tyco
Electronics

Energy Division
http://energy.tycoelectronics.com

WCSM
Heat-shrinkable heavy-wall insulating tubing

WCSM is a heat-shrinkable heavy-wall tubing for insulating and sealing power cables and accessories. In WCSM tubing, the electrical and physical properties of a cable over-sheath material are combined with ruggedness and easy installation. WCSM material is halogen free.

On heating, WCSM tubing recovers to a smaller diameter, fitting tightly over a wide range of cable sizes and accessories because of its high shrink ratio. At the same time the tubing's inner adhesive wall gives a dependable moisture seal over the most irregular shapes.

WCSM tubing's mechanical strength enables immediate back-filling of cable trenches after jointing. Widely used to insulate, protect and seal power cable joints, accessories and electrical connections, it is one result of Raychem's extensive capability in materials technology.

Raychem is one of the world leaders in the technology of heat-shrinkable materials and one of the the largest producers of heat-shrinkable polymeric and elastomeric components. By electron beam radiation Raychem materials are given an "elastic memory". They can then be installed over variously-shaped objects to make a tight, insulating or fluid-resistant cover. In a wide range of formulations, Raychem products are engineered to meet the specific demands of the growing world of energy.



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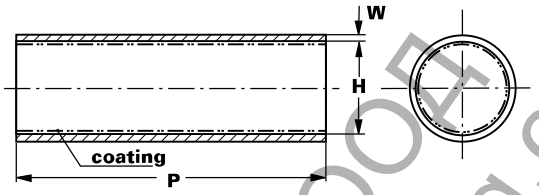
Raychem

WCSM Properties		Test Method	Material Requirements
Tensile Strength		ISO 37	12 MPa min
Ultimate Elongation		ISO 37	350% min
Density		ISO 1183 Method A	1.0-1.2 g/cm³
Hardness		ISO 868	40-60 shore D
Accelerated Ageing	7 days at 150 °C ± 2 °C	ISO 188	
	Tensile Strength	ISO 37	12 MPa min
	Ultimate Elongation	ISO 37	350% min
Low Temperature Flexibility	4 hours at -50 °C ± 2 °C	ASTM D2671 Procedure C	No cracking
Dielectric Strength		IEC 60243 Part 1 and 2	170 kV/cm min (1 mm wall) 120 kV/cm min (2 mm wall)
Volume Resistivity		IEC 60093	1 x 10^{12} Ω cm min
Dielectric Constant		IEC 60250	5.0 max
Water Absorption		ISO 62 Method 1	0.2% max after 14 days at 23 °C ± 2 °C
Weathering		The material from which WCSM is manufactured contains carbon black to protect it from ultra-violet light.	

Additional Properties Further details are given in Raychem specification PPS 3010/10.
Adhesive characteristics are detailed in Raychem specification PPS 3012/76.
UL listed per 486D (file E91151), Certified to CSA C22.2, Qualified to ANSI C119.1-1986

Ordering information

Dimensions



Notes:
1. Dimensions in millimeters
   a = as supplied
   b = after free recovery

1. Max. longitudinal change after free recovery:-15% up to 43/12
   -10% above 43/12

Raychem WCSM tubing is supplied complete with installation instructions.

Product/Size	Application range (diameter)	H a min	H b max	W a min	W b max	P
WCSM 9/3	3.5-8.0	9	3	0.6	2.0	See
WCSM 13/4	4.5-11.5	13	4	0.6	2.4	Standard
WCSM 20/6	6.5-18.0	20	6	0.7	2.5	Lengths
WCSM 33/8	9.0-29.5	33	8	0.7	3.2	
WCSM 43/12	13.0-38.5	43	12	0.8	4.3	
WCSM 51/16	17.5-46.0	51	16	1.0	4.5	
WCSM 70/21	23.0-63.0	70	21	1.0	4.4	
WCSM 85/25	27.5-76.5	85	25	1.0	4.3	
WCSM 90/30*	33.0-81.0	90	30	1.0	4.3	
WCSM 105/30**	33.0-94.5	105	30	1.0	4.3	
WCSM 130/36	40.0-117.0	130	36	1.0	4.3	
WCSM 160/50	55.0-145.0	160	50	1.0	4.3	
WCSM 180/50	55.0-162.0	180	50	1.0	4.3	

* Size 90/30 available without adhesive only
** Size 105/30 available with adhesive only

Standard Lengths and Adhesive

Lengths
All sizes are available in the standard lengths: 1000 mm and 1500 mm.

On request: other lengths and on spools.

All lengths subject to standard cutting tolerances.

Adhesive
WCSM tubing is available with or without an inner adhesive wall. The adhesive exhibits excellent bonding and sealing characteristics to all materials commonly used in the various cable insulation and sheath constructions, such as plastic, rubber, lead, and aluminium.

Ordering Example Part Number

WCSM 9/3-1500/S

- Product Type
- Size
- Standard Length
- /S = adhesive
- /U = without adhesive

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale. ALR, AMP, AXICOM, B&H, BOWTHORPE EMP, CROMPTON INSTRUMENTS, DORMAN SMITH, DULMISON, GURO, HELLSTERN, LA PRAIRIE, MORLYNN, RAYCHEM, and SIMEL are trademarks.

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Energy Division – a pioneer in the development of economical solutions for the electrical power industry. Our product range includes: cable accessories, connectors & fittings, electrical equipment, instruments, lighting controls, insulators & insulation enhancement and surge arresters.

For more information and your country contact person, please visit us at:
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