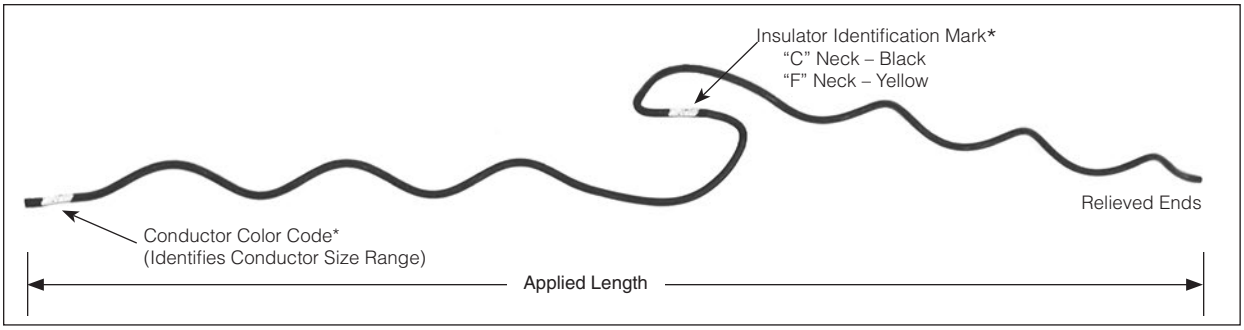
Coated Top Tie

NOMENCLATURE



Applied Length: Assists in identification of conductor size, corresponding to tabular information appearing on catalog pages.

Relieved Ends: Eases installation without damaging the conductor jacket and eliminates electrical tracking.

Insulator Identification Mark: Identifies the correct insulator headstyle by colors corresponding to information on catalog pages.

Color Code: Assists in identification of conductor size, corresponding to tabular information appearing on catalog pages.

*Since the COATED TOP TIES are all black, where an insulator or conductor code normally would be black, no additional black mark is applied to the COATED TOP TIES.

GENERAL RECOMMENDATIONS

Intended Use: The COATED TOP TIE is intended for use with plastic jacketed conductors and tie top ANSI C29 compliant insulators only. They are suitable for use with any plastic covered conductor such as Tree Wire or Spacer Cable.

Material: COATED TOP TIES use a semi-conductive plastic coating, selected for its superior electrical tracking resistance properties, covering a formed steel wire.

Mechanical: Testing has shown COATED TOP TIES will develop unbalanced and lift-off loads equivalent to, or in excess of, a hand tie over jacketed conductor.

Line Angles: On vertically-mounted insulators, COATED TOP TIE can normally accommodate line angles up to **10**°. Larger angles may be accommodated when the insulator is mounted at varying degrees of cant from the vertical.

In all cases the conductor should rest in the preferred insulator groove, independently of the tie, so the tie is not required to force the conductor to remain in that groove. The largest practical angle a tie can accommodate depends upon the limiting factors such as conductor size, tension, span lengths, sag angles, insulator style and orientation. Consult PLP for further guidance on line angle issues.

Insulators: To ensure proper fit and performance, it is recommended that only ANSI C29.5 or C29.7 compliant insulators having nominal neck diameters corresponding to 2-1/4" C-Neck or 2-7/8" F-Neck be used.

The COATED TOP TIE is designed to permit controlled and limited movement of unbroken conductor and under certain conditions, return the conductor to its originally installed position. The ability of the tie to give and return under differential loading conditions is called "resiliency" and is designed into each COATED TOP TIE.

SAFETY CONSIDERATIONS

1. This product is intended for a single (one-time) use and for the specified application. CAUTION: DO NOT REUSE OR MODIFY THIS PRODUCT UNDER ANY CIRCUMSTANCES.
2. This product is intended for use by trained craftspeople only. This product SHOULD NOT BE USED by anyone who is not familiar with and trained in the use of it.
3. When working in the area of energized lines with this product, EXTRA CARE should be taken to prevent accidental electrical contact.
4. For PROPER PERFORMANCE AND PERSONAL SAFETY be sure to select the proper size PREFORMED™ Coated Tie before application.
5. PREFORMED Coated Ties are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.

Coated Top Tie

For use on:
Plastic Jacket Conductor
C-Neck Interchangeable
Headstyle Insulators

ANSI 55-2 Pin **2-1/4"**
ANSI 55-3 Pin **Neck Diameter**

Catalog Number	Diameter Range (Inches)		Units	Wt./Lbs.	Applied Length (Inches)	Insulator Identification Mark	Color Code
	Min.	Max.	Per Carton				
CTC-0201	.278	.315	100	18	28	Black/None	Purple
CTC-0202	.316	.357	100	19	28	Black/None	Red
CTC-0203	.358	.405	100	20	30	Black/None	Yellow
CTC-0204	.406	.459	50	17	30	Black/None	Blue
CTC-0205	.460	.520	50	17	32	Black/None	Orange
CTC-0206	.521	.588	50	18	33	Black/None	Red
CTC-0207	.589	.665	50	18	34	Black/None	Purple
CTC-0208	.666	.755	50	19	36	Black/None	Brown
CTC-0209	.756	.858	50	19	36	Black/None	Red
CTC-0210	.859	.968	50	20	40	Black/None	Blue
CTC-0211	.969	1.096	50	21	44	Black/None	Green
CTC-0212	1.097	1.240	50	22	48	Black/None	Yellow
CTC-0213	1.241	1.402	50	23	48	Black/None	Orange
CTC-0214	1.403	1.585	50	24	48	Black/None	Black/None

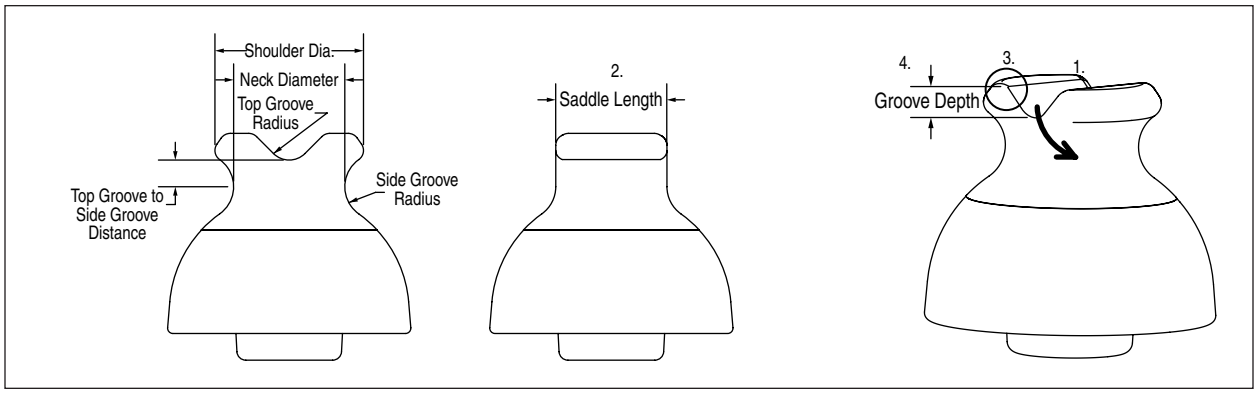
For use on:
Plastic Jacket Conductor
F-Neck Interchangeable
Headstyle Insulators

ANSI 55-4 Pin **2-7/8"**
ANSI 55-5 Pin **Neck Diameter**
ANSI 57-1 Post
ANSI 57-2 Post
ANSI 57-3 Post

Catalog Number	Diameter Range (Inches)		Units	Wt./Lbs.	Applied Length (Inches)	Insulator Identification Mark	Color Code
	Min.	Max.	Per Carton				
CTF-0101	.278	.315	100	20	28	Yellow	Purple
CTF-0102	.316	.357	100	20	28	Yellow	Red
CTF-0103	.358	.405	100	20	30	Yellow	Yellow
CTF-0104	.406	.459	50	18	30	Yellow	Blue
CTF-0105	.460	.520	50	18	32	Yellow	Orange
CTF-0106	.521	.588	50	19	33	Yellow	Red
CTF-0107	.589	.665	50	19	34	Yellow	Purple
CTF-0108	.666	.755	50	20	36	Yellow	Brown
CTF-0109	.756	.858	50	21	36	Yellow	Red
CTF-0110	.859	.968	50	22	40	Yellow	Blue
CTF-0111	.969	1.096	50	23	44	Yellow	Green
CTF-0112	1.097	1.240	50	35	48	Yellow	Yellow
CTF-0113	1.241	1.402	50	26	48	Yellow	Orange
CTF-0114	1.403	1.585	50	28	48	Yellow	Black/None

Insulator Fit

Interchangeable Insulators for use with PLP® Ties
Dimensional Factors that affect Tie Application and Performance



It is recommended that only insulators meeting the dimensional requirements of the most recent ANSI® C29.3, C29.5, C29.6, and C29.7 specifications be used with the appropriate PLP ties.

ANSI C29 Insulator Specifications and their Affects on PLP Ties

ANSI C29 specifies and defines dimensions for insulator heads that are crucial to the proper application and lifetime performance of PLP factory formed ties. These dimensions include:

- Neck Diameter - nominal
  - C-neck – 2-1/4"
  - F-neck – 2-7/8"
  - J-neck – 3-1/2"
  - K-neck – 4"
- Top groove radius (minimum)
- Side groove radius (minimum)
- Maximum shoulder diameter (maximum)
- Top groove to side groove vertical spacing

Some of the specified dimensions are simply maximum or minimum allowable values. The dimensions for the vertical distance from the bottom of the top groove to the middle of the side groove and the neck diameter have minimum and maximum values designated.

These dimensions and insulator designations determine the proper tie to be used and the maximum conductor size for the groove application. Review the individual tie sections for groove/conductor diameter limitations.

Insulator characteristics that are not part of the ANSI C29 Specifications

Some of the insulator characteristics that have an impact on the application and performance of PLP Ties are not included in the ANSI specification. These characteristics include:

1. **The transition contour of the top groove into side groove**
2. **Length of the saddle or top groove**
3. **Extension of shoulders past the edge of the top groove.**
4. **Depth of the top groove**

Each of these items has different results on a factory formed tie's performance. Combinations of several of these characteristics could result in initial tie damage and incorrect application.

1. The transition contour of the top groove into the side groove is important due to the tie's shape. If an edge is created instead of a smooth rounded transition, the tie's formed wire is forced to bend over a fulcrum point resulting in a high concentration of stress. This is detrimental for both the insulator and tie.

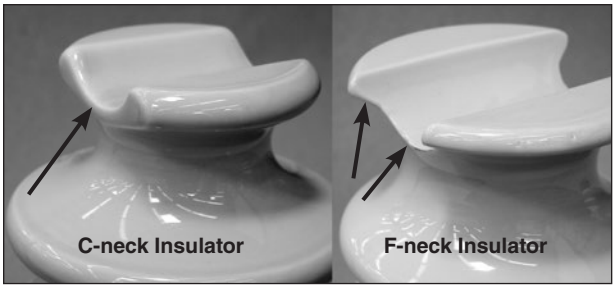


Figure 1a
Note the edge that exists between the top groove and the side groove above. Figure 1b shows a smooth transition.

Figure 1b

Insulator Fit

2. A top groove length longer than the insulator's neck diameter results in an edge. This edge creates a high stress contact point and results in an abnormal tie application. As an example, Figure 2 illustrates how a Distribution Tie reacts to this configuration (the tie tube was omitted to illustrate the gap beneath the conductor). Note the point contact at the insulator/tie interface.

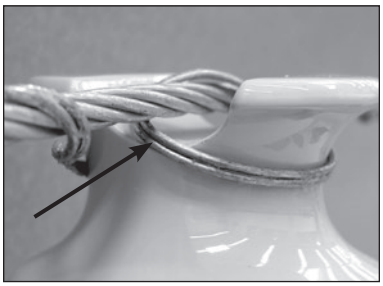


Figure 2

3. The shoulder extensions result in difficulty in application of top ties. As the tie is rotated, the added protrusions from the shoulders past the end of the top groove provide catch points for the tie (see F-neck Insulator in Figure 1a).

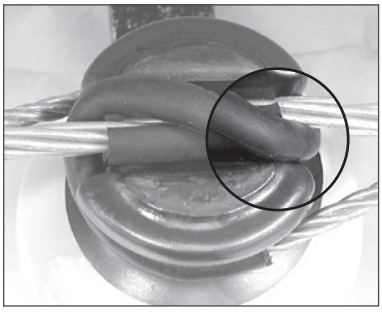


Figure 3

4. The top groove of the insulator can cause installation difficulties of top ties when its diameter is at the minimum ANSI designation. This is especially troublesome when installing the WRAPLOCK® Tie. Figure 3 illustrates the application on a C-neck insulator on 1/0 ACSR 6/1 conductor.

The circled area illustrates that the covered center section of the WRAPLOCK® Tie is wedged between the conductor and the inner surface of the insulator. This increases the installation difficulty of the tie.

In many instances the transition of the grooves can have a great impact on the form, fit, and function of a factory formed tie and hand tie wire. The sharp edge of a long top groove saddle (see Figure #1) can be especially hazardous to the soft hand tie wire as well as a factory formed tie.

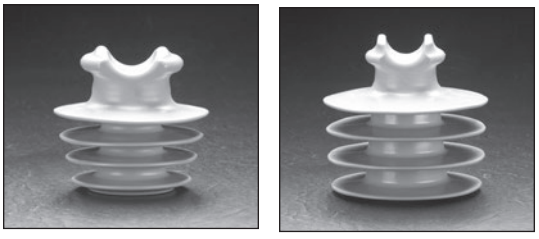
Insulator Review and Trial Applications

It is recommended the user conduct a thorough review of the insulator size, shape and geometry and conduct trial fits with the ties, prior to full scale field installations. Consult PLP for assistance, especially if there are any doubts concerning tie and insulator fit or performance.

Non-ANSI C29 Insulators

Some insulators that do not technically meet all the ANSI C29 Wet Process Porcelain Insulator standards may be suitable for use with PLP factory formed ties depending on their head and neck dimensions and geometry.

An example is the PLP polymer C & F-neck tie top insulators. These insulators have head and neck designs for use with PLP factory formed ties or PLP Ring Ties. The head and neck dimensions of the PLP Polymer C & F-neck insulators have been designed to match critical ANSI C29 dimensional specifications and meet or exceed most of the mechanical and electrical performance requirements specified in that standard.



PLP Polymer 15kV and 35kV Insulators