

NICOPRESS Material Selection & Rated Breaking Strength

Proper material selection is important to ensure efficiency of wire rope connections

The ideal combination between any sleeve and wire rope are similar metals; however, some dissimilar metals combinations are perfectly acceptable to meet performance and/or material availability requirements. Understanding material combinations of wire rope and sleeves for a given environment is important to minimize corrosion. Refer to *Technical Bulletin TB-3.1* for details.

Nicopress Guide to Sleeve and Wire Rope Material Combinations in Various Environments										
Sleeve Materials (small area electrode)	Wire Rope Materials (large area electrode)									
	Mildly Corrosive Environment (ex: indoors)				Moderately Corrosive Environment (ex: outdoors)				Severely Corrosive Environment (ex: chemical or ocean exposure)	
	CS	Zn CS	SS	BO SS	CS	Zn CS	SS	BO SS	Zn CS	SS
Cu	B	B	B	B	C	B	B	B	C	C
Zn Cu	C	A	C	C	NR	A	C	C	B	NR
Sn Cu	B	B	B	C	C	B	B	C	C	C
BO Cu	B	B	B	B	C	B	B	C	C	C
Al	C	C	NR	NR	NR	C	NR	NR	NR	NR
SS	B	B	A	A	C	B	A	A	B	A
BO SS	B	B	A	A	C	B	A	A	B	A

Compatibility Key

A	Excellent
B	Good
C	Fair
NR	Not Recommended

Sleeve Materials Key

Cu	Copper
Zn Cu	Zinc-plated Copper
Sn Cu	Tin-plated Copper
BO Cu	Black-Oxide coated Copper
Al	Aluminum
SS	Stainless Steel
BO SS	Black-Oxide coated Stainless Steel

Note: All combinations of sleeves and wire rope in the above table represent "galvanic couples" where it is always preferable to have the "smaller area electrode," or the metal sleeve, to be cathodic (or the more noble metal) relative to the "larger surface area electrode," or wire rope, which is better when it is anodic (or a more active metal) in the couple. Refer to *Technical Bulletin TB-3* for more information.

Disclaimer: The information provided herein serves as a general recommendation only. Many factors involved in service environments such as, but not limited to; temperature cycles and extremes, mechanical loading, electrical currents, radiation, chemicals, exposure methods (spray, immersion, or mists), exposure severity or frequency, and others may potentially vary or reverse an expected result.

Wire Rope Materials Key

Zn CS	Zinc-plated Carbon Steel
SS	Stainless Steel
BO SS	Black-Oxide coated Stainless Steel
CS	Carbon Steel

Rated breaking strength

Table of Government Specifications for Breaking Strengths (lbs force) of Wire Ropes Typically used for Nicopress Sleeve Terminations					
Note: The following table was taken from: "Sleeve – Swaging Wire Rope" MS51844E, pg 4					
Cable size nominal	Construction	Nominal breaking strength (lbs)*			
		MIL-DTL-83420, type I		RR-W-410, type I, class 2**	
		Zinc or tin coated carbon steel comp A	Corrosion resistant steel comp B	Zinc coated steel	Corrosion resistant steel
1/32	3 x 7	110	110		
3/64	7 x 7	270	270		
1/16	7 x 7	480	480		
1/16	7 x 19	480	480		
3/32	7 x 7	920	920		
3/32	7 x 19	1000	920		
1/8	7 x 19	2000	1760		
5/32	7 x 19	2800	2400		
3/16	7 x 19	4200	3700		
7/32	7 x 19	5600	5000		
1/4	7 x 19	7000	6400		
5/16	7 x 19	9800	9000		
3/8	7 x 19	14400	12000		
7/16	6 x 19 IWRC			18360	16300
1/2	6 x 19 IWRC			24000	22800
9/16	6 x 19 IWRC			30200	28500
5/8	6 x 19 IWRC			37000	35000
3/4	6 x 19 IWRC			53000	49600

*Nominal breaking strength. Eye splices, when properly assembled using the manufacturer's recommended tools and splicing instructions and when pulled with increasing tension, shall hold until wire rope breaks. It's preferred that tensile loads at failure be not less than 90 percent of the breaking strength specified in Table I.

**In all applications where RR-W-410 type I, class 2 wire rope is being used, proof tests should be conducted to determine if one or two sleeves are required.

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