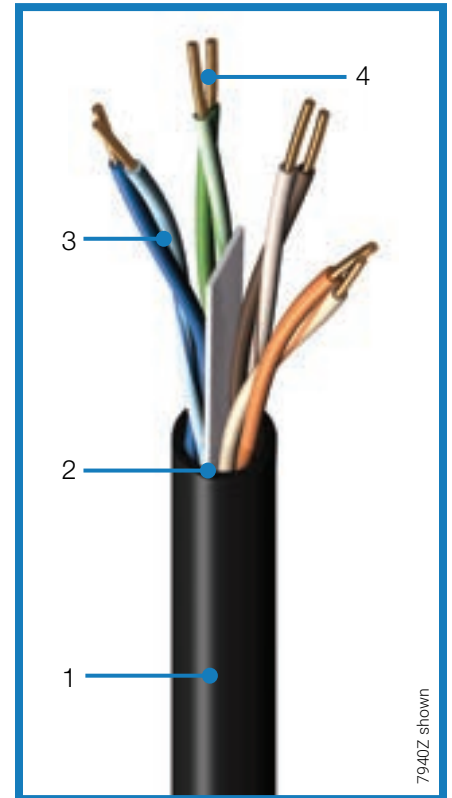
Certifications/Compliance

- ABS certified
- NEC: CMG
- CEC: CMG
- EtherNet/IP compliant
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. LSZH Thermoplastic or Thermoset Jacket
2. Internal Tape Separator
3. Four Bonded Pairs
4. Solid Copper Conductor

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® Industrial Ethernet Cables

Category 6, DataTuff® Cables

Shielded and Unshielded, 4-Pair, 23 AWG



Part No.	Nominal OD		Additional Features/Ratings
	Inch	mm	
23 AWG, Shielded			
Category 6 with Overall Beldfoil Shielding • LSZH Jacket • Cable Design Under Development			
Thermoset Jacket			
7953Z*	Under development		CMG-LS, Category 6
Thermoplastic Jacket			
7953T*	Under development		
23 AWG, Unshielded			
Solid BC Conductors • Polyolefin Insulation • LSZH Outer Jacket			
Thermoset Jacket			
7940Z	0.295	7.4	CMG-LS, Category 6
Thermoplastic Jacket			
7940T	0.295	7.4	
23 AWG, Shielded with Bronze Braid Armor			
Category 6 with Overall Beldfoil Shielding • Double LSZH Jacket • Cable Design Under Development			
Thermoset Jacket			
977953Z*	Under development		CMG-LS, Category 6
Thermoplastic Jacket			
777953T*	Under development		
23 AWG, Unshielded with Bronze Braid Armor			
Solid BC Conductors • Polyolefin Insulation • Double LSZH Outer Jackets			
Thermoset Jacket			
977940Z	0.43	11.1	CMG-LS, Category 6
Thermoplastic Jacket			
777940T	0.43	11.1	

Conductor Color Codes: Pair 1: White/Blue Stripe & Blue • Pair 2: White/Orange Stripe & Orange • Pair 3: White/Green Stripe & Green • Pair 4: White/Brown Stripe & Brown

All reels of Bonded Pair cable come with bonded pair separator tool (part no. 1797B)

EtherNet/IP is a trademark of ODVA. To learn more visit <https://www.odva.org/Technology-Standards/EtherNet-IP/Overview>

BC = Bare Copper

* These products are not ABS approved



MarineTuff®

UL Control and Instrumentation Cables



MarineTuff certified Belden instrumentation and control cables bring reliable, safety conscious wiring solutions to offshore platforms, equipment suppliers and commercial shipbuilders. These ABS-certified cables offer physical toughness and the safety benefits of low smoke and zero halogen (LSZH) jackets to provide a no-compromise solution that can withstand the harshest offshore environments. Belden's MarineTuff certified cables are highly reliable, rugged solutions that will function in a variety of challenging offshore activities: mobile drilling, fixed platform, floating production, storage and offloading (FPSO), marine vessels.

Oil and Gas platforms must continuously achieve optimal performance, while operating in harsh environments under mission-critical conditions. Demands on communication networks include safety, availability, reliability and durability in environments where vibration, corrosion, fluctuating temperature, splash water, and pollution occur. The MarineTuff instrumentation and control cables are designed to operate in these conditions.

The MarineTuff instrumentation and control line features 600V TC-ER rated multiconductor, paired, and triad cables. They feature XLP conductors appropriate for 90 degrees C wet/dry demands, class I and II / Division 2 hazardous location ratings, and HaloarrestXLink low smoke zero halogen jackets (LSZH).

Key Attributes

- Type P rated insulations on all cables and options
- LSZH jackets on all cables and options
- Bronze braid or continuous aluminum armoring available
- ABS certified
- 10 year warranty

MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables

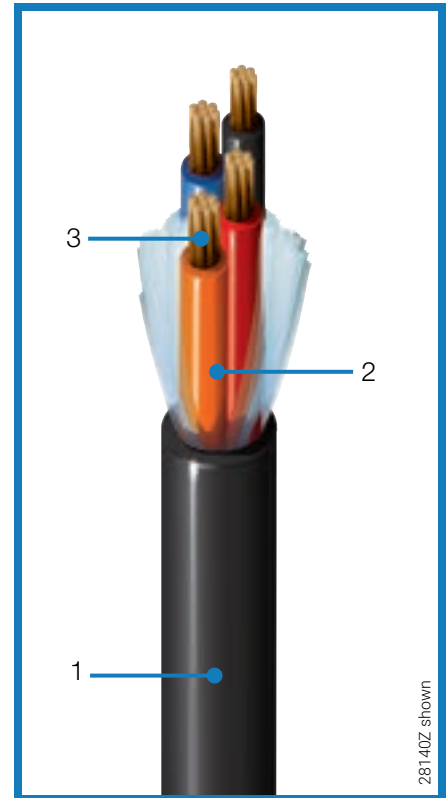


Featured Options:

- Bronze Braid Armoring
- Continuous Aluminum Armor (ABS) - Type MC
- LSZH Thermoset Jacket (Standard)
- Type P Rated Insulations
- Sunlight and Oil Resistant

Certifications/Compliance

- ABS (American Bureau of Shipping)
 - IEEE 45 Electrical Installation on Shipboard
 - IEEE 1580 Type P insulations (recommended practice for marine cables for use on shipboard in fixed or floating facilities)
 - UL 1309 marine shipboard cables
 - IEC 60811-2-1 compliant for hydrocarbon resistance
 - IEC 60754-1 compliant jacket for halogen content
 - IEC 60754-2 compliant jacket for acid gas emissions
 - IEC 60092-350 electrical installations on ships)
 - UL 1277 TC-ER crush and impact resistant (UL TC for 2-conductor cables)
 - IEEE 1202 and FT4 flame-resistant
 - IEC 60332-3-22
- * excludes continuous armored constructions



Construction:

1. LSZH Thermoset Jacket
2. XLP Insulation
3. Flexible Stranded Tinned Copper Conductors
4. Round and Smooth

NOTE: Also available on all options, foil shield, bronze braid armor with LSZH second jacket, continuous aluminum armor with LSZH second jacket (not pictured).



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 18 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
18 AWG • Unshielded • Thermoset Jacket • Type TC									
Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
27916Z	2	E2	44	3.20	81.3	.21 x 0.31	5.3 x 7.9	0.05	1.1
27325Z	2	E2	44	3.10	78.7	0.31	7.9	0.05	1.1
28334Z	3	E2	66	3.30	83.8	0.33	8.4	0.05	1.1
28326Z	4	E2	88	3.60	91.4	0.36	9.1	0.05	1.1
28335Z	5	E2	110	3.90	99.1	0.39	9.9	0.05	1.1
28600Z	6	E2	132	4.20	106.7	0.41	10.4	0.05	1.1
28327Z	7	E2	154	4.30	109.2	0.42	10.7	0.05	1.1
28601Z	8	E2	176	4.50	114.3	0.45	11.4	0.05	1.1
28336Z	9	E2	198	4.90	124.5	0.49	12.4	0.05	1.1
28328Z	10	E2	220	5.70	144.8	0.56	14.2	0.06	1.5
28602Z	11	E2	242	5.80	147.3	0.58	14.7	0.06	1.5
28329Z	12	E2	264	5.80	147.3	0.58	14.7	0.06	1.5
28603Z	13	E2	286	6.10	154.9	0.61	15.5	0.06	1.5
28604Z	14	E2	308	6.10	154.9	0.61	15.5	0.06	1.5
28605Z	15	E2	330	6.40	162.6	0.64	16.3	0.06	1.5
28606Z	16	E2	352	6.40	162.6	0.64	16.3	0.06	1.5
28607Z	17	E2	374	6.80	172.7	0.67	17.0	0.06	1.5
28608Z	18	E2	396	6.80	172.7	0.67	17.0	0.06	1.5
28609Z	19	E2	418	6.80	172.7	0.67	17.0	0.06	1.5
28610Z	20	E2	440	7.10	180.3	0.70	17.8	0.06	1.5
28611Z	25	E2	550	8.00	203.2	0.80	20.3	0.06	1.5
28612Z	30	E2	660	8.30	210.8	0.82	20.8	0.06	1.5
28613Z	37	E2	814	9.40	238.8	0.93	23.6	0.08	2.0
28614Z	50	E2	1100	10.90	276.9	1.09	27.7	0.08	2.0
28632Z	60	E2	1320	11.70	297.2	1.17	29.7	0.08	2.0

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
18 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC (continued next page)											
Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z27916Z	2	E2	44	4.13	105.0	0.45	8.7	0.05	1.1	0.06	1.4
Z27325Z	2	E2	44	5.45	105.0	0.45	8.7	0.05	1.1	0.06	1.4
Z28334Z	3	E2	66	5.69	111.1	0.47	9.3	0.05	1.1	0.06	1.4
Z28326Z	4	E2	88	6.05	120.2	0.50	10.0	0.05	1.1	0.06	1.4
Z28335Z	5	E2	110	6.41	129.4	0.53	10.8	0.05	1.1	0.06	1.4
Z28600Z	6	E2	132	6.86	140.7	0.57	11.7	0.05	1.1	0.06	1.4
Z28327Z	7	E2	154	6.98	143.8	0.58	12.0	0.05	1.1	0.06	1.4
Z28601Z	8	E2	176	7.34	152.9	0.61	12.7	0.05	1.1	0.06	1.4
Z28336Z	9	E2	198	7.82	165.1	0.65	13.8	0.05	1.1	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 18 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC (continued from previous page)

Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z28328Z	10	E2	220	8.66	186.4	0.72	15.5	0.06	1.5	0.06	1.4
Z28602Z	11	E2	242	8.90	192.5	0.74	16.0	0.06	1.5	0.06	1.4
Z28329Z	12	E2	264	8.90	192.5	0.74	16.0	0.06	1.5	0.06	1.4
Z28603Z	13	E2	286	9.26	201.7	0.77	16.8	0.06	1.5	0.06	1.4
Z28604Z	14	E2	308	9.26	201.7	0.77	16.8	0.06	1.5	0.06	1.4
Z28605Z	15	E2	330	9.62	210.8	0.80	17.6	0.06	1.5	0.06	1.4
Z28606Z	16	E2	352	9.62	210.8	0.80	17.6	0.06	1.5	0.06	1.4
Z28607Z	17	E2	374	9.98	220.0	0.83	18.3	0.06	1.5	0.06	1.4
Z28608Z	18	E2	396	9.98	220.0	0.83	18.3	0.06	1.5	0.06	1.4
Z28609Z	19	E2	418	9.98	220.0	0.83	18.3	0.06	1.5	0.06	1.4
Z28610Z	20	E2	440	10.34	229.1	0.86	19.1	0.06	1.5	0.06	1.4
Z28611Z	25	E2	550	11.54	259.6	0.96	21.6	0.06	1.5	0.06	1.4
Z28612Z	30	E2	660	11.78	265.7	0.98	22.1	0.06	1.5	0.06	1.4
Z28613Z	37	E2	814	13.10	299.2	1.09	24.9	0.08	2.0	0.06	1.4
Z28614Z	50	E2	1100	15.02	348.0	1.25	29.0	0.08	2.0	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC (continued next page)

Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W27916Z	2	E2	44	6.98	177.4	0.58	14.8	0.05	1.1	0.06	1.4
W27325Z	2	E2	44	6.98	177.4	0.58	14.8	0.05	1.1	0.06	1.4
W28334Z	3	E2	66	7.22	183.5	0.60	15.3	0.05	1.1	0.06	1.4
W28326Z	4	E2	88	7.58	192.6	0.63	16.1	0.05	1.1	0.06	1.4
W28335Z	5	E2	110	7.94	201.8	0.66	16.8	0.05	1.1	0.06	1.4
W28600Z	6	E2	132	8.18	207.9	0.68	17.3	0.05	1.1	0.06	1.4
W28327Z	7	E2	154	8.30	210.9	0.69	17.6	0.05	1.1	0.06	1.4
W28601Z	8	E2	176	8.66	220.1	0.72	18.3	0.05	1.1	0.06	1.4
W28336Z	9	E2	198	9.14	232.3	0.76	19.4	0.05	1.1	0.06	1.4
W28328Z	10	E2	220	9.98	253.6	0.83	21.1	0.06	1.5	0.06	1.4
W28602Z	11	E2	242	10.22	259.7	0.85	21.6	0.06	1.5	0.06	1.4
W28329Z	12	E2	264	10.22	259.7	0.85	21.6	0.06	1.5	0.06	1.4
W28603Z	13	E2	286	10.58	268.8	0.88	22.4	0.06	1.5	0.06	1.4
W28604Z	14	E2	308	10.58	268.8	0.88	22.4	0.06	1.5	0.06	1.4
W28605Z	15	E2	330	10.94	278.0	0.91	23.2	0.06	1.5	0.06	1.4
W28606Z	16	E2	352	10.94	278.0	0.91	23.2	0.06	1.5	0.06	1.4
W28607Z	17	E2	374	11.30	287.1	0.94	23.9	0.06	1.5	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 18 AWG, Unshielded and Shielded,
Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC (continued from previous page)

Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W28608Z	18	E2	396	11.30	287.1	0.94	23.9	0.06	1.5	0.06	1.4
W28609Z	19	E2	418	11.30	287.1	0.94	23.9	0.06	1.5	0.06	1.4
W28610Z	20	E2	440	11.66	296.3	0.97	24.7	0.06	1.5	0.06	1.4
W28611Z	25	E2	550	12.86	326.7	1.07	27.2	0.06	1.5	0.06	1.4
W28612Z	30	E2	660	13.10	332.8	1.09	27.7	0.06	1.5	0.06	1.4
W28613Z	37	E2	814	14.42	366.4	1.20	30.5	0.08	2.0	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

18 AWG • Shielded 100%, Beldfoil • Thermoset Jacket • Type TC

Flexible Stranded (16 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
27325ZS	2	E2	67	3.13	79.5	0.31	8.0	0.05	1.1
28334ZS	3	E2	90	3.33	84.6	0.33	8.5	0.05	1.1
28326ZS	4	E2	112	3.63	92.2	0.36	9.2	0.05	1.1



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 16 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

16 AWG • Unshielded • Thermoset Jacket • Type TC

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • LSZH Jacket

27917Z	2	E2	44	3.30	83.8	.212 x .330	5.38 x 8.38	0.05	1.1
27337Z	2	E2	44	3.50	88.9	0.34	8.6	0.05	1.1
28331Z	3	E2	66	3.60	91.4	0.35	8.9	0.05	1.1
28338Z	4	E2	88	3.90	99.1	0.39	9.9	0.05	1.1
28339Z	5	E2	110	4.30	109.2	0.42	10.7	0.05	1.1
28615Z	6	E2	132	4.60	116.8	0.46	11.7	0.05	1.1
28323Z	7	E2	154	4.60	116.8	0.46	11.7	0.05	1.1
28616Z	8	E2	176	5.00	127.0	0.49	12.4	0.05	1.1
28340Z	9	E2	198	5.70	144.8	0.56	14.2	0.05	1.1
28617Z	10	E2	220	6.10	154.9	0.61	15.5	0.05	1.1
28618Z	11	E2	242	6.30	160.0	0.63	16.0	0.05	1.1
28341Z	12	E2	264	6.30	160.0	0.63	16.0	0.05	1.1
28619Z	13	E2	286	6.60	167.6	0.66	16.8	0.05	1.1
28620Z	14	E2	308	6.60	167.6	0.66	16.8	0.05	1.1
28621Z	15	E2	330	7.00	177.8	0.69	17.5	0.06	1.5
28330Z	16	E2	352	7.00	177.8	0.69	17.5	0.06	1.5
28622Z	17	E2	374	7.40	188.0	0.73	18.5	0.06	1.5
28623Z	18	E2	396	7.40	188.0	0.73	18.5	0.06	1.5
28624Z	19	E2	418	7.40	188.0	0.73	18.5	0.06	1.5
28625Z	20	E2	440	7.70	195.6	0.77	19.6	0.06	1.5
28324Z	25	E2	550	9.20	233.7	0.91	23.1	0.08	2.0
28626Z	30	E2	660	9.50	241.3	0.95	24.1	0.08	2.0
28627Z	37	E2	814	10.20	259.1	1.02	25.9	0.08	2.0
28628Z	50	E2	1100	11.90	302.3	1.19	30.2	0.08	2.0

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC (continued next page)

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets

Z27917Z	2	E2	44	5.69	144.6	0.47	12.0	0.05	1.1	0.06	1.4
Z27337Z	2	E2	44	5.81	147.7	0.48	12.3	0.05	1.1	0.06	1.4
Z28331Z	3	E2	66	5.93	150.7	0.49	12.6	0.05	1.1	0.06	1.4
Z28338Z	4	E2	88	6.41	162.9	0.53	13.6	0.05	1.1	0.06	1.4
Z28339Z	5	E2	110	6.98	177.3	0.58	14.8	0.05	1.1	0.06	1.4
Z28615Z	6	E2	132	7.46	189.5	0.62	15.8	0.05	1.1	0.06	1.4
Z28323Z	7	E2	154	7.46	189.5	0.62	15.8	0.05	1.1	0.06	1.4
Z28616Z	8	E2	176	7.82	198.6	0.65	16.6	0.05	1.1	0.06	1.4
Z28340Z	9	E2	198	8.66	220.0	0.72	18.3	0.05	1.1	0.06	1.4
Z28617Z	10	E2	220	9.26	235.2	0.77	19.6	0.05	1.1	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 16 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC (continued from previous page)

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z28618Z	11	E2	242	9.50	241.3	0.79	20.1	0.05	1.1	0.06	1.4
Z28341Z	12	E2	264	9.50	241.3	0.79	20.1	0.05	1.1	0.06	1.4
Z28619Z	13	E2	286	9.86	250.4	0.82	20.9	0.05	1.1	0.06	1.4
Z28620Z	14	E2	308	9.86	250.4	0.82	20.9	0.05	1.1	0.06	1.4
Z28621Z	15	E2	330	10.22	259.6	0.85	21.6	0.06	1.5	0.06	1.4
Z28330Z	16	E2	352	10.22	259.6	0.85	21.6	0.06	1.5	0.06	1.4
Z28622Z	17	E2	374	10.70	271.8	0.89	22.6	0.06	1.5	0.06	1.4
Z28623Z	18	E2	396	10.70	271.8	0.89	22.6	0.06	1.5	0.06	1.4
Z28624Z	19	E2	418	10.70	271.8	0.89	22.6	0.06	1.5	0.06	1.4
Z28625Z	20	E2	440	11.18	284.0	0.93	23.7	0.06	1.5	0.06	1.4
Z28324Z	25	E2	550	12.86	326.6	1.07	27.2	0.08	2.0	0.06	1.4
Z28626Z	30	E2	660	13.34	338.8	1.11	28.2	0.08	2.0	0.06	1.4
Z28627Z	37	E2	814	14.18	360.2	1.18	30.0	0.08	2.0	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC (continued next page)

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W27917Z	2	E2	44	7.22	183.5	0.60	15.3	0.05	1.1	0.06	1.4
W27337Z	2	E2	44	7.34	186.5	0.61	15.5	0.05	1.1	0.06	1.4
W28331Z	3	E2	66	7.46	189.6	0.62	15.8	0.05	1.1	0.06	1.4
W28338Z	4	E2	88	7.94	201.8	0.66	16.8	0.05	1.1	0.06	1.4
W28339Z	5	E2	110	8.30	210.9	0.69	17.6	0.05	1.1	0.06	1.4
W28615Z	6	E2	132	8.78	223.1	0.73	18.6	0.05	1.1	0.06	1.4
W28323Z	7	E2	154	8.78	223.1	0.73	18.6	0.05	1.1	0.06	1.4
W28616Z	8	E2	176	9.14	232.3	0.76	19.4	0.05	1.1	0.06	1.4
W28340Z	9	E2	198	9.98	253.6	0.83	21.1	0.05	1.1	0.06	1.4
W28617Z	10	E2	220	10.58	268.8	0.88	22.4	0.05	1.1	0.06	1.4
W28618Z	11	E2	242	10.82	274.9	0.90	22.9	0.05	1.1	0.06	1.4
W28341Z	12	E2	264	10.82	274.9	0.90	22.9	0.05	1.1	0.06	1.4
W28619Z	13	E2	286	11.18	284.1	0.93	23.7	0.05	1.1	0.06	1.4
W28620Z	14	E2	308	11.18	284.1	0.93	23.7	0.05	1.1	0.06	1.4
W28621Z	15	E2	330	11.54	293.2	0.96	24.4	0.06	1.5	0.06	1.4
W28330Z	16	E2	352	11.54	293.2	0.96	24.4	0.06	1.5	0.06	1.4
W28622Z	17	E2	374	12.02	305.4	1.00	25.5	0.06	1.5	0.06	1.4
W28623Z	18	E2	396	12.02	305.4	1.00	25.5	0.06	1.5	0.06	1.4
W28624Z	19	E2	418	12.02	305.4	1.00	25.5	0.06	1.5	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 16 AWG, Unshielded and Shielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC (continued from previous page)

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets

W28324Z	25	E2	550	14.18	360.3	1.18	30.0	0.08	2.0	0.06	1.4
W28626Z	30	E2	660	14.66	372.5	1.22	31.0	0.08	2.0	0.06	1.4
W28627Z	37	E2	814	15.50	393.8	1.29	32.8	0.08	2.0	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

16 AWG • Shielded 100%, Beldfoil • Thermoset Jacket • Type TC

Flexible Stranded (26 x 30) TC Conductors • XLPE Insulation • LSZH Jacket

27337ZS	2	E2	94	3.43	87.1	0.34	8.7	0.05	1.1
28331ZS	3	E2	130	3.53	89.7	0.35	9.0	0.05	1.1



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 14 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
14 AWG • Unshielded • Thermoset Jacket • Type TC									
Flexible Stranded (41 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
27080Z	2	E2	108	3.70	94.0	.24 x .37	6.1 x 9.4	0.05	1.1
27636Z	2	E2	108	3.70	94.0	0.36	9.1	0.05	1.1
28081Z	3	E2	162	3.80	96.5	0.38	9.7	0.05	1.1
28082Z	4	E2	216	4.20	106.7	0.42	10.7	0.05	1.1
28083Z	5	E2	270	4.60	116.8	0.45	11.4	0.05	1.1
28084Z	6	E2	324	5.00	127.0	0.50	12.7	0.05	1.1
28085Z	7	E2	378	5.00	127.0	0.50	12.7	0.05	1.1
28086Z	8	E2	432	5.70	144.8	0.57	14.5	0.05	1.1
28087Z	9	E2	486	6.20	157.5	0.62	15.7	0.05	1.1
28088Z	10	E2	540	6.70	170.2	0.66	16.8	0.06	1.5
28089Z	11	E2	594	6.90	175.3	0.68	17.3	0.06	1.5
28090Z	12	E2	648	6.90	175.3	0.68	17.3	0.06	1.5
28091Z	13	E2	702	7.20	182.9	0.72	18.3	0.06	1.5
28092Z	14	E2	756	7.20	182.9	0.72	18.3	0.06	1.5
28093Z	15	E2	810	7.60	193.0	0.76	19.3	0.06	1.5
28094Z	16	E2	864	7.60	193.0	0.76	19.3	0.06	1.5
28095Z	17	E2	918	8.00	203.2	0.80	20.3	0.06	1.5
28096Z	18	E2	972	8.00	203.2	0.80	20.3	0.06	1.5
28097Z	19	E2	1026	8.00	203.2	0.80	20.3	0.06	1.5
28098Z	20	E2	1080	8.90	226.1	0.88	22.4	0.06	1.5
28099Z	21	E2	1134	8.90	226.1	0.88	22.4	0.06	1.5
28100Z	22	E2	1188	9.30	236.2	0.92	23.4	0.06	1.5
28101Z	23	E2	1242	9.30	236.2	0.92	23.4	0.06	1.5
28102Z	24	E2	1296	9.80	248.9	0.97	24.6	0.06	1.5
28103Z	25	E2	1350	10.00	254.0	0.99	25.1	0.06	1.5
28104Z	26	E2	1404	10.00	254.0	0.99	25.1	0.06	1.5
28105Z	27	E2	1458	10.00	254.0	0.99	25.1	0.08	2.0
28106Z	28	E2	1512	10.30	261.6	1.03	26.2	0.08	2.0
28107Z	29	E2	1566	10.30	261.6	1.03	26.2	0.08	2.0
28108Z	30	E2	1620	10.30	261.6	1.03	26.2	0.08	2.0
28629Z	37	E2	1998	11.10	281.9	1.11	28.2	0.08	2.0
28912Z	50	E2	2700	13.00	330.2	1.30	33.0	0.08	2.0



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 14 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
14 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC											
Flexible Stranded (41 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z27080Z	2	E2	108	6.17	156.8	0.51	13.1	0.05	1.1	0.06	1.4
Z27636Z	2	E2	108	6.05	153.8	0.50	12.8	0.05	1.1	0.06	1.4
Z28081Z	3	E2	162	6.29	159.9	0.52	13.3	0.05	1.1	0.06	1.4
Z28082Z	4	E2	216	6.98	177.3	0.58	14.8	0.05	1.1	0.06	1.4
Z28083Z	5	E2	270	7.34	186.4	0.61	15.5	0.05	1.1	0.06	1.4
Z28084Z	6	E2	324	7.94	201.7	0.66	16.8	0.05	1.1	0.06	1.4
Z28085Z	7	E2	378	7.94	201.7	0.66	16.8	0.05	1.1	0.06	1.4
Z28086Z	8	E2	432	8.78	223.0	0.73	18.6	0.05	1.1	0.06	1.4
Z28087Z	9	E2	486	9.38	238.3	0.78	19.9	0.05	1.1	0.06	1.4
Z28088Z	10	E2	540	9.86	250.4	0.82	20.9	0.06	1.5	0.06	1.4
Z28089Z	11	E2	594	10.10	256.5	0.84	21.4	0.06	1.5	0.06	1.4
Z28090Z	12	E2	648	10.10	256.5	0.84	21.4	0.06	1.5	0.06	1.4
Z28091Z	13	E2	702	10.58	268.7	0.88	22.4	0.06	1.5	0.06	1.4
Z28092Z	14	E2	756	10.58	268.7	0.88	22.4	0.06	1.5	0.06	1.4
Z28093Z	15	E2	810	11.06	280.9	0.92	23.4	0.06	1.5	0.06	1.4
Z28094Z	16	E2	864	11.06	280.9	0.92	23.4	0.06	1.5	0.06	1.4
Z28095Z	17	E2	918	11.54	293.1	0.96	24.4	0.06	1.5	0.06	1.4
Z28096Z	18	E2	972	11.54	293.1	0.96	24.4	0.06	1.5	0.06	1.4
Z28097Z	19	E2	1026	11.54	293.1	0.96	24.4	0.06	1.5	0.06	1.4
Z28098Z	20	E2	1080	12.50	317.5	1.04	26.5	0.06	1.5	0.06	1.4
Z28099Z	21	E2	1134	12.50	317.5	1.04	26.5	0.06	1.5	0.06	1.4
Z28100Z	22	E2	1188	12.98	329.7	1.08	27.5	0.06	1.5	0.06	1.4
Z28101Z	23	E2	1242	12.98	329.7	1.08	27.5	0.06	1.5	0.06	1.4
Z28102Z	24	E2	1296	13.58	344.9	1.13	28.7	0.06	1.5	0.06	1.4
Z28103Z	25	E2	1350	13.82	351.0	1.15	29.3	0.06	1.5	0.06	1.4
Z28104Z	26	E2	1404	13.82	351.0	1.15	29.3	0.06	1.5	0.06	1.4
Z28105Z	27	E2	1458	13.82	351.0	1.15	29.3	0.08	2.0	0.06	1.4
Z28106Z	28	E2	1512	14.30	363.2	1.19	30.3	0.08	2.0	0.06	1.4
Z28107Z	29	E2	1566	14.30	363.2	1.19	30.3	0.08	2.0	0.06	1.4
Z28108Z	30	E2	1620	14.30	363.2	1.19	30.3	0.08	2.0	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 14 AWG, Unshielded and Shielded,
Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
14 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded (41 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W27080Z	2	E2	108	7.70	195.7	0.64	16.3	0.05	1.1	0.06	1.4
W27636Z	2	E2	108	7.58	192.6	0.63	16.1	0.05	1.1	0.06	1.4
W28081Z	3	E2	162	7.82	198.7	0.65	16.6	0.05	1.1	0.06	1.4
W28082Z	4	E2	216	8.30	210.9	0.69	17.6	0.05	1.1	0.06	1.4
W28083Z	5	E2	270	8.66	220.1	0.72	18.3	0.05	1.1	0.06	1.4
W28084Z	6	E2	324	9.26	235.3	0.77	19.6	0.05	1.1	0.06	1.4
W28085Z	7	E2	378	9.26	235.3	0.77	19.6	0.05	1.1	0.06	1.4
W28086Z	8	E2	432	10.10	256.6	0.84	21.4	0.05	1.1	0.06	1.4
W28087Z	9	E2	486	10.70	271.9	0.89	22.7	0.05	1.1	0.06	1.4
W28088Z	10	E2	540	11.18	284.1	0.93	23.7	0.06	1.5	0.06	1.4
W28089Z	11	E2	594	11.42	290.2	0.95	24.2	0.06	1.5	0.06	1.4
W28090Z	12	E2	648	11.42	290.2	0.95	24.2	0.06	1.5	0.06	1.4
W28091Z	13	E2	702	11.90	302.4	0.99	25.2	0.06	1.5	0.06	1.4
W28092Z	14	E2	756	11.90	302.4	0.99	25.2	0.06	1.5	0.06	1.4
W28093Z	15	E2	810	12.38	314.6	1.03	26.2	0.06	1.5	0.06	1.4
W28094Z	16	E2	864	12.38	314.6	1.03	26.2	0.06	1.5	0.06	1.4
W28095Z	17	E2	918	12.86	326.7	1.07	27.2	0.06	1.5	0.06	1.4
W28096Z	18	E2	972	12.86	326.7	1.07	27.2	0.06	1.5	0.06	1.4
W28097Z	19	E2	1026	12.86	326.7	1.07	27.2	0.06	1.5	0.06	1.4
W28098Z	20	E2	1080	13.82	351.1	1.15	29.3	0.06	1.5	0.06	1.4
W28099Z	21	E2	1134	13.82	351.1	1.15	29.3	0.06	1.5	0.06	1.4
W28100Z	22	E2	1188	14.30	363.3	1.19	30.3	0.06	1.5	0.06	1.4
W28101Z	23	E2	1242	14.30	363.3	1.19	30.3	0.06	1.5	0.06	1.4
W28102Z	24	E2	1296	14.90	378.6	1.24	31.5	0.06	1.5	0.06	1.4
W28103Z	25	E2	1350	15.14	384.7	1.26	32.1	0.06	1.5	0.06	1.4
W28104Z	26	E2	1404	15.14	384.7	1.26	32.1	0.06	1.5	0.06	1.4
W28105Z	27	E2	1458	15.14	384.7	1.26	32.1	0.08	2.0	0.06	1.4
W28106Z	28	E2	1512	15.62	396.8	1.30	33.1	0.08	2.0	0.06	1.4
W28107Z	29	E2	1566	15.62	396.8	1.30	33.1	0.08	2.0	0.06	1.4
W28108Z	30	E2	1620	15.62	396.8	1.30	33.1	0.08	2.0	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
14 AWG • Shielded 100%, Beldfoil • Thermoset Jacket • Type TC									
Flexible Stranded (41 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
28081ZS	3	E2	99	3.83	97.3	0.38	9.7	0.05	1.1
28082ZS	4	E2	273	4.23	107.4	0.42	10.7	0.05	1.1



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 12 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
12 AWG • Unshielded • Thermoset Jacket • Type TC									
Flexible Stranded (65 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
27109Z	2	E2	172	4.10	104.1	0.40	10.2	0.05	1.1
27641Z	2	E2	172	4.10	104.1	0.40	10.2	0.05	1.1
28110Z	3	E2	258	4.20	106.7	0.42	10.7	0.05	1.1
28111Z	4	E2	344	4.60	116.8	0.46	11.7	0.05	1.1
28112Z	5	E2	430	5.00	127.0	0.50	12.7	0.05	1.1
28113Z	6	E2	516	6.00	152.4	0.59	15.0	0.05	1.1
28114Z	7	E2	602	6.00	152.4	0.59	15.0	0.05	1.1
28115Z	8	E2	688	6.40	162.6	0.64	16.3	0.06	1.5
28116Z	9	E2	774	6.90	175.3	0.69	17.5	0.06	1.5
28117Z	10	E2	860	7.50	190.5	0.75	19.1	0.06	1.5
28118Z	11	E2	946	7.70	195.6	0.77	19.6	0.06	1.5
28119Z	12	E2	1032	7.70	195.6	0.77	19.6	0.06	1.5
28120Z	13	E2	1118	8.10	205.7	0.81	20.6	0.06	1.5
28121Z	14	E2	1204	8.20	208.3	0.81	20.6	0.06	1.5
28122Z	15	E2	1290	9.00	228.6	0.90	22.9	0.06	1.5
28123Z	16	E2	1376	9.00	228.6	0.90	22.9	0.06	1.5
28124Z	17	E2	1462	9.50	241.3	0.95	24.1	0.06	1.5
28125Z	18	E2	1548	9.50	241.3	0.95	24.1	0.06	1.5
28126Z	19	E2	1634	9.50	241.3	0.95	24.1	0.06	1.5
28127Z	20	E2	1720	10.00	254.0	0.99	25.1	0.08	2.0
28128Z	21	E2	1806	10.00	254.0	0.99	25.1	0.08	2.0
28129Z	22	E2	1892	10.50	266.7	1.04	26.4	0.08	2.0
28130Z	23	E2	1978	10.50	266.7	1.04	26.4	0.08	2.0
28131Z	24	E2	2064	11.00	279.4	1.10	27.9	0.08	2.0
28132Z	25	E2	2150	11.30	287.0	1.12	28.4	0.08	2.0
28133Z	26	E2	2236	11.30	287.0	1.12	28.4	0.08	2.0
28134Z	27	E2	2322	11.30	287.0	1.12	28.4	0.08	2.0
28135Z	28	E2	2408	11.70	297.2	1.16	29.5	0.08	2.0
28136Z	29	E2	2494	11.70	297.2	1.16	29.5	0.08	2.0
28137Z	30	E2	2580	11.70	297.2	1.16	29.5	0.08	2.0
28630Z	37	E2	3182	12.60	320.0	1.26	32.0	0.08	2.0
28634Z	50	E2	4300	14.80	375.9	1.47	37.3	0.08	2.0



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 12 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC											
Flexible Stranded (65 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z27109Z	2	E2	172	6.64	171.2	0.55	14.3	0.05	1.1	0.06	1.4
Z27641Z	2	E2	172	6.64	171.2	0.55	14.3	0.05	1.1	0.06	1.4
Z28110Z	3	E2	258	6.87	177.3	0.57	14.8	0.05	1.1	0.06	1.4
Z28111Z	4	E2	344	7.34	189.5	0.61	15.8	0.05	1.1	0.06	1.4
Z28112Z	5	E2	430	7.82	201.7	0.65	16.8	0.05	1.1	0.06	1.4
Z28113Z	6	E2	516	8.88	229.1	0.74	19.1	0.05	1.1	0.06	1.4
Z28114Z	7	E2	602	8.88	229.1	0.74	19.1	0.05	1.1	0.06	1.4
Z28115Z	8	E2	688	9.47	244.4	0.79	20.4	0.06	1.5	0.06	1.4
Z28116Z	9	E2	774	10.06	259.6	0.84	21.6	0.06	1.5	0.06	1.4
Z28117Z	10	E2	860	10.77	277.9	0.90	23.2	0.06	1.5	0.06	1.4
Z28118Z	11	E2	946	11.01	284.0	0.92	23.7	0.06	1.5	0.06	1.4
Z28119Z	12	E2	1032	11.01	284.0	0.92	23.7	0.06	1.5	0.06	1.4
Z28120Z	13	E2	1118	11.48	296.2	0.96	24.7	0.06	1.5	0.06	1.4
Z28121Z	14	E2	1204	11.48	296.2	0.96	24.7	0.06	1.5	0.06	1.4
Z28122Z	15	E2	1290	12.54	323.6	1.05	27.0	0.06	1.5	0.06	1.4
Z28123Z	16	E2	1376	12.54	323.6	1.05	27.0	0.06	1.5	0.06	1.4
Z28124Z	17	E2	1462	13.13	338.8	1.09	28.2	0.06	1.5	0.06	1.4
Z28125Z	18	E2	1548	13.13	338.8	1.09	28.2	0.06	1.5	0.06	1.4
Z28126Z	19	E2	1634	13.13	338.8	1.09	28.2	0.06	1.5	0.06	1.4
Z28127Z	20	E2	1720	13.61	351.0	1.13	29.3	0.08	2.0	0.06	1.4
Z28128Z	21	E2	1806	13.61	351.0	1.13	29.3	0.08	2.0	0.06	1.4
Z28129Z	22	E2	1892	14.20	366.3	1.18	30.5	0.08	2.0	0.06	1.4
Z28130Z	23	E2	1978	14.20	366.3	1.18	30.5	0.08	2.0	0.06	1.4
Z28131Z	24	E2	2064	14.91	384.6	1.24	32.0	0.08	2.0	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 12 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded (65 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W27109Z	2	E2	172	8.06	204.8	0.67	17.1	0.05	1.1	0.06	1.4
W27641Z	2	E2	172	8.06	204.8	0.67	17.1	0.05	1.1	0.06	1.4
W28110Z	3	E2	258	8.30	210.9	0.69	17.6	0.05	1.1	0.06	1.4
W28111Z	4	E2	344	8.78	223.1	0.73	18.6	0.05	1.1	0.06	1.4
W28112Z	5	E2	430	9.26	235.3	0.77	19.6	0.05	1.1	0.06	1.4
W28113Z	6	E2	516	10.34	262.7	0.86	21.9	0.05	1.1	0.06	1.4
W28114Z	7	E2	602	10.34	262.7	0.86	21.9	0.05	1.1	0.06	1.4
W28115Z	8	E2	688	10.94	278.0	0.91	23.2	0.06	1.5	0.06	1.4
W28116Z	9	E2	774	11.54	293.2	0.96	24.4	0.06	1.5	0.06	1.4
W28117Z	10	E2	860	12.26	311.5	1.02	26.0	0.06	1.5	0.06	1.4
W28118Z	11	E2	946	12.50	317.6	1.04	26.5	0.06	1.5	0.06	1.4
W28119Z	12	E2	1032	12.50	317.6	1.04	26.5	0.06	1.5	0.06	1.4
W28120Z	13	E2	1118	12.98	329.8	1.08	27.5	0.06	1.5	0.06	1.4
W28121Z	14	E2	1204	12.98	329.8	1.08	27.5	0.06	1.5	0.06	1.4
W28122Z	15	E2	1290	14.06	357.2	1.17	29.8	0.06	1.5	0.06	1.4
W28123Z	16	E2	1376	14.06	357.2	1.17	29.8	0.06	1.5	0.06	1.4
W28124Z	17	E2	1462	14.66	372.5	1.22	31.0	0.06	1.5	0.06	1.4
W28125Z	18	E2	1548	14.66	372.5	1.22	31.0	0.06	1.5	0.06	1.4
W28126Z	19	E2	1634	14.66	372.5	1.22	31.0	0.06	1.5	0.06	1.4
W28127Z	20	E2	1720	15.14	384.7	1.26	32.1	0.08	2.0	0.06	1.4
W28128Z	21	E2	1806	15.14	384.7	1.26	32.1	0.08	2.0	0.06	1.4
W28129Z	22	E2	1892	15.74	399.9	1.31	33.3	0.08	2.0	0.06	1.4
W28130Z	23	E2	1978	15.74	399.9	1.31	33.3	0.08	2.0	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 10 AWG, Unshielded, Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
10 AWG • Unshielded • Thermoset Jacket • Type TC									
Flexible Stranded (105 x 30) TC Conductors • XLPE Insulation • LSZH Jacket									
27138Z	2	E2	296	4.50	114.3	0.44	11.2	0.045	1.14
27643Z	2	E2	296	4.50	114.3	0.44	11.2	0.045	1.14
28139Z	3	E2	444	4.70	119.38	0.47	11.9	0.045	1.14
28140Z	4	E2	592	5.20	132.08	0.51	13.0	0.045	1.14
28141Z	5	E2	740	6.00	152.4	0.60	15.2	0.06	1.52
28142Z	6	E2	888	6.60	167.64	0.65	16.5	0.06	1.52
28143Z	7	E2	1036	6.60	167.64	0.65	16.5	0.06	1.52
28144Z	8	E2	1184	7.10	180.34	0.71	18.0	0.06	1.52
28145Z	9	E2	1332	7.60	193.04	0.76	19.3	0.06	1.52
28146Z	10	E2	1480	8.70	220.98	0.87	22.1	0.06	1.52
28147Z	11	E2	1628	9.00	228.6	0.90	22.9	0.06	1.52
28148Z	12	E2	1776	9.00	228.6	0.90	22.9	0.08	2.03

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
10 AWG • Unshielded • Double Thermoset Jackets • Bronze Braid Armor • Type TC											
Flexible Stranded (105 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z27138Z	2	E2	296	7.22	183.4	0.60	15.3	0.045	1.14	0.06	1.4
Z27643Z	2	E2	296	7.22	183.4	0.60	15.3	0.045	1.14	0.06	1.4
Z28139Z	3	E2	444	7.58	192.5	0.63	16.0	0.045	1.14	0.06	1.4
Z28140Z	4	E2	592	8.06	204.7	0.67	17.1	0.045	1.14	0.06	1.4
Z28141Z	5	E2	740	9.14	232.2	0.76	19.3	0.06	1.52	0.06	1.4
Z28142Z	6	E2	888	9.74	247.4	0.81	20.6	0.06	1.52	0.06	1.4
Z28143Z	7	E2	1036	9.74	247.4	0.81	20.6	0.06	1.52	0.06	1.4
Z28144Z	8	E2	1184	10.46	265.7	0.87	22.1	0.06	1.52	0.06	1.4
Z28145Z	9	E2	1332	11.06	280.9	0.92	23.4	0.06	1.52	0.06	1.4
Z28146Z	10	E2	1480	12.38	314.5	1.03	26.2	0.06	1.52	0.06	1.4
Z28147Z	11	E2	1628	12.74	323.6	1.06	27.0	0.06	1.52	0.06	1.4
Z28148Z	12	E2	1776	12.74	323.6	1.06	27.0	0.08	2.03	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 8 AWG, Unshielded - 10 AWG
Uninsulated Ground Wire, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

10 AWG • Unshielded • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded (105 x 30) TC Conductors • XLPE Insulation • Double LSZH Jackets

W27138Z	2	E2	296	8.54	217.0	0.71	18.1	0.045	1.14	0.06	1.4
W27643Z	2	E2	296	8.54	217.0	0.71	18.1	0.045	1.14	0.06	1.4
W28139Z	3	E2	444	8.90	226.2	0.74	18.8	0.045	1.14	0.06	1.4
W28140Z	4	E2	592	9.38	238.4	0.78	19.9	0.045	1.14	0.06	1.4
W28141Z	5	E2	740	10.46	265.8	0.87	22.1	0.06	1.52	0.06	1.4
W28142Z	6	E2	888	11.06	281.0	0.92	23.4	0.06	1.52	0.06	1.4
W28143Z	7	E2	1036	11.06	281.0	0.92	23.4	0.06	1.52	0.06	1.4
W28144Z	8	E2	1184	11.78	299.3	0.98	24.9	0.06	1.52	0.06	1.4
W28145Z	9	E2	1332	12.38	314.6	1.03	26.2	0.06	1.52	0.06	1.4
W28146Z	10	E2	1480	13.70	348.1	1.14	29.0	0.06	1.52	0.06	1.4
W28147Z	11	E2	1628	14.06	357.2	1.17	29.8	0.06	1.52	0.06	1.4
W28148Z	12	E2	1776	14.06	357.2	1.17	29.8	0.08	2.03	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 8 AWG, Unshielded - 10 AWG

Uninsulated Ground Wire, Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

8 AWG • Unshielded - 10 AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC

Flexible Stranded (7 x 19 x 29) TC Conductors • XLPE Insulation • LSZH Jacket

Z28149Z	2	E2	384	6.00	152.4	0.60	15.2	0.06	1.52
Z28150Z	3	E2	576	6.40	162.6	0.63	16.0	0.06	1.52
Z28151Z	4	E2	768	7.00	177.8	0.69	17.5	0.06	1.52

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

8 AWG • Unshielded - 10 AWG Uninsulated Ground Wire • Bronze Braid Armor • Double Thermoset Jackets • Type TC

Flexible Stranded (7 x 19 x 29) TC Conductors • XLPE Insulation • Double LSZH Jackets

Z28149Z	2	E2	296	9.14	232.2	0.76	19.3	0.06	1.52	0.06	1.4
Z28150Z	3	E2	296	9.50	241.3	0.79	20.1	0.06	1.52	0.06	1.4
Z28151Z	4	E2	444	10.22	259.6	0.85	21.6	0.06	1.52	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

8 AWG • Unshielded - 10 AWG Uninsulated Ground Wire • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded (7 x 19 x 29) TC Conductors • XLPE Insulation • Double LSZH Jackets

W28149Z	2	E2	296	10.46	265.8	0.87	22.1	0.06	1.52	0.06	1.4
W28150Z	3	E2	296	10.82	274.9	0.90	22.9	0.06	1.52	0.06	1.4
W28151Z	4	E2	444	11.54	293.2	0.96	24.4	0.06	1.52	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 6 AWG, Unshielded - 8 AWG
Uninsulated Ground Wire, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
6 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC									
Flexible Stranded (7 x 19 x 27) TC Conductors • XLPE Insulation • LSZH Jacket									
Z28152Z	2	E2	610	6.8	172.7	0.67	17.0	0.06	1.52
Z28153Z	3	E2	915	7.2	182.9	0.71	18.0	0.06	1.52
Z28154Z	4	E2	1220	7.9	200.7	0.78	19.8	0.06	1.52

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
6 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Bronze Braid Armor • Double Thermoset Jackets • Type TC											
Flexible Stranded (7 x 19 x 27) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z28152Z	2	E2	296	9.98	253.5	0.83	21.1	0.06	1.52	0.06	1.4
Z28153Z	2	E2	296	10.46	265.7	0.87	22.1	0.06	1.52	0.06	1.4
Z28154Z	3	E2	444	11.30	287.0	0.94	23.9	0.06	1.52	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
6 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded (7 x 19 x 27) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W28152Z	2	E2	296	11.30	287.1	0.94	23.9	0.06	1.52	0.06	1.4
W28153Z	2	E2	296	11.78	299.3	0.98	24.9	0.06	1.52	0.06	1.4
W28154Z	3	E2	444	12.62	320.6	1.05	26.7	0.06	1.52	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 4 AWG, Unshielded - 8 AWG

Uninsulated Ground Wire, Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

4 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC

Flexible Stranded (7 x 19 x 25) TC Conductors • XLPE Insulation • LSZH Jacket

28155Z	2	E2	970	7.7	195.6	0.77	19.6	0.06	1.52
28156Z	3	E2	1455	8.2	208.3	0.81	20.6	0.08	2.03
28157Z	4	E2	1940	9.5	241.3	0.94	23.9	0.08	2.03

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

4 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Bronze Braid Armor • Double Thermoset Jackets • Type TC

Flexible Stranded (7 x 19 x 25) TC Conductors • XLPE Insulation • Double LSZH Jackets

Z28155Z	2	E2	970	11.18	284.0	0.93	23.7	0.06	1.52	0.06	1.4
Z28156Z	2	E2	1455	11.66	296.2	0.97	24.7	0.08	2.03	0.06	1.4
Z28157Z	3	E2	1940	13.22	335.8	1.10	28.0	0.08	2.03	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

4 AWG • Unshielded - 8 AWG Uninsulated Ground Wire • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded (7 x 19 x 25) TC Conductors • XLPE Insulation • Double LSZH Jackets

W28155Z	2	E2	970	12.50	317.6	1.04	26.5	0.06	1.52	0.06	1.4
W28156Z	2	E2	1455	12.98	329.8	1.08	27.5	0.08	2.03	0.06	1.4
W28157Z	3	E2	1940	14.54	369.4	1.21	30.8	0.08	2.03	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 2 AWG, Unshielded - 6 AWG
Uninsulated Ground Wire, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
2 AWG • Unshielded - 6 AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC									
Flexible Stranded (7 x 19 x 23) TC Conductors • XLPE Insulation • LSZH Jacket									
28158Z	2	E2	1544	9.3	236.2	0.93	23.6	0.08	2.03
28159Z	3	E2	2316	9.8	248.9	0.98	24.9	0.08	2.03

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2 AWG • Unshielded - 6 AWG Uninsulated Ground Wire • Bronze Braid Armor • Double Thermoset Jackets • Type TC											
Flexible Stranded (7 x 19 x 23) TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z28158Z	2	E2	1544	13.10	332.7	1.09	27.7	0.08	2.03	0.06	1.4
Z28159Z	2	E2	2316	13.70	348.0	1.14	29.0	0.08	2.03	0.06	1.4

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2 AWG • Unshielded - 6 AWG Uninsulated Ground Wire • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded (7 x 19 x 23) TC Conductors • XLPE Insulation • Double LSZH Jackets											
W28158Z	2	E2	1544	14.42	366.4	1.20	30.5	0.08	2.03	0.06	1.4
W28159Z	2	E2	2316	15.02	381.6	1.25	31.8	0.08	2.03	0.06	1.4



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 1 AWG to 4/0 AWG, Unshielded,
Thermoset Jacket

Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1 AWG • Unshielded - 6AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC											
Flexible Stranded (7 x 19 x 22) TC Conductors • XLPE Insulation • LSZH Jacket											
28161Z	2	E2	2919	12.00	304.8	1.19	30.2	0.08	2.0	-	-
1/0 AWG • Unshielded - 6AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC											
Flexible Stranded (7 x 19 x 21) TC Conductors • XLPE Insulation • LSZH Jacket											
28167Z	2	E2	1690	11.40	289.6	1.13	28.7	0.08	2.0	-	-
28168Z	3	E2	2535	12.10	307.3	1.21	30.7	0.08	2.1	-	-
28169Z	4	E2	3380	13.20	335.3	1.32	33.5	0.08	2.1	-	-
2/0 AWG • Unshielded - 6AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC											
Flexible Stranded (7 x 19 x 20) TC Conductors • XLPE Insulation • LSZH Jacket											
28170Z	2	E2	2130	12.20	309.9	1.21	30.7	0.08	2.1	-	-
28171Z	3	E2	3195	13.00	330.2	1.30	33.0	0.08	2.1	-	-
28172Z	4	E2	4260	14.30	363.2	1.43	36.3	0.08	2.1	-	-



MarineTuff® UL Control Cable

600 V Type TC (or MC) Cables, 1 AWG to 4/0 AWG, Unshielded, Thermoset Jacket



Part No.	Conductors	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
3/0 AWG • Unshielded - 6AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC											
Flexible Stranded (7 x 19 x 19) TC Conductors • XLPE Insulation • LSZH Jacket											
28173Z	2	E2	2686	14.20	360.7	1.41	35.8	0.08	2.1	–	–
28174Z	3	E2	4029	15.20	386.1	1.51	38.4	0.08	2.1	–	–
28175Z	4	E2	5372	15.50	393.7	1.55	39.4	0.08	2.1	–	–
4/0 AWG • Unshielded - 6AWG Uninsulated Ground Wire • Thermoset Jacket • Type TC											
Flexible Stranded (7 x 19 x 18) TC Conductors • XLPE Insulation • LSZH Jacket											
28176Z	2	E2	3386	13.20	335.3	1.31	33.3	0.08	2.1	–	–
28177Z	3	E2	5078	15.20	386.1	1.51	38.4	0.08	2.1	–	–
28178Z	4	E2	6771	17.50	444.5	1.75	44.5	0.12	3.0	–	–



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables

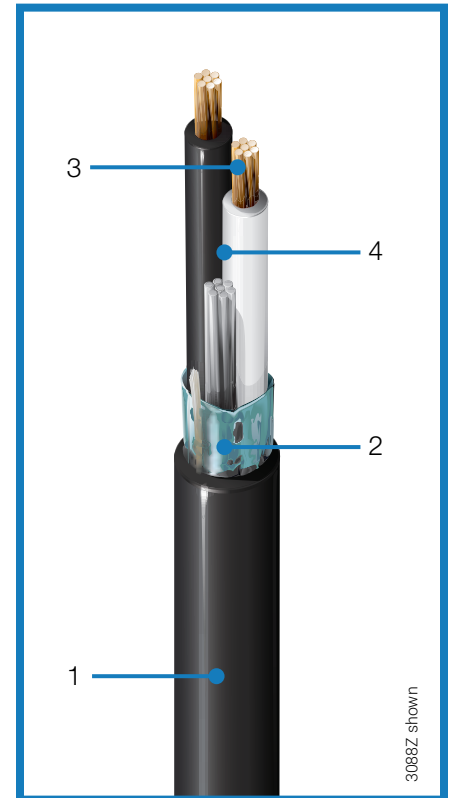
Featured Options:

- Bronze Braid Armoring
- Continuous Aluminum Armor (ABS) - Type MC
- LSZH Thermoset Jacket (Standard)
- Type P Rated Insulations
- Sunlight and Oil Resistant
- Unshielded, overall shield, or individually shielded

Certifications/Compliance

- ABS (American Bureau of Shipping)
- IEEE 45 Electrical Installation on Shipboard
- IEEE 1580 Type P insulations (recommended practice for marine cables for use on shipboard in fixed or floating facilities)
- UL 1309 marine shipboard cables
- IEC 60811-2-1 compliant for hydrocarbon resistance
- IEC 60754-1 compliant jacket for halogen content
- IEC 60754-2 compliant for acid gas emissions
- IEC 60092-350 electrical installation on ships
- UL 1277 TC-ER crush and impact resistance (UL TC for 2-conductor cables)
- IEEE 1202 and FT4 flame-resistance
- IEC 60332-3-22

*excludes continuous armored constructions



Construction:

1. LSZH Thermoset Jacket
2. Beldfoil Shield
3. Flexible Stranded Tinned Copper Conductors
4. XLP Insulation

NOTE: Also available on all options, bronze braid armor with LSZH second jacket, continuous armor with LSZH second jacket, overall foil shield 100% coverage (not pictured).



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables, 18 AWG, Shielded, Thermoset Jacket



Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket									
1120Z	1	E2	59	3.20	81.3	0.32	8.1	0.05	1.2
3088Z	1	E1	67	3.20	81.3	0.32	8.1	0.05	1.2
1048Z	2	E1	140	5.10	129.5	0.51	13.0	0.05	1.2
1049Z	4	E1	258	6.30	160.0	0.63	16.0	0.05	1.3
1050Z	8	E1	350	8.00	203.2	0.79	20.1	0.06	1.6
1051Z	12	E1	728	10.10	256.5	1.01	25.7	0.06	1.6
1052Z	16	E1	963	11.30	287.0	1.12	28.4	0.08	2.1
1053Z	24	E1	1434	13.90	353.1	1.38	35.1	0.08	2.1
1054Z	36	E1	2139	15.90	403.9	1.58	40.1	0.08	2.1
1038Z	50	E1	2962	19.40	492.8	1.94	49.3	0.08	2.1

Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z1120Z	1	E2	59	5.57	141.6	0.46	11.8	0.05	1.2	0.06	1.4
Z3088Z	1	E1	67	5.57	141.6	0.46	11.8	0.05	1.2	0.06	1.4
Z1048Z	2	E1	140	7.85	199.5	0.65	16.6	0.05	1.2	0.06	1.4
Z1049Z	4	E1	258	9.29	236.1	0.77	19.7	0.05	1.3	0.06	1.4
Z1050Z	8	E1	350	11.21	284.8	0.93	23.7	0.06	1.6	0.06	1.4
Z1051Z	12	E1	728	13.85	351.9	1.15	29.3	0.06	1.6	0.06	1.4

Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
W1120Z	1	E2	59	7.10	180.4	0.59	15.0	0.05	1.2	0.06	1.4
W3088Z	1	E1	67	7.10	180.4	0.59	15.0	0.05	1.2	0.06	1.4
W1048Z	2	E1	140	9.38	238.4	0.78	19.9	0.05	1.2	0.06	1.4
W1049Z	4	E1	258	10.82	274.9	0.90	22.9	0.05	1.3	0.06	1.4
W1050Z	8	E1	350	12.74	323.7	1.06	27.0	0.06	1.6	0.06	1.4
W1051Z	12	E1	728	15.38	390.8	1.28	32.6	0.06	1.6	0.06	1.4



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables, 18 AWG, Shielded, Thermoset Jacket



Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket

1121Z	1	E2	81	3.30	83.8	0.32	8.1	0.05	1.2
3089Z	1	E1	90	3.30	83.8	0.32	8.1	0.05	1.2
3064Z	2	E1	185	6.00	152.4	0.59	15.0	0.05	1.2
1093Z	4	E1	347	6.90	175.3	0.68	17.3	0.06	1.6
1094Z	8	E1	672	9.40	238.8	0.94	23.9	0.06	1.6
1095Z	12	E1	997	11.30	287.0	1.13	28.7	0.08	2.1
1096Z	24	E1	1971	15.60	396.2	1.56	39.6	0.08	2.1

Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets

Z1121Z	1	E2	81	5.57	141.6	0.46	11.8	0.05	1.2	0.055	1.4
Z3089Z	1	E1	90	5.57	141.6	0.46	11.8	0.05	1.2	0.055	1.4
Z3064Z	2	E1	185	8.81	223.9	0.73	18.7	0.05	1.2	0.055	1.4
Z1093Z	4	E1	347	9.89	251.3	0.82	20.9	0.06	1.6	0.055	1.4
Z1094Z	8	E1	672	13.01	330.5	1.08	27.5	0.06	1.6	0.055	1.4

Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

18 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets

W1121Z	1	E2	81	7.10	180.4	0.59	15.0	0.05	1.2	0.06	1.4
W3089Z	1	E1	90	7.10	180.4	0.59	15.0	0.05	1.2	0.06	1.4
W3064Z	2	E1	185	10.34	262.7	0.86	21.9	0.05	1.2	0.06	1.4
W1093Z	4	E1	347	11.42	290.2	0.95	24.2	0.06	1.6	0.06	1.4
W1094Z	8	E1	672	14.54	369.4	1.21	30.8	0.06	1.6	0.06	1.4



MarineTuff® UL Instrumentation Cable 600 V Type TC (or MC) Cables, 16 AWG, Shielded, Thermoset Jacket



Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm
16 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC									
Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket									
1118Z	1	E2	105	3.50	88.9	0.34	8.64	0.05	1.2
3090Z	1	E1	105	3.50	88.9	0.34	8.64	0.05	1.2
1055Z	2	E1	223	5.90	149.9	0.58	14.73	0.05	1.2
1037Z	3	E1	290	6.20	157.5	0.62	15.75	0.05	1.2
1039Z	4	E1	411	6.80	172.7	0.68	17.27	0.06	1.6
1040Z	6	E1	428	8.00	203.2	0.80	20.32	0.06	1.6
1041Z	8	E1	786	9.00	228.6	0.90	22.86	0.06	1.6
1042Z	12	E1	1161	11.00	279.4	1.10	27.94	0.09	2.2
1043Z	16	E1	1537	12.30	312.4	1.22	30.99	0.09	2.2
1044Z	20	E1	1912	13.60	345.4	1.36	34.54	0.09	2.2
1045Z	24	E1	2287	15.20	386.1	1.51	38.35	0.09	2.2
1046Z	36	E1	3413	18.10	459.7	1.80	45.72	0.09	2.2
1047Z	50	E1	4726	21.20	538.5	2.12	53.85	0.12	3.0

Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
16 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z1118Z	1	E2	105	5.81	147.7	0.48	12.3	0.05	1.2	0.06	1.4
Z3090Z	1	E1	105	5.81	147.7	0.48	12.3	0.05	1.2	0.06	1.4
Z1055Z	2	E1	223	8.69	220.8	0.72	18.4	0.05	1.2	0.06	1.4
Z1037Z	3	E1	290	9.17	233.0	0.76	19.4	0.05	1.2	0.06	1.4
Z1039Z	4	E1	411	9.89	251.3	0.82	20.9	0.06	1.6	0.06	1.4
Z1040Z	6	E1	428	11.33	287.9	0.94	24.0	0.06	1.6	0.06	1.4
Z1041Z	8	E1	786	12.53	318.3	1.04	26.5	0.06	1.6	0.06	1.4
Z1042Z	12	E1	1161	14.93	379.3	1.24	31.6	0.09	2.2	0.06	1.4



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables, 16 AWG, Shielded, Thermoset Jacket



Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets

W1118Z	1	E2	105	7.34	186.5	0.61	15.5	0.05	1.2	0.06	1.4
W3090Z	1	E1	105	7.34	186.5	0.61	15.5	0.05	1.2	0.06	1.4
W1055Z	2	E1	223	10.22	259.7	0.85	21.6	0.05	1.2	0.06	1.4
W1037Z	3	E1	290	10.70	271.9	0.89	22.7	0.05	1.2	0.06	1.4
W1039Z	4	E1	411	11.42	290.2	0.95	24.2	0.06	1.6	0.06	1.4
W1040Z	6	E1	428	12.86	326.7	1.07	27.2	0.06	1.6	0.06	1.4
W1041Z	8	E1	786	14.06	357.2	1.17	29.8	0.06	1.6	0.06	1.4

Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm

16 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket

1119Z	1	E2	129	3.60	91.4	0.35	8.9	0.05	1.2
3091Z	1	E1	129	3.60	91.4	0.35	8.9	0.05	1.2
1097Z	4	E1	554	7.40	188.0	0.74	18.8	0.06	1.6
1098Z	8	E1	1072	10.20	259.1	1.02	25.9	0.09	2.2
1099Z	12	E1	1590	12.40	315.0	1.24	31.5	0.09	2.2
3118Z	16	E1	1771	15.10	383.5	1.51	38.4	0.09	2.2
1100Z	24	E1	3144	17.90	454.7	1.78	45.2	0.09	2.2
3130Z	36	E1	3600	22.60	574.0	2.26	57.4	0.11	2.8

Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm

16 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC

Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets

Z1119Z	1	E2	129	9.77	248.0	0.38	9.8	0.05	1.2	0.06	1.4
Z3091Z	1	E1	129	9.77	248.0	0.38	9.8	0.05	1.2	0.06	1.4
Z1097Z	4	E1	554	20.11	510.8	0.79	20.1	0.06	1.6	0.06	1.4
Z1098Z	8	E1	1072	27.22	691.4	1.07	27.2	0.09	2.2	0.06	1.4



MarineTuff® UL Instrumentation Cable 600 V Type TC (or MC) Cables, 16 AWG, Shielded, Thermoset Jacket



Part No.	Triads	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
16 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
W1119Z	1	E2	129	13.00	330.3	0.51	13.0	0.05	1.2	0.06	1.4
W3091Z	1	E1	129	13.00	330.3	0.51	13.0	0.05	1.2	0.06	1.4
W1097Z	4	E1	554	22.91	581.9	0.90	22.9	0.06	1.6	0.06	1.4
W1098Z	8	E1	1072	30.02	762.6	1.18	30.0	0.09	2.2	0.06	1.4



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables, 14 AWG, Shielded, Thermoset Jacket



Part No.	Pairs	Color Code	Pull Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm
14 AWG • Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC											
Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket											
3080Z	1	E1	160	3.70	94.0	0.37	9.4	0.05	1.2	–	–
14 AWG • Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z3080Z	1	E1	160	6.17	0.6	0.51	13.1	0.05	1.2	0.06	1.4
14 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
W3080Z	1	E1	160	7.70	195.7	0.64	16.3	0.05	1.2	0.06	1.4
14 AWG • Overall Shield 100% Beldfoil Triads • Thermoset Jacket • Type TC											
Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket											
3081Z	1	E1	200	3.80	96.5	0.38	9.7	0.05	1.2	–	–
14 AWG • Overall Shield 100% Beldfoil Triads • Bronze Braid Armor • Double Thermoset Jackets • Type TC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
Z3081Z	1	E1	200	6.29	159.9	0.52	13.3	0.05	1.2	0.055	1.4
14 AWG • Individually Shielded Triads + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC											
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets											
W3081Z	1	E1	200	7.82	198.7	0.65	16.6	0.05	1.2	0.055	1.4



MarineTuff® UL Instrumentation Cable

600 V Type TC (or MC) Cables, 12 AWG, Shielded,
Thermoset Jacket



Part No.	Pairs	Color Code	Pull Tension (Max)		Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
			Lbs	Inch	mm	Inch	mm	Inch	mm	Inch	mm	
12 AWG • Overall Shield 100% Beldfoil • Thermoset Jacket • Type TC												
Flexible Stranded TC Conductors • XLPE Insulation • LSZH Jacket												
3103Z	1	E1	253	4.10	104.1	0.41	10.4	0.05	1.2	–	–	
12 AWG • Overall Shield 100% Beldfoil • Bronze Braid Armor • Double Thermoset Jackets • Type TC												
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets												
Z3103Z	1	E1	253	6.86	174.2	0.57	14.5	0.05	1.2	0.06	1.4	
14 AWG • Individually Shielded Pairs + Overall Shield 100% Beldfoil • Continuous Armor • Double Thermoset Jackets • Type MC												
Flexible Stranded TC Conductors • XLPE Insulation • Double LSZH Jackets												
W3103Z	1	E1	253	8.18	14.6	0.68	17.3	0.05	1.2	0.06	1.4	



MarineTuff®

Variable Frequency Drive (VFD) Cables

It is important to select a motor drive cable that has been properly designed and engineered to address all the key technical issues that such a component faces.

In offshore environments with multiple drives, increased vulnerability to noise exists. This noise emission can sometimes be difficult to track down and eliminate and is likely the single most significant problem associated with VFD systems today. Unless a proper cable shielding design is present to control it, noise emission from a drive system cable can disrupt operations. Moreover, because a longer cable radiates more noise, the length of cable runs must be limited. That, in turn, puts a limitation on your shipboard layout. Choosing well-designed, robust VFD cables ensures motor uptime and reliability of the VFD system and also provides protection for any sensitive instrumentation and adjacent control systems.

- The MarineTuff VFD line features XLP conductors appropriate for 90°C wet/dry demands, Class I and II / Division 2 hazardous location ratings, and HaloarrestXLink™ low smoke zero halogen jackets (LSZH).
- All options are rated 600V UL 1277 TC-ER and 1000V UL Flexible Motor Supply, UL 1309, IEEE 1580 Type P, UL 1685 Vertical Tray Flame tested, RoHS compliant and CE approved.

Key Attributes

- Thermoset LSZH jacket standard
- Bronze braid armoring available as option
- ABS certified
- 10 year warranty

MarineTuff® VFD Cable

Classic Foil/Braid Design Thermoset Low Smoke Zero Halogen

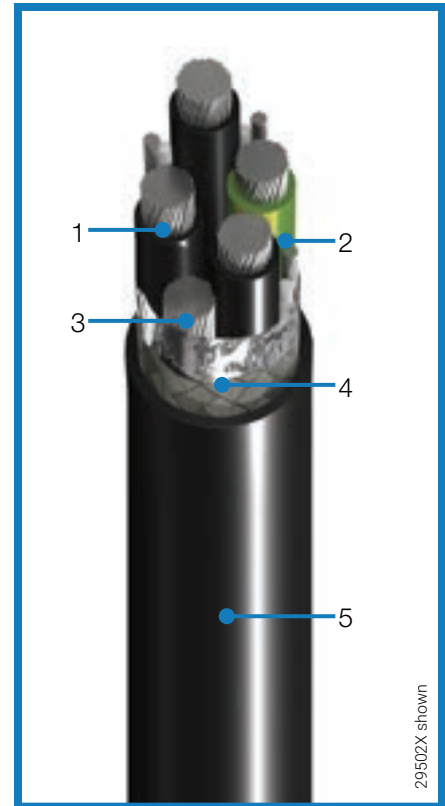


Features:

- Low Smoke Zero Halogen (LSZH) jacketed, Type P insulations
- 300% ground for enhanced system reliability and human safety. Approximately 300% of 1 full-sized conductor in ground potential copper
- Finely stranded tinned copper conductors for ease of cable installation, high frequency performance, vibration, corrosion and heat resistance
- Low capacitance XLP insulation protects motor by reducing magnitude of reflected wave
- Foil/Braid shielding enables noise control, improves common mode current containment and prevents capacitive coupling

Certifications/Compliance:

- ABS (American Bureau of Shipping)
- IEEE 45 Electrical Installation on Shipboard
- IEEE 1580 Type P insulations IEEE recommended practice for use on shipboard in fixed or floating facilities
- UL 1309 marine shipboard cables
- IEC 60811-2-1 Hydrocarbon Resistant
- IEC 60754-1,-2 (acid gas emissions)
- 600V UL 1277 Type TC-ER
- 1000V UL Flexible Motor Supply
- IEEE 1202/383, CSA FT4 Flame Tests
- IEC 60332-3-22 Cat A Flame Test
- -40°C Cold Bend
- RHW-2/XHHW-2 Rated Conductors (16 AWG XHHW-2 only)
- 90°C Wet/Dry
- Oil Res II
- Sunlight Resistant



Construction:

1. 16 to 2 AWG - Three Finely-Stranded Tinned Copper (TC) Circuit Conductors with XLP Insulation
2. One Full-Sized Green/Yellow XLP Insulated Ground (Same AWG as Circuit Conductors)
3. One Full-Sized, Tinned, Uninsulated Ground/Drain
4. Overall Duofoil® Shield + 85% TC Braid
5. LSZH Thermoset Jacket



MarineTuff® VFD Cable

Classic Foil/Braid Design Thermoset Low Smoke Zero Halogen



Part No.	Conductor		Pulling Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
	AWG	Stranding		Lbs	Inch	mm	Inch	mm	Lbs	mm	Inch
16 to 2 AWG • Thermoset Jacket											
29500X	16	26x30	128	4.3	109.2	0.53	13.5	0.07	1.85	–	–
29501X	14	41x30	212	4.8	121.9	0.60	15.2	0.07	1.85	–	–
29502X	12	65x30	336	5.2	132	0.65	16.5	0.07	1.85	–	–
29503X	10	105x30	592	5.5	139.7	0.69	17.5	0.07	1.85	–	–
29504X	8	7x19x29	768	7.5	190.5	0.93	23.6	0.09	2.36	–	–
29505X	6	7x19x27	1220	8.0	203.2	1.02	25.9	0.09	2.36	–	–
29506X	4	7x19x25	1940	9.3	236.2	1.16	29.5	0.09	2.36	–	–
29507X	2	7x19x23	3088	10.8	273.1	1.31	33.3	0.09	2.36	–	–

Conductor Color Coding: ICEA Method 4: Black and Numbered, Green/Yellow Ground.

Part No.	Conductor		Pulling Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
	AWG	Stranding		Lbs	Inch	mm	Inch	mm	Lbs	mm	Inch
16 to 2 AWG • Bronze Braid Armor • Double Thermoset Jackets											
Z29500X	16	26x30	128	8.30	210.8	0.69	17.6	0.07	1.85	0.06	1.4
Z29501X	14	41x30	212	9.14	232.2	0.76	19.3	0.07	1.85	0.06	1.4
Z29502X	12	65x30	336	9.74	247.4	0.81	20.6	0.07	1.85	0.06	1.4
Z29503X	10	105x30	592	10.22	259.6	0.85	21.6	0.07	1.85	0.06	1.4
Z29504X	8	7x19x29	768	13.10	332.7	1.09	27.7	0.09	2.36	0.06	1.4
Z29505X	6	7x19x27	1220	14.18	360.2	1.18	30.0	0.09	2.36	0.06	1.4

Conductor Color Coding: ICEA Method 4: Black and Numbered, Green/Yellow Ground.

Part No.	Conductor		Pulling Tension (Max)	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
	AWG	Stranding		Lbs	Inch	mm	Inch	mm	Lbs	mm	Inch
16 to 2 AWG • Continuous Armor • Double Thermoset Jackets											
W29500X	16	26x30	128	9.62	244.4	0.80	20.4	0.07	1.85	0.06	1.4
W29501X	14	41x30	212	10.46	265.8	0.87	22.1	0.07	1.85	0.06	1.4
W29502X	12	65x30	336	11.06	281.0	0.92	23.4	0.07	1.85	0.06	1.4
W29503X	10	105x30	592	11.54	293.2	0.96	24.4	0.07	1.85	0.06	1.4
W29504X	8	7x19x29	768	14.42	366.4	1.20	30.5	0.09	2.36	0.06	1.4
W29505X	6	7x19x27	1220	15.50	393.8	1.29	32.8	0.09	2.36	0.06	1.4

Conductor Color Coding: ICEA Method 4: Black and Numbered, Green/Yellow Ground.



MarineTuff® VFD Cable

Classic Symmetrical Design Thermoset Low Smoke Zero Halogen

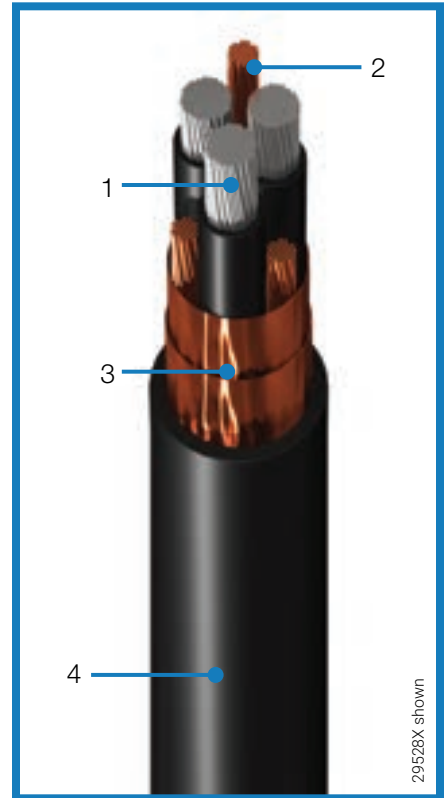


Features:

- Low Smoke Zero Halogen (LSZH) jacketed, Type P insulations
- 100% Ground - 3 Symmetrical Ground Conductors
- Finely stranded tinned copper conductors for ease of cable installation, high frequency performance, vibration, corrosion and heat resistance
- Low capacitance XLP insulation protects motor by reducing magnitude of reflected wave
- 100% Dual copper tape shielding for enhanced flexibility and noise control

Certifications/Compliance:

- ABS (American Bureau of Shipping)
- IEEE 45 Electrical Installation on Shipboard
- IEEE 1580 Type P Insulations IEEE recommended practice for use on shipboard in fixed or floating facilities
- UL 1309 marine shipboard cables
- IEC 60811-2-1 Hydrocarbon Resistant
- IEC 60754-1,-2 (acid gas emissions)
- 600V UL 1277 Type TC-ER
- 1000V UL Flexible Motor Supply
- IEEE 1202/383, CSA FT4 Flame Tests
- IEC 60332-3-22 Cat A Flame Test
- -40C Cold Bend
- XHHW-2 Rated Conductors
- 90°C Wet/Dry
- Oil Res II
- Sunlight Resistant



Construction:

1. 1 to 4/0 AWG - Three Finely-Stranded Tinned Copper (TC) Circuit Conductors with XLP Insulation
2. Three Symmetrical Bare Copper (BC) Uninsulated Grounds (equivalent to 1 full-sized ground)
3. Two Spiral Copper Tape Shields (100% Coverage)
4. LSZH Thermoset Jacket



MarineTuff® VFD Cable

Classic Symmetrical Design Thermoset Low Smoke
Zero Halogen



Part No.	Conductor		Pulling Tension (Max) Lbs	Bend Radius (Min)		OD (Nom)		Jacket Thickness		Outer Jacket Thickness	
	AWG	Stranding		Inch	mm	Inch	mm	Lbs	mm	Inch	mm
1 to 4/0 AWG • Thermoset Jacket											
29528X	1	7X19X22	2650	12.00	304.8	1.20	30.5	0.08	2.1	–	–
29529X	1/0	7X19X21	3537	12.90	327.7	1.29	32.8	0.08	2.1	–	–
29530X	2/0	7X19X20	4200	14.00	355.6	1.40	35.6	0.08	2.1	–	–
29531X	3/0	7X19X19	5025	15.20	386.1	1.52	38.6	0.08	2.1	–	–
29532X	4/0	7X19X18	6670	16.80	426.7	1.68	42.7	0.08	2.1	–	–

Conductor Color Coding: ICEA Method 4: Black and Numbered, 3 Symmetrical Bare Copper Grounds.



MarineTuff® Foundation Fieldbus Cables



FOUNDATION Fieldbus is the dominant industrial network in offshore environments. Belden Fieldbus cables are designed to withstand the destructive effects of temperature extremes, humidity/moisture, dust and oil. In harsh environments such as oil and gas extraction ultraviolet radiation from extensive exposure to the sun can shorten cable life. With the high cost of downtime in such remote locations, investing in cable with proven performance and reliability can significantly reduce the likelihood of system failure.

Key Attributes

- Type P ratings on all 600V insulations and options
- LSZH jackets on all cables and options
- Bronze braid option on all cables
- ABS and DNV certified
- 10 year warranty
- Compliant with Fieldbus Spec IEC 61158-2 (ISA/SP-50)
- Excellent electrical characteristics
- Versions in 18 and 16 AWG stranded tinned copper conductors
- Standard multi-pair cables available in 2 to 12 pairs. Higher pair counts available upon request
- PLTC/ITC-ER, PLTC, and TC-ER versions
- C(UL) CIC Type TC on 600V XLP insulated products
- Suitable for use in Class 1, Div. 2 applications
- RoHS compliant and CE approved



MarineTuff® FOUNDATION Fieldbus Cable

300V and 600V, 18 AWG Paired Cable, Type A,
Thermoset/Thermoplastic with or without Bronze Armoring

Featured Options:

- Low Smoke Zero Halogen
- Both Thermoplastic and Thermoset Options
- Bronze braid armoring
- Additional AWG sizes and pair counts available upon request
- Sun Res
- Oil Res II (Thermoset)

Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- IEEE 1580 Type P Insulations - 600V Constructions
- UL 1277 Type TC-ER - 600V Constructions
- PLTC/ITC-ER - 300V Constructions
- NEC: CMG - 300V Constructions
- CEC: CMG FT4 - 300V Constructions
- IEC 60332-3-24 (Cat C)
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)



Construction:

1. 18 or 16 AWG Stranded Tinned Copper Conductors
2. XLP Insulation - 600V
Polyolefin Insulation - 300V
3. 100% Overall Foil Shield Coverage
Plus Individually Shielded Pairs on Multi-Pair Constructions
4. LSZH Thermoset or Thermoplastic Jacket

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® FOUNDATION Fieldbus Cable

300V and 600V, 18 AWG Paired Cable, Type A,
Thermoset/Thermoplastic with or without Bronze Armoring



Part No.	AWG	Pairs	OD (Nom)		Additional Features/Ratings	
			Inch	mm		
300V, 18 AWG Foundation Fieldbus						
Stranded (7 x 26) TC Conductors • Polyolefin Insulation • LSZH Jacket • TC Drain Wire • Beldfoil® Shielding						
Thermoset Jacket						
3076Z	18	1	0.38	9.7	CMG, PLTC-ER, ITC-ER, Direct Burial	
Thermoplastic Jacket						
3076T	18	1	0.38	9.7		
300V, 18 AWG Foundation Fieldbus, Bronze Armored						
Stranded (7 x 26) TC Conductors • Polyolefin Insulation • Double LSZH Jackets • TC Drain Wire • Beldfoil® Shielding						
Thermoset Jacket						
973076Z	18	1	0.52	13.3	CMG, PLTC-ER, ITC-ER, Direct Burial	
Thermoplastic Jacket						
773076T	18	1	0.52	13.3		
600 V, 18 AWG Foundation Fieldbus						
Stranded (7 x 26) TC Conductors • XLP Insulation • LSZH Jacket • TC Drain Wire • Beldfoil® Shielding Note: Cables in this section are not DNV Rated						
Thermoset Jacket						
2118Z	18	1	0.35	8.8	TC-ER, ITC-ER, Direct Burial	
2119Z	18	2	0.60	15.2		
2120Z	18	5	0.75	19.0		
2121Z	18	8	0.93	23.6		
2122Z	18	12	1.12	28.5		
Thermoplastic Jacket						
2118T	18	1	0.35	8.8		
2119T	18	2	0.60	15.2		
2120T	18	5	0.75	19.0		
2121T	18	8	0.93	23.6		
2122T	18	12	1.12	28.5		



MarineTuff® FOUNDATION Fieldbus Cable

600V, 18 AWG Paired Cable, Type A



Part No.	AWG	Pairs	OD (Nom)		Additional Features/Ratings
			Inch	mm	

600V, 18 AWG Foundation Fieldbus - Bronze Armored

Stranded (7x26) TC Conductors • XLP Insulation • Double LSZH Jackets • TC Drain Wire • Individually shielded pairs and overall Beldfoil Shielding

Thermoset Jacket					TC-ER, ITC-ER, Direct Burial
972118Z	18	1	0.48	12.5	
972119Z	18	2	0.75	19.3	
972120Z	18	5	0.90	23.1	
972121Z	18	8	1.09	27.7	
Thermoplastic Jacket					
772118T	18	1	0.49	12.5	
772119T	18	2	0.76	19.3	
772120T	18	5	0.91	23.1	
772121T	18	8	1.09	27.7	



MarineTuff® FOUNDATION Fieldbus Cable

600V, 16 AWG Paired Cable, Type A



Part No.	AWG	Pairs	OD (Nom)		Additional Features/Ratings
			Inch	mm	

600V, 16 AWG Foundation Fieldbus

Stranded (7x24) TC Conductors • XLP Insulation • LSZH Jacket • TC Drain Wire • Individually shielded pairs and overall Beldfoil Shielding

Thermoset Jacket					TC-ER, ITC-ER, Direct Burial
2127Z	16	1	0.37	9.5	
2128Z	16	2	0.65	16.4	
2129Z	16	5	0.81	20.6	
2130Z	16	8	1.01	25.6	
2131Z	16	12	1.22	31.0	
Thermoplastic Jacket					
2127T	16	1	0.37	9.5	
2128T	16	2	0.65	16.4	
2129T	16	5	0.81	20.6	
2130T	16	8	1.01	25.6	
2131T	16	12	1.22	31.0	

600V, 16 AWG Foundation Fieldbus - Bronze Armored

Stranded (7x24) TC Conductors - XLP Insulation - Double LSZH Jackets - TC Drain Wire - Individually shielded pairs and overall Beldfoil Shielding

Thermoset Jacket					TC-ER, ITC-ER, Direct Burial
972127Z	16	1	0.52	13.2	
972128Z	16	2	0.81	20.5	
972129Z	16	5	0.97	24.7	
972130Z	16	8	1.17	29.7	
Thermoplastic Jacket					
772127T	16	1	0.51	13.2	
772128T	16	2	0.80	20.5	
772129T	16	5	0.97	24.7	
772130T	16	8	1.16	29.7	



MarineTuff®

PROFIBUS-DP Cables



PROFIBUS is one of the largest open industrial fieldbuses in the world. As with most fieldbus systems, PROFIBUS can reduce operating costs, increase productivity, decrease time to market for new products, and improve product quality. And unlike standard 4-20mA controls, PROFIBUS can support up to 32 devices per segment – up to a total of 126 devices, depending on total system current.

The MarineTuff Profibus offering includes a 150-ohm twinax (twisted pair) cable that matches the impedance of your offshore system, allowing for maximum signal transmission. The cable incorporates an overall Beldfoil® shield plus a 65% tinned copper braid for maximum shielding effectiveness. It also carries a UL NEC Type PLTC listing to achieve maximum installation versatility. The stranded option provides additional flexibility during installation and in use. With the additional ABS rating and armoring options, the MarineTuff Profibus line will meet all the demands of your Marine applications.

Key Attributes

- LSZH jackets on all cable options
- UL NEC Type PLTC
- ABS and DNV certified
- Overall Beldfoil shield plus 65% tinned copper braid
- Optimized for maximum signal transmission
- 10 year warranty

MarineTuff® PROFIBUS-DP Cable

22 AWG, PLTC, Thermoset/Thermoplastic with or without Bronze Armoring



Featured Options:

- Low Smoke Zero Halogen jacket – Both Thermoplastic and Thermoset Options
- Multiple armoring options
- Sun Res
- Oil Res II (Thermoset)

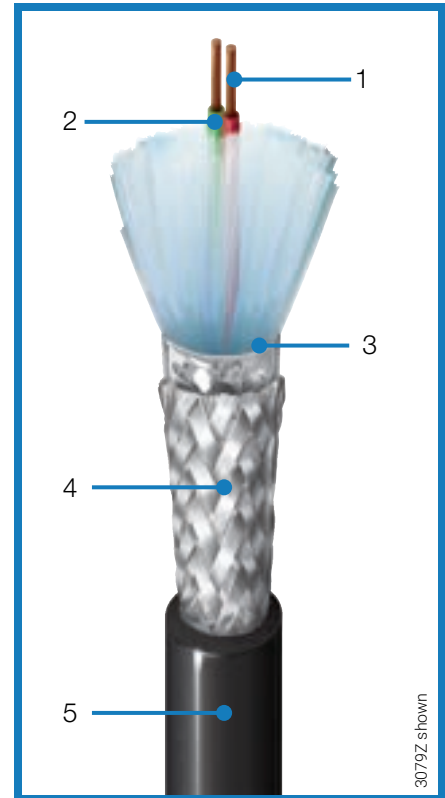
Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- NEC: PLTC CMG
- CEC: CMG FT4
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. 22 AWG Bare Copper Conductors
2. Flame Retardant Foam Polyethylene Insulation
3. Overall Beldfoil® Shield (100% coverage)
4. Tinned Copper Braid Shield (65% coverage)
5. LSZH Thermoset or Thermoplastic Jacket

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® PROFIBUS-DP Cable

22 AWG, PLTC, Thermoset/Thermoplastic with or without Bronze Armoring

Part No.	OD (Nom)		Additional Features/Ratings
	Inch	mm	
22 AWG, 300V Single Pair Databus ISA/SP-50 Profibus Cable			
Solid BC Conductors • FRFPE Insulation • Overall Beldfoil® Shielding, plus Overall Tinned Copper Braid (65% coverage) • LSZH Outer Jacket			
Thermoset Jacket			PLTC-LS, CMG-LS
3079Z	0.43	10.9	
Thermoplastic Jacket			
3079T	0.43	10.9	
22 AWG, 300V Single Pair DataBus ISA/SP-50 Profibus Cable - with Bronze Armoring			
Solid BC Conductors • FRFPE Insulation • Overall Beldfoil® Shielding, plus Overall Tinned Copper Braid (65% coverage) • Double LSZH Outer Jackets			
Thermoset Jacket			PLTC-LS, CMG-LS
973079Z	0.59	15.0	
Thermoplastic Jacket			
773079T	0.59	15.0	



MarineTuff®

RS-485 Cables



As a part of Belden's comprehensive portfolio of Industrial Ethernet cables, the MarineTuff RS-485 provides reliable connections as a standard from the control room to metering and pumping/compressor stations. RS-485 cables provide serial data transmission in offshore industrial environments and are PLTC and CMG rated allowing for installation in 300V power limited cable trays. For plenum installations, MarineTuff RS-485 should be routed through conduit.

With manufacturing in ISO certified manufacturing facilities, Belden's state-of-the-art processes ensure quality in each product. Product consistency is a mainstay of our products.

Key Attributes

- LSZH jackets on all cable options
- UL NEC Type PLTC/CMG
- ABS and DNV certified
- High foam density polyethylene insulation (FHDPE)
- Overall Beldfoil shield plus 65% tinned copper braid
- 10 year warranty



MarineTuff® RS-485 Cable

PLTC/CM, Thermoset/Thermoplastic with or without Bronze Armoring

Featured Options:

- Low Smoke Zero Halogen jacket – both Thermoplastic and Thermoset Options
- Sun Res
- Oil Res II (Thermoset)

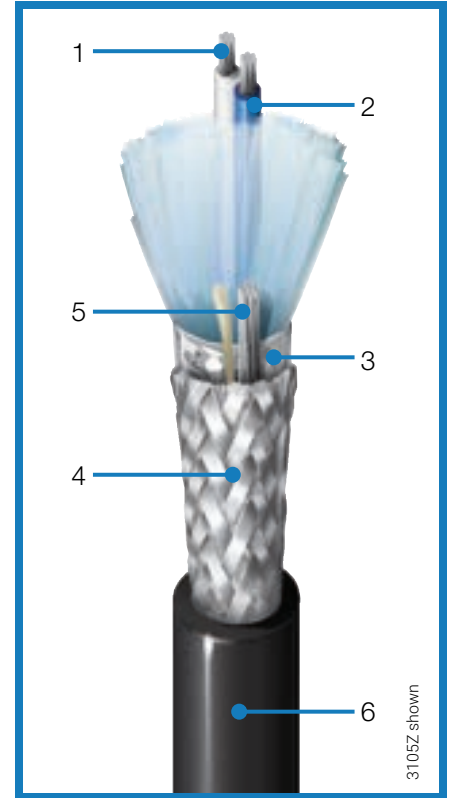
Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- NEC: CMG, PLTC
- CEC/C(UL): CMG FT4
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. 22 AWG Stranded Tinned Copper (TC) Conductors
2. Datalene® Insulation
3. Overall Beldfoil® Shield (100% coverage)
4. Tinned Copper Braid Shield (65% coverage)
5. Stranded Tinned Copper Drain Wire
6. LSZH Thermoset or Thermoplastic Jacket

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® RS-485 Cable

PLTC/CM, Thermoset/Thermoplastic with or without
Bronze Armoring



Part No.	Pairs	OD (Nom)		Additional Features/Ratings	
		Inch	mm		
RS-485					
22 AWG (7x30) Stranded TC Conductors • Datalene Insulation • TC Drain Wire Overall Beldfoil Shielding plus an overall tinned copper braid (65% coverage) • LSZH Outer Jacket					
Thermoset Jacket					
3105Z	1	0.40	10.2	CMG-LS, PLTC-LS	
3107Z	2	0.44	11.2		
3108Z	3	0.47	11.9		
3109Z	4	0.49	12.4		
Thermoplastic Jacket					
3105T	1	0.45	11.4		
3107T	2	0.49	12.4		
3108T	3	0.52	13.2		
3109T	4	0.49	12.4		
RS-485 - Bronze Armored					
22 AWG (7x30) Stranded TC Conductors • Datalene Insulation • TC Drain Wire Overall Beldfoil Shielding plus an overall tinned copper braid (65% coverage) • Double LSZH Outer Jackets					
Thermoset Jacket					
973105Z	1	0.56	14.3	CMG-LS, PLTC-LS	
973107Z	2	0.60	15.3		
973108Z	3	0.63	16.0		
973109Z	4	0.65	16.6		
Thermoplastic Jacket					
773105T	1	0.61	15.5		
773107T	2	0.65	16.6		
773108T	3	0.68	17.3		
773109T	4	0.70	17.8		



MarineTuff® ControlNet™



To ensure that Belden's ControlBus™ cables meet the high-speed, time-critical requirements for the operation of ControlNet offshore systems, these low-loss RG-6/U Type coaxial cables incorporate a Duobond Quad Shield for maximum signal integrity and run length. All products are sweep tested across a wide frequency range, ensuring that return loss, impedance and other critical performance features, meet the requirements of the ControlNet physical layer specification. ControlBus cables can be supplied with a bronze braid, aluminum or steel interlocked armor. Belden manufactures variations of the cable for different applications, identification needs, and environments.

Key Attributes

- Excellent electrical characteristics
- RoHS compliant and CE approved
- ABS and DNV certified
- Low Smoke Zero Halogen (LSZH) jackets on all cables
- Bronze Braid Optional
- 10-Year Warranty



MarineTuff® ControlNet™ Cable

18 AWG, Duobond®-Quad Shielded Coaxial, Type RG6/U,
Thermoset/Thermoplastic with or without Bronze Armoring



Featured Options:

- Low Smoke Zero Halogen Jacket - Both Thermoplastic and Thermoset Options
- Multiple armoring options
- Sun Res
- Oil Res II (Thermoset)

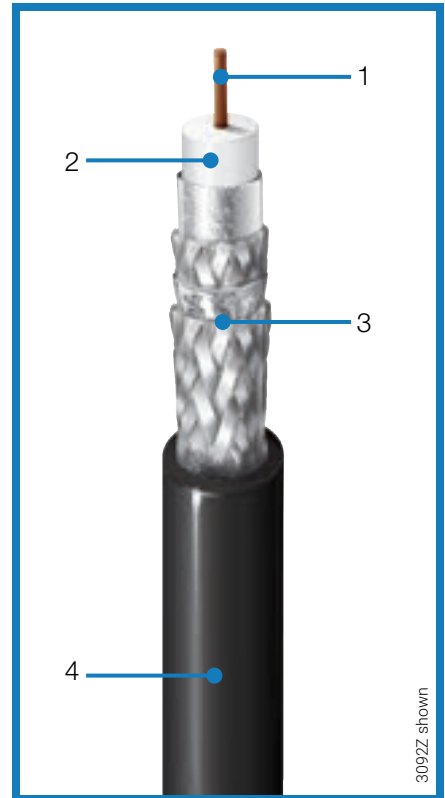
Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- NEC: CMG CL2
- CEC: CMG FT4
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. Type RG6/U 18 AWG Solid Copper Covered Steel Conductors or 20 AWG Finely Stranded BC Conductor (High Flex)
2. Polyolefin Insulation
3. Quad-Shield Coverage (Foil Braid/Foil Braid)
4. LSZH Thermoset or Thermoplastic Jacket

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® ControlNet™ Cable

18 AWG, Duobond®-Quad Shielded Coaxial, Type RG6/U,
Thermoset/Thermoplastic with or without Bronze Armoring

Part No.	AWG	OD (Nom)		Additional Features/Ratings
		Inch	mm	
Solid - Quad Shielded Coaxial, Type RG6/U				
18 AWG Solid BC-Covered Steel Conductor • Polyolefin Insulation • Duobond QuadShield • LSZH Jacket				
Thermoset Jacket				
3092Z	18	0.30	7.6	CMG-LS, CL2
Thermoplastic Jacket				
3092T	18	0.30	7.6	
Solid - Quad Shielded Coaxial, Type RG6/U - Bronze Armored				
18 AWG Solid BC-Covered Steel Conductor • Polyolefin Insulation • Duobond QuadShield • Double LSZH Jackets				
Thermoset Jacket				
973092Z	18	0.44	11.3	CMG-LS, CL2
Thermoplastic Jacket				
773092T	18	0.44	11.3	
Stranded - Quad Shielded Coaxial, Type RG6/U				
20 AWG Stranded (105x40) BC Conductor • Polyolefin Insulation • Duobond QuadShield • LSZH Jacket Note: Cables in this section are not DNV Rated				
Thermoset Jacket				
3092FZ	20	0.31	7.7	CMG-LS, CL2
Thermoplastic Jacket				
3092FT	20	0.31	7.7	
Stranded - Quad Shielded Coaxial, Type RG6/U - Bronze Armored				
20 AWG Stranded (105x40) BC Conductor • Polyolefin Insulation • Duobond QuadShield • Double LSZH Jackets Note: Cables in this section are not DNV Rated				
Thermoset Jacket				
973092F	20	0.45	11.4	CMG-LS, CL2
Thermoplastic Jacket				
773092F	20	0.45	11.4	

*Duobond IV is a four-layer shield: (1) Duobond II Foil, (2) TC Braid (94%), (3) Duofoil® Foil, (4) TC Braid (90%).

BC = Bare Copper • PVC = Polyvinyl Chloride



MarineTuff® Blue Hose Cables



The needs of real-time, high-throughput applications can be routinely met by the control network and the use of Belden Blue Hose cable. These cables are a robust physical media for the transmission of PLC/DCS signals. Backed by years of research and development, each Belden Blue Hose cable is manufactured to exacting quality standards. Belden Blue Hose cables are designed to give you unprecedented installation flexibility for Data Highway, SY/Net and many other PLC-I/O networks.

Key Attributes

- LSZH jackets on all cables and options
- Bronze braid options on all cables and options
- ABS and DNV certified
- 10 year warranty



MarineTuff® Blue Hose Cable

18 AWG, 600V Twinaxial Cable Thermoset/Thermoplastic
Jackets with or without Bronze Braid Armoring



Featured Options:

- Low Smoke Zero Halogen jacket – standard on all products
- Sunlight and Oil resistance
- Direct Burial
- Bronze braid armoring
- Sun Res
- Oil Res II (Thermoset)

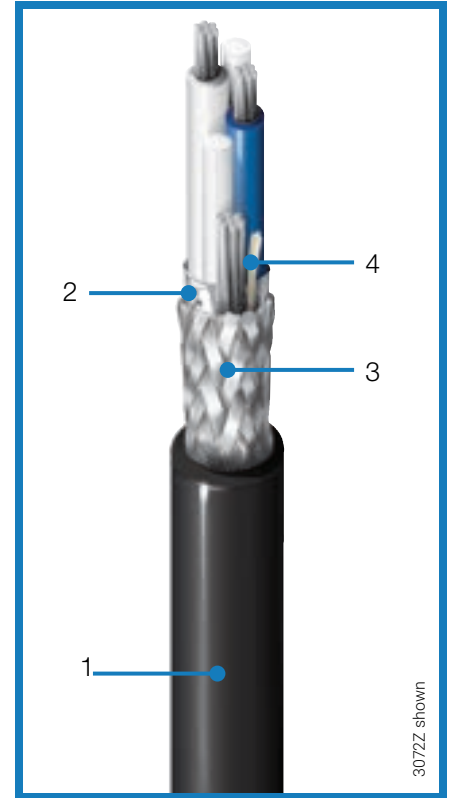
Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- NEC/UL: CMG, TC
- C(UL): CMG
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. LSZH Thermoset Jacket
2. 100% Foil Shield Coverage
3. 55% tinned copper braid
4. Drain wire

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® Blue Hose Cable

18 AWG, 600V Twinaxial Cable Thermoset/Thermoplastic
Jackets with or without Bronze Braid Armoring



Part No.	OD (Nom)		Additional Features/Ratings
	Inch	mm	
18 AWG, 600V Twinaxial Cable			
Stranded TC Conductors (7x26) • Polyolefin Insulation • Overall Beldfoil Shielding • LSZH Outer Jacket			
Thermoset Jacket			TC-LS, CMG-LS, ITC-LS
3072Z	0.42	10.6	
Thermoplastic Jacket			TC-LS, CMG-LS, ITC-LS
3072T	0.42	10.6	
18 AWG, 600V Twinaxial Cable - with Bronze Braid Armor			
Stranded TC Conductors (7x26) • Polyolefin Insulation • Overall Beldfoil Shielding • Double LSZH Outer Jackets			
Thermoset Jacket			TC-LS, CMG-LS, ITC-LS
973072Z	0.57	14.7	
Thermoplastic Jacket			TC-LS, CMG-LS, ITC-LS
773072T	0.57	14.7	



MarineTuff®

DeviceNet™



Widely used for maritime electronics, the MarineTuff DeviceNet cables' rugged design will support your offshore DeviceNet ODVA requirements. These cables provide device designers with the ability to implement desired network behavior of several communication objects into a device while the durable design allows these networks to run in the harshest environments. Whether connecting sensors or switching devices, the MarineTuff DeviceNet cables will offer the reliability you demand.

Key Attributes

- 600V Class 1 ODVA
- LSZH jackets on all cable options
- ABS and DNV certified
- UL NEC TC-ER
- Overall Beldfoil shield plus 65% tinned copper braid
- XLPE insulation on the power pairs and F-R Polypropylene on the data pairs
- Able to occupy the same tray/conduit as 600V cables
- 10 year warranty

MarineTuff® DeviceNet™ Cable

16 AWG, 600V Thermoset/Thermoplastic Jackets with or without Bronze Braid Armoring



Featured Options:

- Low Smoke Zero Halogen jacket – standard on all products
- Multiple armoring options
- Sun Res
- Oil Res II (Thermoset)

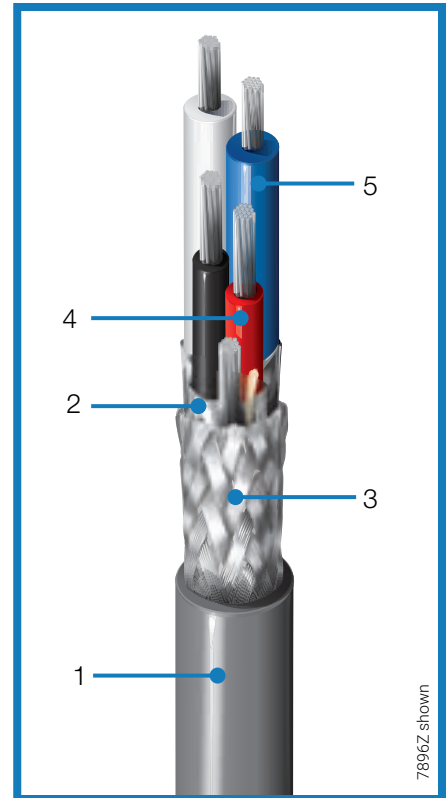
Certifications/Compliance

- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)*
- C(UL) AWM I/II A/B (Thermoset Only)
- NEC: TC-ER
- CEC: FT4
- FT4/IEEE 1202
- IEC 60332-3-22
- IEC 60754-1 (Jacket)
- IEC 60754-2 (Jacket)

Construction:

1. LSZH Thermoset Jacket
2. 100% Foil Shield Coverage
3. TC Braid Shield (65% coverage)
4. 18 AWG Data
5. 16 AWG Power

NOTE: Also available on all options, bronze braid armor with LSZH second jacket not pictured





MarineTuff® DeviceNet™ Cable

16 AWG, 600V Thermoset/Thermoplastic Jackets with or without Bronze Braid Armoring



Part No.	Pairs	OD (Nom)		Additional Features/Ratings
		Inch	mm	
16 AWG, 600V DeviceBus for ODVA DeviceNet				
Stranded (19x) TC Conductors • XLPE Insulation (16 AWG) • PE Insulation (18 AWG) • Overall Beldfoil Shielding plus Overall Tinned Copper Braid (65% coverage) • LSZH Outer Jacket				
Thermoset Jacket				TC-LS, TC-ER, AWM I/II A/B
7896Z	2	0.64	16.2	
Thermoplastic Jacket				TC-LS, TC-ER
7896T	2	0.64	16.2	
16 AWG, 600V DeviceBus for ODVA DeviceNet				
Stranded (19x) TC Conductors • XLPE Insulation (16 AWG) • PE Insulation (18 AWG) • Overall Beldfoil Shielding plus an overall tinned copper braid (65% coverage) • Double LSZH Outer Jackets				
Thermoset Jacket				TC-LS, TC-ER, AWM I/II A/B
977896Z	2	0.80	19.8	
Thermoplastic Jacket				TC-LS, TC-ER
777896T	2	0.80	19.8	

Conductor Color Coding: Data: Blue, White
Power: Red, Black



MarineTuff® A/V and Electronic Cable



Delivering high-end audio and video quality in shipboard environments is critical to enhancing shipboard safety and communications as well as crew and consumer experience. Belden's ABS-rated audiovisual and electronic cables enable connectivity for the same wide range of application options available on dry land including audio, video, security, networking and control. Marine A/V cables use standard connectors, with no special installation techniques allowing for a fast and easy installation.

Products Include

- Electronic Audio, Control, and Instrumentation
- Audio and Speaker Cable
- Coaxial Broadcast AV
- DataTwist Nonbonded-Pair
- Security Composite

Key Attributes

- ABS certified
- LSZH jackets on all cables and options
- 10 year warranty



MarineTuff® Electronic Audio, Control and Instrumentation Cable

Featured Options:

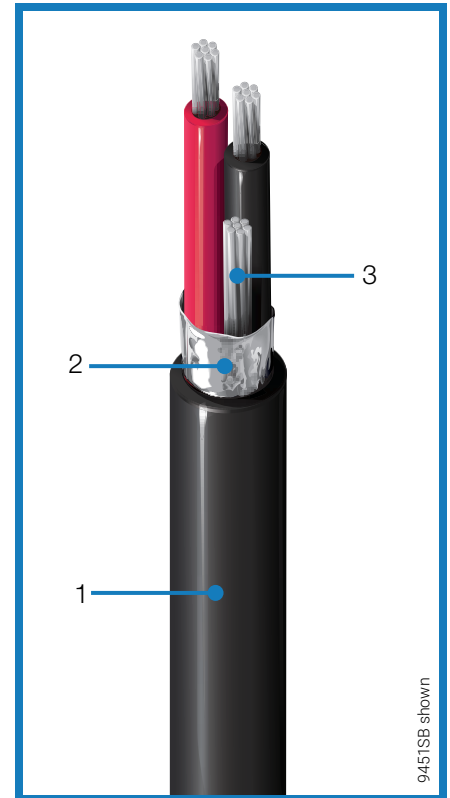
- Low Smoke Zero Halogen jacket – standard on all products
- RS-232 Cable (9451SB)
- Audio/Control Cables
- Multimedia control cable for AMX® and Crestron systems with both RS-485® and power in one cable (1502SB)

Certifications/Compliance

- ABS Certified
- Compliant with IEEE 45 and applicable sections of IEC 60092-376
- NEC/CEC CMG-LS
- FT4
- RoHS compliant

Construction:

1. LSZH Thermoplastic Jacket
2. 100% Foil Shield Coverage
3. Drain Wires





MarineTuff® Electronic Audio, Control and Instrumentation Cable



Part No.	AWG	Pairs	Insulation	Shield	OD (Nom)		Additional Features/Ratings
					Inch	mm	
Electronic Audio, Control, and Instrumentation Single- and Multi-pair Cables							
Standard (7x) TC Conductors • Thermoplastic LSZH Jacket							
9451SB*	22	1	PP	Beldfoil	0.16	4.1	300V RMS, NEC/CEC CMG-LS, FT4
8723SB*	22	2	PP	Individual Beldfoil	0.20	5.0	
8777SB	22	3	PP	Individual Beldfoil	0.27	6.9	UL AWM Style 2919, NEC/CEC CMG-LS, FT4
Electronic Audio, Control, and Instrumentation Multimedia Control Cable							
Standard (7x) TC Conductors • Thermoplastic LSZH Jacket							
1502SB	22	1 + 2C	FPR (data) F-R PVC (Power)	Beldfoil (data), Unshielded (power)	0.26	6.5	NEC/CEC CMG-LS, FT4

* Indicates common part numbers, LSZH, Thermoplastic



MarineTuff® Audio and Speaker Cable



Featured Options:

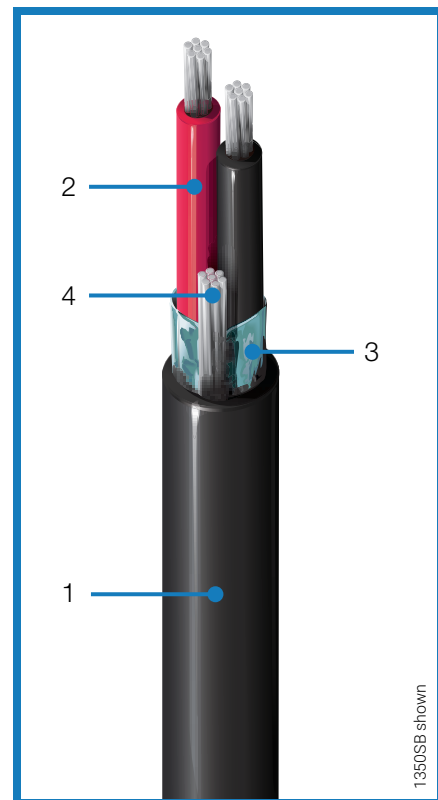
- Low Smoke Zero Halogen thermoplastic jacket – standard on all products
- AES/EBU Audio Cable
- High-strand Speaker Cable

Certifications/Compliance

- ABS Certified
- Compliant with IEEE 45 and applicable sections of IEC 60092-376
- NEC/CEC CMG-LS
- FT4
- RoHS compliant
- High Flex/High Purity (Fine Stranding) on 1314SB-1317SB

Construction:

1. LSZH Thermoplastic Jacket
2. Datalene or Polypropylene Insulation
3. 100% Foil Shield Coverage (where applicable)
4. Drain Wires





MarineTuff® Audio and Speaker Cable



Part No.	AWG	Conductors	Insulation	Shield	OD (Nom)		Additional Features/Ratings
					in/Inch	mm	
AES/EBU Digital Audio Cable							
Standard TC Conductors • Thermoplastic LSZH Jacket							
1350SB*	24	1 PR	Datalene	Beldfoil	0.18	4.6	NEC/CEC CMG-LS, FT4
High Strand Speaker Cable for Unshielded Audio and Control; High-Flex and High-Purity							
Standard TC Conductors • Thermoplastic LSZH Jacket							
1314SB*	14	2	PP	Unshielded	0.30	7.6	NEC/CEC CMG-LS, FT4
1315SB	14	4	PP	Unshielded	0.34	8.6	
1316SB*	12	2	PP	Unshielded	0.34	8.6	
1317SB	12	4	PP	Unshielded	0.39	9.9	

* Indicates common part numbers, LSZH, Thermoplastic



MarineTuff® Coaxial Broadcast AV Cable



Featured Options:

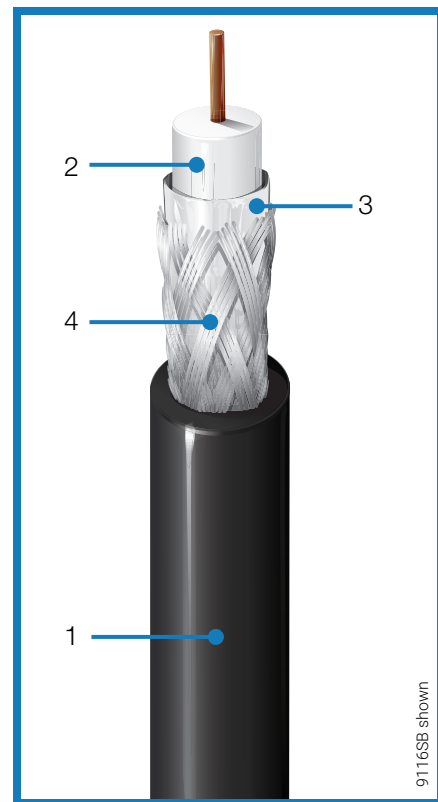
- Low Smoke Zero Halogen thermoplastic jacket – standard on all products
- CATV, Series
- RG-8 Type Low Loss 50 Ohm Wireless RF Transmission
- RG-6/U Type Digital Low Loss Serial
- RG-11/U Type Low Loss Serial
- Aluminum or Tinned Copper Braid Shielding

Certifications/Compliance

- ABS Certified
- Compliant with IEEE 45 and applicable sections of IEC 60092-376
- NEC/CEC CMG-LS
- FT4
- RoHS compliant

Construction:

1. LSZH Thermoplastic Jacket
2. Foam Polyethylene or Foam High-Density Polyethylene Insulation
3. 100% Duobond II® or Duofoil® Shield Coverage
4. 60% or 95% Braid Shield Coverage





MarineTuff® Coaxial Broadcast AV Cable



Part No.	AWG	Pairs	Insulation	Shield	OD (Nom)		Additional Features/Ratings
					Inch	mm	
Broadband Coaxial; CATV Series 6							
Thermoplastic LSZH Jacket							
9116SB*	18	Coax	Foam PE	Duobond®II + Aluminum Braid Shield	0.27	7.0	NEC/CEC CMG-LS, FT4
Low Loss 50 Ohm Wireless RF Transmission Cable; RG-8 Type							
Thermoplastic LSZH Jacket							
7810SB	10	Coax	Foam HDPE	Duobond®II + TC Braid	0.41	10.3	RF400, NEC/CEC CMG-LS, FT4
Precision Video Cable for Analog and Digital; Low Loss Serial Digital Coax; RG-6/U Type							
Thermoplastic LSZH Jacket							
1694SB*	18	Coax	Foam HDPE	Duofoil® + TC Braid	0.27	7.0	SDI/HDTV Digital Video, NEC/CEC CMG-LS, FT4
Precision Video Cable for Analog and Digital; Low Loss Serial Digital Coax; RG-11/U Type							
Thermoplastic LSZH Jacket							
7731SB	14	Coax	Foam HDPE	Duofoil® + TC Braid	0.40	10.2	SDI/HDTV Digital Video, NEC/CEC CMG-LS, FT4

* Indicates common part numbers, LSZH, Thermoplastic



MarineTuff® DataTwist® Nonbonded Pair



Featured Options:

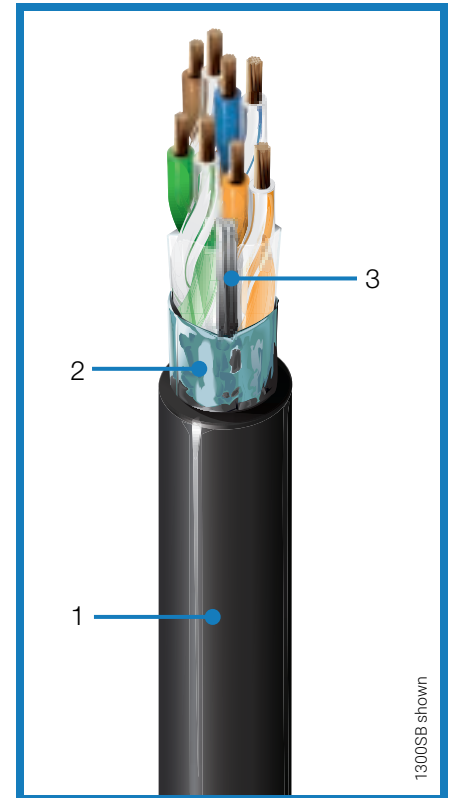
- Low Smoke Zero Halogen thermoplastic jacket – standard on all products
- Category 5e or Category 6
- Multimedia control cable for AMX® and Crestron systems with both RS-485® and power in one cable (1502SB)
- Shielded or Unshielded (depending on construction)
- RJ-45 Compatible

Certifications/Compliance

- ABS Certified
- TIA/EIA-568-B.2 or B.2.1
- Compliant with IEEE 45 and applicable sections of IEC 60092-376
- NEC/CEC CMG-LS
- FT4
- RoHS compliant

Construction:

1. LSZH Thermoplastic Jacket
2. 100% Foil Shield Coverage (for shielded)
3. Drain Wire (for shielded)
4. Rip Cord (for unshielded)





MarineTuff® DataTwist Nonbonded Pair



Part No.	AWG	Pairs	Insulation	Shield	OD (Nom)		Additional Features/Ratings
					Inch	mm	
Category 5e; TIA/EIA-568-B.2							
Solid BC Conductors • Thermoplastic LSZH Jacket							
1300SB*	24	4	PO	Beldfoil	0.26	6.6	NEC/CEC CMG-LS, FT4
1633ESB*	24	4	PO	Beldfoil + TC Braid	0.25	6.3	
1318SB	24	4	PO	Unshielded	0.29	7.4	
Category 6; TIA/EIA-568-B.2.1							
Standard TC Conductors • Thermoplastic LSZH Jacket							
1319SB*	23	4	PO	Unshielded	0.29	7.4	NEC/CEC CMG-LS, FT4

* Indicates common part numbers, LSZH, Thermoplastic



MarineTuff® Security Composite Cable

Featured Options:

- Low Smoke Zero Halogen thermoplastic jacket – standard
- RG-6 Coax Plus Twisted Pair
- CCTV Plus Audio or Pan/Tilt/Zoom CCTV Control Applications

Certifications/Compliance

- ABS Certified
- NEC/CEC CMG-LS
- FT4
- RoHS compliant

Construction:

1. LSZH Thermoplastic Jacket





MarineTuff® Security Composite Cable



Part No.	AWG	Conductors	Insulation	Shield	OD (Nom)		Additional Features/Ratings
					Inch	mm	
CCTV plus Audio or Pan/Tilt/Zoom CCTV Control Applications							
RG6 Coax plus Twisted Pair - Siamese Construction							
1306SB*	18 (Coax) 18 (Pair)	1PR + Coax	FPE (Coax), PO (Pair)	BC Braid (Coax) Unshielded (Pair)	.28 x .51	7.0 x 13.1	NEC/CEC CMG-LS, FT4

* Indicates common part numbers, LSZH, Thermoplastic



MarineTuff® Part Number Index

Part Number	Page No
1037Z	38
1038Z	36
1039Z	38
1040Z	38
1041Z	38
1042Z	38
1043Z	38
1044Z	38
1045Z	38
1046Z	38
1047Z	38
1048Z	36
1049Z	36
1050Z	36
1051Z	36
1052Z	36
1053Z	36
1054Z	36
1055Z	38
1093Z	37
1094Z	37
1095Z	37
1096Z	37
1097Z	39
1098Z	39
1099Z	39
1100Z	39
1118Z	38
1119Z	39
1120Z	36
1121Z	37
1300SB	76
1306SB	78
1314SB	72
1315SB	72
1316SB	72
1317SB	72
1318SB	76
1319SB	76
1350SB	72
1502SB	70
1633ESB	76
1694SB	74
2118T	50

Part Number	Page No
2118Z	50
2119T	50
2119Z	50
2120T	50
2120Z	50
2121T	50
2121Z	50
2122T	50
2122Z	50
2127T	52
2127Z	52
2128T	52
2128Z	52
2129T	52
2129Z	52
2130T	52
2130Z	52
2131T	52
2131Z	52
3064Z	37
3072T	64
3072Z	64
3076T	50
3076Z	50
3079T	55
3079Z	55
3080Z	41
3081Z	41
3088Z	36
3089Z	37
3090Z	38
3091Z	39
3092FT	61
3092FZ	61
3092T	61
3092Z	61
3103Z	42
3105T	58
3105Z	58
3107T	58
3107Z	58
3108T	58
3108Z	58
3109T	58

Part Number	Page No
3109Z	58
3118Z	39
3130Z	39
7731SB	74
7810SB	74
7896T	67
7896Z	67
7940T	12
7940Z	12
7953T	12
7953Z	12
8723SB	70
8777SB	70
9116SB	74
9451SB	70
27080Z	21
27109Z	24
27138Z	27
27325Z	15
27325ZS	17
27337Z	18
27337ZS	20
27636Z	21
27641Z	24
27643Z	27
27916Z	15
27917Z	18
28081Z	21
28081ZS	23
28082Z	21
28082ZS	23
28083Z	21
28084Z	21
28085Z	21
28086Z	21
28087Z	21
28088Z	21
28089Z	21
28090Z	21
28091Z	21
28092Z	21
28093Z	21
28094Z	21
28095Z	21

Part Number	Page No
28096Z	21
28097Z	21
28098Z	21
28099Z	21
28100Z	21
28101Z	21
28102Z	21
28103Z	21
28104Z	21
28105Z	21
28106Z	21
28107Z	21
28108Z	21
28110Z	24
28111Z	24
28112Z	24
28113Z	24
28114Z	24
28115Z	24
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28122Z	24
28123Z	24
28124Z	24
28125Z	24
28126Z	24
28127Z	24
28128Z	24
28129Z	24
28130Z	24
28131Z	24
28132Z	24
28133Z	24
28134Z	24
28135Z	24
28136Z	24
28137Z	24
28139Z	27
28140Z	27
28141Z	27



MarineTuff® Part Number Index

Part Number	Page No	Part Number	Page No	Part Number	Page No	Part Number	Page No
28142Z	27	28336Z	15	29505X	45	973109Z	58
28143Z	27	28338Z	18	29506X	45	977896Z	67
28144Z	27	28339Z	18	29507X	45	977940Z	12
28145Z	27	28340Z	18	29528X	47	977953Z	12
28146Z	27	28341Z	18	29529X	47	FD1B002LB	9
28147Z	27	28600Z	15	29530X	47	FD1B004LB	9
28148Z	27	28601Z	15	29531X	47	FD1B006LB	9
28149Z	29	28602Z	15	29532X	47	FD1B010LB	9
28150Z	29	28603Z	15	772118T	51	FD1B012LB	9
28151Z	29	28604Z	15	772119T	51	FD1L006LF	8
28152Z	30	28605Z	15	772120T	51	FD1L012LG	8
28153Z	30	28606Z	15	772121T	51	FD1L024LG	8
28154Z	30	28607Z	15	772127T	52	FD1L036LG	8
28155Z	31	28608Z	15	772128T	52	FD1L048LG	8
28156Z	31	28609Z	15	772129T	52	FD3B002LB	9
28157Z	31	28610Z	15	772130T	52	FD3B004LB	9
28158Z	32	28611Z	15	773072T	64	FD3B006LB	9
28159Z	32	28612Z	15	773076T	50	FD3B010LB	9
28161Z	33	28613Z	15	773079T	55	FD3B012LB	9
28167Z	33	28614Z	15	773092F	61	FD3L006LF	8
28168Z	33	28615Z	18	773092T	61	FD3L012LG	8
28169Z	33	28616Z	18	773105T	58	FD3L024LG	8
28170Z	33	28617Z	18	773107T	58	FD3L036LG	8
28171Z	33	28618Z	18	773108T	58	FD3L048LG	8
28172Z	33	28619Z	18	773109T	58	FD4B002LB	9
28173Z	34	28620Z	18	777896T	67	FD4B004LB	9
28174Z	34	28621Z	18	777940T	12	FD4B006LB	9
28175Z	34	28622Z	18	777953T	12	FD4B010LB	9
28176Z	34	28623Z	18	972118Z	51	FD4B012LB	9
28177Z	34	28624Z	18	972119Z	51	FD4L006LF	8
28178Z	34	28625Z	18	972120Z	51	FD4L012LG	8
28323Z	18	28626Z	18	972121Z	51	FD4L024LG	8
28324Z	18	28627Z	18	972127Z	52	FD4L036LG	8
28326Z	15	28628Z	18	972128Z	52	FD4L048LG	8
28326ZS	17	28629Z	21	972129Z	52	FDSB002LB	9
28327Z	15	28630Z	24	972130Z	52	FDSB004LB	9
28328Z	15	28632Z	15	973072Z	64	FDSB006LB	9
28329Z	15	28634Z	24	973076Z	50	FDSB010LB	9
28330Z	18	28912Z	21	973079Z	55	FDSB012LB	9
28331Z	18	29500X	45	973092F	61	FDSL006LF	8
28331ZS	20	29501X	45	973092Z	61	FDSL012LG	8
28334Z	15	29502X	45	973105Z	58	FDSL024LG	8
28334ZS	17	29503X	45	973107Z	58	FDSL036LG	8
28335Z	15	29504X	45	973108Z	58	FDSL048LG	8



MarineTuff® Part Number Index

Part Number	Page No
W1037Z	39
W1039Z	39
W1040Z	39
W1041Z	39
W1048Z	36
W1049Z	36
W1050Z	36
W1051Z	36
W1055Z	39
W1093Z	37
W1094Z	37
W1097Z	40
W1098Z	40
W1118Z	39
W1119Z	40
W1120Z	36
W1121Z	37
W3064Z	37
W3080Z	41
W3081Z	41
W3088Z	36
W3089Z	37
W3090Z	39
W3091Z	40
W3103Z	42
W27080Z	23
W27109Z	26
W27138Z	28
W27325Z	16
W27337Z	19
W27636Z	23
W27641Z	26
W27643Z	28
W27916Z	16
W27917Z	19
W28081Z	23
W28082Z	23
W28083Z	23
W28084Z	23
W28085Z	23
W28086Z	23
W28087Z	23
W28088Z	23
W28089Z	23

Part Number	Page No
W28090Z	23
W28091Z	23
W28092Z	23
W28093Z	23
W28094Z	23
W28095Z	23
W28096Z	23
W28097Z	23
W28098Z	23
W28099Z	23
W28100Z	23
W28101Z	23
W28102Z	23
W28103Z	23
W28104Z	23
W28105Z	23
W28106Z	23
W28107Z	23
W28108Z	23
W28110Z	26
W28111Z	26
W28112Z	26
W28113Z	26
W28114Z	26
W28115Z	26
W28116Z	26
W28117Z	26
W28118Z	26
W28119Z	26
W28120Z	26
W28121Z	26
W28122Z	26
W28123Z	26
W28124Z	26
W28125Z	26
W28126Z	26
W28127Z	26
W28128Z	26
W28129Z	26
W28130Z	26
W28139Z	28
W28140Z	28
W28141Z	28
W28142Z	28

Part Number	Page No
W28143Z	28
W28144Z	28
W28145Z	28
W28146Z	28
W28147Z	28
W28148Z	28
W28149Z	29
W28150Z	29
W28151Z	29
W28152Z	30
W28153Z	30
W28154Z	30
W28155Z	31
W28156Z	31
W28157Z	31
W28158Z	32
W28159Z	32
W28323Z	19
W28324Z	20
W28326Z	16
W28327Z	16
W28328Z	16
W28329Z	16
W28330Z	19
W28331Z	19
W28334Z	16
W28335Z	16
W28336Z	16
W28338Z	19
W28339Z	19
W28340Z	19
W28341Z	19
W28600Z	16
W28601Z	16
W28602Z	16
W28603Z	16
W28604Z	16
W28605Z	16
W28606Z	16
W28607Z	16
W28608Z	17
W28609Z	17
W28610Z	17
W28611Z	17

Part Number	Page No
W28612Z	17
W28613Z	17
W28615Z	19
W28616Z	19
W28617Z	19
W28618Z	19
W28619Z	19
W28620Z	19
W28621Z	19
W28622Z	19
W28623Z	19
W28624Z	19
W28626Z	20
W28627Z	20
W29500X	45
W29501X	45
W29502X	45
W29503X	45
W29504X	45
W29505X	45
Z1037Z	38
Z1039Z	38
Z1040Z	38
Z1041Z	38
Z1042Z	38
Z1048Z	36
Z1049Z	36
Z1050Z	36
Z1051Z	36
Z1055Z	38
Z1093Z	37
Z1094Z	37
Z1097Z	39
Z1098Z	39
Z1118Z	38
Z1119Z	39
Z1120Z	36
Z1121Z	37
Z3064Z	37
Z3080Z	41
Z3081Z	41
Z3088Z	36
Z3089Z	37
Z3090Z	38



MarineTuff® Part Number Index

Part Number	Page No	Part Number	Page No	Part Number	Page No	Part Number	Page No
Z3091Z	39	Z28102Z	22	Z28143Z	27	Z28601Z	15
Z3103Z	42	Z28103Z	22	Z28144Z	27	Z28602Z	16
Z27080Z	22	Z28104Z	22	Z28145Z	27	Z28603Z	16
Z27109Z	25	Z28105Z	22	Z28146Z	27	Z28604Z	16
Z27138Z	27	Z28106Z	22	Z28147Z	27	Z28605Z	16
Z27325Z	15	Z28107Z	22	Z28148Z	27	Z28606Z	16
Z27337Z	18	Z28108Z	22	Z28149Z	29	Z28607Z	16
Z27636Z	22	Z28110Z	25	Z28150Z	29	Z28608Z	16
Z27641Z	25	Z28111Z	25	Z28151Z	29	Z28609Z	16
Z27643Z	27	Z28112Z	25	Z28152Z	30	Z28610Z	16
Z27916Z	15	Z28113Z	25	Z28153Z	30	Z28611Z	16
Z27917Z	18	Z28114Z	25	Z28154Z	30	Z28612Z	16
Z28081Z	22	Z28115Z	25	Z28155Z	31	Z28613Z	16
Z28082Z	22	Z28116Z	25	Z28156Z	31	Z28614Z	16
Z28083Z	22	Z28117Z	25	Z28157Z	31	Z28615Z	18
Z28084Z	22	Z28118Z	25	Z28158Z	32	Z28616Z	18
Z28085Z	22	Z28119Z	25	Z28159Z	32	Z28617Z	18
Z28086Z	22	Z28120Z	25	Z28323Z	18	Z28618Z	19
Z28087Z	22	Z28121Z	25	Z28324Z	19	Z28619Z	19
Z28088Z	22	Z28122Z	25	Z28326Z	15	Z28620Z	19
Z28089Z	22	Z28123Z	25	Z28327Z	15	Z28621Z	19
Z28090Z	22	Z28124Z	25	Z28328Z	16	Z28622Z	19
Z28091Z	22	Z28125Z	25	Z28329Z	16	Z28623Z	19
Z28092Z	22	Z28126Z	25	Z28330Z	19	Z28624Z	19
Z28093Z	22	Z28127Z	25	Z28331Z	18	Z28625Z	19
Z28094Z	22	Z28128Z	25	Z28334Z	15	Z28626Z	19
Z28095Z	22	Z28129Z	25	Z28335Z	15	Z28627Z	19
Z28096Z	22	Z28130Z	25	Z28336Z	15	Z29500X	45
Z28097Z	22	Z28131Z	25	Z28338Z	18	Z29501X	45
Z28098Z	22	Z28139Z	27	Z28339Z	18	Z29502X	45
Z28099Z	22	Z28140Z	27	Z28340Z	18	Z29503X	45
Z28100Z	22	Z28141Z	27	Z28341Z	19	Z29504X	45
Z28101Z	22	Z28142Z	27	Z28600Z	15	Z29505X	45





About Belden

Belden Inc., a global leader in high quality, end-to-end signal transmission solutions, delivers a comprehensive product portfolio designed to meet the mission-critical network infrastructure needs of industrial, enterprise and broadcast markets. With innovative solutions targeted at reliable and secure transmission of rapidly growing amounts of data, audio and video needed for today's applications, Belden is at the center of the global transformation to a connected world. Founded in 1902, the company is headquartered in St. Louis, USA, and has manufacturing capabilities in North and South America, Europe and Asia.

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