Special PUBLICATION

ANDREW®

Product Information
Cold Shrink Weatherproofing Kits

Product Description

Cold Shrink Weatherproofing Kits, designed for indoor, outdoor, and submerged application, provide field-installed weatherproofing and moisture sealing for:

- Jumper cable-to-connector interfaces
- Cable splices
- Antenna output-to-cable interfaces

Each kit includes an open-ended rubber sleeve that is factory expanded on a removable core. As you unwind the core, the tube shrinks to form a waterproof seal that requires no adhesives, heat, or flame. Properly installed, Cold Shrink conforms to the interface and maintains constant compression which prevents moisture from migrating into the sealed connection. The tube, made of EPDM rubber, contains no chlorides or sulfurs. You can easily remove the Cold Shrink at any time by using a knife to slit along the length of the sealed connection. Cold Shrink is compatible with all rubber or plastic jacketed coaxial cables, and is available in a range of sizes to accommodate many applications.

Survivability

The Cold Shrink Weatherproofing Kit operates at temperatures exceeding those recommended for HELIAX Coaxial Cable, -40 to 85° C (-40 to 185° F). The installed kit requires no additional covering or adhesive for indoor, outdoor, overhead, or submerged applications. In addition, Cold Shrink is not adversely affected by moisture, mild acids, alkalies, ozone or ultraviolet light. Cold Shrink conforms to the requirements of ANSI C119.1 1974, appropriate sections of Western Underground Guide 2.14 and UL 486D, and has been accepted by the U.S. Department of Agriculture, Rural Electrification Administration, for both submersible and aerial application.

Typical Physical and Electrical Properties

Test Method	Typical Value
Physical Properties:	
Color:	black
100% Modulus ASTM D 412:	170 lb/in² (1.17 MPa)
300% Modulus ASTM D 412-75 Original:	700 lb/in² (4.7 MPa)
Ultimate Tensile ASTM D 412-75 Original:	1680lb/in² (11.6 MPa)
Ultimate Elongation ASTM D 412-75	635%
Die C Tear ASTM D 624C-73 Original	220 pli (38.5 KN/m)
Fungus resistance ASTM G-21	
28 days exposure	No growth
Shore A Hardness ASTM D 2240-75	48
Permanent Set test method	RT 8.8%
@250% strain 5 minute recovery	40° F (4.4° C) 14.6%
Electrical Properties:	
Dielectric strength ASTM D 149-75	490 V/mil (19.1 MV/m)
Original @ 1.78 mm	
7 days in H_2O at 90° C (194° F)	465 V/mil (18.1 MV/m)
Dielectric Constant Original	5.0
7 days @ 90°C (194° F)	5.6

Moisture, Cold, Heat, Seal, and UV Test Criteria

Test Sequence

1. 24 hours in room temperature water (12 inches deep).
2. Insulation resistance, at dc (500 to 1000 V), 1 minute.
3. Dielectric ac withstand, 1 minute at 2200 V.
4. Heat at 90°C for 72 hours.
5. Flex test: 10 cycles at 90 right and 90 left.
6. Twist test: twist 15 clockwise and then 15 counterclockwise from center 5X.
7. Water immersion as in Step 1.
8. Insulation resistance as in Step 2.
9. Cold temperature, 4 hours at 0°F, bend and twist as in Step 5 and Step 6 at temperature.
10. Flex as in Step 5.
11. Twist as in Step 6.
12. Water immersion as in Step 1.
13. Insulation resistance as in Step 2.
14. Current cycle and water submersion test:
    a. Heat conductor with current to 90°C for one hour.
    b. De-energize
    c. Plunge in 25°C water within 3 minutes of Step b for 30 minutes.
    d. Repeat Steps a, b, and c 25 times.
    e. Measure insulation resistance as in Step 2.
    f. Repeat Steps a, b, and c 25 times.
    g. Dielectric test as in Step 3.
15. Dielectric withstand as in Step 3.
16. Leakage current in water 600 volts 60 hz., 2.5 mA maximum leakage.

Thermal Shock Test

a. Freeze to -60°C.
b. De-energize
c. Heat to 120°C.
d. Repeat Steps a, b, and c 50 times one hour per cycle
e. Dielectric test as in Step 3.

High Temperature Test

a. Heated to 140°C for 96 hours.
b. Water immerse as in Step 1.
c. Dielectric test as in Step 3.

UV Resistance Test Criteria

Samples were exposed to UV-Condensation Reference ASTM G-53, light source UVA 340 floureschent lamp. The samples were examined after 1000 hours. No visible signs of degradation were observed.

Installation

The information below describes the basic Cold Shrink installation procedure. Refer to the installation instructions provided with each Cold Shrink Weatherproofing Kit (Bulletin 237272) for more detailed and application-specific instructions.

1. Remove the loose end from the cut and welded end of the Cold Shrink tube.
2. Slide the Cold Shrink assembly onto the cable interface connection, and position the Cold Shrink. See Bulletin 237272.
3. Hold the Cold Shrink and cable assembly in the proper position in one hand and unwind the core in a counter clockwise direction with the other.