



## C-Lite

Low Fire Hazard  
Lightweight Cables for  
Commercial Marine Applications

Tyco Electronics Ltd. is a leading global provider of engineered electronic components, network solutions, wireless systems and undersea telecommunication systems, with fiscal 2007 sales of US\$13.5 billion to customers in more than 150 countries.

We design, manufacture and market products for customers in industries from automotive, appliance and aerospace and defence to telecommunications, computers and consumer electronics.

With approximately 8,000 engineers and worldwide manufacturing, sales and customer service capabilities, Tyco Electronics' commitment is our customers' advantage. More information on Tyco Electronics can be found at <http://www.tycoelectronics.com/>.

## CONTENTS

<b>Introduction</b>	<b>2</b>
Tyco Technologies/ Rchem/ C-Lite	
<b>C-Lite CL105-PI/C-Lite CL105-TI</b>	<b>4</b>
Multipair and Multitriple Individually Screened Cables	
<b>C-Lite CL105-PF/C-Lite CL105-TF</b>	<b>6</b>
Multipair and Multitriple Unscreened Cables	
<b>C-Lite CL105-SO</b>	<b>8</b>
Multicore Overall Screened Cables	
<b>C-Lite CL105-PO/C-Lite CL105-TO</b>	<b>10</b>
Multipair and Multitriple Overall Screened Cables	
<b>C-Lite CL105-SU</b>	<b>12</b>
Multicore Unscreened Cables	
<b>C-Lite CL105-PIO/C-Lite CL105-TIO</b>	<b>14</b>
Multipair and Multitriple Individually and Overall Screened Cables	
<b>C-Lite</b>	<b>16</b>
Primary Wire (Switchboard Cable)	
<b>Approvals</b>	<b>17</b>
<b>Technical Information</b>	<b>18</b>
<b>Specification Summary</b>	<b>19</b>





## Raychem

The Tyco Electronics Raychem brand of Wire and Cable products is recognised worldwide, and is backed by a history of proven performance, reliability, innovation and superior quality.


For over forty-five years, customers have recognised the global capabilities of Raychem products. Combining these advanced products with superior technical support and a global sales/ services organisation, customers with worldwide operations count on Tyco Electronics to supply the knowledge and products they need to solve specific problems and help them take advantage of opportunities, anywhere they arise. This philosophy has earned Tyco Electronics a reputation for leadership in materials science technologies.

Developed from these technologies, Raychem C-Lite has been engineered to meet the requirements of DNV Type Approval Program No. 6-827.11.1, and as such, are the cabling solution for challenging marine applications.

## C-Lite

Raychem materials technology and expertise in processing allows the use of thinwall insulation systems. The use of Zerohal crosslinked cable jacket completes the product offering.

This means that C-Lite cable products can offer significant size and weight reduction, when compared to conventional insulation systems, while at the same time meeting key criteria such as low fire hazard performance and mechanical robustness.



**Raychem**

**C-Lite is 30% lighter than standard commercial cable providing the customer with:**

**A massive weight saving (in cable weight alone), models indicate**

- 2,100kg in 6,000kg for a small vessel
- 56,000kg in 200,000kg for a large vessel

**Weight savings result in a number of benefits**

- Reduced and easier "Reaving" (cable pulling) time (estimates 30% improvement – more cables in one go)
- Reduced weight means lighter and faster vessels, in acceleration and deceleration, and better fuel economy

**Reduced diameter results in a number of benefits**

- C-Lite has a reduced diameter that means smaller bend radius can be used during installation
- Reduced diameter cables means cables occupy less space/more cables can be put into the same space
- Reduced diameter means smaller and lower cost cable accessories, eg. cable trays, glands etc. (estimated saving 30%) that also results in further accessory weight savings

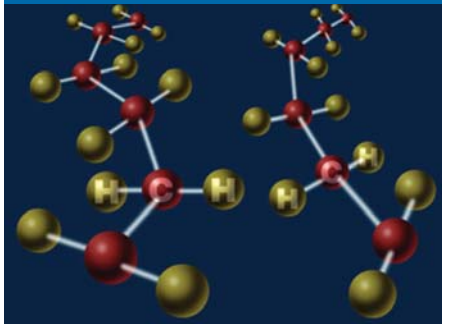
**Competitors' cable tray** (150mm x 60mm)

**C-Lite cable tray** (117mm x 50mm)

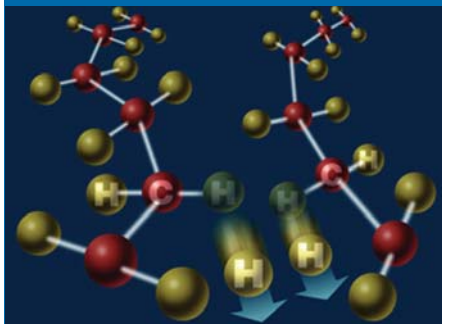
When comparing the same copper cross sections, C-Lite cables occupy up to 50% less volume and space than traditional cables.

**Tyco Electronics**

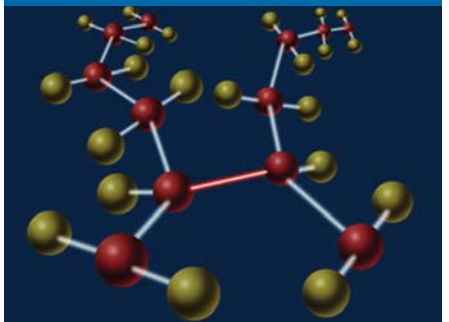
## Radiation Crosslinking



Molecular chain



Crosslinking



Crosslinked Molecular chain

Raychem was the first company to commercialise radiation cross-linking of insulation, initially for aerospace applications.

To achieve crosslinking, a polymer product is exposed to high-energy radiation. This is generally done by exposure to beta radiation (high-energy electrons) using an electron beam;

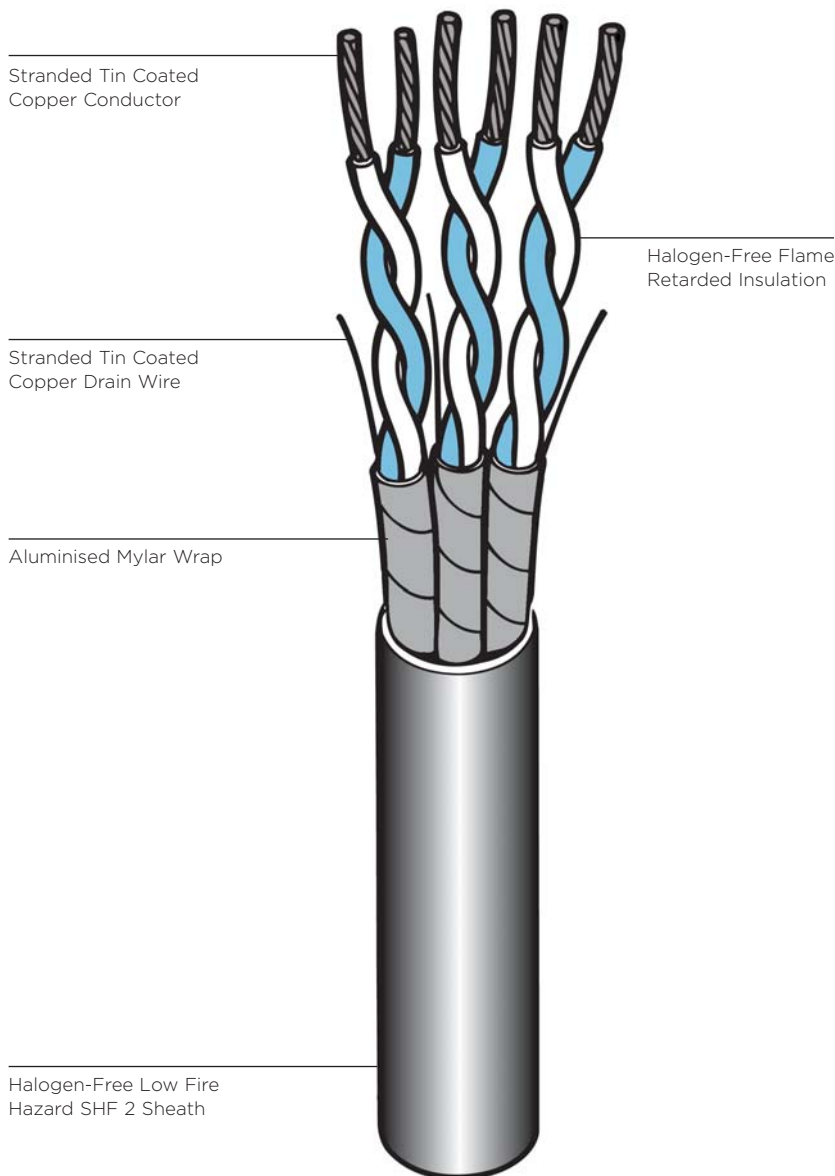
Crosslinked insulations in Wire & Cable products are lightweight, mechanically tough and thermally stable.

The new C-Lite cable range is constructed from flame retarded halogen free primary wire and crosslinked sheath materials.

Offering size and weight savings over traditional cables. The new C-Lite cable range is suitable for use in general power, lighting, communication, control and instrumentation applications.

Field of application  
Instrumentation and communication control. General power and lighting  
Voltage class 0.6/1kV

Temperature class 90°C  
Flame retarded IEC 60332-1,-3  
Cable jacket Zerohal



## Core Identification

Pairs



Additional pairs numbered sequentially

Triples



Additional triples numbered sequentially

## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK

Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>PAIRS</b>					
CL105-1x2x0.5 - PI	3.2	0.9	5	0.3	41
CL105-2x2x0.5 - PI	6.1	1.0	8.1	0.5	87
CL105-3x2x0.5 - PI	6.3	1.1	8.5	0.6	103
CL105-4x2x0.5 - PI	7	1.1	9.2	0.6	126
CL105-7x2x0.5 - PI	8.7	1.1	10.9	0.7	185
CL105-10x2x0.5 - PI	10.1	1.2	12.5	0.8	255
CL105-14x2x0.5 - PI	11.9	1.3	14.5	0.9	347
CL105-19x2x0.5 - PI	13.8	1.4	16.6	1.1	462
CL105-24x2x0.5 - PI	15.5	1.4	18.3	1.2	566
CL105-37x2x0.5 - PI	19.2	1.6	22.4	1.5	856
<b>TRIPLES</b>					
CL105-1x3x0.75 - TI	3.7	0.9	5.5	0.4	54
CL105-2x3x0.75 - TI	7.4	1.1	9.6	0.6	132
CL105-4x3x0.75 - TI	8.9	1.2	11.3	0.7	209
CL105-7x3x0.75 - TI	11.1	1.2	13.5	0.9	309
CL105-10x3x0.75 - TI	14.7	1.4	17.5	1.1	449
CL105-15x3x0.75 - TI	17.3	1.5	20.3	1.3	664
<b>PAIRS</b>					
CL105-1x2x0.75 - PI	3.4	0.9	5.2	0.3	46
CL105-2x2x0.75 - PI	6.9	1.1	9.1	0.6	112
CL105-3x2x0.75 - PI	7.1	1.1	9.3	0.6	132
CL105-4x2x0.75 - PI	7.9	1.1	10.1	0.7	164
CL105-7x2x0.75 - PI	9.9	1.2	12.3	0.8	250
CL105-10x2x0.75 - PI	11.4	1.3	14	0.9	344
CL105-14x2x0.75 - PI	13.4	1.3	16	1.0	462
CL105-19x2x0.75 - PI	15.7	1.4	18.5	1.2	616
CL105-24x2x0.75 - PI	17.5	1.5	20.5	1.3	769
CL105-37x2x0.75 - PI	21.8	1.7	25.2	1.6	1164
<b>PAIRS</b>					
CL105-1x2x1.0 - PI	3.7	0.9	5.5	0.4	55
CL105-2x2x1.0 - PI	7.5	1.1	9.7	0.6	133
CL105-3x2x1.0 - PI	7.7	1.1	9.9	0.6	159
CL105-4x2x1.0 - PI	8.6	1.1	10.8	0.7	198
CL105-7x2x1.0 - PI	10.7	1.2	13.1	0.9	306
CL105-10x2x1.0 - PI	12.4	1.3	15	1.0	423
CL105-14x2x1.0 - PI	14.6	1.4	17.4	1.1	579
CL105-19x2x1.0 - PI	17.1	1.5	20.1	1.3	773
CL105-24x2x1.0 - PI	19.1	1.6	22.3	1.4	965
CL105-37x2x1.0 - PI	23.7	1.7	27.1	1.8	1448
<b>PAIRS</b>					
CL105-1x2x1.5 - PI	4.4	1.0	6.4	0.4	73
CL105-2x2x1.5 - PI	8.8	1.2	11.2	0.7	179
CL105-3x2x1.5 - PI	9.1	1.2	11.5	0.7	211
CL105-4x2x1.5 - PI	10.1	1.2	12.5	0.8	265
CL105-7x2x1.5 - PI	12.6	1.3	15.2	1.0	406
CL105-10x2x1.5 - PI	14.6	1.4	17.4	1.1	562
CL105-14x2x1.5 - PI	17.2	1.5	20.2	1.3	769
CL105-19x2x1.5 - PI	20.1	1.6	23.3	1.5	1027
CL105-24x2x1.5 - PI	22.5	1.7	25.9	1.7	1283
CL105-37x2x1.5 - PI	27.9	1.9	31.7	2.1	1943
<b>TRIPLES</b>					
CL105-1x3x1.5 - TI	4.7	1.0	6.7	0.4	88
CL105-2x3x1.5 - TI	9.5	1.2	11.9	0.8	213
CL105-4x3x1.5 - TI	11.4	1.3	14	0.9	337
CL105-7x3x1.5 - TI	14.2	1.4	17	1.1	521

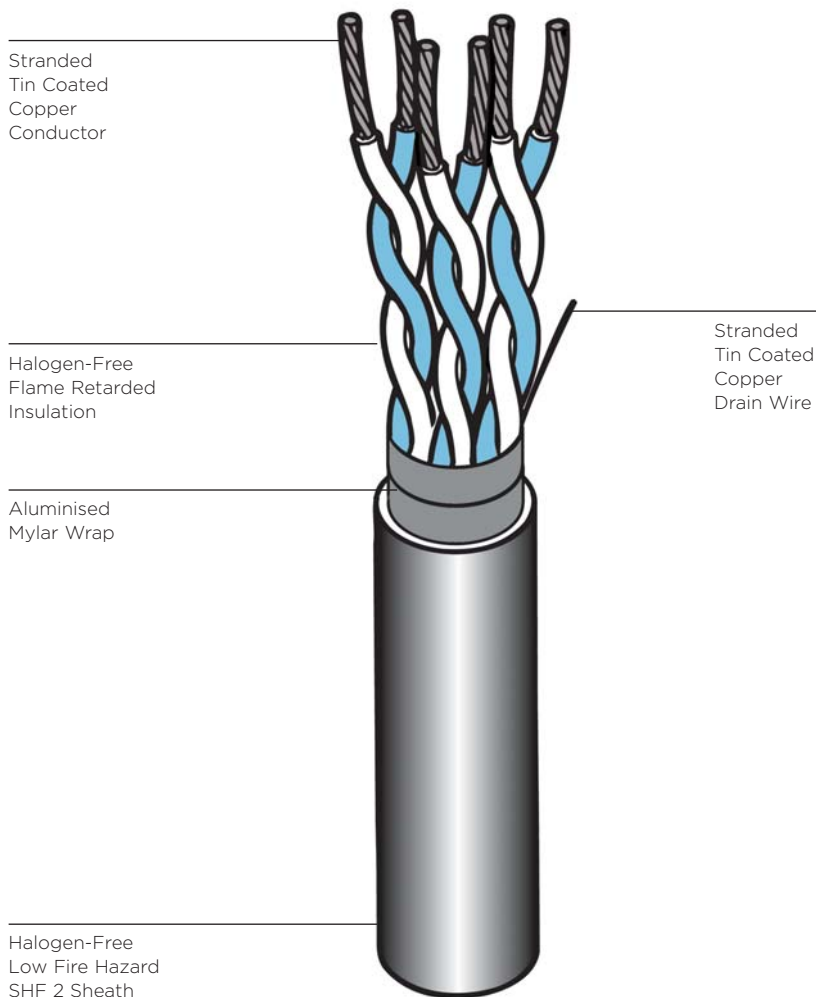
Note: For installation guidelines refer to Raychem installation guidelines document WT1189

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Flame retarded IEC 60332-1,-3  
Cable jacket Zerohal



## Core Identification

Pairs



Additional pairs numbered sequentially

Triples



Additional triples numbered sequentially

## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK

Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>PAIRS</b>					
CL105-2x2x0.5 - PF	3.7	0.9	5.5	0.4	51
CL105-3x2x0.5 - PF	5.7	1.0	7.7	0.5	85
CL105-4x2x0.5 - PF	6.3	1.1	8.5	0.6	106
CL105-7x2x0.5 - PF	7.8	1.1	10	0.7	152
CL105-10x2x0.5 - PF	9.9	1.2	12.3	0.8	210
CL105-14x2x0.5 - PF	11.5	1.3	14.1	0.9	281
CL105-19x2x0.5 - PF	13.3	1.3	15.9	1.1	360
CL105-24x2x0.5 - PF	14.8	1.4	17.6	1.2	446
CL105-37x2x0.5 - PF	18.1	1.5	21.1	1.4	655
CL105-2x2x0.75 - PF	4.1	1.0	6.1	0.4	70
CL105-3x2x0.75 - PF	6.5	1.1	8.7	0.6	112
CL105-4x2x0.75 - PF	7.2	1.1	9.4	0.6	133
CL105-7x2x0.75 - PF	8.9	1.2	11.3	0.7	204
CL105-10x2x0.75 - PF	11.2	1.2	13.6	0.9	271
CL105-14x2x0.75 - PF	13	1.3	15.6	1.0	365
CL105-19x2x0.75 - PF	15	1.4	17.8	1.2	481
CL105-24x2x0.75 - PF	16.7	1.5	19.7	1.3	597
CL105-37x2x0.75 - PF	20.6	1.6	23.8	1.5	881
CL105-2x2x1.0 - PF	4.4	1.0	6.4	0.4	79
CL105-3x2x1.0 - PF	7.1	1.1	9.3	0.6	128
CL105-4x2x1.0 - PF	7.9	1.1	10.1	0.7	154
CL105-7x2x1.0 - PF	9.8	1.2	12.2	0.8	239
CL105-10x2x1.0 - PF	12.1	1.3	14.7	1.0	326
CL105-14x2x1.0 - PF	14.2	1.4	17	1.1	440
CL105-19x2x1.0 - PF	16.3	1.5	19.3	1.3	580
CL105-24x2x1.0 - PF	18.2	1.5	21.2	1.4	709
CL105-37x2x1.0 - PF	22.4	1.7	25.8	1.7	1064
CL105-2x2x1.5 - PF	5.2	1.0	7.2	0.5	105
CL105-3x2x1.5 - PF	8.4	1.1	10.6	0.7	181
CL105-4x2x1.5 - PF	9.3	1.2	11.7	0.8	218
CL105-7x2x1.5 - PF	11.6	1.3	14.2	0.9	332
CL105-10x2x1.5 - PF	14.2	1.4	17	1.1	452
CL105-14x2x1.5 - PF	16.6	1.5	19.6	1.3	613
CL105-19x2x1.5 - PF	19.2	1.6	22.4	1.5	810
CL105-24x2x1.5 - PF	21.4	1.7	24.8	1.6	1006
CL105-37x2x1.5 - PF	26.4	1.9	30.2	2.0	1511
<b>TRIPLES</b>					
CL105-2x3x0.75 - TF	7.1	1.1	9.3	0.6	126
CL105-4x3x0.75 - TF	8.5	1.1	10.7	0.7	182
CL105-7x3x0.75 - TF	10.5	1.2	12.9	0.8	283
CL105-10x3x0.75 - TF	15	1.4	17.8	1.2	412
CL105-15x3x0.75 - TF	17.5	1.5	20.5	1.3	601
CL105-2x3x1.5 - TF	9.1	1.2	11.5	0.7	191
CL105-4x3x1.5 - TF	10.9	1.2	13.3	0.9	290
CL105-7x3x1.5 - TF	13.5	1.3	16.1	1.0	453

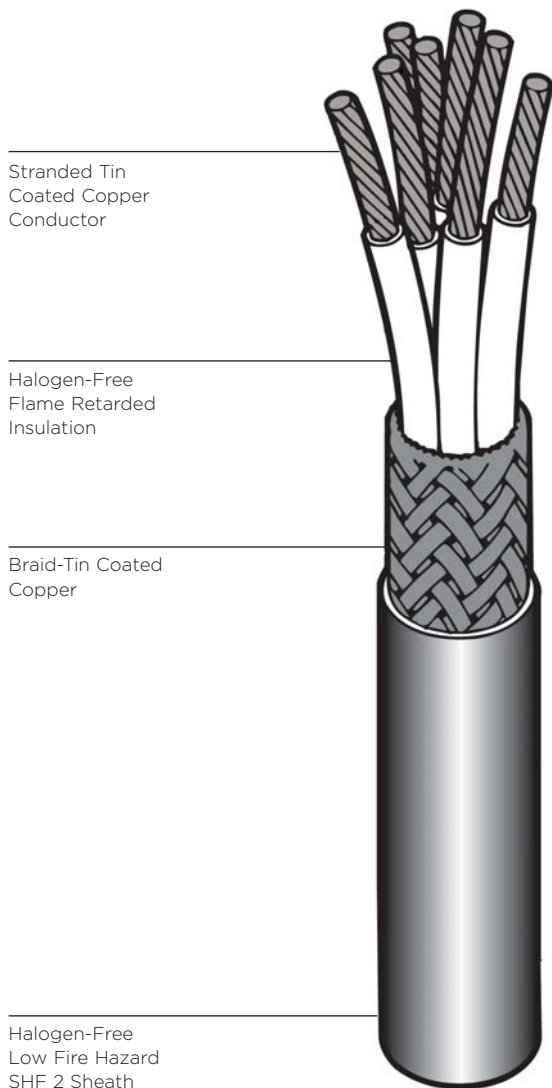
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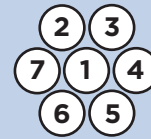


## Core Identification

Standard  
2 Core



Others



Additional cores numbered sequentially

Colour Coded  
2G



3G



5G



## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK



Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>STANDARD</b>					
CL105-2x0.5 - SO	3.5	0.9	5.3	0.3	48
CL105-3x0.5 - SO	3.7	0.9	5.5	0.4	55
CL105-4x0.5 - SO	4.1	1.0	6.1	0.4	68
CL105-5x0.5 - SO	4.5	1.0	6.5	0.4	79
CL105-7x0.5 - SO	4.9	1.0	6.9	0.4	96
CL105-12x0.5- SO	6.5	1.1	8.7	0.6	149
CL105-19x0.5 - SO	7.7	1.1	9.9	0.6	208
CL105-27x0.5 - SO	9.3	1.2	11.7	0.8	284
CL105-2x1.0 - SO	4.2	1.0	6.2	0.4	66
CL105-3x1.0 - SO	4.5	1.0	6.5	0.4	78
CL105-4x1.0 - SO	4.9	1.0	6.9	0.4	93
CL105-5x1.0 - SO	5.4	1.0	7.4	0.5	110
CL105-7x1.0 - SO	6	1.0	8	0.5	135
CL105-12x1.0 - SO	8	1.1	10.2	0.7	214
CL105-19x1.0 - SO	9.5	1.2	11.9	0.8	311
CL105-27x1.0 - SO	11.5	1.3	14.1	0.9	427
CL105-2x1.5 - SO	4.9	1.0	6.9	0.4	85
CL105-3x1.5 - SO	5.2	1.0	7.2	0.5	104
CL105-4x1.5 - SO	5.7	1.0	7.7	0.5	122
CL105-5x1.5 - SO	6.3	1.1	8.5	0.6	150
CL105-7x1.5 - SO	6.9	1.1	9.1	0.6	187
CL105-12x1.5 - SO	9.4	1.2	11.8	0.8	299
CL105-14x1.5 - SO	9.9	1.2	12.3	0.8	337
CL105-19x1.5 - SO	11.1	1.2	13.5	0.9	432
CL105-24x1.5 - SO	13.3	1.3	15.9	1.0	558
CL105-27x1.5 - SO	13.6	1.3	16.2	1.1	611
CL105-37x1.5 - SO	15.6	1.4	18.4	1.2	828
CL105-2x2.5 - SO	5.8	1.0	7.8	0.5	116
CL105-3x2.5 - SO	6.2	1.0	8.2	0.5	145
CL105-4x2.5 - SO	6.9	1.1	9.1	0.6	183
CL105-5x2.5 - SO	7.6	1.1	9.8	0.6	214
CL105-7x2.5 - SO	8.4	1.1	10.6	0.7	271
CL105-12x2.5 - SO	11.3	1.3	13.9	0.9	446
CL105-19x2.5 - SO	13.6	1.3	16.2	1.1	668
CL105-27x2.5 - SO	16.7	1.5	19.7	1.3	958
CL105-37x2.5 - SO	18.9	1.6	22.1	1.4	1264
<b>COLOUR CODED</b>					
CL105-2Gx0.5 - SO	3.5	0.9	5.3	0.3	48
CL105-3Gx0.5 - SO	3.7	0.9	5.5	0.4	55
CL105-5Gx0.5 - SO	4.5	1.0	6.5	0.4	79
CL105-2Gx1.0 - SO	4.2	1.0	6.2	0.4	66
CL105-3Gx1.0 - SO	4.5	1.0	6.5	0.4	78
CL105-5Gx1.0 - SO	5.4	1.0	7.4	0.5	110
CL105-2Gx1.5 - SO	4.9	1.0	6.9	0.4	85
CL105-3Gx1.5 - SO	5.2	1.0	7.2	0.5	104
CL105-5Gx1.5 - SO	6.3	1.1	8.5	0.6	150
CL105-2Gx2.5 - SO	5.8	1.0	7.8	0.5	116
CL105-3Gx2.5 - SO	6.2	1.0	8.2	0.5	145
CL105-5Gx2.5 - SO	7.6	1.1	9.8	0.6	214

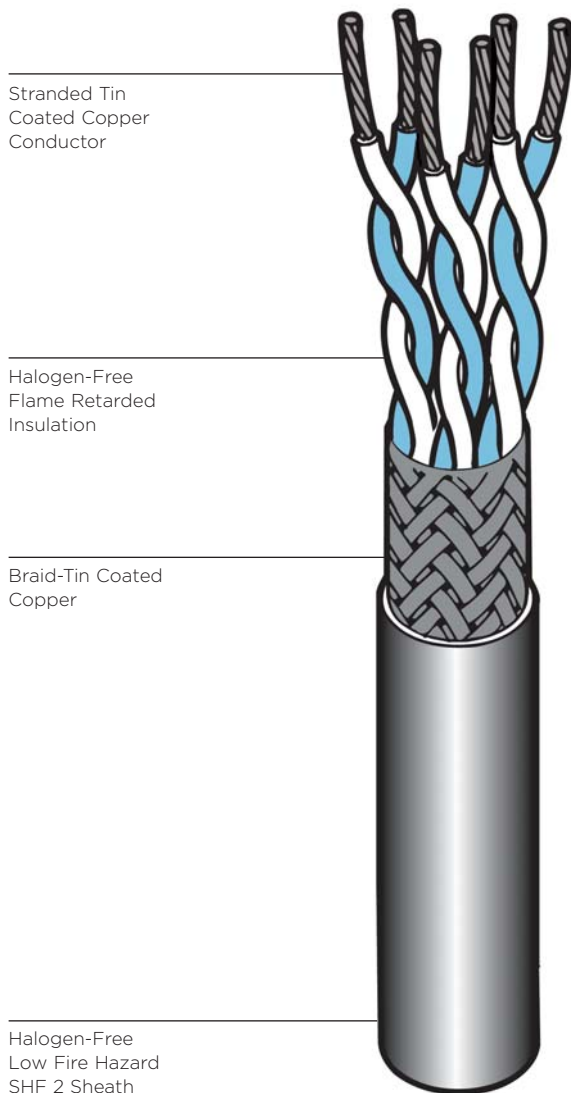
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## Approvals

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Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>PAIRS</b>					
CL105-1x2x0.5 - PO	3.5	0.9	5.3	0.3	48
CL105-2x2x0.5 - PO	4.1	1.0	6.1	0.4	68
CL105-3x2x0.5 - PO	6.2	1.1	8.4	0.6	109
CL105-4x2x0.5 - PO	6.9	1.1	9.1	0.6	130
CL105-7x2x0.5 - PO	8.3	1.1	10.5	0.7	178
CL105-10x2x0.5 - PO	9.6	1.2	12	0.8	236
CL105-14x2x0.5 - PO	11.2	1.3	13.8	0.9	312
CL105-19x2x0.5 - PO	13	1.3	15.6	1.0	412
CL105-24x2x0.5 - PO	14.5	1.4	17.3	1.2	504
CL105-37x2x0.5 - PO	18.1	1.5	21.1	1.4	754
CL105-1x2x0.75 - PO	3.9	1.0	5.9	0.4	60
CL105-2x2x0.75 - PO	4.6	1.0	6.6	0.4	82
CL105-3x2x0.75 - PO	7	1.1	9.2	0.6	134
CL105-4x2x0.75 - PO	7.7	1.1	9.9	0.6	162
CL105-7x2x0.75 - PO	9.4	1.2	11.8	0.8	232
CL105-10x2x0.75 - PO	10.8	1.2	13.2	0.9	301
CL105-14x2x0.75 - PO	12.8	1.3	15.4	1.0	416
CL105-19x2x0.75 - PO	14.8	1.4	17.6	1.1	541
CL105-24x2x0.75 - PO	16.7	1.5	19.7	1.3	688
CL105-37x2x0.75 - PO	20.7	1.6	23.9	1.6	1029
CL105-1x2x1.0 - PO	4.2	1.0	6.2	0.4	66
CL105-2x2x1.0 - PO	4.9	1.0	6.9	0.4	93
CL105-3x2x1.0 - PO	7.6	1.1	9.8	0.6	154
CL105-4x2x1.0 - PO	8.4	1.1	10.6	0.7	186
CL105-7x2x1.0 - PO	10.3	1.2	12.7	0.8	269
CL105-10x2x1.0 - PO	11.8	1.3	14.4	0.9	360
CL105-14x2x1.0 - PO	13.9	1.4	16.7	1.1	496
CL105-19x2x1.0 - PO	16.3	1.5	19.3	1.3	669
CL105-24x2x1.0 - PO	18.2	1.5	21.2	1.4	809
CL105-37x2x1.0 - PO	22.5	1.7	25.9	1.7	1226
CL105-1x2x1.5 - PO	4.9	1.0	6.9	0.4	85
CL105-2x2x1.5 - PO	5.7	1.0	7.7	0.5	122
CL105-3x2x1.5 - PO	8.9	1.2	11.3	0.7	206
CL105-4x2x1.5 - PO	9.9	1.2	12.3	0.8	251
CL105-7x2x1.5 - PO	12.1	1.3	14.7	1.0	367
CL105-10x2x1.5 - PO	14	1.4	16.8	1.1	508
CL105-14x2x1.5 - PO	16.6	1.5	19.6	1.3	703
CL105-19x2x1.5 - PO	19.1	1.6	22.3	1.4	915
CL105-24x2x1.5 - PO	21.6	1.7	25	1.6	1161
CL105-37x2x1.5 - PO	26.5	1.9	30.3	2.0	1703
<b>TRIPLES</b>					
CL105-1x3x0.75 - TO	4.2	1.0	6.2	0.4	69
CL105-2x3x0.75 - TO	7.7	1.1	9.9	0.6	152
CL105-4x3x0.75 - TO	9.1	1.2	11.5	0.7	223
CL105-7x3x0.75 - TO	11.2	1.2	13.6	0.9	318
CL105-10x3x0.75 - TO	14.8	1.4	17.6	1.1	472
CL105-15x3x0.75 - TO	17.4	1.5	20.4	1.3	697
CL105-1x3x1.5 - TO	5.2	1.0	7.2	0.5	104
CL105-2x3x1.5 - TO	9.7	1.2	12.1	0.8	231
CL105-4x3x1.5 - TO	11.5	1.3	14.1	0.9	342
CL105-7x3x1.5 - TO	14.3	1.4	17.1	1.1	520

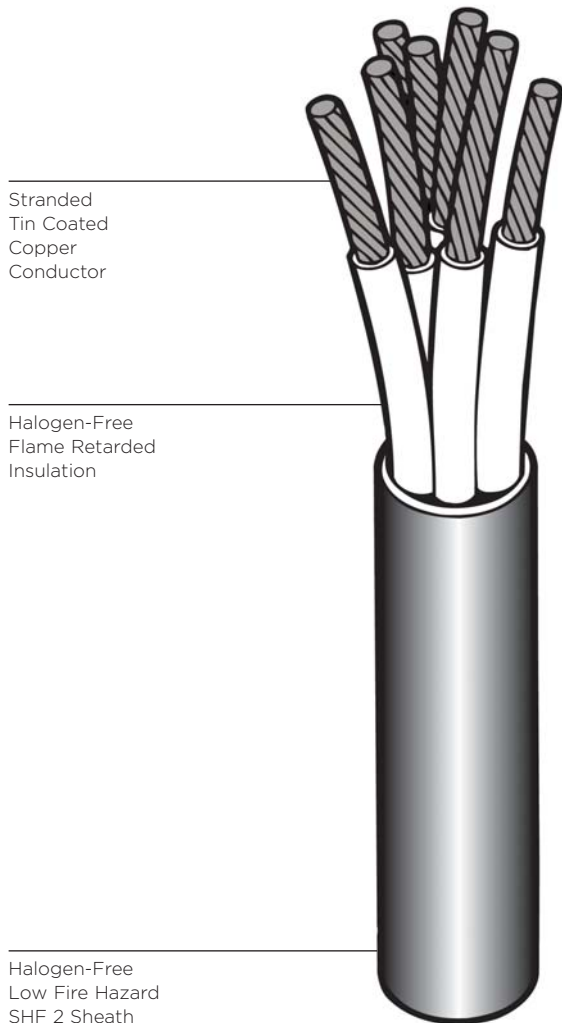
Note: For installation guidelines refer to Raychem installation guidelines document WT1189

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Field of application  
Instrumentation and communication control. General power and lighting  
Voltage class 0.6/1kV

Temperature class 90°C  
Flame retarded IEC 60332-1,-3  
Cable jacket Zerohal

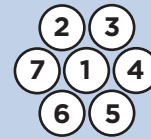


## Core Identification

Standard  
2 Core



Others

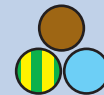


Additional cores numbered sequentially

Colour Coded  
2G



3G



5G



## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK



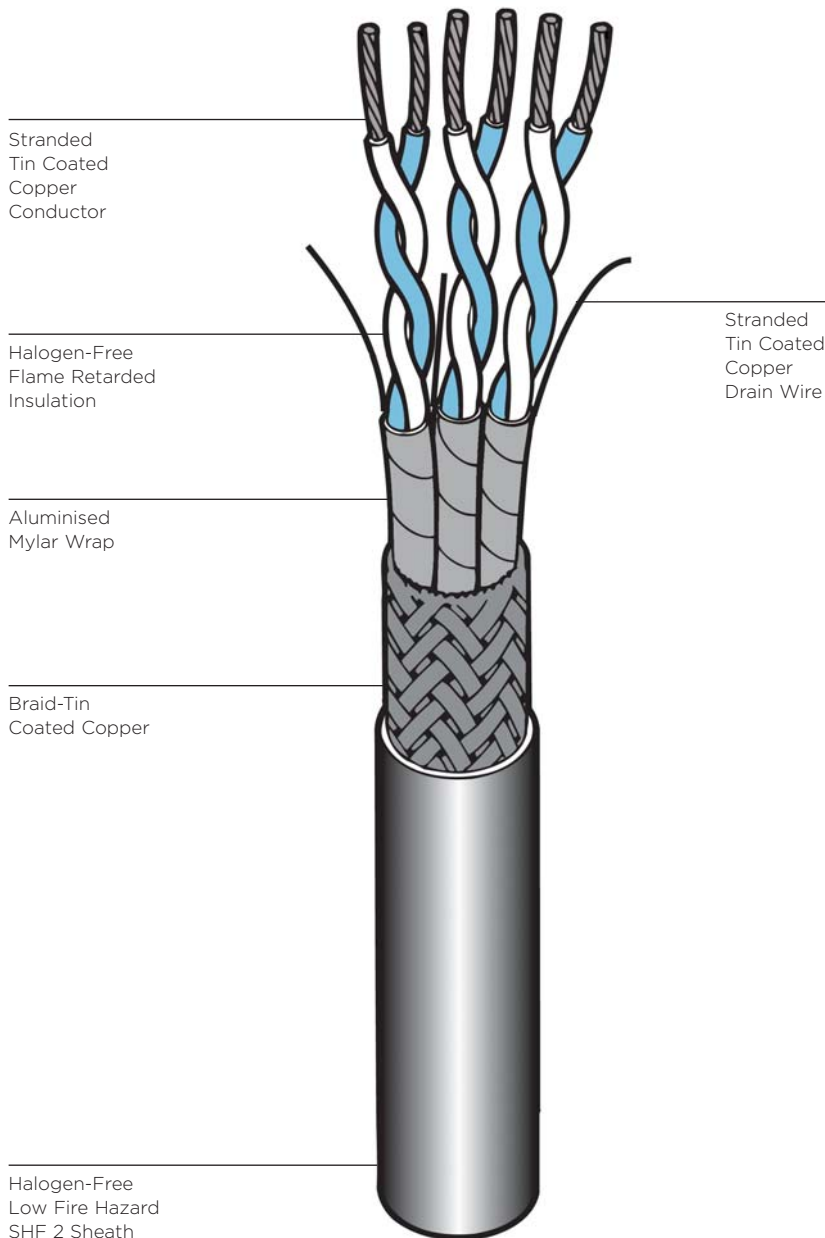
Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>STANDARD</b>					
CL105-2x0.5 - SU	2.9	0.9	4.7	0.3	33
CL105-3x0.5 - SU	3.1	0.9	4.9	0.3	39
CL105-4x0.5 - SU	3.5	0.9	5.3	0.3	48
CL105-5x0.5 - SU	3.9	1.0	5.9	0.4	59
CL105-7x0.5 - SU	4.3	1.0	6.3	0.4	75
CL105-12x0.5 - SU	5.9	1.0	7.9	0.5	117
CL105-19x0.5 - SU	7.1	1.1	9.3	0.6	176
CL105-27x0.5 - SU	8.7	1.1	10.9	0.7	239
CL105-2x0.75 - SU	3.3	0.9	5.1	0.3	40
CL105-3x0.75 - SU	3.6	0.9	5.4	0.4	48
CL105-4x0.75 - SU	4	1.0	6.0	0.4	62
CL105-5x0.75 - SU	4.4	1.0	6.4	0.4	75
CL105-7x0.75 - SU	4.9	1.0	6.9	0.4	95
CL105-12x0.75 - SU	6.8	1.1	9.0	0.6	155
CL105-19x0.75 - SU	8.1	1.1	10.3	0.7	226
CL105-27x0.75 - SU	10	1.2	12.4	0.8	316
CL105-2x1.0 - SU	3.6	0.9	5.4	0.4	45
CL105-3x1.0 - SU	3.9	1.0	5.9	0.4	58
CL105-4x1.0 - SU	4.3	1.0	6.3	0.4	72
CL105-5x1.0 - SU	4.8	1.0	6.8	0.4	87
CL105-7x1.0 - SU	5.4	1.0	7.4	0.5	110
CL105-12x1.0 - SU	7.4	1.1	9.6	0.6	180
CL105-19x1.0 - SU	8.9	1.2	11.3	0.7	271
CL105-27x1.0 - SU	10.9	1.2	13.3	0.9	372
CL105-2x1.5 - SU	4.3	1.0	6.3	0.4	64
CL105-3x1.5 - SU	4.6	1.0	6.6	0.4	82
CL105-4x1.5 - SU	5.1	1.0	7.1	0.5	97
CL105-5x1.5 - SU	5.7	1.0	7.7	0.5	119
CL105-7x1.5 - SU	6.3	1.1	8.5	0.6	158
CL105-12x1.5 - SU	8.8	1.2	11.2	0.7	259
CL105-14x1.5 - SU	9.3	1.2	11.7	0.8	295
CL105-19x1.5 - SU	10.5	1.2	12.9	0.8	385
CL105-24x1.5 - SU	12.6	1.3	15.2	1.0	488
CL105-27x1.5 - SU	12.9	1.3	15.5	1.0	540
CL105-37x1.5 - SU	14.7	1.4	17.5	1.1	725
CL105-2x2.5 - SU	5.2	1.0	7.2	0.5	91
CL105-3x2.5 - SU	5.6	1.0	7.6	0.5	118
CL105-4x2.5 - SU	6.3	1.1	8.5	0.6	153
CL105-5x2.5 - SU	7	1.1	9.2	0.6	181
CL105-7x2.5 - SU	7.8	1.1	10.0	0.7	235
CL105-12x2.5 - SU	10.7	1.2	13.1	0.9	391
CL105-19x2.5 - SU	12.9	1.3	15.5	1.0	597
CL105-27x2.5 - SU	15.8	1.4	18.6	1.2	838
CL105-37x2.5 - SU	18	1.5	21.0	1.4	1129
<b>COLOUR CODED</b>					
CL105-2Gx0.5 - SU	2.9	0.9	4.7	0.3	33
CL105-3Gx0.5 - SU	3.1	0.9	4.9	0.3	39
CL105-5Gx0.5 - SU	3.9	1.0	5.9	0.4	59
CL105-2Gx0.75 - SU	3.3	0.9	5.1	0.3	40
CL105-3Gx0.75 - SU	3.6	0.9	5.4	0.4	48
CL105-5Gx0.75 - SU	4.4	1.0	6.4	0.4	75
CL105-2Gx1.0 - SU	3.6	0.9	5.4	0.4	45
CL105-3Gx1.0 - SU	3.9	1.0	5.9	0.4	58
CL105-5Gx1.0 - SU	4.8	1.0	6.8	0.4	87
CL105-2Gx1.5 - SU	4.3	1.0	6.3	0.4	64
CL105-3Gx1.5 - SU	4.6	1.0	6.6	0.4	82
CL105-5Gx1.5 - SU	5.7	1.0	7.7	0.5	119
CL105-2Gx2.5 - SU	5.2	1.0	7.2	0.5	91
CL105-3Gx2.5 - SU	5.6	1.0	7.6	0.5	118
CL105-5Gx2.5 - SU	7.0	1.1	9.2	0.6	181

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Voltage class 0.6/1kV

Temperature class 90°C  
Flame retarded IEC 60332-1,-3  
Cable jacket Zerohal



## Core Identification

Pairs



Additional pairs numbered sequentially

Triples



Additional triples numbered sequentially

## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK

Ordering Description	OD Under jacket (mm)	Nom Wall (mm)	Nom OD (mm)	Tolerance (mm)	Nom weight (kg/km)
<b>PAIRS</b>					
CL105-1x2x0.5 - PIO	3.7	0.9	5.5	0.4	56
CL105-2x2x0.5 - PIO	6.7	1.1	8.9	0.6	117
CL105-3x2x0.5 - PIO	6.9	1.1	9.1	0.6	132
CL105-4x2x0.5 - PIO	7.6	1.1	9.8	0.6	155
CL105-7x2x0.5 - PIO	9.3	1.2	11.7	0.8	230
CL105-10x2x0.5 - PIO	10.7	1.2	13.1	0.9	300
CL105-14x2x0.5 - PIO	12.6	1.3	15.2	1.0	413
CL105-19x2x0.5 - PIO	14.5	1.4	17.3	1.1	538
CL105-24x2x0.5 - PIO	16.4	1.5	19.4	1.3	684
CL105-37x2x0.5 - PIO	20.3	1.6	23.5	1.5	1023
<b>0.75mm</b>					
CL105-1x2x0.75 - PIO	4.1	1.0	6.1	0.4	68
CL105-2x2x0.75 - PIO	7.5	1.1	9.7	0.6	144
CL105-3x2x0.75 - PIO	7.7	1.1	9.9	0.6	165
CL105-4x2x0.75 - PIO	8.5	1.1	10.7	0.7	200
CL105-7x2x0.75 - PIO	10.5	1.2	12.9	0.8	294
CL105-10x2x0.75 - PIO	12	1.3	14.6	0.9	395
CL105-14x2x0.75 - PIO	14.1	1.4	16.9	1.1	544
CL105-19x2x0.75 - PIO	16.6	1.5	19.6	1.3	735
CL105-24x2x0.75 - PIO	18.4	1.5	21.4	1.4	891
CL105-37x2x0.75 - PIO	22.9	1.7	26.3	1.7	1352
<b>1.0mm</b>					
CL105-1x2x1.0 - PIO	4.4	1.0	6.4	0.4	78
CL105-2x2x1.0 - PIO	8.1	1.1	10.3	0.7	167
CL105-3x2x1.0 - PIO	8.3	1.1	10.5	0.7	194
CL105-4x2x1.0 - PIO	9.2	1.2	11.6	0.8	243
CL105-7x2x1.0 - PIO	11.3	1.3	13.9	0.9	360
CL105-10x2x1.0 - PIO	13.1	1.3	15.7	1.0	492
CL105-14x2x1.0 - PIO	15.5	1.4	18.3	1.2	682
CL105-19x2x1.0 - PIO	18	1.5	21	1.4	891
CL105-24x2x1.0 - PIO	20.2	1.6	23.4	1.5	1131
CL105-37x2x1.0 - PIO	24.8	1.8	28.4	1.8	1665
<b>1.5mm</b>					
CL105-1x2x1.5 - PIO	5.1	1.0	7.1	0.5	96
CL105-2x2x1.5 - PIO	9.4	1.2	11.8	0.8	219
CL105-3x2x1.5 - PIO	9.7	1.2	12.1	0.8	252
CL105-4x2x1.5 - PIO	10.7	1.2	13.1	0.9	310
CL105-7x2x1.5 - PIO	13.3	1.3	15.9	1.0	476
CL105-10x2x1.5 - PIO	15.5	1.4	18.3	1.2	664
CL105-14x2x1.5 - PIO	18.1	1.5	21.1	1.4	889
CL105-19x2x1.5 - PIO	21.2	1.6	24.4	1.6	1200
CL105-24x2x1.5 - PIO	23.6	1.7	27	1.8	1476
CL105-37x2x1.5 - PIO	29	2.0	33	2.1	2197
<b>TRIPLES</b>					
CL105-1x3x0.75 - TIO	4.4	1.0	6.4	0.4	62
CL105-2x3x0.75 - TIO	8	1.1	10.2	0.7	166
CL105-4x3x0.75 - TIO	9.5	1.2	11.9	0.8	249
CL105-7x3x0.75 - TIO	11.7	1.3	14.3	0.9	365
CL105-10x3x0.75 - TIO	15.6	1.4	18.4	1.2	552
CL105-15x3x0.75 - TIO	18.2	1.5	21.2	1.4	784
<b>1.5mm</b>					
CL105-1x3x1.5 - TIO	5.4	1.0	7.4	0.5	113
CL105-2x3x1.5 - TIO	10.1	1.2	12.5	0.8	255
CL105-4x3x1.5 - TIO	12	1.3	14.6	0.9	388
CL105-7x3x1.5 - TIO	14.9	1.4	17.7	1.2	599

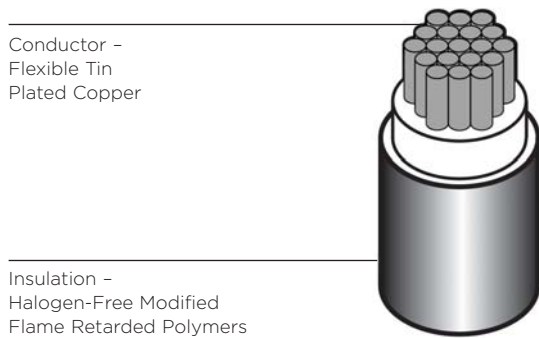
Note: For installation guidelines refer to Raychem installation guidelines document WT1189

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Voltage class 0.6/1kV

Temperature class 90°C  
Flame retarded IEC 60332-1,-3  
Cable jacket Zerohal



## Approvals

DNV, LR, GL, ABS, KR

## Pending

BV, CCS, RMRS, RINA, NK

Part Number (CL105-)	Conductor		Finished Wire		
	Standing No' Dia (mm)	Max Diameter (mm)	Maximum Resistance @ 20°C (ohm/km)	Nominal Diameter (mm)	Nominal Weight (kg/km)
Metric Cross Section					
0111-0.50-*	19/0.18	0.90	40.1	1.40	6.60
0111-0.75-*	19/0.23	1.15	26.7	1.60	8.90
0111-1.00-*	19/0.25	1.26	20.0	1.75	10.7
0111-1.50-*	37/0.23	1.58	13.7	2.08	16.0
0111-2.50-*	37/0.29	2.01	8.21	2.55	25.7
0111-4.00-*	56/0.30	2.57	4.89	3.09	43.6
AWG Cross Section					
0111-0.25-*(24AWG)	19/0.13	0.63	84.32	1.14	3.59
0111-0.40-*(22AWG)	19/0.16	0.79	50.5	1.33	5.20
0111-0.60-*(20AWG)	19/0.20	1.01	31.1	1.52	7.40
0111-1.00-*(18AWG)	19/0.25	1.26	20.0	1.75	10.7
0111-1.20-*(16AWG)	19/0.29	1.42	15.3	1.93	13.6
0111-2.00-*(14AWG)	37/0.25	1.82	10.5	2.36	20.3
0111-3.00-*(12AWG)	37/0.32	2.24	6.58	2.78	31.0

Colour Code: The \*in the part number shall be replaced by a standard colour code designator in accordance with MilStd 681

White preferred other colours available on request e.g. CL105-0111-0.5-9 White Insulation

Performance Requirements: To be tested to and meet the requirements of the issue in effect of DNV Type Approval Programme No. 6-52711-1 (excluding sizes less than 0.5mm<sup>2</sup>)

Note: For installation guidelines refer to Raychem installation guidelines document WT1189



	<b>Approval Body</b>	<b>Approval System</b>	<b>Certificate Numbers</b>
DNV	Det Norske Veritas	Type Approval Programme No. 6-827.11.1	E-7276, E-7277, E7278, E-7279, E-7280, E-7281
LR	Lloyds Register	2002 Type Approval System	99/0154(E1)
GL	Germanischer Lloyd	Type Approval System	33 106-06 HH, 33 108-06 HH
ABS	American Bureau of Shipping	Type Approval Program	06-LD158945-PDA
KR	Korean Register	Type Approval	TBC

### **Pending**

BV	Bureau Veritas		
CCS	China Classification Society		
RMRS	Russian Register of Shipping		
RINA	Registro Italiano Navale		
NK	Nippon Kaiji Kyokai		

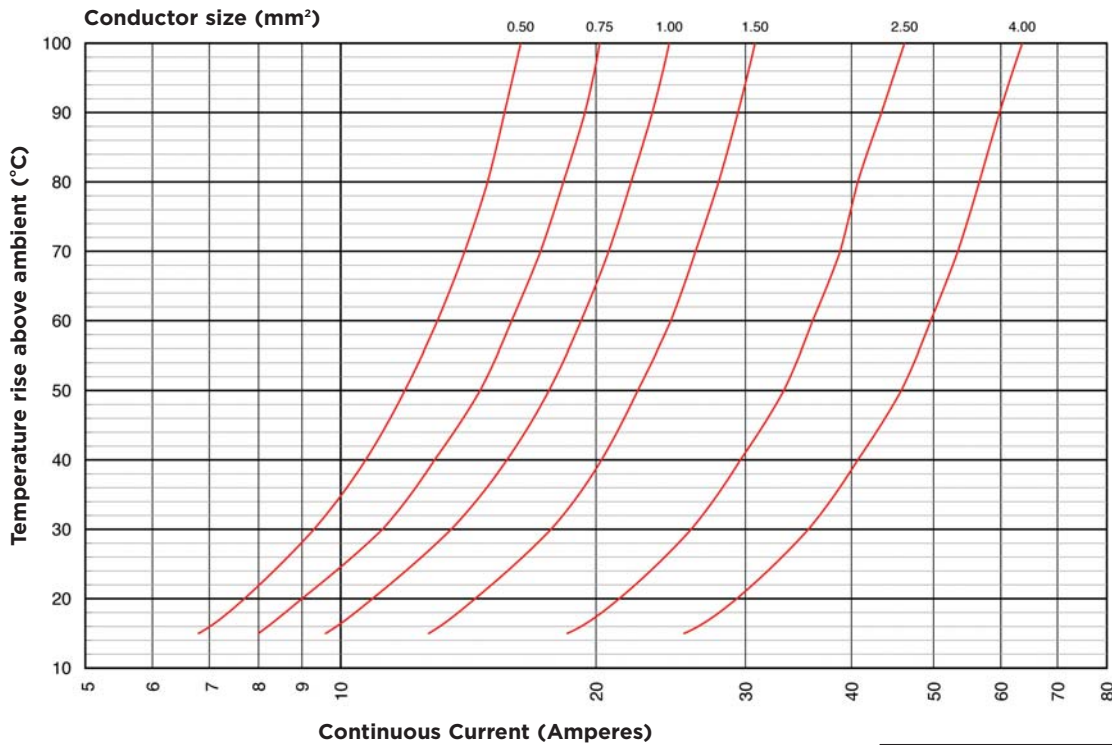
Additional Type Approvals on request

## Current Carrying Capacity

Current carrying capacity is defined as the continuous current which when passed through a wire will increase the temperature of the conductor from a specific ambient temperature to the maximum temperature rating of the insulation/sheath.

## Temperature Rise v Current Guide

For Type CL105 in free air (single core)



No of cores	Derating Factor
2	0.825
3	0.73
4	0.66
7	0.54
9	0.49
12	0.43
15	0.39
18	0.36
21	0.33
24	0.31
27	0.29
30	0.28
37	0.26

### Continuous Current (Amperes)

For ambients other than 20°C divide the current by:  $\sqrt{(234.5 + \text{ambient})/254.5}$   
 For equally loaded multicores, multiply current by multicore derating factor

## Short Circuit Current

The short circuit current is based on the material the wire is made of, the cross sectional area of the wire and the maximum temperature rating of the insulation material. The short circuit current for a given wire size is provided in the table as constant current for a given amount of time.

Cross-Section of the conductor in mm <sup>2</sup>	Duration of short circuit in seconds.				
	0.2	0.5	1.0	2.0	3.0
0.5	122	77	54	38	31
0.75	183	115	82	58	47
1.0	243	154	109	77	63
1.5	365	231	163	115	94
2.5	609	385	272	192	157
4.0	974	616	435	308	251
	Short circuit current in Amps				

Examination or test	Test basis	Requirements	Test on
General properties			
Braid coverage	IEC 60092-350	90% minimum coverage	Cable
Metallic coating of copper conductors	IEC 60092-350 by inspection	Conductor surface will be smooth and uniform. Insulation will not adhere to the conductor.	Conductor
Physical properties			
Tensile strength and ultimate elongation	IEC 60811-1-1	20MPa minimum, 150% minimum (insulation) (speed 50310 mm/min)	Insulation
Scrape abrasion resistance	NF F 63-808	500 cycles minimum (5N load, 0.45 mm diameter rod, 20°C, 55 cycles/minute)	Core
Dynamic cut through	NF F 63-808	50N minimum (90° 0.13 mm radius blade, 20°C, 100g/s load)	Core
Notch propagation	NF F 63-808	No dielectric breakdown (0.05 mm notch, 6X mandrel, 1.5kV ac for 1 minute)	Core
Mechanical/particular characteristic of sheathing compounds	IEC 60092-350, 12.4 IEC 60092-359 Table II & III	SHF1 or SHF2	Sheath
Thermal properties			
Lifetime	BS 2G 230	>20000h @ 120°C	Core
Accelerated ageing	IEC 60811-1-2	No cracks, no dielectric breakdown (168h @ 150°C, 1.5kV ac for 5 minutes)	Core
Insulation blocking	NF F 63-808	Cores must be easily separated (6h @ 150°C)	Core
Cold bend (Where outer diameter <12.5 mm)	IEC 60811-1-4	No cracks, no dielectric breakdown (-30°C, 10X mandrel, 1.5kV ac for 5 mins for 1m core) (-30°C, 10X mandrel, 3.5kV ac for 5 min. Sample of cable)	Core Cable
Current overload	BS 2G 230	No cracks, no dielectric breakdown (30s @ 250°C, 6X mandrel, wind as in test 11, 1.5kV ac for 5 minutes)	Core
Electrical properties			
AC and DC voltage tests	IEC 60092-350	No dielectric breakdown (2.5kV ac/4.5kV dc for 5 minutes for 1m of core) (3.5kV ac/5 minutes for each delivery length of cable)	Core Cable
Insulation – continuity proof test	IEC 60092-350 Clause 9.3b	No dielectric breakdown At least 8kV impulse, 8kV dc or 5.3kV ac	Core
Insulation resistance at 20°C	IEC 60092-350	500Mffkm min. @ 20°C (5m length, quote actual IR)	Core
Insulation resistance at 90°C	IEC 60092-350	1.5Mffkm min @ 90°C (5m length, quote actual IR)	Core
Increase in a.c. capacitance after immersion in water	IEC 60092-350	C14-C1 0.15C1, C14-C7 0.05C7 (14 days @ 50°C in tap water)	Core
Environmental properties			
Ozone resistance	IEC 60092-350 IEC 60811-2-1	No crazing or cracking (250-300ppm, 25°C, 30h)	Core
Fluid immersion: 72h @ 70°C – IRM 902, Diesel (F-76), 3.5% salt water	BS 2G 230	No cracking or dielectric breakdown 5% max, swell (6X mandrel, soak in water, 1.5kV ac for 5 minutes)	Core
Fire hazard properties			
Flammability – small scale	IEC 60332-1	Charring confined between 50mm and 540mm from lower edge of top support (Single vertical wire)	Core
Flammability – large scale	IEC 60332-3	Category A, designation F	Cable
Halogen content	IEC 60684-2 cl, 45	Less than 0.5% for each non metallic component	Cable
Toxicity index	IMO FTPC Appendix 3	It of less than 2, report Lc value	Cable
Smoke emission – small scale	ISO 5659-2 Appendix 3	Ds4 150 max. and Dmax 150 max. VOF4 300 max.	Core
Smoke emission – Large scale	IEC 61034-2	70% minimum transmittance	Cable

Note: For installation guidelines refer to Raychem installation guidelines document WT1189

**For more information**

Martyn Cook  
Market Development Manager  
Office Tel: +44 (0) 1793 572098  
Mobile Tel: +44 (0) 7712 078870  
email: [martyn.cook@tycoelectronics.com](mailto:martyn.cook@tycoelectronics.com)

Paul Bremner  
Product Manager  
Office Tel: +44 (0) 1793 572385  
Mobile Tel: +44 (0) 7713 502228  
email: [paul.bremner@tycoelectronics.com](mailto:paul.bremner@tycoelectronics.com)

**tycoelectronics.com**

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