

How to Properly Select Bonding Wire Assembly

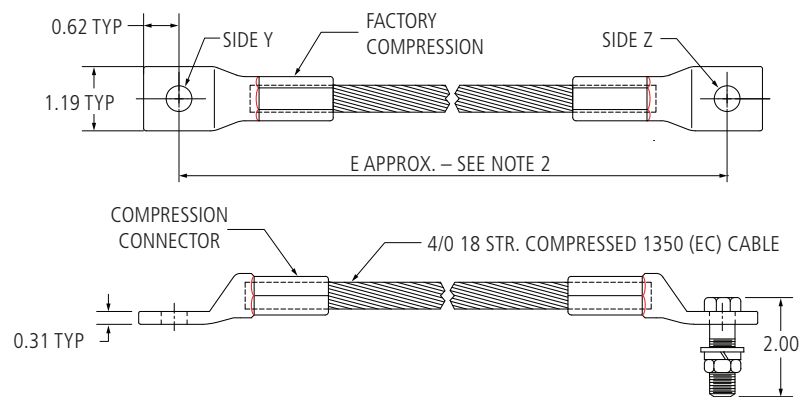
Peyton Campbell, Application Engineer, AFL

INTRODUCTION

AFL has been the leader in fiber optic hardware (FOHW) since 1984. Within AFL's FOHW offerings, bonding wires have been of extreme importance when grounding a system to a tower or pole. The purpose of this paper is to compare AFL's offerings of various bonding wires to help YOU select the correct bonding wire for YOUR application.

ALUMINUM BONDING WIRE (BWAL SERIES)

AFL's aluminum bonding wire is one of the most versatile offerings in bonding wire that AFL currently offers. This series contains a 4/0 18-stranded aluminum wire that is moderately flexible. This bonding wire has an ampacity of 383 amps. It comes in lengths of 24", 36", 40", 60" and 68". Another feature that this series includes is the ability to have one or two terminal ends, with the option to have different terminal sizes on either end if necessary. The terminals come with 3/8", 1/2", 5/8" or 3/4" holes and can include hardware for any of these sizes as well. The hardware includes a 2" bolt, a lock washer, a flat washer and a nut in that terminals designated size. The ordering information for the BWAL series can be found below in Figure 1.



Selection Information

BWAL	YY		H	/	ZZ		H	-	LL
Aluminum Bonding Wire	Terminal Selection Code – Side Y – (Smaller End)	Terminal Angle Blank = 0° Bend D = 45° Bend	Hardware H = Hardware Blank = No hardware		Terminal Selection Code – Side Z – (Larger End)	Terminal Angle Blank = 0° Bend D = 45° Bend	Hardware H = Hardware Blank = No hardware		Length in Inches (See Chart) *

DIMENSION "E"
(length in inches)*
24
36
40
60
68

TERMINAL		
SELECTION CODE**	HARDWARE SIZE	MOUNT HOLE DIAMETER
38	3/8"	0.438
50	1/2"	0.531
62	5/8"	0.688
75	3/4"	0.812

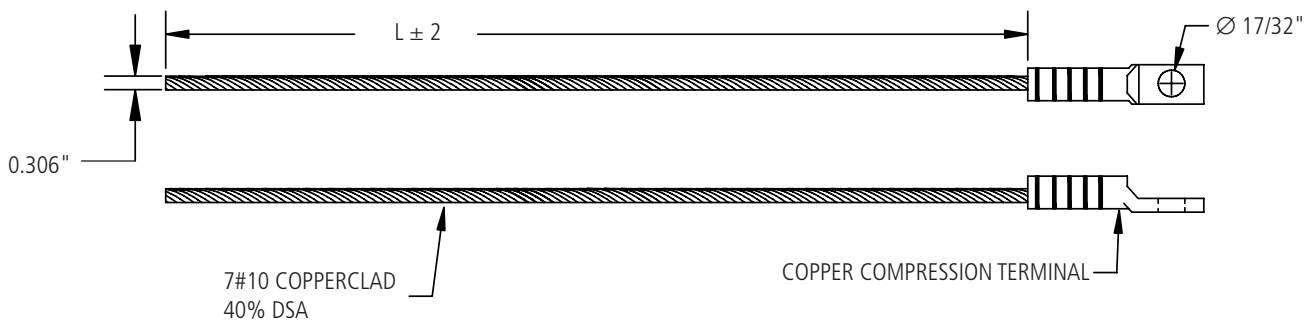
NOTES:

- Connectors to be pre-compressed onto cable at factory.
- If assembly does not contain two hole diameter codes, one terminal is supplied and dimension "E" references wire end.
- (*) For additional lengths not found in chart, contact AFL.
- (**) To order 45° angled terminal, add suffix 'D' to selection code. Example: (BWAL50DH/50D-36).

Figure 1—BWAL Series Information

COPPERCLAD BONDING WIRE (BWCU SERIES)

AFL's CopperClad bonding wire is another series in AFL's bonding wire family. This series of bonding wires contains a 7#10 CopperClad Steel wire that is available in different lengths which are 24", 32", 36", 40", 48", 56" and 60". This series comes with one terminal that has a 1/2" hole and is made of copper. The ampacity of this series is 206 amps. This is the ideal bonding wire to use with copper accessories and assemblies that require a higher tensile strength.



Selection Information

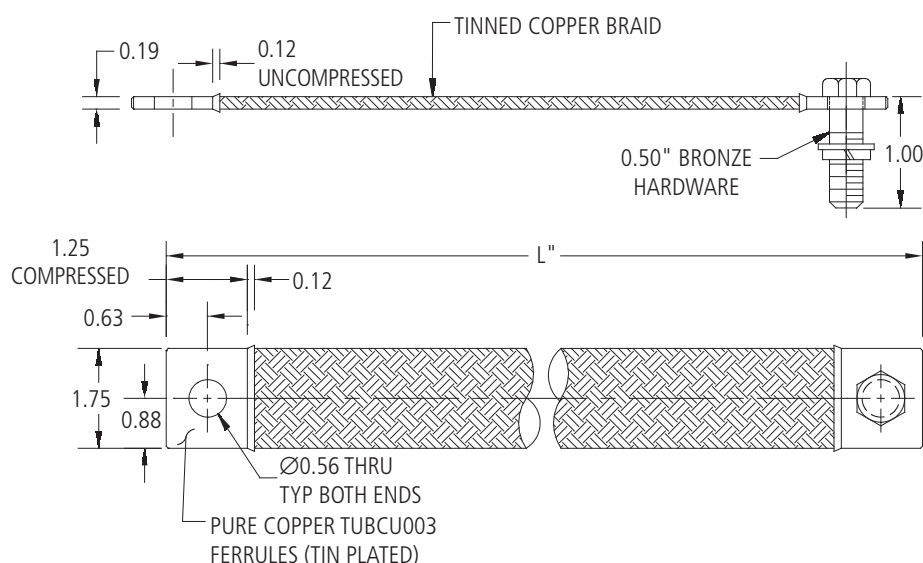
CATALOG NO.	L (INCHES)
BWCU50-18	18
BWCU50-24	24
BWCU50-32	32
BWCU50-36	36
BWCU50-40	40
BWCU50-48	48
BWCU50-56	56
BWCU50-60	60

Figure 2—BWCU Specification

continued
→

TINNED COPPER FLEXIBLE BRAIDED BONDING STRAP (BWCF SERIES)

AFL's tinned copper flexible braided bonding strap is one of the more unique designs in AFL's bonding wire family. With this series, there is a higher level of flexibility with grounding and is ideal with higher wind speeds and cooler temperatures. Due to the shape of the strap, these are not compatible with our bonding clamps, but these are still compatible with our dead-ends and suspension units. These come with a tinned copper braided strap and a tinned copper terminal on each end. This product has an ampacity of 340 amps. These are available in four different lengths of 24", 36", 48" and 60". Each of these come with one set of hardware for one of the 1/2" terminals that includes a 1" bolt, flat washer and a split washer. The ordering information for these can be found below in Figure 3.



Selection Information

BWCF	50SN	NH100	/	50SN	—	LL
Tinned Copper Flexible Braided Bonding Strap	Terminal Hole for 1/2" Hardware	1" Bolt, Flat Washer, Split Washer		Terminal Hole for 1/2" Hardware		Length in Inches (See Chart) *

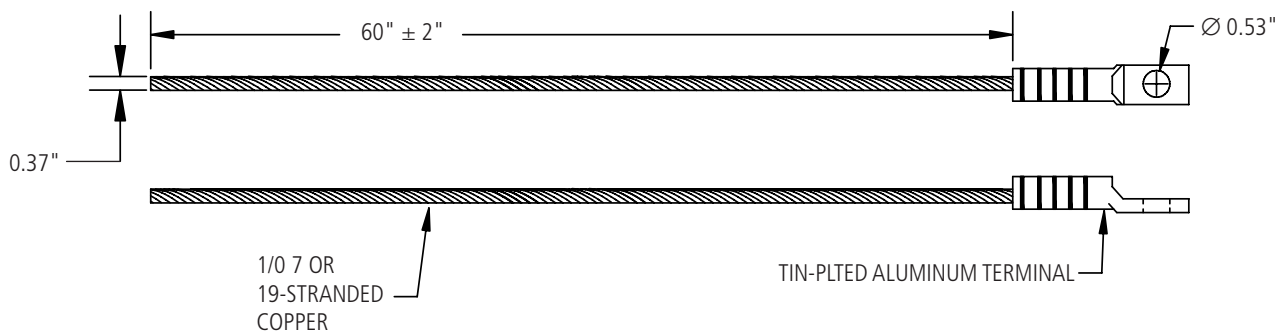
AFL NO.	L (inches)
BWCF50SNH100/50SN-60	60
BWCF50SNH100/50SN-48	48
BWCF50SNH100/50SN-36	36
BWCF50SNH100/50SN-24	24

Figure 3—BWCF Series Information

continued
→

TIN-PLATED COPPER BONDING WIRE (BWCO50H-60)

AFL also has one additional bonding wire in its collection. This bonding wire is a 1/0 tin-plated copper wire. This product has an ampacity of 310 amps. It comes with one tin-plated aluminum terminal with a 1/2" hole and is 60" in length. This bonding wire does not come with hardware as it is designed to operate alongside of our OPGW dead-ends and suspensions that already contain the necessary grounding lugs. Customers are to order this bonding wire by the part number BWCO50H-60.



Selection Information

CATALOG NO.	L (INCHES)
BWCO50H-60	60

Figure 4—BWCO50H Specification

SUMMARY

Table 1 below compares the various bonding wire series at a high level for a quick comparison. This ultimately should help in the selection of the appropriate bonding wire for YOUR application.

Table 1—Bonding Wire Comparison

PARAMETER	BONDING WIRE SERIES			
	BWAL	BWCU	BWCF	BWCO
Series Description	Aluminum Bonding Wire	Copperclad Steel (CCS) Bonding Wire	Flexible Copper Braided Bonding Strap	Copper Bonding Wire
Wire Material	Aluminum	Copperclad Steel	Tinned Copper	Tinned Copper
Terminal Material	Aluminum	Tinned Copper	Tinned Copper	Tinned Copper
Wire Size and Stranding	4/0-18	7#10 40% DSA CCS	3/0 AWG equivalent	1/0- 7 or 19 Strand
Number of Terminals	1 or 2	1	2	1
Hole/Hardware Size(s)	3/8", 1/2" 5/8", 3/4"	1/2"	1/2"	1/2"
Length(s)	24"-68"	18"-60"	24"-60"	60"
Ampacity	383 A	206 A	340 A	310 A



www.AFLglobal.com