



# ZHPCG CK0226 POWER CABLE

WIRE & CABLE



# ZHPCG CK0226 POWER CABLE

## WIRE & CABLE

### Application/Use

Rail approved zero Halogen Power Cables, available as 750V or 1800V rated.

ZHPCG cables are all Halogen free, flexible, with good oil and water resistance, making them ideal for the Rail market.

The construction is a dual wall combination of TE Connectivity formulated polymer blends.



1. IEC 60228 Tin Plated Class 5/6 Conductor
2. X-Linked Polyolefin Electrical Insulator
3. X-Linked Outer Jacket

### ZHPCG Series Product Family

ZHPCG-15 (750/1300V)

IEC Class 5 – Flexible cable

ZHPCG-35 (1800/3300V)

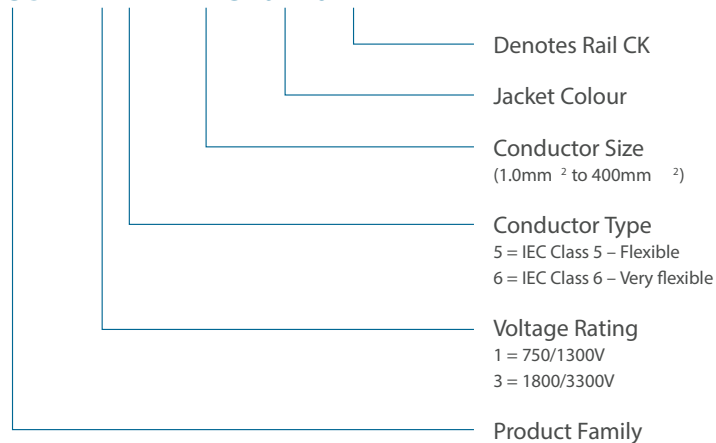
IEC Class 5 – Flexible cable

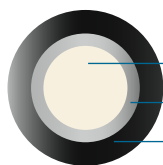
ZHPCG-36 (1800/3300V)

IEC Class 6 – Very flexible cable

### Part Description

#### ZHPCG- XX – XX – XCK0226





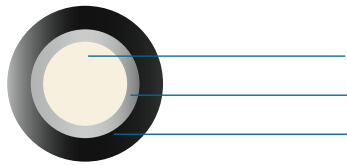
### 750 VOLT ZERO HALOGEN POWER CABLE

1. Conductor - Flexible tin plated copper special Class 5 to IEC 60228
2. Insulation - Flexible Polyolefin containing no added Halogens
3. Outer Jacket - Black Zerohal®

Part Description	Conductor		Finished Wire			Maximum Weight (kg/km)
	Maximum Diameter of Strands (mm)	Maximum Diameter (mm)	Max Resist @20 °C (Ohms/km)	Outer Diameter		
				Lower Spec Limit (mm)	Upper Spec Limit (mm)	
ZHPCG-15-1.0-#	0.21	1.25	20.00	3.62	4.00	28
ZHPCG-15-1.5-#	0.26	1.49	13.70	3.64	4.00	36
ZHPCG-15-2.5-#	0.26	1.97	8.21	4.07	4.50	45
ZHPCG-15-4.0-#	0.31	2.56	5.09	4.39	4.89	60
ZHPCG-15-6.0-#	0.31	3.05	3.39	5.06	5.56	85
ZHPCG-15-10.0-#	0.41	4.05	1.95	6.23	6.88	135
ZHPCG-15-16.0-#	0.41	5.20	1.24	7.63	8.48	195
ZHPCG-15-25.0-#	0.41	7.00	0.795	9.20	10.30	300
ZHPCG-15-35.0-#	0.41	7.75	0.565	10.70	11.90	443
ZHPCG-15-50.0-#	0.41	9.20	0.393	12.90	14.10	623
ZHPCG-15-70.0-#	0.51	11.50	0.277	14.90	16.30	847
ZHPCG-15-95.0-#	0.51	13.00	0.210	17.40	18.80	1119
ZHPCG-15-120.0-#	0.51	14.80	0.164	19.10	20.50	1445
ZHPCG-15-150.0-#	0.51	16.70	0.132	21.10	22.90	1775
ZHPCG-15-185.0-#	0.51	18.70	0.108	23.50	25.30	2115
ZHPCG-15-240.0-#	0.51	21.90	0.0817	26.90	28.70	2762
ZHPCG-15-300.0-#	0.51	26.90	0.0654	30.10	32.30	3452
ZHPCG-15-400.0-#	0.51	31.00	0.0495	34.10	36.30	4474

Zerohal® is a registered trademark of TE Connectivity





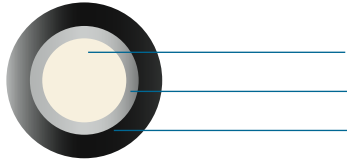
**1800/3300 VOLT ZERO HALOGEN POWER CABLE**

1. Conductor - Flexible tin plated copper special class 5 to IEC 60228
2. Insulation - Flexible Polyolefin containing no added Halogens
3. Outer Jacket - Black Zerohal®

Part Description	Conductor		Finished Wire			Maximum Weight (kg/km)
	Maximum Diameter of Strands (mm)	Maximum Diameter (mm)	Max Resist @20 °C (Ohms/km)	Outer Diameter		
				Lower Spec Limit (mm)	Upper Spec Limit (mm)	
ZHPCG-35-1.5-#	0.26	1.55	13.7	4.40	4.70	37.9
ZHPCG-35-2.5-#	0.26	1.97	8.21	4.87	5.27	52.9
ZHPCG-35-4.0-#	0.31	2.56	5.09	5.41	5.91	72.7
ZHPCG-35-6.0-#	0.31	3.05	3.39	5.90	6.40	96.7
ZHPCG-35-10.0-#	0.41	4.05	1.95	7.03	7.63	141
ZHPCG-35-16.0-#	0.41	5.20	1.24	8.43	9.23	214
ZHPCG-35-25.0-#	0.41	7.00	0.795	10.00	11.0	316
ZHPCG-35-35.0-#	0.41	7.75	0.565	11.20	12.30	425
ZHPCG-35-50.0-#	0.41	9.2	0.393	12.90	14.10	582
ZHPCG-35-70.0-#	0.51	11.5	0.277	14.80	16.30	802
ZHPCG-35-95.0-#	0.51	13.0	0.210	17.30	18.60	1051
ZHPCG-35-120.0-#	0.51	14.8	0.164	19.10	20.50	1308
ZHPCG-35-150.0-#	0.51	16.7	0.132	20.80	22.30	1601
ZHPCG-35-185.0-#	0.51	18.7	0.108	22.70	24.20	1966
ZHPCG-35-240.0-#	0.51	21.9	0.0817	26.60	28.20	2542
ZHPCG-35-300.0-#	0.51	26.9	0.0654	31.70	33.60	3568
ZHPCG-35-400.0-#	0.51	31.0	0.0495	36.10	38.10	4652

Zerohal® is a registered trademark of TE Connectivity





## 1800/3300 VOLT ZERO HALOGEN POWER CABLE

1. Conductor - Flexible tin plated copper special class 6 to IEC 60228
2. Insulation - Flexible Polyolefin containing no added Halogens
3. Outer Jacket - Black Zerohal®

Part Description	Conductor		Finished Wire			Maximum Weight (kg/km)
	Maximum Diameter of Strands (mm)	Maximum Diameter (mm)	Max Resist @20 °C (Ohms/km)	Outer Diameter		
				Lower Spec Limit (mm)	Upper Spec Limit (mm)	
ZHPCG-36-1.5-#	0.16	1.68	12.80	3.20	4.91	42.1
ZHPCG-36-2.5-#	0.16	2.60	7.76	5.43	5.99	63.2
ZHPCG-36-4.0-#	0.16	3.00	4.76	5.80	6.41	84.0
ZHPCG-36-6.0-#	0.21	3.80	3.23	6.57	7.25	111
ZHPCG-36-10.0-#	0.21	4.87	1.88	7.69	8.47	169
ZHPCG-36-16.0-#	0.21	5.80	1.19	8.76	9.66	248
ZHPCG-36-25.0-#	0.21	7.70	0.780	10.67	11.76	363
ZHPCG-36-35.0-#	0.21	9.00	0.550	12.00	13.23	495
ZHPCG-36-50.0-#	0.31	10.70	0.393	13.71	15.12	666
ZHPCG-36-70.0-#	0.31	12.60	0.270	15.70	17.30	916
ZHPCG-36-95.0-#	0.31	14.80	0.200	18.29	20.16	1227
ZHPCG-36-120.0-#	0.31	17.10	0.160	20.48	22.58	1539
ZHPCG-36-150.0-#	0.31	18.30	0.132	21.28	23.48	1839
ZHPCG-36-185.0-#	0.31	20.90	0.108	23.52	25.93	2229
ZHPCG-36-240.0-#	0.41	23.50	0.081	27.33	30.14	2905
ZHPCG-36-300.0-#	0.41	26.00	0.060	30.10	33.18	3595

Zerohal® is a registered trademark of TE Connectivity

# ZHPCG CK0226 POWER CABLE WIRE & CABLE

## Approvals & Declarations:

- EN 45545-2
- DIN 5510-2
- TE WSD 1265

## Continuous Operating Temperature

- -25°C to +105°C

## Halogens

- Halogen free, low smoke, highly flame retarded

## Voltage Rating

- ZHPCG-15 750/1300V
- ZHPCG-35 1800/3300V
- ZHPCG-36 1800/3300V

## Conductor Size Range

- 1.0mm<sup>2</sup> to 400mm<sup>2</sup>

## Conductor Type

- Tin plated copper stranded

## Construction

- Single core

## Colours

- Standard Jacket colour black
- Colours on request

**EN45545**

Test	Method	Result
Flammability - small scale	(IEC 60332-1-2)	Charring confined to between 50mm and 540mm
Flammability - large scale	(Clause 9.1.2 EN50305)	Max. burn length 1.5m
Smoke - large scale	(EN 61034-2)	3m cube box 90% min transmittance
Toxicity	(Clause 9.2 EN50305)	Index max 6

**DIN 5510-2 (SEE TEST REPORT WT2387)**

Test	Method	Result
Flammability - small scale	EN60332-1-2	PASS
Flammability - large scale	EN50305	PASS
Smoke - 3m Cube	EN61034-2	PASS
PH & Conductivity	EN50267-2-2	PASS
Evolution of HCl	EN50267-2-1	PASS
Fluorine Content	EN60684-2	PASS
Toxicity	Clause 9.2 EN50305	PASS

**GENERAL PROPERTIES (SEE WSD 1265 FOR FULL DETAILS)**

Property	Requirements and relevant conditions	Test Basis			
<b>GENERAL PROPERTIES</b>					
Dimensions	As specification control drawing	IEC 60811-203			
Concentricity	70% minimum	IEC 60811-201 & 202			
Weight per Unit Length	As specification control drawing	See section 10.3			
Colour	Black - Colours available on request	By inspection			
Workmanship	Insulation free of cracks, splits, irregularities or foreign material	By inspection			
Jacket Wrinkling	Insulation free of wrinkles or creases when flexed	See section 10.6			
<b>PHYSICAL PROPERTIES</b>					
Insulation Tensile Strength & Ultimate Elongation	Tensile Strength 8 MPa minimum, Elongation ≥125%	IEC 60811-501			
Scrape Abrasion Resistance	Cable (mm <sup>2</sup> )	Load (N)	Minimum cycles at 20°C	Minimum cycles at 90°C	EN 50305
	1 - 6	10	250	20	
	10 - 25	15	350	150	
	35 - 95	20	500	400	
	120 - 400	25	650	550	
Dynamic Cut-through	Cable (mm <sup>2</sup> )	Minimum force at 20°C (N)		Minimum force at 90°C (N)	EN 50305
	1 - 6	120		24	
	10 - 25	200		40	
	35 - 95	500		100	
	120 - 400	700		140	
Notch Propagation	No dielectric breakdown			EN 50305	

**GENERAL PROPERTIES (SEE WSD 1265 FOR FULL DETAILS) - CONTINUED**

<b>THERMAL PROPERTIES</b>					
Thermal Endurance	20,000 hours @ 105°C minimum			EN 50305	
Accelerated Aging	No cracks, flowing or dielectric breakdown			IEC 60811-401	
Cold Bend	No cracking or breakdown			IEC 60811-504	
Shrinkage	Change in length shall be no more than 1%			IEC 60811-502	
Blocking	Cores to be separated without transfer of insulation			ENG-SYS-825-905	
<b>ELECTRICAL PROPERTIES</b>					
Conductor Resistance	See individual Specification Control Drawing			EN 50305	
Dielectric Strength AC Voltage Test	No dielectric breakdown between conductor and water				
	Cable voltage rating		Voltage/time		
	750V 1800V	3.0kV for 5 min 6.0kV for 5 min			
Breakdown Voltage	Cable voltage rating		Min breakdown voltage		
	750V 1800V	8kV 15kV			
Insulation Resistance K Factor	Temp (°C)	20	60	90	
	K (MΩ.km)	500	10	5	
Temperature Insulation Stability	No dielectric breakdown				
	Cable voltage rating		Voltage		
	750V 1800V	1.5kV DC 3.0kV DC			
Surface Leakage Current	Less than 1 mA			EN 50305	
Insulation Continuity Proof Test	No dielectric breakdown			BS 5099	
<b>ENVIRONMENTAL PROPERTIES</b>					
Fluid Immersion	No cracking, delamination, or breakdown in voltage test				
	Fluid (temp/time)	% TS ret min	% Eb ret min	% Thickness swell maximum	
	Diesel (70°C/168h)	60	60	20	
	Diesel (20°C/168h)	70	60	10	
	IRM 902 (100°C/24h) Silicone oil (100°C/24h)	70 70	70 70	10 10	
Ozone Resistance	No cracks, crazing or breakdown			EN 50305	
U.V. Stability	No cracking on 5 X mandrel. No breakdown following voltage test			ASTM G154	
Hydrolytic Stability	No damage on 5 X mandrel. No bend or breakdown when cooled			ENG-SYS-825-905	
Water Absorption	4% max			IEC 60811-402	
Salt Resistance	Tensile strength retention 85% minimum			ASTM B117 and IEC 60811-501	



2 Lydiard Fields, Swindon Wiltshire, SN5 8UB, United Kingdom  
Tel: +44(0) 1793 616700 • Fax: +44(0)1793 644304  
uksales@is-rayfast.com • www.is-rayfast.com