

COTRAN®

STOCK CODE: 300731



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COTRAN®

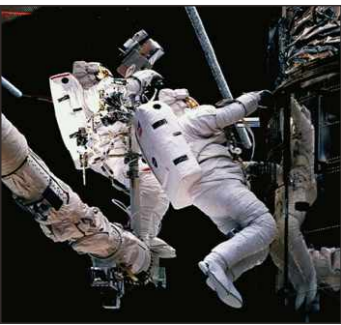
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WATERPROOF PRODUCTS &
SOLUTIONS FOR TELECOM



ABOUT COTRAN



Vision

To be a world-class enterprise of polymer material application and development.

Mission

To provide customers with satisfactory integrated solutions and services of polymer materials application and development.

To help customers succeed.

To build a common career platform to help employees achieve career dreams.

Core Value

To be customer-centric, striver-oriented, honest and pragmatic, professional and innovative.

Company founded.

2008

Supply of the world's top 500.

2009

Fast growth in telecom industry.

2010

2015

GEM listing.
Stock Code:300731

2017

Layout 5G.

2018

Brazil subsidiary Established
Develop 5G application materials.

2019

....
2021

COTRAN Partners



ZTE



NOKIA





Stability is very important for the antenna feeder in wireless transportation systems and the whole system.

Frequently problems , such as signal decay , standing-wave ratio alarm, outdoor devices water penetration alarm, are arising due to the failure of sealing of connection of antenna feeder and the connector.

Hence, signal transportation is affected, resulting in customer complaints and increased maintenance cost.

Waterproof
Dchematic
Diagram and failure



Contents

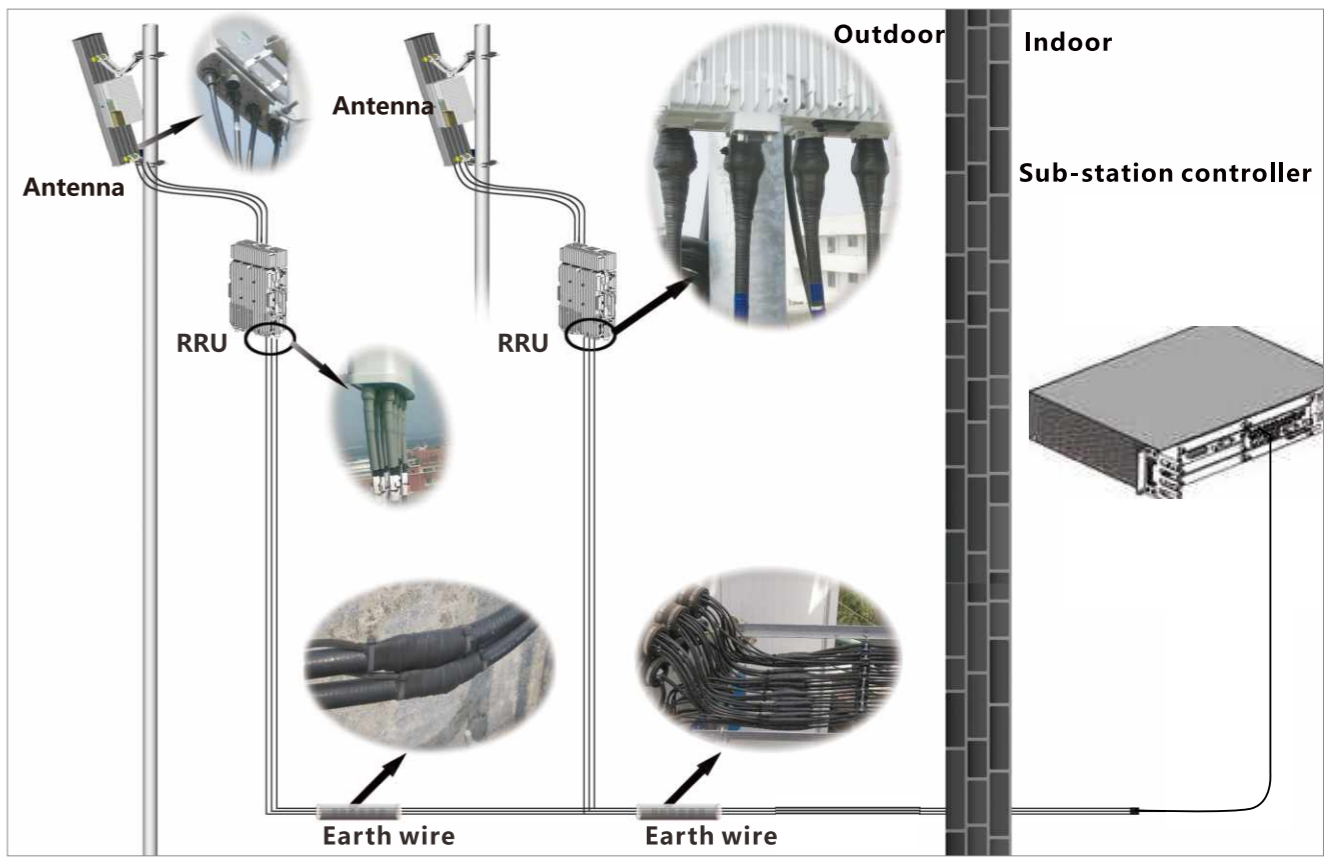
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Base station waterproof schematic diagram





A

Tape Solution



Waterseal Mastic Tape+PVC Tape

Indoor Only

KC86(9166)

Waterproof Tape

+

KC62(8712)

PVC Tape

- Suitable for indoor connector
- Not suitable for outdoor
- The KC86(9166) waterproof tape will easily melt and overflow under high temperature
- During installation, the tape is very sticky

General Climate

KC80(T28)

Waterseal tape

+

KC62(8712)

PVC Tape

- Suitable for outdoor connector
- Anti-UV (5 years)
- Heat-resistance
- Not recommended under extreme weather

All - Weather

T28 ultra-thin

Waterseal Tape

+

KC63

PVC Tape

- Suitable for outdoor connector (long service time)
- Anti-UV (15 years)
- Heat- resistance
- Low-temperature resistance

Steps for Installation

Step1

1 Layer
PVC Tape

Step2

3 Layers
Waterproof Tape

Step3

3 Layers
PVC Tape

B

Kits Solution



Universal Weatherproof Kits

Product Description

The universal waterproof kits are used for the connectors, they include 6 rolls KC86 (waterseal mastic tape),2 rolls of KC63(all-weather electrical PVC tape) with a width of 19mm and 1 roll of KC62(Quality electrical PVC tape) with a width of 50mm.

Dimensions

Name	Content
Universal Weatherproof Kits	One roll of 50 mm PVC tape Six rolls of 63 mm butyl rubber tape Two rolls of 18 mm PVC tape

Mechanical Specifications

Item	Content
UV Resistance Test Method	8h UV at 60°C BPT, 0.77W/(m2•nm) @ 340nm, 4h condensation at 50°C BPT
UV Resistance Test Time	1008h (with no degradation)
Weather Resistance Test Method	ASTM D4388-08, ASTM D4325-08 and ASTM D750-06 clause 6.8

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant
REACH (EC)NO 1907/2006	Concentration of 46 SVHC substances are less than 0.1%
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system



C

Tube Solution



KC97 Silicone Rubber Cold Shrink Tube with Mastic

KC92 Silicone Rubber Cold Shrink Tube

KC80 Waterproof tape+KC63 PVC Tape

Installation labor cost is low



VS

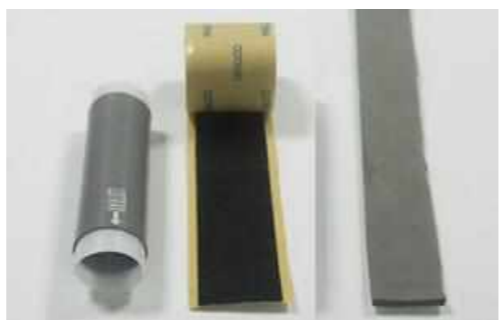


Comparison for solutions

Comparison Solution	Cold shrinkable tubing	Waterproof tape+PVC Tape
Operating space	Small	Large
Convenience of operation	Easy	Difficult
Sealing performance	General Sealing	General Sealing
Operating time	Short	Long
Labor cost	Low	High

Special Application

In some special case, for example, 1/2" to 1 5/8" connector, we need to add foam tape or waterproof tape inside the cold shrink tube to keep waterproofing.



KC97 Silicone Rubber Cold Shrink Tube with Mastic

KC97 Silicone Rubber Cold Shrink Tube with Mastic

KC92 Silicone Rubber Cold Shrink Tube

90% Installation labor cost is saved



VS

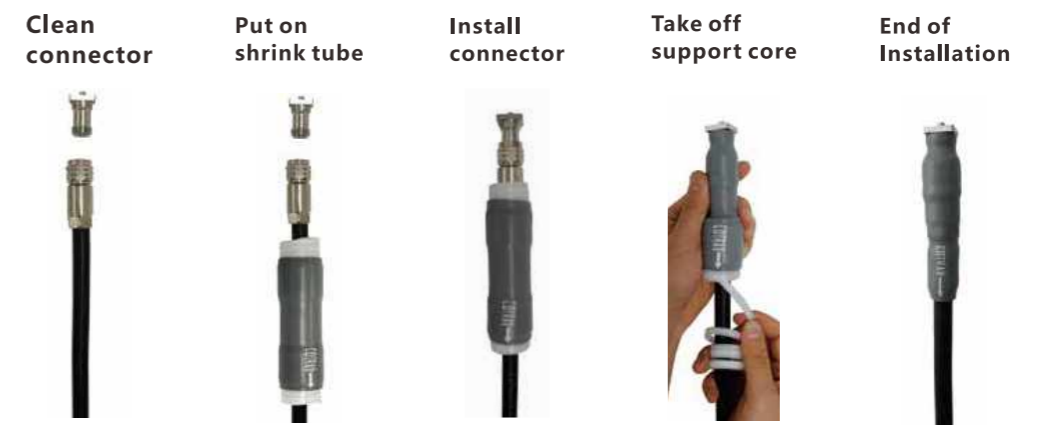


90% Installation labor cost is saved

Comparison for solutions

Comparison Solution	Mastic inside	Cold shrinkable tubing+foam solution
Operating space	Small	Large
Convenience of operation	Easy	Difficult
Sealing performance	Long-term liquidity sealing	General Sealing
Shape retention	Excellent	Poor
Product cost + Labor cost	Low	High

Installation Steps for KC97



D

Tube Solution





KC80(T28)

Waterseal
Mastic Tape



Product Description

KC80(T28) is a shapeable, adhesive and waterproof tape designed for communication connectors and made from EPR and butyl rubber. It has no corrosion to copper and other cable cover material.And it can be applied in a wide temperature. The rated operating temperature is 90 °C and the emergency overload is 130 °C. It has the best performance in waterproofing and sealing, which is suitable for all sorts of communication equipment connectors and cable connectors.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Low failure rate
High elongation	Good shape retention	Reliable sealing
Imported materials	Anti-aging	Low maintenance costs
Unique formula	Heat resistance	UV
Self-melt material	Strong adhesive	Reliable Waterproof

Specification

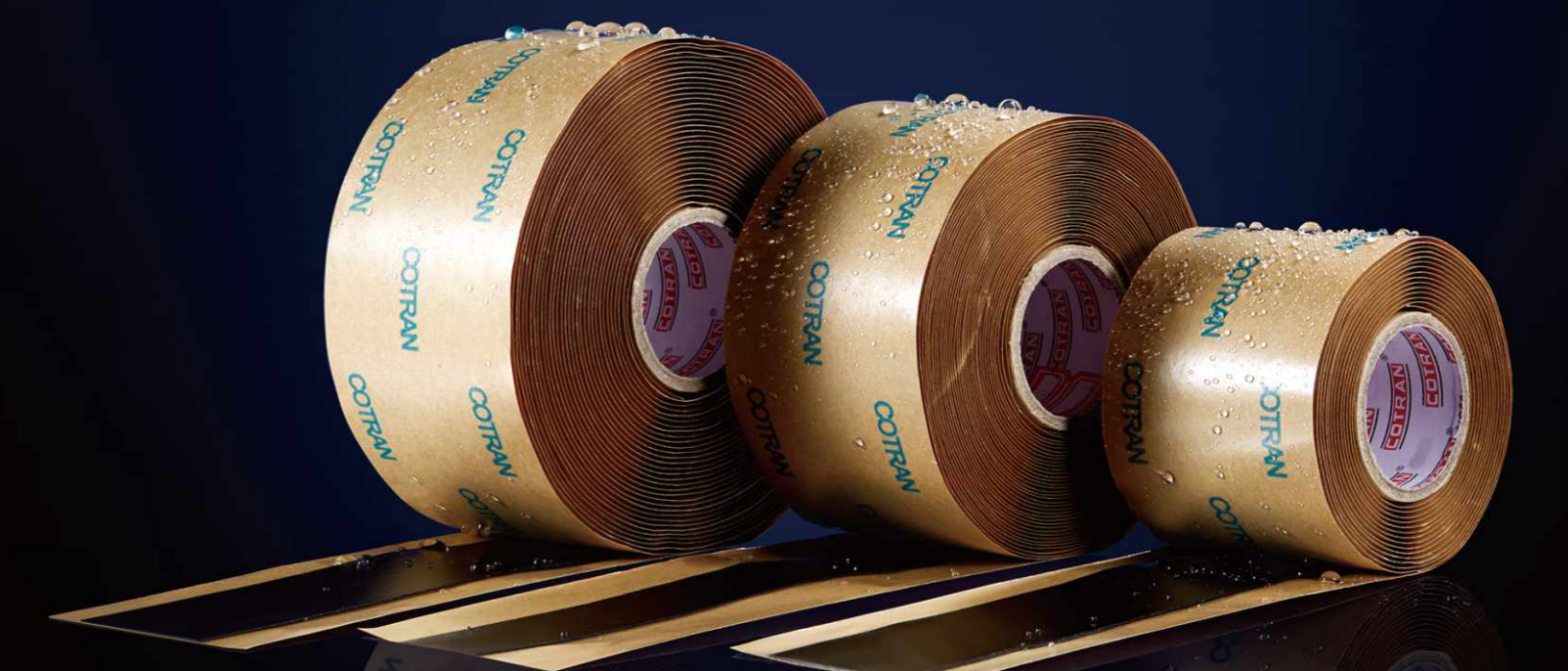
Property	Typical Value	Test Method
Tensile Strength	1.29MPa	ASTM D 4325
Elongation at break	970%	ASTM D 4325
Dielectric Strength	26.5KV/mm	ASTM D 4325
Adhesion (180°, Steel plate)	78.4N/50mm	ASTM D 1000
Ozone Resistance	Pass	ASTM D 4388
UV Resistance	Pass	ASTM D 4388
Xenon-arc Exposure	Pass	ASTM D 4388

Package Information

Model	Dimensions	Color	Packing
KC80(T28)	51mm×1.65mm×3m	Black	20pcs/CTN
KC80mini(T28 mini)	51mm×1.65mm×0.5m	Black	100pcs/CTN

Instruction manual

1. Clean up the cable
2. 200% stretched to the original length of the tape
3. 50% Overlap wrapped on the cable with the mastic side
4. Beyond both ends of the connector 30-50mm when wrapped the tape
5. Recommend to use COTRAN PVC tape together



KC80thin
(T29)

Thin Waterseal
Mastic Tape



Product Description

KC80 thin(T29) is a waterproof communication tape of a new generation made from EPR and Butyl rubber. KC80 thin(T29) is produced according to a new improved formula of COTRAN, Which is a fusion of all advice from the base station staff. It inherits all KC80 thin(T29) good features, and also has the new characteristics of being light&thin and easy to be operated.

COTRAN Advantage

Feature	Advantage	Benefit
Good tensile strength	Easy operate	Saving time
Ultra thin	Small place	Working efficient
Imported materials	Anti-aging	Low maintenance costs
Unique formula	Heat resistance	UV
Self-melt materia	Strong adhesive	Reliable waterproof

Specification

Property	Typical Value	Test Method
Tensile Strength	0.94 MPa	ASTM D 4325
Elongation at break	817%	ASTM D 4325
Dielectric Strength	20KV/mm	ASTM D 4325
Adhesion (Steel Plate)	25N/38mm	ASTM D 1000
Ozone Resistance	Pass	ASTM D 4388
UV Resistance	Pass	ASTM D 4388
Xenon-arc Exposure	Pass	ASTM D 4388

Package Information

Model	Dimensions	Color	Packing
KC80 thin(T29) light	51mm×1mm×3m	Black	20pcs/CTN
KC80 thin(T29) slim	38mm×1mm×3m	Black	30pcs/CTN

Instruction manual

1. Clean up the cable
2. 200% stretched to the original length of the tape
3. 50% Overlap wrapped on the cable with the mastic side
4. Beyond both ends of the connector 30-50mm when wrapped the tape
5. Recommend to use COTRAN PVC tape together



KC86(9166)

Waterproofing
Mastic Tape



Product Description

KC86(9166) is a shapable, adhesive and waterproof tape made from single-layer butyl rubber. Applicable for indoor connectors, buried cables, and waterproofing for electrical cable or fiber cable.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Low failure rate
High elongation	Good shape retention	Reliable sealing
Imported material	Pro-environment	Low maintenance costs

Specification

Property	Typical Value	Test Method
Ozone	Crack Free	ASTM D 518
UV	No obvious change	ASTM G 154-2

Package Information

Model	Dimensions	Color	Packing
KC86(9166)	63mm×3.18mm×0.6m	Black	50pcs/CTN

Instruction manual

1. Clean connector dust and contaminated part
2. Remove separator paper, warp&paste tape to connector.
3. Beyond both ends of the connector 30-50mm when wrapped the tape.
4. Recommend to use COTRAN PVC tape together



KC78

Electrical Insulation
Filler Tape



Product Description

KC78 is a self-amalgamating butyl rubber tape used on solid dielectric low voltage cable for electrical insulation and filling in around irregular shaped connectors.

COTRAN Advantage

Feature	Advantage	Benefit
Electrical tape	Good covering	Low failure rate
Good electrical insulation	Good shape retention	Reliable sealing
Imported material	Pro-environment	Low maintenance costs

Specification

Property	Typical Value	Test Method
Tensile strength	3.72N/10mm	ASTM D 1000
Elongation	>602%	ASTM D 1000
Dielectric strength	36.1KV/mm	ASTM D 1000
Insulation resistance	1.53x10 ¹³ Ω	ASTM D 1000
Copper corrosion	None	ASTM D 69

Package Information

Model	Dimensions	Color	Packing
KC78	38mmx3.175mmx1.5m	Black	40pcs/CTN

Instruction manual

1. Perform normal cable preparation
2. Remove separator from tape
3. 100% stretched to the original length of the tape
4. 60% Overlap wrapped on the cable
5. Recommend to use COTRAN PVC tape together



KC63(833)

All Weather
Electrical PVC Tape



Product Description

KC63(833) is a professional grade pressure sensitive PVC tape. It’s made by the high elastic base material and coating rubber, excellent electrical insulation and shape. Apply from -18 °C to 105°C temperature range. Widely used in all kinds of mechanical and electrical joint process apply to wire and cable connector of main insulation voltage 600V and below.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Low failure rate
High elongation	Good shape retention	Reliable sealing
Resistance low and high temp	wide range of application	Low maintenance costs

Specification

Property	Typical Value	Test Method
Tensile strength	69.5N/19mm	ASTM D 1000
Elongation	280%	ASTM D 1000
Dielectric strength	47.28KV/mm	ASTM D 4325
Adhesion (Steel Plate)	3.82N/19mm	ASTM D 1000
Insulation resistance	2.76×10 ¹¹ Ω	ASTM D 1000
Anti-Ozone	Pass	ASTM D 4388
anti UV aging	Pass	ASTM D 4388
Xenon lamp aging resistance	Pass	ASTM D 4388
Temperature rating	-18°C to105°C	

Package Information

Model	Dimensions	Color	Packing
KC63(833)	19mm ×0.18mm×20m	Black	100pcs/CTN

Instruction manual

1. Clean up the cable connector
2. 50% Overlap wrapped on the cable
3. PVC tape must be at the state without ant tension when using COTRAN waterproof jointy.



Product Description

KC62(8712) is a high-quality pressure-sensitive PVC insulation tape. It consists of substrate and coated rubber and has an excellent performance in shaping and electrical insulation. It is widely applied to all kinds of mechanical and electrical connector processing. The temperature range is from 0°C to 80°C. It is applied to wire and cable connector for main insulation voltage 600V and below.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Good covering
High elongation	Good shape retention	Good shape retention

Specification

Property	Typical Value	Test Method
Tensile strength	50.2N/19mm	ASTM D 1000
Elongation	210%	ASTM D 1000
Dielectric strength	50.49KV/mm	ASTM D 4325
Adhesion (Steel Plate)	4.4N/19m	ASTM D 1000
Volume Resistivity	2.21×10 ¹¹ Ω/25mm	ASTM D 1000
Anti-Ozone	Pass	ASTM D 4388
anti UV aging	Pass	ASTM D 4388
Xenon lamp aging resistance	Pass	ASTM D 4388
Temperature rating	0°C to 80°C	

Package Information

Model	Dimensions	Color	Packing
KC62(8712)	18mm ×0.18mm×20m	Black	100pcs/CTN

Instruction manual

1. Clean up the cable connector
2. 50% Overlap wrapped on the cable
3. PVC tape must be at the state without ant tension when using cotran waterproof jointy.

KC62(8712)

Quality Electrical
PVCTape





KC65

Color Coding
Electrical PVC Tape



Product Description

KC65 is an adhesive, shapable, and pressure-sensitive PVC insulation tape with many colors which are not easy to fade. It has great performances in anti-friction, anti-ultraviolet antiseptic, chemical-resistance and electrical insulation. It can be used in a wide temp range.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Low failure rate
High elongation	Good shape retention	Reliable sealing
Resistance low and high temp	wide range of application	Low maintenance costs
High fade performance	Not easy fade	Maintainable

Specification

Property	Typical Value	Test Method
Tensile strength	36.7N/19mm	ASTM D 1000
Temperature rating	-55°C to105°C	ASTM D 1000
Adhesion(steel)	3.42N/19mm	ASTM D 1000
Insulation strength	60KV/mm	ASTM D 4325
Insulation resistance	2.05×10 ¹² Ω	ASTM D 1000

Package Information

Model	Dimensions	Color	Packing
KC65	19mm ×0.18mm×20m	Red	100pcs/CTN

Instruction manual

1. Clean up the cable connector
2. 50% Overlap wrapped on the cable
3. Work with COTRAN waterproof tape, With the forces of nature, do not stretch.

Product Description

KC60(8600) is a leadless pressure-sensitive electrical PVC insulation tape with color coding for cable identification. It has great performances in inflaming retarding, and color retention. Apply to wire and cable connector of main insulation voltage 600V and below.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Good covering	Low failure rate
High elongation	Good shape retention	Reliable sealing
High fade performance	Not easy fade	Maintainable

Specification

Property	Typical Value	Test Method
Tensile strength	34.8N/19mm	ASTM D 1000
Adhesion(Backing)	3.52N/19mm	ASTM D 1000
Elongation	190%	ASTM D 1000
Insulation strength	61.3KV/mm	ASTM D 4325
Dielectric constant	3.06	ASTM D 4325
Insulation resistance	2.33×10 ¹² Ω	ASTM D 1000
Fade level	4	GBT250

Package Information

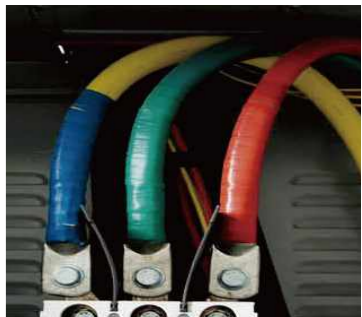
Model	Dimensions	Color	Packing
KC60(8600)	19mm ×0.13mm×10m	Red	200pcs/CTN

Instruction manual

1. Clean up the cable connector
2. 50% Overlap wrapped on the cable
3. Work with COTRAN waterproof tape, With the forces of nature, do not stretch.

KC60(8600)

Quality Color Coding
Electrical PVC Tape





KC96-Dual

EPDM-Dual Cold Shrink Tube



Product Description

Cotran KC96-Dual is developed based on the standard KC96 EPDM cold shrink tube, It aims to make sealing and weatherproofing more reliable and stable, and to improve the installation efficiency and performance. With the dual layers structure, built-in silicone tube, no need foam tape or other filling materials any more.

Technical Data

Property	Typical Value	Test Method
IP Grade	IPX8	IEC 60529
Tensile strength	10.75 MPa	ASTM D421
Elongation	690%	ASTM D624
Tear strength	29.71N/mm	ASTM D624

COTRAN Advantage

Installation Easily

Applicable to a variety of jumpers

Type N
4.3-10
DIN

Waterproofness

No need any inner filling materail

PROOF IP68

Solution

Item	Color	Application	Package
KC96-Dual	Black	Dual layer structure,design for 1/2' jumper(7/16 DIN,4.3-10) to equipment	50 pcs/Carton

Product Description

Cotran KC96 is a open-ended cold shrink ethylene propylene diene monomer (EPDM) rubber sleeve, which is factory pre-expanded and assembled onto a removable core. The core is removed when the tube is position for installation over an in line connection or termination lug. It provides a water proofing tight for terminations and joints.

Technical Data

Property	Typical Value	Test Method
IP Grade	IPX7	IEC 60529
Tensile strength	10.13 MPa	ASTM D 421
Elongation	680%	ASTM D 412
Tear strength	28.34 N/mm	ASTM D 624
Brittle temperature	< -20°C	ISO 812
Thermal ageing	Pass	ASTM D 412
Ozone aging	Pass	ASTM D 1149
UV aging	Pass	ASTM G 154

Seletive chart

Part No.	Diameter (mm)	Cable size (mm)		Length (mm)	Wall thickness after shrinkage (mm)
		Min	Max		
KC96-20	Φ 20	8	15	90 ~ 500	3.0
KC96-25	Φ 25	10	20	90 ~ 500	3.0
KC96-35	Φ 35	13	30	90 ~ 500	3.5
KC96-40	Φ 40	17.5	33	90 ~ 500	3.5
KC96-53	Φ 53	25	46	90 ~ 500	3.8
KC96-70	Φ 70	32	63	90 ~ 500	4.0
KC96-104	Φ 104	43	94	90 ~ 500	4.2
KC96-125	Φ 125	46	114	90 ~ 500	4.2
KC96-150	Φ 150	55	135	90 ~ 500	4.5

Note: Other size is available on request.

KC96

EPDM Cold Shrink Tube





KC97

Silicone Rubber Cold Shrink Tube with Mastic



Product Description

KC97 Silicone cold shrink tube with mastic inside, is a new base station waterproof product by increasing mastic at silicone tube's ends and forming strict structure between cold shrink tubes and cables under the effect of casing pipe's permanent radial pressure. It fits well for dense-joint c-connectors processing in small space. It is the idealest, maturest and most reliable.

Application

1. RRU (Outdoor equipment) connector
2. Antenna terminal
3. Feeder connector
4. Indoor system connector

COTRAN Advantage

Feature	Advantage	Benefit
Silicone Secret formula	Tube hold strength Great tensile strength	Reliable sealing Long service life
Mastic Secret formula	Good shape retention High&Low temp non-congealable Good compatibility	Flow waterproof seal Free maintenance
Support core High strength	No collapse	Long storage life

Specification

Property	Typical Value	Test Method	Property	Typical Value	Test Method
IP Grade	IPX8	IEC 60529	Electric strength	24.4 KV/mm	ASTM D 4325
Tensile strength	9.42 MPa	ASTM D 421	Volume resistivity	4.0×10 ¹⁵ Ω.cm	ASTM D 4325
Elongation	960%	ASTM D 412	Thermal ageing	Pass	ASTM D 412
Tear strength	41.6 N/mm	ASTM D 624	Ozone aging	Pass	ASTM D 1149
Brittle temperature	< -60°C	ISO 812	UV aging	Pass	ASTM G 154

Note: Not for specifications. Values are typical, not to be considered minimum or maximum.

Package Information

Model	Model	Model
KC97 25-120	Φ25mm-120mm	Designed for 8-pin AISG cable connected to RET/RCU;
KC97 28-110	Φ28mm-110mm	Designed for 1/2" jumper cable connected to RF devices (RRU, Antenna) through 4.3-10 or N connector.
KC97 40-140	Φ40mm-140mm	Designed for 1/2" jumper cable connected to RF devices (RRU, Antenna) through 7/16DIN or 4.3-10 connector.
KC97 40-250	Φ40mm-250mm	Designed for cable joint between 1/2" jumper cable and 7/8" feeder cable.

Note:
I.D.: Internal Diameter of tube before release
Length: Length of tube after release
Other size or any color is available with the same design.

Product Description

Kc92 cold shrink tueb (without mastic inside) with an accordant and beautiful appearance, has perfect resilience to various sizes which is very suitable for operating dense-joint connectors in small space and easy to operate. And it can satisfy all sorts of waterproof & sealing requireme-nts of all indoor connectors.

COTRAN Advantage

Feature	Advantage	Benefit
Great tensile strength	Tube hold strength	Reliable sealing
High elongation	Durable anti-aging	Long service life
High tear strength	Wear and friction	Low maintenance costs
Unique Formula	Wide application cable	Reduce the inventory cost

Specification

Property	Typical Value	Test Method
IP Grade	IPX7	IEC 60529
Tensile strength	9.89 MPa	ASTM D 421
Elongation	910%	ASTM D 412
Tear strength	46.2 N/mm	ASTM D 624
Brittle temperature	< -60°C	ISO 812
Electric strength	24.4 KV/mm	ASTM D 4325
Volume resistivity	4.0×10 ¹⁵ Ω.cm	ASTM D 4325
Thermal ageing	Pass	ASTM D 412
Ozone aging	Pass	ASTM D 1149
UV aging	Pass	ASTM G 154

Package Information

Part No.	Diameter (mm)	Cable size(mm)		Length (mm)	Wall thickness After shrinkage (mm)
		Min	Max		
KC92-18	Φ 18	5.7	13	50~ 200	2.5
KC92-25	Φ 25	7.3	21	50~ 300	2.5
KC92-28	Φ 28	9	23	50~ 300	2.5
KC92-40	Φ 40	11.7	35.1	50~ 400	3
KC92-55	Φ 55	18.2	49.2	90~800	3
KC92-60	Φ 60	18.2	53	90~800	3
KC92-70	Φ 70	22.4	63.6	90~800	3

Note: other size is available or request.

KC92

Silicone Rubber Cold Shrink Tube



En-CST
Cold Shrink Tube



Product Description

En-CST is new silicone rubber cold shrink tube with special appearance. It’ s specially designed to improve silicone cold shrink tube’ s resistance to puncture and other external damage. It is also for weatherproofing protection on cable connections or joint, mostly applied on cell sites, such as connection between jumper cable and connector (7/16 DIN, N type or 4.3-10 connector) on RF equipment (RRU, Antenna and passive device), and joint between feeder and jumper cable. Comparing with tape sealing protection, time of installation is much shorter (15-30 seconds), more convenient, uniform waterproofing quality.

Application

- 1. IPX8 class, stable and long-life during operation
- 2. Easy to install, only two steps (Cover, pull)
- 3. Fast installation, only 15-30 seconds needed to seal one connection
- 4. No limitation of spare space, especially design for MIMO & massive MIMO Antenna, also convenient to deploy on wall-mounted, high tower, pole-mounted condition etc.,. Easy to uninstall, only need knife to cut tube open
- 5. No skill required by engineers, uniform quality after installation, stable and good sealing and weatherproofing performance
- 6. Much time cost, and labor cost saving
- 7. Good operating capability under extreme cold and hot condition, highland, salt-mist situation, heavy windy weather, and anti-UV, anti-ozone

Property

Item		Parameter and Result	Test Method
Physical and mechanical properties	Class	Pass, IPX8	IEC 60529:1989+A1:1999+A2:2013; 1 meter depth in water, duration: 8 hours
	Shore Hardness	A/41/1	ASTM D2240-15
	Tensile Strength	9.89 MPa	ASTM D412-15a Method A
	Elongation	910%	ASTM D412-15a Method A
	Tear Strength	46.2 KN/m	ASTM D624-00(2012)
Flammability	Brittleness temperature by impact	Pass	ASTM D746-14
	Horizontal burning	HB	UL 94-2013 Rev.6-2016 Section 7
Temperature	Installation temperature	-40 ℃ - 60 ℃	
	Operation temperature	-60 ℃ - 90 ℃	
	Stock temperature	-60 ℃ - 90 ℃	

Note: Not for specifications. Values are typical, not to be considered minimum or maximum.

Specification

Model	I.D (mm)	Relaxed I.D (mm)	Relaxed Length (mm)	Description
En-CST-40	≥38	≤12	≥140	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 7/16 DIN or 4.3-10 connector
En-CST-28	≥27	≤12	≥110	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 4.3-10 or Type N connector
En-CST-AISG	≥22	≤10	≥110	Cold Shrink Tube, applicable for AISG cable to RET



Product Description

En-KC97 is the upgrade solution of KC97 cold shrink tube with built-in mastic, which has been re-designed with special appearance on tube’ s surface, much helpful to improve tube’ s resistance to puncture and other external damage. It has the same performance as KC97 cold shrink tube for weatherproofing protection on cable connections or joints applied on cell sites, such as connection between jumper cable and connector (7/16 DIN, N type or 4.3-10 connector) on RF equipment (RRU, Antenna and passive device), and joint between feeder and jumper cable. Comparing with tape sealing protection, time of installation is much shorter (15-30 seconds), more convenient, uniform waterproofing quality.

Application

- 1. High elastic silicone rubber tube structure with mastic built-in, dual layers design can bring double guarantee of weatherproofing protection
- 2. IPX8 class, stable and long-life during operation
- 3. Easy to install, only two steps (Cover, pull)
- 4. Fast installation, only 15-30 seconds needed to seal one connection
- 5. Easy to uninstall, only need knife to cut tube open. No limits for installation space, especially design for MIMO & massive MIMO Antenna, also convenient to deploy on wall-mounted, high tower, pole-mounted condition etc.,
- 6. No skill required by engineers, uniform quality after installation, stable and good sealing and weatherproofing performance
- 7. Much time cost, and labor cost saving
- 8. Good operating capability under extreme cold and hot condition, highland, salt-mist situation, heavy windy weather, and anti-UV, anti-ozone

Property

Item		Parameter and Result	Test Method
Physical and mechanical properties	Class	Pass, IPX8	IEC 60529:1989+A1:1999+A2:2013; 1 meter depth in water, duration: 8 hours
	Shore Hardness	A/41/1	ASTM D2240-15
	Tensile Strength	9.42 MPa	ASTM D412-15a Method A
	Elongation	960%	ASTM D412-15a Method A
	Tear Strength	41.6 KN/m	ASTM D624-00(2012)
Flammability	Brittleness temperature by impact	Pass	ASTM D746-14
	Horizontal burning	HB	UL 94-2013 Rev.6-2016 Section 7
Temperature	Installation temperature	-40℃ - 60℃	
	Operation temperature	-60℃ - 90℃	
	Stock temperature	-60℃ - 90℃	

Note: Not for specifications. Values are typical, not to be considered minimum or maximum.

Specification

Model	I.D (mm)	Relaxed I.D (mm)	Relaxed Length (mm)	Description
En-KC97-40	≥38	≤13	≥140	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 7/16 DIN or 4.3-10 connector
En-KC97-28	≥27	≤12	≥110	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 4.3-10 or Type N connector
En-KC97-AISG	≥22	≤10	≥110	Cold Shrink Tube, applicable for AISG cable to RET



EnRR-CST

Enhanced-
Rubber Ring
Cold Shrink Tube



Product Description

EnRR-CST is new silicone rubber cold shrink tube (built-in Rubber Ring) with special appearance. It's specially designed to improve silicone cold shrink tube's resistance to puncture and other external damage. It's a kind of good accessory for weatherproofing protection on cable connections or joint, mostly applied on cell sites, such as connection between jumper cable and connector (7/16 DIN, N type or 4.3-10 connector) on RF equipment (RRU, Antenna and passive device), and joint between feeder and jumper cable. Comparing with tape sealing protection, time of installation is much shorter (15-30 seconds), more convenient, uniform waterproofing quality.

Application

1. IPX8 class, stable and long-life during operation
2. Easy to install, only two steps (Cover, pull)
3. Fast installation, only 15-30 seconds needed to seal one connection
4. No limitation of spare space, especially design for MIMO & massive MIMO Antenna, also convenient to deploy on wall-mounted, high tower, pole-mounted condition etc.,
5. Easy to uninstall, only need knife to cut tube open
6. No skill required by engineers, uniform quality after installation, stable and good sealing and weatherproofing performance
7. Much time cost, and labor cost saving
8. Good operating capability under extreme cold and hot condition, highland, salt-mist situation, heavy windy weather, and anti-UV, anti-ozone

Property

Item		Parameter and Result	Test Method
	Class	Pass, IPX8	IEC 60529:1989+A1:1999+A2:2013; 1 meter depth in water, duration: 8 hours
Physical and mechanical properties	Shore Hardness	A/41/1	ASTM D2240-15
	Tensile Strength	9.89 MPa	ASTM D412-15a Method A
	Elongation	910%	ASTM D412-15a Method A
	Tear Strength	46.2 KN/m	ASTM D624-00(2012)
	Brittleness temperature by impact	Pass	ASTM D746-14
Flammability	Horizontal burning	HB	UL 94-2013 Rev.6-2016 Section 7
	Installation temperature	-40℃ - 60℃	
Temperature	Operation temperature	-60℃ - 90℃	
	Stock temperature	-60℃ - 90℃	

Note: Not for specifications. Values are typical, not to be considered minimum or maximum.

Specification

Model	I.D (mm)	Relaxed I.D (mm)	Relaxed Length (mm)	Description
EnRR-CST-40	≥38	≤12	≥140	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 7/16 DIN or 4.3-10 connector
enRR-CST-28	≥27	≤12	≥110	Cold Shrink Tube, designed for 1/2" jumper to equipment, only applicable for 4.3-10 or Type N connector
enRR-CST-AISG	≥22	≤10	≥110	Cold Shrink Tube, applicable for AISG cable to RET



RR-CST

Cold Shrink Tube



Product Description

RR-CST is silicone rubber cold shrink tube series product, an alternative option for clients. It's designed for weatherproofing protection on cable connections or joint, mostly applied on cell sites, such as connection between jumper cable and connector (7/16 DIN, N type or 4.3-10 connector) on wireless equipment (RRU, Antenna and passive device), and joint between feeder and jumper cable. Comparing with tape sealing protection, time of installation is much shorter (15-30 seconds), more convenient, uniform waterproofing quality.

Application

1. IPX8 class, stable and long-life during operation
2. Easy to install, only two steps (Cover, pull)
3. Fast installation, only 15-30 seconds needed to seal one connection
4. No limitation of spare space, especially design for narrow space, high density connectors mounted equipment such as scenario of 3G and 4G combination site, MIMO antenna), also convenient to deploy on wall-mounted, high tower, pole-mounted condition etc.,
5. Easy to uninstall, only need knife to cut tube open
6. No skill required by engineers, uniform quality after installation, stable and good sealing and weatherproofing performance
7. Much time cost, and labor cost saving
8. Good operating capability under extreme cold and hot condition, highland, salt-mist situation, heavy windy weather, and anti-UV, anti-ozone

Property

Item		Parameter and Result	Test Method
	Class	Pass, IPX8	IEC 60529:1989+A1:1999+A2:2013; 1 meter depth in water, duration: 8 hours
Physical and mechanical properties	Shore Hardness	A/41/1	ASTM D2240-15
	Tensile Strength	9.89 MPa	ASTM D412-15a Method A
	Elongation	910%	ASTM D412-15a Method A
	Tear Strength	46.2 KN/m	ASTM D624-00(2012)
	Brittleness temperature by impact	Pass	ASTM D746-14
Flammability	Horizontal burning	HB	UL 94-2013 Rev.6-2016 Section 7
	Installation temperature	-40℃ - 60℃	
Temperature	Operation temperature	-60℃ - 90℃	
	Stock temperature	-60℃ - 90℃	

Note: Not for specifications. Values are typical, not to be considered minimum or maximum.

Specification

Model	I.D (mm)	Relaxed I.D (mm)	Relaxed Length (mm)	Description
RR-CST-40	≥38	≤13	≥140	Cold Shrink Tube (Built-in Rubber Ring), designed for 1/2" jumper to equipment, only applicable for 7/16 DIN or 4.3-10 connector
RR-CST-28	≥27	≤12	≥110	Cold Shrink Tube (Built-in Rubber Ring), designed for 1/2" jumper to equipment, only applicable for 4.3-10 or Type N connector



The difference between Waterproof tape and Waterproof mastic tape

Waterproof tape

VS

Waterproof mastic tape

01

Structure

2 layers

1 layer

Waterproof tape with 2 layers

Waterproof mastic tape with 1 layer

Installation

02

It does not glue on the hand High efficiency

It can easily stick on the hand, not easy to clean Which can affect the efficiency of installation

03

Weather ability

High TEMP does not glue Low TEMP has toughness Anti-aging properties Can be used in all weather

Glue overflows when high there is high temperature, which can affect the joint waterproof sealing effect. It should be used indoors only.



How to identify the merits of waterproof tape

Excellent

VS

Inferior

Odor Recognition

Good

No odor

Bad

Excellent waterproof tape at normal temperature without any odor

Inferior tape has a terrible smell, generally as inferior or recycled. This has a great influence on the sealing effect after use. The composition is unstable, it has poor performance and low reliability.

High TEMP Test

Good

Bad

Wrapping waterproof tape on communication connectors, Quality waterproof tape without any change after testing for 168 hours at a high temperature of 80°C.

Inferior tape will be show excess glue and this will alter the waterproof effect.

Anti-aging Test

Good

Bad

High quality tape doesn't show any changes after testing with xenon lamp and UV aging in 1000 hours

Inferior tape through the xenon lamp and UV aging obviously shows cracks after 1000 hours. This portrays the short service life of the product.

Certificates



Underwriter Laboratories Inc.



CSA



RoHS



How to identify the merits of PVC tape

How to choose

Excellent

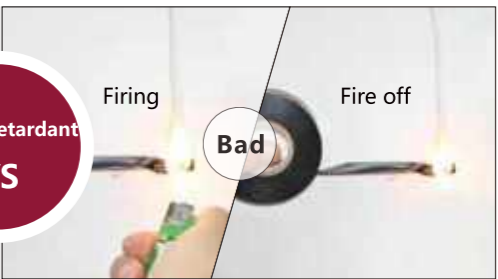
VS

Inferior



It has CSA and UL Certificates

It has no Certificate and no report



flame-retardant VS

When the fire is off, the tape no longer has any firing effect and so it extinguish itself. This is the flame-retardant function

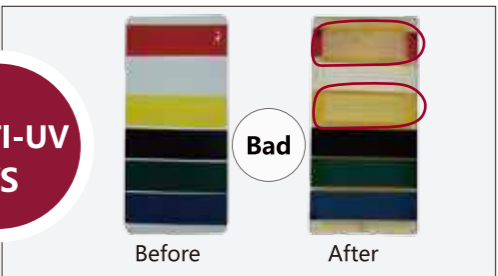
When the fire left, the inferior tape still firing. It does not have any flame-retardant function



Elongation VS

After elongation test, the specimen is pulled off. The elongation is bigger and the quality is better

It has a lower elongation, worse quality of the product



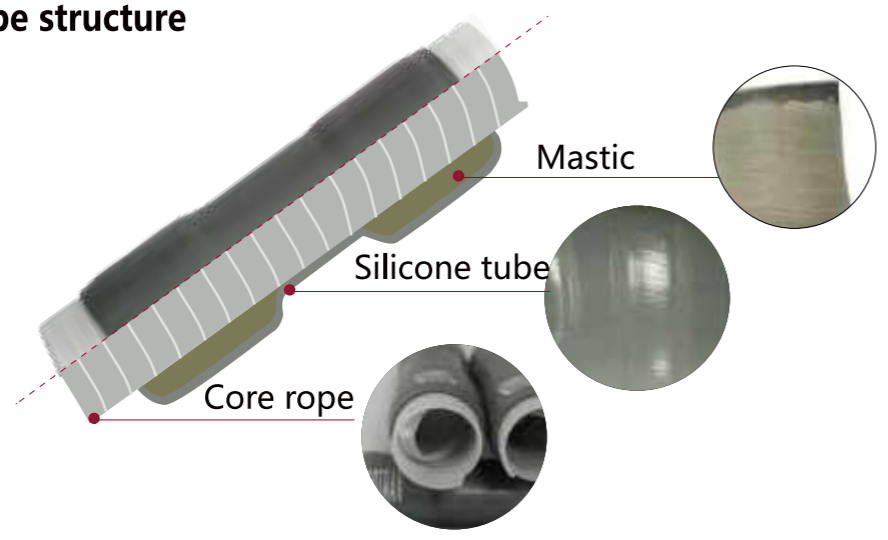
ANTI-UV VS

Quality color coding tape after xenon lamp exposure, after 1000 hours, the product has no color fading

Inferior color coding tape after xenon lamp exposure after 1000hours will have serious color fading

How to choose the mastic inner cold shrink tube

Tube structure



Silicone tube		
Requirement	Property	Benefits
Strong hold force	Strong tensile strength(Index 1)	Excellent waterproof performance
	High expansion rate(Index 2)	Reliably Sealing
	Low permanent distortion(Index 3)	Long service life
Long life time	High elongation at breaking point	More durable life
Resistance external damage	High tear strength	Continuous waterproof

* Hold force is the joint effect of Index 1、2、3

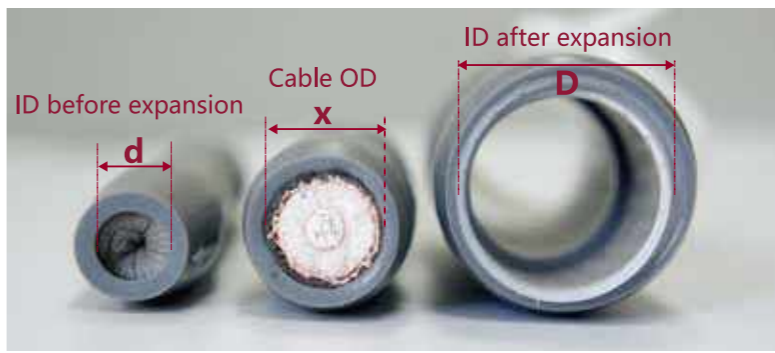
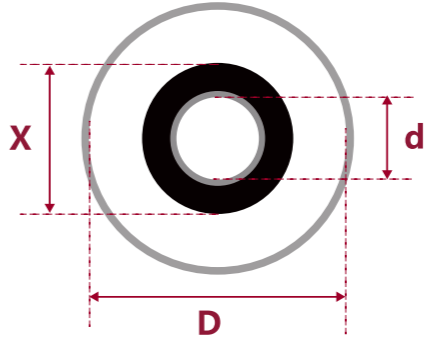
Mastic		
Requirement	Property	Benefits
Non-congealable	It does not coagulate at high or low temperature	Floating seal, high reliability
Easy stereotypes	Mastic can be completely wrapped connector metal parts	Inside tube wall, its sealing effect is good
No excess glue	Mastic cannot be too soft and it has compatibility with the tube	High reliability and long life
Buffer design	It reserves 3 mm buffer on both ends	Good weather resistance and long service life

Conductor cord		
Requirement	Property	Benefits
Not easy to collapse	Strong compression capability	It reduces transportation and unexpected loss
Smooth surface both inside and outside	Spare mastic and shrink tube	It does not affect the water-seal performance
Extraction at constant speed	Hasp + ultrasonic welding	Good positioning, high accuracy during construction

COTRAN Advantage of cold shrink tube with mastic



Tube expansion rate



The expansion rate of the core rope tube = $(D-d)/d \times 100\%$

The bigger the better

The expansion rate on core rope is bigger, Silicone tube has more application. It also has better sealing performance during the long - run operation

The expansion rate of the cable = $(X-d)/d \times 100\%$

The bigger the better

The expansion rate on cable is bigger and the silicone tube has bigger hold force to the radial of the cable. It also has better sealing performance