

NATIONAL  
CABLES  
INDUSTRY

# NCI

الوطنية  
لصناعة  
الكابلات

*Committed Quality for our Customers*

## FIRE RESISTANT CABLES NCI - FP

**INNOVATIVE**

PROCESSES AND

TECHNOLOGY STRATEGIES



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# INTRODUCTION

Power supply is required to be maintained in critical application services for limited time during fire in, schools, hospitals, stadiums, airports, theatres, multiplexes, hotels, high rise buildings, power stations transit systems and other large public buildings to avoid loss of visibility caused by smoke and acid evolved from burning cable materials which can cause panic and create serious problems when evacuating personnel. Circuit integrity is of utmost importance and power supply to equipment is to be maintained during fire for fire fighting devices, sprinkler systems essential fire detection and alarm systems and evacuations systems for safeguarding human life and protecting equipment.

NCI Fire Resistant Wires and Cables provide robust fire resistant wiring system which in addition to maintaining circuit integrity during fire, produce very low levels of smoke and almost no acidic emissions thus safeguarding human life and protecting vital equipment.

NCI-FP1 Fire Resistant 600/1000 V wires are suitable for use in metallic conduits, trunking where electrical circuit integrity is of utmost importance. These are ideal for emergency lighting, fire detection and fire alarm circuits for systems that do not require twisted pairs or a built-in metallic screen.

NCI's CU/MICA/LSZH-FP1 600/1000 V wires meet Fire tests when tested in conduits as per BS 6387 (950°C for 3 hours), Meets Fire tests as per IEC 60331-21 with enhanced temperature (950°C, 90 minutes + 15 minutes cool down), meet acid gas emission requirements (<0.5%) when tested as per BS EN 60754, meet smoke emission requirements (>70% transmittance) when tested as per BS EN 61034. NCI-FP1 wires are certified by Loss Prevention Certification Board (LPCB).

NCI-FP armoured cables are manufactured from specially formulated Low Smoke and Zero Halogen Compounds and cables comply to BS 7846 Category F2 type and are certified by Loss Prevention Certification Board (LPCB) and satisfy CWZ requirements of BS 6387. NCI-FP cables are manufactured under Quality Management Systems Certified by BASEC and LPCB.

This catalog contains information on National Cables Industry Fire Resistant Wires and Cables with Copper Conductors, MICA Glass Primary Insulation, Low Smoke XLPE Insulation, Armoured/Unarmoured single and multicore cables. Each section contains appropriate technical details and constructional data.

## SALIENT FEATURES:

**Circuit Integrity:** Maintains Circuit Integrity for 3 hours under fire conditions - Category CWZ.

**Smoke emission:** Minimum 70% transmittance as per BS EN 61034.

**Acid gas emission:** Zero Halogen < 0.5% acid gas generation as per BS EN 60754.

## CORE IDENTIFICATION

As per UAE Local regulations the following colour code is used. However, special colour code as per BS 7846 can be provided based on special request.

Two Core: RED, BLACK

Three Core: RED, YELLOW, BLUE

Four Core: RED, YELLOW, BLUE, BLACK

Current rating tabulated are based on a ambient temperature of 30°C. for other ambient temperatures, the following rating factors are to be applied:



# TEST EQUIPMENT

## De-rating factors for different air temperatures

Ambient Temperature	25	30	35	40	45	50	55	60	65	70
Rating Factor	1.04	1.0	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58

NCI- FP cables meet Flame propagation tests as per BS EN 60332-1, BS EN 60332 - 3 - 24, Acid emission as per BS EN 60754 (actual less than 0.1%), Smoke Emission tests as per BS EN 61034 with minimum 70% transmittance. CWZ Fire Resistance tests at 600/1000 V as per BS 6387.

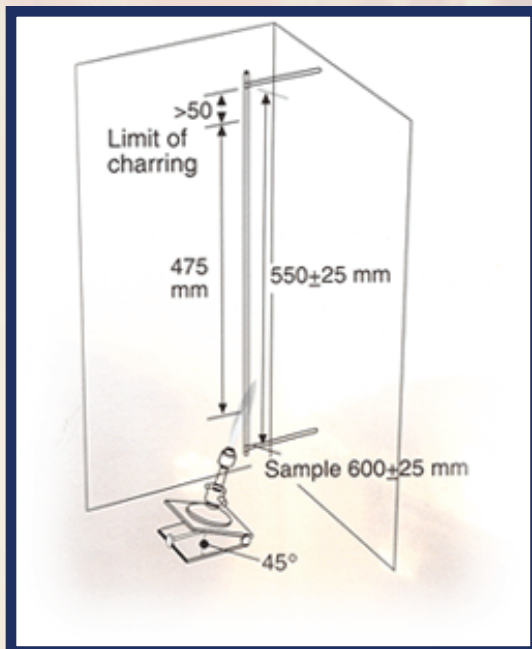
Fire properties: Protocol C - 950°C for 3 hours as per BS 6387.

Fire with Water: Protocol W - 650°C for 15 minutes as per BS 6387

Fire with Mechanical Shock: Protocol Z – 950°C for 15 minutes as per BS 6387.

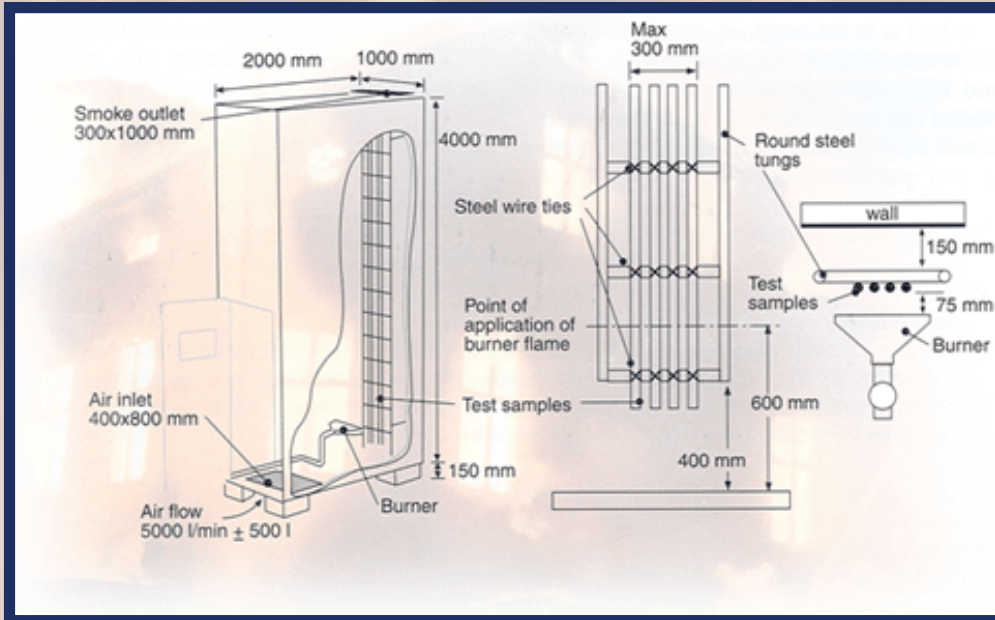
Fire resistant 600/1000 V, 2 Core, 3 core and 4 Core 1.5 mm<sup>2</sup> to 400 mm<sup>2</sup> NCI-FP cables are suitable for applications requiring circuit integrity during fire. Since these cables are used in critical applications, process approval (FPC – Factory Production Control from LPCB) and LPCB certification are vital to ensure necessary performance and civil defense approval.

## Fire Propagation Test On Single Cable

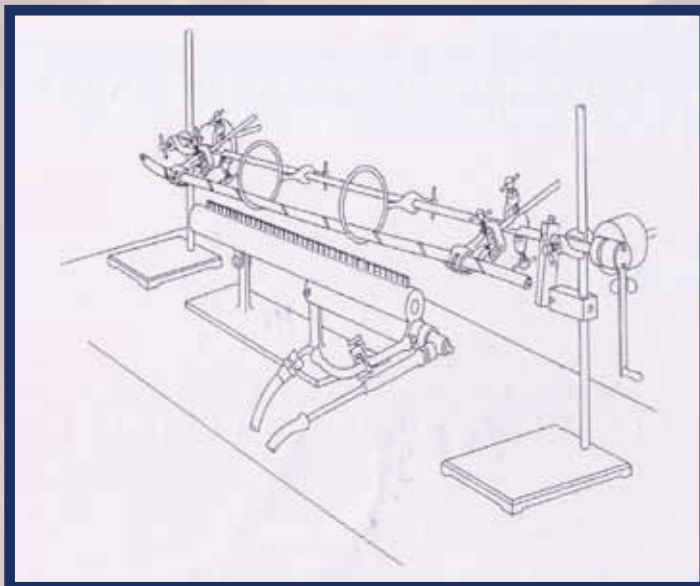


# TEST EQUIPMENT

## Flame Propagation Test On Multiple Cables

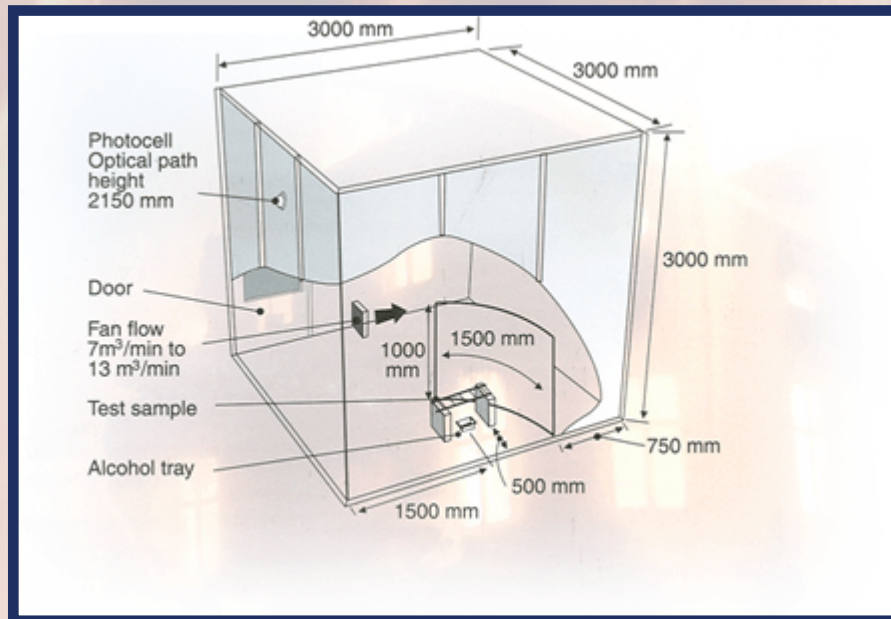


## Fire Resistance Test 950 °C – 3 Hours

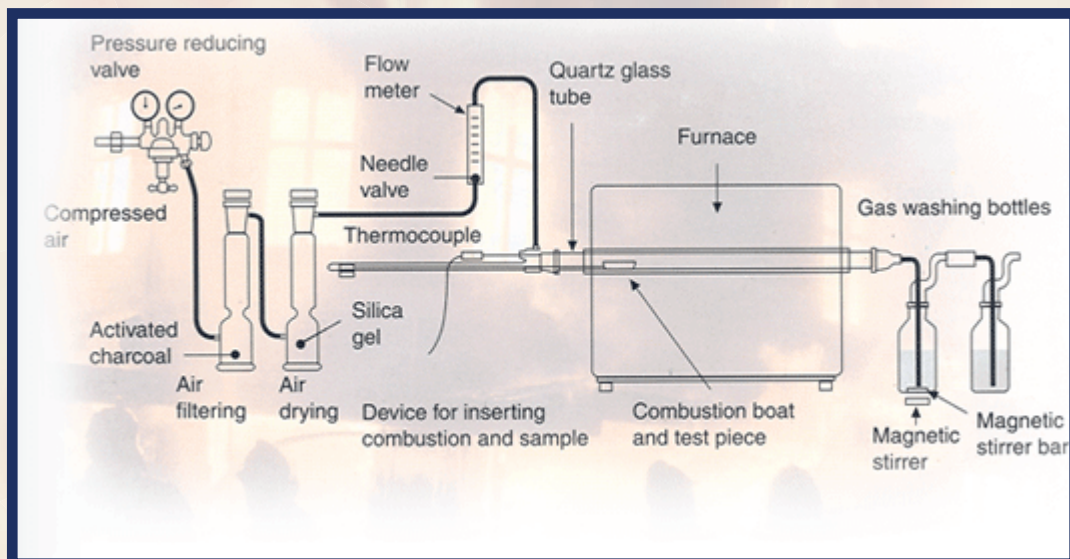


# TEST EQUIPMENT

## Smoke Emission Test



## Determination of Emission of Acid Gas



# 1 CORE FR 600/1000 Volts

## 600/1000 VOLTS 1 CORE FIRE RESISTANT CABLES TO BS 6387, IEC 60331-21 (STRANDED COPPER CONDUCTOR), NCI-FP1

Cross Sectional Area	Number Of Strands	Approx. Conductor Diameter	Average Insulation Thickness	Approx. Overall Diameter	Approx. Weight	Maximum Conductor D.C. Resistance at 20°	Current Rating (1Ø AC)	Current Rating (3Ø AC)	Voltage Drop (1Ø AC)	Voltage Drop (3Ø AC)
mm <sup>2</sup>	No.	mm	mm	mm	Kg/Km	Ohm/km	Amps	Amps	mV/A/m	mV/A/m
1x 1.5 rm	7	1.56	0.7	4.0	30	12.1	23	20	31	27
1 x 2.5 rm	7	2.01	0.8	5.0	40	7.41	31	28	19	16
1 x 4 rm	7	2.55	0.8	5.5	60	4.61	42	37	12	10
1 x 6 rm	7	3.12	0.8	6.0	80	3.08	54	48	7.9	6.8
1 x 10 rm	7	4.01	1.0	7.0	125	1.83	75	66	4.7	4
1x 16 rm	7	5.03	1.0	8.0	180	1.15	100	88	2.9	2.5
1 x 25 rm	7	6.30	1.2	10.0	280	0.727	133	117	1.9	1.65
1 x 35 sm	7	7.44	1.2	11.0	375	0.524	164	144	1.35	1.15
1 x 50 rmc	19	8.10	1.4	12.0	500	0.387	198	175	1.05	0.9
1 x 70 rmc	19	9.70	1.4	14.0	700	0.268	253	222	0.75	0.65
1 x 95 rmc	19	11.40	1.6	16.0	950	0.193	306	269	0.58	0.5
1x 120 rmc	37	12.90	1.6	17.0	1185	0.153	354	312	0.48	0.42
1 x 150 rmc	37	14.30	1.8	19.0	1450	0.124	393	342	0.43	0.37
1 x 185 rmc	37	16.0	2.0	21.0	1815	0.0991	449	384	0.37	0.32
1 x 240 rmc	61	18.40	2.2	24.0	2375	0.0754	528	450	0.33	0.29
1 x 300 rmc	61	20.40	2.4	26.0	2965	0.0601	603	514	0.31	0.27
1x400 rmc	61	23.20	2.6	29.0	3765	0.047	683	584	0.29	0.25
1x500 rmc	61	26.70	2.8	33.0	4800	0.0366	783	666	0.28	0.24
1x600 rmc	61	30.40	2.8	37.0	6140	0.283	900	764	0.27	0.23

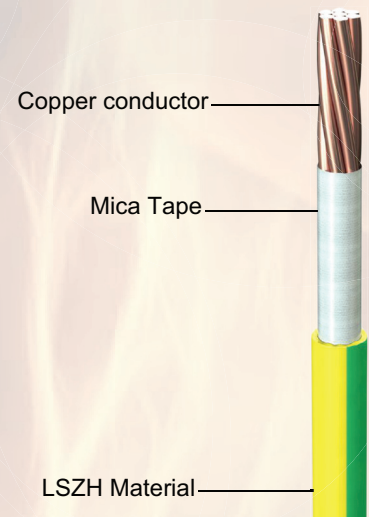
Current rating based on installation "enclosed in conduit on a wall or in trunking" in line with BS 7671 (IEE Wiring Regulations). Laying condition: 30° C ambient temperature & 90°C operating temperature. For other ambient temperatures appropriate rating factors should be applied.

### Temperature Rating Factors

Ambient Temperature in °C	25	30	35	40	45	50	45	60
Rating Factor	1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71

### Correction Factors for Grouping

Number of Circuits	2	3	4	5	6	7	8	9
Rating Factor	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50



# 2 CORE FR 600/1000 Volts

## 600/1000 Volts 2 CORE FIRE RESISTANT ARMoured CABLES TO BS 7846 (STRANDED COPPER CONDUCTOR)

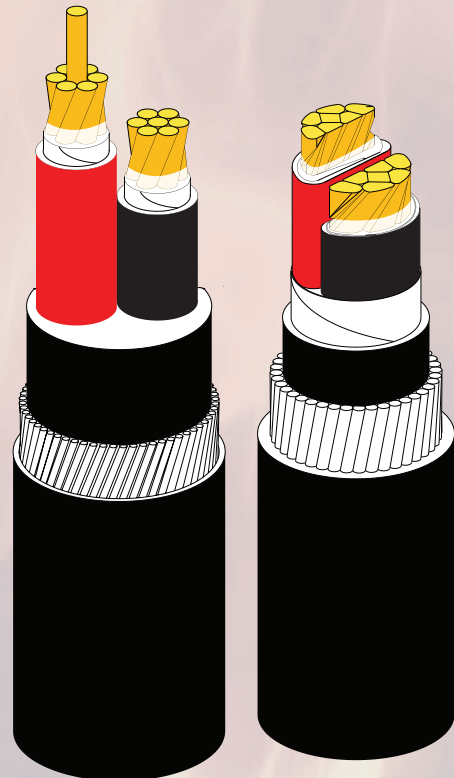
Cross Sectional Area	Number Of Strands	Approx. Conductor Diameter	Average Insulation Thickness	Nominal Steel Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight	Maximum Conductor d.c. Resistance at 20°C	Current rating in Air @ 30°C
mm <sup>2</sup>	No.	mm	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps
2x 1.5 rm	7	1.56	0.6	0.9	1.3	15.0	380	12.1	29
2 x 2.5 rm	7	2.01	0.7	0.9	1.4	16.0	475	7.41	39
2 x 4 rm	7	2.55	0.7	0.9	1.4	17.0	550	4.61	52
2 x 6 rm	7	3.12	0.7	0.9	1.4	18.0	620	3.08	66
2 x 10 rm	7	4.01	0.7	0.9	1.5	20.0	780	1.83	90
2 x 16 rmc	7	4.70	0.7	1.25	1.5	22.0	1065	1.15	115
2 x 25 rm	7	6.30	0.9	1.25	1.6	26.0	1480	0.727	152
2 x 35 rmc	7	6.9	0.9	1.6	1.7	29.0	1935	0.524	188
2 x 50 sm	19	Sectoral	1.0	1.6	1.8	27.0	1910	0.387	228
2 x 70 sm	19	Sectoral	1.1	1.6	1.9	30.0	2450	0.268	291

Note: For Electrical parameters, please refer to NCI Electrical Guide.

### Colour of Insulation: Red,Black

BS 7846 colour code shall be provided only based on special request  
Colour code: Brown, Blue

rm - Round multi stranded  
rmc - Round multi stranded compacted  
sm - Sectoral shaped compacted





# 3 CORE FR 600/1000 Volts

## 600/1000 Volts 3 CORE FIRE RESISTANT ARMoured CABLES TO BS 7846 (STRANDED COPPER CONDUCTOR)

Cross Sectional Area	Number Of Strands	Approx. Conductor Diameter	Average Insulation Thickness	Nominal Steel Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight	Maximum Conductor d.c. Resistance at 20°C	Current rating in Air @ 30°C
mm <sup>2</sup>	No.	mm	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps
3x 1.5 rm	7	1.56	0.6	0.9	1.3	15.0	415	12.1	25
3 x 2.5 rm	7	2.01	0.7	0.9	1.4	17.0	500	7.41	33
3 x 4 rm	7	2.55	0.7	0.9	1.4	18.0	600	4.61	44
3 x 6 rm	7	3.12	0.7	0.9	1.4	19.0	700	3.08	56
3 x 10 rm	7	4.01	0.7	1.25	1.5	23.0	1015	1.83	78
3x 16 rmc	7	4.70	0.7	1.25	1.6	24.0	1250	1.15	99
3 x 25 rm	7	6.30	0.9	1.6	1.7	30.0	1930	0.727	131
3 x 35 sm	7	Sectoral	0.9	1.6	1.8	28.0	2050	0.524	162
3 x 50 sm	19	Sectoral	1.0	1.6	1.8	31.0	2540	0.387	197
3 x 70 sm	19	Sectoral	1.1	1.6	1.9	34.0	3300	0.268	251
3 x 95 sm	19	Sectoral	1.1	2.0	2.1	39.0	4490	0.193	304
3x 120 sm	37	Sectoral	1.2	2.0	2.2	42.0	5375	0.153	353
3 x 150 sm	37	Sectoral	1.4	2.5	2.3	48.0	6850	0.124	406
3 x 185 sm	37	Sectoral	1.6	2.5	2.4	52.0	8200	0.0991	463
3 x 240 sm	61	Sectoral	1.7	2.5	2.6	57.0	10160	0.0754	546
3 x 300 sm	61	Sectoral	1.8	2.5	2.7	62.0	12265	0.0601	628
3x400 sm	61	Sectoral	2.0	2.5	2.9	69.0	15165	0.047	728

Note: For Electrical parameters, please refer to NCI Electrical Guide.

### Colour of Insulation: Red, Yellow, Blue

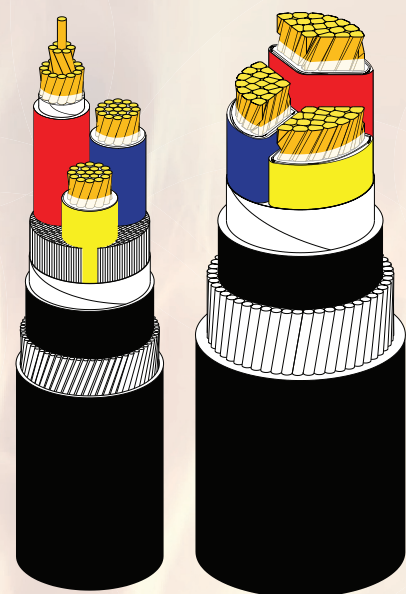
BS 7846 colour code shall be provided only based on special request

Colour code: Brown, Black, Grey

rm - Round multi stranded

rmc - Round multi stranded compacted

sm - Sectoral shaped compacted



# 4 CORE FR 600/1000 Volts

## 600/1000 Volts 4 CORE FIRE RESISTANT ARMoured CABLES TO BS 7846 (STRANDED COPPER CONDUCTOR)

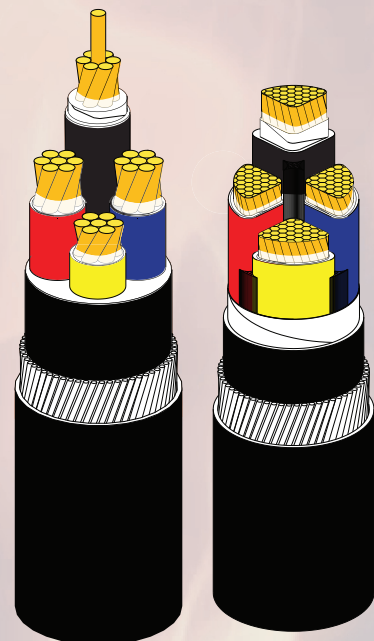
Cross Sectional Area	Number Of Strands	Approx. Conductor Diameter	Average Insulation Thickness	Nominal Steel Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight	Maximum Conductor d.c. Resistance at 20°C	Current rating in Air @ 30°C
mm <sup>2</sup>	No.	mm	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps
4x 1.5 rm	7	1.56	0.6	0.9	1.3	16.0	470	12.1	25
4 x 2.5 rm	7	2.01	0.7	0.9	1.4	18.0	585	7.41	33
4x 4 rm	7	2.55	0.7	0.9	1.4	19.0	700	4.61	44
4 x 6 rm	7	3.12	0.7	1.25	1.5	21.0	950	3.08	56
4 x 10 rm	7	4.01	0.7	1.25	1.5	23.0	1235	1.83	78
4x 16 rmc	7	4.70	0.7	1.25	1.6	26.0	1465	1.15	99
4 x 25 sm	7	Sectoral	0.9	1.6	1.7	27.0	2000	0.727	131
4 x 35 sm	7	Sectoral	0.9	1.6	1.8	30.0	2485	0.524	162
4 x 50 sm	19	Sectoral	1.0	1.6	1.9	33.0	3130	0.387	197
4 x 70 sm	19	Sectoral	1.1	2.0	2.10	39.0	4435	0.268	251
4 x 95 sm	19	Sectoral	1.1	2.0	2.20	42.0	5610	0.193	304
4x 120 sm	37	Sectoral	1.2	2.5	2.30	48.0	7180	0.153	353
4 x 150 sm	37	Sectoral	1.4	2.5	2.4	52.0	8575	0.124	406
4 x 185 sm	37	Sectoral	1.6	2.5	2.6	57.0	10330	0.0991	463
4 x 240 sm	61	Sectoral	1.7	2.5	2.7	63.0	12950	0.0754	546
4 x 300 sm	61	Sectoral	1.8	2.5	2.9	69.0	15670	0.0601	628
4x400 sm	61	Sectoral	2.0	3.15	3.2	79.0	20435	0.047	728

Note: For Electrical parameters, please refer to NCI Electrical Guide.

### Colour of Insulation: Red, Yellow, Blue, Black

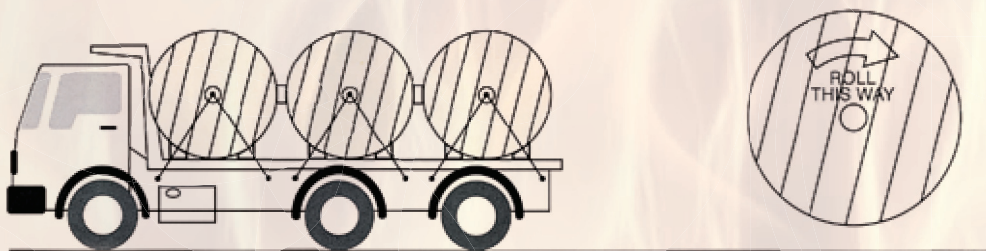
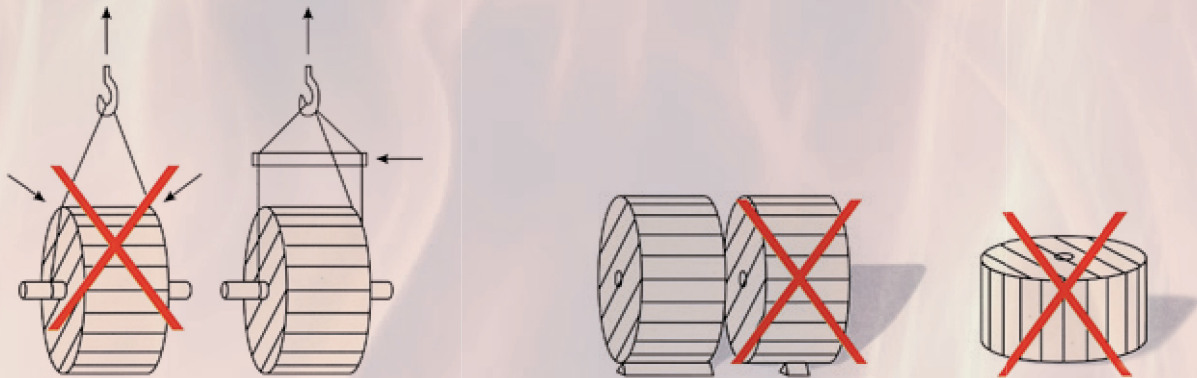
BS 7846 colour code shall be provided only based on special request  
Colour code: Blue, Brown, Black, Grey

rm - Round multi stranded  
rmc - Round multi stranded compacted  
sm - Sectoral shaped compacted



# DRUM HANDLING INSTRUCTION

*National Cable Industry* Cables and Conductors should be installed by trained personnel in accordance with good engineering practices, recognized codes of practice, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable reels and handling these reels can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.





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