

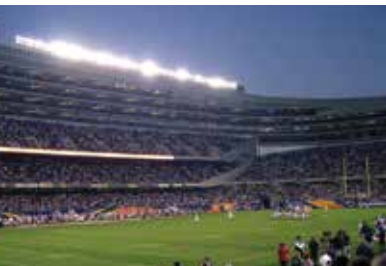


# IDH

**Cables Limited**

MADE IN IRELAND SINCE 1934

QUALITY  
APPROVED  
CABLES



IDH CABLES LIMITED

# KILFLAM<sup>TM</sup>

FIRE RESISTANT CABLES



Cables for BS 5839-1 2013 Enhanced Grade, Standard Grade, BS EN 50200 & BS 6387 CWZ | Approvals with LPCB & BASEC | Reduced installation time | Superior electrical performance | Pliable fire resistant cables | No toxic fumes

## KILFLAM™ 1000 SINGLE CORE FIRE RESISTANT CABLE

<b>FIRE RESISTANCE:</b>	Complies with IEC331 and BS 6387 CWZ when tested in a steel conduit
<b>SMOKE EMISSION:</b>	Complies with low smoke emissions to BS EN 61034
<b>ACID GAS:</b>	Acid gas emissions to BS EN 50267 (HCL level <0.5%)
<b>FLAME RETARDANCE:</b>	BS EN 60332-1-2
<b>TEMPERATURE RANGE:</b>	-25°C to 90°C
<b>CONSTRUCTION:</b>	Conductor - Plain annealed copper to BS EN 60228 class 2 Fire Barrier - Mica tape Insulation - Low Smoke, Halogen Free to BS EN 50363 - EI5
<b>COLOURS:</b>	Blue, Brown, Green/Yellow. Other colours available on request
<b>SUPPLIED LENGTHS:</b>	100 and 500 metre drums. Other lengths available on request
<b>APPROVALS:</b>	LPCB approved to BS 6387 CWZ when tested in a metal conduit



Area mm <sup>2</sup>	Conductor No. of Strands (mm)	Nominal Cable Diameter (mm)	Conductor Resistance ohm/km @20°C
1.5	7 / 0.53	3.3	12.1
2.5	7 / 0.67	3.75	7.41
4.0	7 / 0.85	4.3	4.61
6.0	7 / 1.04	5.0	3.08
10.0	7 / 1.35	6.8	1.83

## KILFLAM™ STANDARD 2000

<b>CABLE DESCRIPTION:</b>	BS EN 50200 Class PH30 including Annex E, BS EN 50200 Class PH60
<b>COLOURS:</b>	White and Red sheath as standard. Other colours available on request
<b>SUPPLIED LENGTHS:</b>	100 and 500 metre reels. Other packaging/lengths available on request
<b>APPROVALS:</b>	LPCB to BS 5839-1 'Standard Grade' BASEC to BS 7629 and BS 6387 CWZ LPCB to BS 7629 and BS 6387 CWZ BASEC and LPCB approval to BS EN ISO 9001:2008
<b>KEY APPLICATIONS:</b>	The use of Kilflam Standard 2000 is recommended for general use as a fire resistant cable, voice, data and emergency lighting applications to BS 5266-1 PH60 cables



No. of Cores	2	2	2	3	3	3	4	4	4
Conductor Area (mm <sup>2</sup> )	1.5	2.5	4.0	1.5	2.5	4.0	1.5	2.5	4.0
No. of Wires	1	7	7	1	7	7	1	7	7
Nominal Diameter of Conductor (mm)	1.37	0.67	0.85	1.37	0.67	0.85	1.37	0.67	0.85
Nominal Insulation Thickness (mm)	0.70	0.80	0.80	0.70	0.80	0.80	0.70	0.80	0.80
Nominal Cable OD (mm)	8.40	10.05	11.40	9.15	11.05	13.40	10.20	11.65	14.80
Approx Cable Weight (kg/km)	98.30	146.40	213.50	121.00	178.80	249.50	148.20	210.70	349.10

To meet the toughest requirements of a fire alarm cable. An easy to use alternative to the traditional cable solution for areas requiring enhanced performance.

<b>CABLE DESCRIPTION:</b>	High performance, very flexible with a double fire barrier system
<b>COLOURS:</b>	White and Red sheath as standard. Other colours available on request
<b>SUPPLIED LENGTHS:</b>	100 and 500 metre reels. Other lengths available on request
<b>APPROVALS:</b>	LPCB and BASEC approved. This cable is designed to meet the requirements of BS 5839-1 'Enhanced Grade' BS 7629, BS 6387 CWZ, BS EN 50200. Class PH 120, BS 8434-2
<b>KEY APPLICATIONS:</b>	<p>'Enhanced' fire resistance is recommended in systems and buildings in which cables need to operate correctly during a fire for longer than required for single phase evacuation.</p> <p>Examples: Unsprinkled high-rise buildings with phased evacuation arrangements; premises of such a nature/size that areas remote from the fire could be occupied for a prolonged period during a fire, any location where system integrity is essential in severe conditions.</p>



No. of Cores	2	2	2	3	3	3	3	4	4	4
Conductor Area (mm²)	1.5	2.5	4.0	1.5	1.0	2.5	4.0	1.5	2.5	4.0
No. of Wires	7	7	7	7	7	7	7	7	7	7
Nominal Diametre of Conductor (mm)	0.53	0.65	0.85	0.53	1.13	0.65	0.85	0.53	0.65	0.85
Nominal Insulation Thickness (mm)	0.70	0.80	0.80	0.70	0.60	0.80	0.80	0.70	0.80	0.80
Nominal Cable OD (mm)	9.40	10.70	11.00	10.20	8.55	11.00	13.40	13.20	14.60	14.80
Approx Cable Weight (kg/km)	131.25	188.11	269.78	181.44	93.60	187.30	249.50	192.44	271.16	349.10

## KILFLAM™ ENHANCED 3000 CABLE CONSTRUCTION

<b>CONDUCTORS:</b>	Copper wire class 1 to BS EN 60228 for sections 1.5mm² Copper wire class 2 to BS EN 60228 for sections 2.5-4.0mm² Conductor resistance	As per BS EN 60228
<b>FIRE BARRIER:</b>	Double layer of mica tape	
<b>INSULATION:</b>	Silicon rubber type EI 2 to BS EN 50363 Insulation thickness Tensile strength (min) Elongation (min) Hot set elongation (max)	As per BS 7629 Table 2 5 N/mm 150% 100% at 250°C
<b>ELECTROSTATIC SCREEN:</b>	Metal tape	
<b>SHEATHING:</b>	Low smoke halogen free type LTS3 Sheath thickness Sheath hardness Tensile strength (min) Elongation (min) Tear strength (min)	As per BS 7629 Table 2 Shore A. 96 10 N/mm 100% 6.5 N/mm
<b>THERMOMECHANICAL PROPERTIES:</b>	Hot pressure deformation Heat shock Cold impact Cold elongation	at 80°C <50% 1 hour at 150°C PASS at -15°C PASS at -15°C min elongation 30%

## PERFORMANCE UNDER FIRE CONDITIONS

### To BS 5839-1 2013 'Enhanced Grade' to BS EN 50200 classification PH 120.

Circuit Integrity	Resistance to fire and mechanical shock	60 min at 930°C
Performance	Followed by fire, mechanical shock and water	60 min same sample at 930°C

### To BS 5839-1 2013 'Standard Grade' to BS EN 50200 classification PH 30, Annex E

Circuit Integrity	Resistance to fire and mechanical shock	15 min at 830°C
Performance	Followed by fire, mechanical shock and water	15 min same sample at 830°C

### To BS 5839-1 2013 'Standard Grade' to BS EN 502000 Clarification PH60

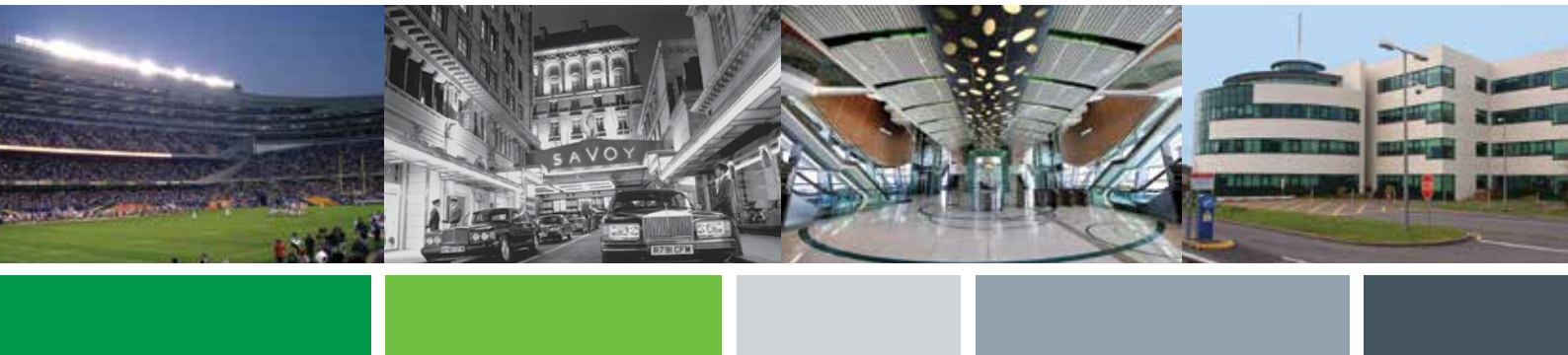
Circuit Integrity	Resistance to fire and mechanical shock	60 mins at 830°C
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### To BS 6387 CWZ

Circuit Integrity	Resistance to fire alone	CAT C	3 hours at 950°C
	Resistance to fire and water	CAT W	15 mins at 950°C
	Resistance to fire and mechanical shock	CAT Z	15 mins at 950°C
Flame Retardancy	BS EN 60332-1-2		
Flame Propagation	IEC 332 Part 1		



QUALITY  
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CABLES



IDH CABLES LIMITED

**FUMEGUARD™**

LOW SMOKE HALOGEN FREE CABLES



The longest-running original range of low voltage, low smoke, halogen free cables in the industry

## OVERVIEW

Fumeguard™ is a complete range of low voltage cables made to the highest standards in low smoke halogen free (LSHF) materials. Cables include single for conduit and panel wiring; flat multicores for fixed wiring and flexible cables for appliances, for ordinary duty, heat resisting and low temperature (Arctic) use.

### Fumeguard™ cables are fire safety tested to:

SMOKE EMISSION:	BS EN 61034 IEC 61034-2
FLAME RETARDANT:	BS EN 60332-1-2
ACID GAS EMISSION:	BS EN 50267-2-1 IEC 60754-1
DEGREE OF ACIDITY EMISSIONS:	BS EN 50267-2-3 IEC 60754-2

Fumeguard™ cables are manufactured to meet the latest versions of cable standards.

BS 7211: 2012

BS EN 50525-3-41

BS EN 50525-3-11

Specifiers can rely on the Fumeguard™ name as it complies fully with International (IEC) and British Standards (BS). Not all cables are 'fire safety' compliant to these standards despite being promoted as so. Modified PVCs and LSF materials do not comply with the highest standards. Created as a result of the King's Cross tube fire in London, the low smoke halogen free polymer technology reduces smoke when burning to improve visibility in a fire and does not emit the poisonous HCL fumes that are generated by PVC and modified PVC cables. All public buildings, stadia, railway stations and enclosed construction spaces should call for LSHF cables.



Canary Wharf, London



Millennium Dome, London



Burj Al Arab, Dubai

## NO7ZZ1-R,U & NO5ZZ1-R,U

6181B; 6241B; 6242B; and 6243B INSULATED & SHEATHED CABLES

Used for surface wiring in power and lighting applications. Sheath has UV protection against direct sunlight.

<b>STANDARDS:</b>	BS7211
<b>OPERATING TEMP:</b>	90°C
<b>COLOURS:</b>	White as standard. Other colours available on request, including red
<b>PACKAGING:</b>	50 and 100 metre lengths. Other lengths available on request
<b>APPROVALS:</b>	BASEC



Conductor mm <sup>2</sup>	Conductor Construction	Mean Overall Diameter (mm)			Conductor Resistance ohm/km @20°C
		1 Core / 6181B	2 Core / 6242B	3 Core / 6243B	
1.0	1 / 1.30	4.10	4.10 x 8.65	4.60 x 9.70	18.10
1.5	1 / 1.37	4.45	4.55 x 8.80	4.75 x 11.45	12.10
2.5	1 / 1.77	5.05	5.40 x 10.50	5.46 x 13.40	7.41
4.0	7 / 0.85	6.05	6.10 x 12.00		4.61
6.0	7 / 1.04	6.60	6.90 x 13.80		3.08
10.0	7 / 1.35	7.90	8.40 x 18.50		1.83
16.0	7 / 1.70	9.10	9.70 x 20.60		1.15

ALSO AVAILABLE IN TRADITIONAL FLAT STYLE

## HO5Z-R,U & HO7Z-R,U

6491B SINGLE CORE INSULATED CABLES

General purpose power and lighting cables, often used within protective conduit or trunking installations.  
Can also be used within light fittings, appliance wiring and control gear.

<b>STANDARDS:</b>	BS EN 50525-3-41; BS7211
<b>OPERATING TEMP:</b>	90°C
<b>COLOURS:</b>	Blue, Brown, Black, Grey; Green/Yellow. Other colours available on request
<b>CORES:</b>	Single
<b>PACKAGING:</b>	50 and 100 metre lengths. Other lengths available on request
<b>APPROVALS:</b>	BASEC



Conductor mm <sup>2</sup>	Conductor Construction	Mean Overall Diameter (mm)	Conductor Resistance ohm/km @20°C
1.0	1 / 1.30	2.35	18.10
1.5 x 7	7 / 0.53	3.00	12.10
2.5 x 7	7 / 0.67	3.60	7.41
4.0	7 / 0.85	4.10	4.61
6.0	7 / 1.04	4.70	3.08
10.0	7 / 1.35	6.00	1.83
16.0	7 / 1.70	7.00	1.50
25.0	7 / 2.14	8.70	0.727

### TECHNICAL DATA

INSULATION RESISTANCE K VALUE	0.037M ohms/km at 90°C
TENSILE STRENGTH (MIN)	10.0 N/mm <sup>2</sup>
% ELONGATION (MIN)	125%
HOT SET ELONGATION	100%

LOW TEMPERATURE BEND
VOLTAGE TEST (200C)
TEST UNDER FIRE CONDITIONS
CORROSIVE ACID GAS EMISSIONS
SMOKE EMISSION

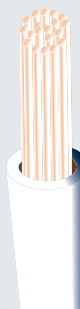
-15°C
Pass 2.5 KV
BS EN 60332
<0.5% to BS EN 50267
Pass BS EN 61034

## HO5Z-K & HO7Z-K

### 2491B SINGLE CORE INSULATED WIRES

Flexible single core wires used typically in control panels.

<b>STANDARDS:</b>	BS EN 50525-3-41
<b>OPERATING TEMP:</b>	90°C
<b>COLOURS:</b>	Blue, Brown, Black, Grey, Green/Yellow. Other colours available on request
<b>CORES:</b>	Single
<b>PACKAGING:</b>	50 and 100 metre lengths. Other lengths available on request
<b>APPROVALS:</b>	BASEC



Conductor mm <sup>2</sup>	Conductor Construction	Mean Overall Diameter (mm)	Conductor Resistance ohm/km @20°C
0.5	16 / 0.20	2.12	39.00
0.75	24 / 0.20	2.33	26.00
1.0	32 / 0.20	2.48	19.50
1.5	30 / 0.25	2.98	13.30
2.5	50 / 0.25	3.63	7.98
4.0	56 / 0.25	4.23	4.95
6.0	84 / 0.30	4.83	3.30
10.0	80 / 0.40	5.85	1.91

#### TECHNICAL DATA

INSULATION RESISTANCE K VALUE	0.037M ohms/km at 90°C	LOW TEMPERATURE BEND	-15°C
TENSILE STRENGTH (MIN)	10.0 N/mm <sup>2</sup>	VOLTAGE TEST (200C)	Pass 2.5 KV
% ELONGATION (MIN)	125%	TEST UNDER FIRE CONDITIONS	BS EN 60332
HOT SET ELONGATION	(200°C MAX) 100%	CORROSIVE ACID GAS EMISSIONS	<0.5% to BS EN 50267
		SMOKE EMISSION	Pass BS EN 61034

## ARCTIC -40°C

### LOW SMOKE HALOGEN FREE FLEXIBLE CABLES

Insulated and flexible cords used for extension leads and temporary wiring.

<b>OPERATING TEMP:</b>	90°C
<b>COLOURS:</b>	Yellow and Blue sheath. Other colours available on request
<b>CORES:</b>	2 Core – Brown and Blue; 3 Core – Blue, Brown and Green/Yellow
<b>PACKAGING:</b>	50 and 100 metre lengths. Other lengths available on request



Conductor mm <sup>2</sup>	Conductor Construction	Mean Overall Diameter (mm)				Conductor Resistance ohm/km @20°C
		2 Core	3 Core	4 Core	5 Core	
0.75	24 / 0.20	6.50	6.70	7.60	8.60	26.00
1.0	32 / 0.20	6.80	7.05	8.15	9.40	19.50
1.25	40 / 0.20	7.50	8.05	–	–	15.60
1.5	30 / 0.25	7.80	8.25	9.60	10.60	13.30
2.5	50 / 0.25	9.25	10.20	11.30	–	7.98
4.0	56 / 0.30	–	11.50	12.50	–	4.95

ALSO AVAILABLE IN TWIN FLAT FOR FESTOON LIGHTING

#### INSULATION MADE WITH LOW SMOKE ZERO HALOGEN

##### THERMOPLASTIC MATERIAL (TYPE T16)

CONDUCTOR RESISTANCE:	As per BS60228
INSULATION THICKNESS:	As per BS6004 Table 6
INSULATION RESISTANCE (MIN):	0.02M ohms/km at 70°C
TENSILE STRENGTH (MIN):	7.5 N/mm <sup>2</sup>
% ELONGATION (MIN):	150%
FLAME TEST:	BS EN 60332
SMOKE EMISSION:	As per BS7211
CORROSIVE ACID GAS EMISSIONS:	<0.5% to BS EN 50267
VOLTAGE TEST:	Pass 2.5 KV at 20°C

#### SHEATHING

##### MADE WITH LOW SMOKE ZERO HALOGEN THERMOPLASTIC MATERIAL (TYPE TM7 TO HD21.14S1)

SHEATH THICKNESS:	As per BS6004 Table 6
CABLE OD:	As per BS6004 Table 6
TENSILE STRENGTH (MIN):	7.5 N/mm <sup>2</sup>
% ELONGATION (MIN):	150%
RESISTANCE TEST:	0.02M ohms/km at 70°C
CORROSIVE ACID GAS EMISSIONS:	<0.5% to BS EN 50267
TEST UNDER FIRE CONDITIONS:	BS EN 60332



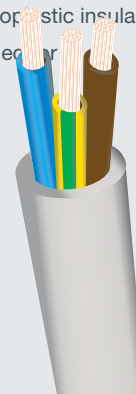
# H05Z1Z1-F 3182B; 3183B; 3184B AND 3185B

## INSULATED & SHEATHED FLEXIBLE CORDS

General purpose 70°C rated flexible cable. Manufactured to BS EN 50525-3-11. Flexible cables with halogen free thermoplastic insulation and low smoke emissions. Includes circular and flat cables with voltage rating up to and including 300/500V. Intended for connecting domestic appliances to a fixed supply.

90°C version also available.

<b>STANDARDS:</b>	BS EN 50525-3-11
<b>OPERATING TEMP:</b>	70°C
<b>COLOURS:</b>	White as standard. Other colours available on request
<b>CORES:</b>	2 Core- Blue and Brown. 3 Core - Blue, Brown, Green/Yellow
<b>PACKAGING:</b>	50 and 100 metre lengths. Other lengths available on request



No. of nominal cross-sectional areas of conductor mm²	Thickness of insulations Specified value mm	Thickness of insulations Specified value mm	Mean Overall Diameter (mm)		Min. insulation resistance at 70°C
			Lower Limit	Upper Limit	
2x0.75	0.6	0.8	5.7 or 3.7x6.0	7.2 or 4.5x7.2	0.011
2x1	0.6	0.8	5.9 or 3.9x6.2	7.5 or 4.7x7.5	0.010
2x1.5	0.7	0.8	6.8	8.6	0.010
2x2.5	0.8	1.0	8.4	10.6	0.0095
2x4	0.8	1.1	9.7	12.1	0.0078
3x0.75	0.6	0.8	6.0	7.6	0.011
3x1	0.6	0.8	6.3	8.0	0.010
3x1.5	0.7	0.9	7.4	9.4	0.010
3x2.5	0.8	1.1	9.2	11.4	0.0095
3x4	0.8	1.2	10.5	13.1	0.0078
4x0.75	0.6	0.8	6.6	8.3	0.011
4x1	0.6	0.9	7.1	9.0	0.010
4x1.5	0.7	1.0	8.4	10.5	0.010
4x2.5	0.8	1.1	10.1	12.5	0.0095
5x0.75	0.6	0.9	7.4	9.3	0.011
5x1	0.6	0.9	7.8	9.8	0.010
5 x1.5	0.7	1.1	9.3	11.6	0.010
5x2.5	0.8	1.2	11.2	13.9	0.0095

### INSULATION

MADE WITH LOW SMOKE ZERO HALOGEN  
THERMOPLASTIC MATERIAL (TYPE T16)

CONDUCTOR RESISTANCE:	As per BS60228
INSULATION THICKNESS:	As per BS EN 50525-3-11
INSULATION RESISTANCE (MIN):	0.02M ohms/km at 70°C
TENSILE STRENGTH (MIN):	7.5 N/mm²
% ELONGATION (MIN):	150%
FLAME TEST:	BS EN 60332
SMOKE EMISSION:	As per BS61034
CORROSIVE ACID GAS EMISSIONS:	<0.5% to BS EN 50267
VOLTAGE TEST:	Pass 2.5 KV at 20°C

### SHEATHING

MADE WITH LOW SMOKE ZERO HALOGEN THERMOPLASTIC  
MATERIAL (TYPE TM7)

SHEATH THICKNESS:	As per BS EN 50525-3-11
CABLE OD:	As per BS EN 50525-3-11
TENSILE STRENGTH (MIN):	10.0 N/mm²
% ELONGATION (MIN):	150%
RESISTANCE TEST:	0.02M ohms/km at 70°C
OXYGEN INDEX:	35% at 270°C
CORROSIVE ACID GAS EMISSIONS:	<0.5% to BS EN 50267
TEST UNDER FIRE CONDITIONS:	BS EN 60332

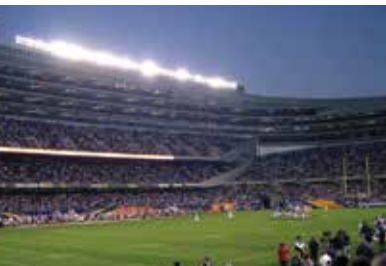


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QUALITY  
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CABLES



IDH CABLES LIMITED

# PVC CABLES

INSULATED PVC CABLES



# INSULATED NON-SHEATHED CABLES

ORDINARY DUTY AND HEAT RESISTING 90°C

## PANEL WIRING – CLASS V CONDUCTOR

### REFERENCE

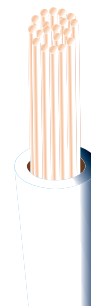
HO5V-K 300/500 VOLT	HO7V-K 450/750 VOLT	2491X	Flexible
HO5V2-K 300/500 VOLT	HO7V2-K 450/750 VOLT	2491X HR RK90°C	Flexible

**MANUFACTURED TO:** IS201; BS6004; BS EN 50525-2-31

**COLOURS:** Blue, Brown, Green/Yellow, Red, Black, White, Yellow, Orange, Pink, Violet and Grey  
Other colours and bi-colours available on request

**PACKAGING:** 50 and 100 metre lengths. Other lengths available on request

**APPROVALS:** BASEC; <HAR>



Conductor (CSA mm²)	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)	Conductor Resistance ohm/km @20°C
*0.5	16 / 0.20	2.15	39.00
*0.75	24 / 0.20	2.35	26.00
*1.0	32 / 0.20	2.50	19.50
1.5	30 / 0.25	3.00	13.30
2.5	50 / 0.25	3.65	7.98
4.0	56 / 0.30	4.30	4.95
6.0	84 / 0.30	4.90	3.30
10.0	80 / 0.40	6.15	1.91

## CONDUIT WIRING – CLASS I AND II CONDUCTOR

### REFERENCE

HO5V-U 300/500 VOLT	HO7V-U 450/750 VOLT	HO7V-R 450/750 VOLT	6491X
HO5V2-U 300/500 VOLT	HO7V2-U 450/750 VOLT	HO7V2-R 450/750 VOLT	6491X HR 90°C

**MANUFACTURED TO:** IS201; BS6004; BS EN 50525-2-31

**APPROVALS:** BASEC; <HAR>



Conductor (CSA mm²)	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)	Conductor Resistance ohm/km @20°C
0.5	1 / 0.81	2.05	36.29
0.75	1 / 1.13	2.35	18.00
1.5 x 1	1 / 1.37	2.80	12.10
1.5 x 7	7 / 0.53	3.00	12.10
2.5 x 1	1 / 1.77	3.40	7.41
2.5 x 7	7 / 0.67	3.60	7.41
4.0	7 / 0.85	4.15	4.61
6.0	7 / 1.04	4.70	3.08
10.0	7 / 1.35	6.05	1.83
16.0	7 / 1.70	7.05	1.15
25.0	7 / 2.14	8.90	0.727

## PVC INSULATED SHEATHED FLEXIBLE CORDS

### LIGHT DUTY – CLASS V CONDUCTOR

#### 300/300V ORDINARY DUTY AND HEAT RESISTING AND REDUCED EMISSION (<15%HCI)

##### REFERENCE

HO3VVH2-F	SKK	Twin Flat	2192Y
HO3VV-F	SK	Multi Core Round	218_Y
HO3V2V2-F	SKX	Heat Resistant Multi Core Round	209_Y
HO3V2V2H2-F	SKX	Heat Resistant Twin Flat	209_Y

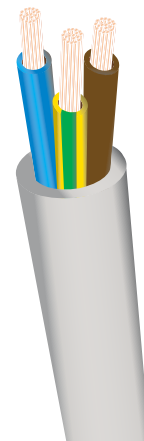
**MANUFACTURED TO:** IS201; BS6500; BS EN 50525-2-11

**COLOURS:** White, Black and Gold sheath. Other colours available on request.

Non-standard core colours available

**PACKAGING:** 50 and 100 metre lengths. Other lengths available on request.

**APPROVALS:** <HAR>



Conductor (CSA mm <sup>2</sup> )	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)					Conductor Resistance ohm/km @20°C
		Flat 2 Core	2 Core Circular	3 Core Circular	4 Core Circular	5 Core Circular	
0.5	16 / 0.20	3.35 x 5.35	5.25	5.45	5.75	7.35	39.00
0.75	24 / 0.20	3.55 x 5.75	5.70	6.0	6.40	7.95	26.00

### 300/500V – CLASS V CONDUCTOR

##### REFERENCE

HO5VVH2-F	RKK	3192Y	Twin Flat
HO5VV-F	RKK	318_Y	Multi Core Round
HO5V2V2-F	RKX90	309_Y HR	Multi Core Round

**MANUFACTURED TO:** IS201; BS6500; BS EN 50525-2-11. \*4mm 2 size is covered in BS7919

**COLOURS:** White and Black sheath. Other colours available on request.

**PACKAGING:** 50 and 100 metre lengths. Other lengths available on request.

**APPROVALS:** <HAR>

Conductor (CSA mm <sup>2</sup> )	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)					Conductor Resistance ohm/km @20°C
		Flat 2 Core	2 Core Circular	3 Core Circular	4 Core Circular	5 Core Circular	
0.5	16 / 0.20	4.0 x 6.10	6.10	6.50	–	–	39.00
0.75	24 / 0.20	4.15 x 6.5	6.50	6.70	7.60	8.60	26.00
1.0	32 / 0.20	–	6.50	7.05	8.15	9.40	19.50
1.25	40 / 0.20	–	7.50	8.05	–	–	15.60
1.5	30 / 0.25	–	7.80	8.25	9.60	10.60	13.30
2.5	50 / 0.25	–	9.25	10.20	11.30	–	7.98
*4.0	56 / 0.30	–	–	11.50	12.80	–	4.95

## PVC INSULATED SHEATHED FLEXIBLE CORDS

### 300/500V SINGLE CORE AND FLAT TWIN CABLE

#### REFERENCE

NO5VV-R	6181Y	Single
NO5VVH2-R	6192Y	Twin Flat

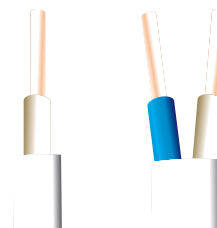
**MANUFACTURED TO:** IS201; BS6004

**COLOURS:** Grey sheath

**CORES:** NO5VV-R Blue or Brown. NO5VVH2-R Blue and Brown  
Brown and Brown for 1.0mm<sup>2</sup> and 1.5mm<sup>2</sup> sizes also available

**PACKAGING:** 50 and 100 metre lengths. Other lengths available on request

**APPROVALS:** BASEC; <HAR>

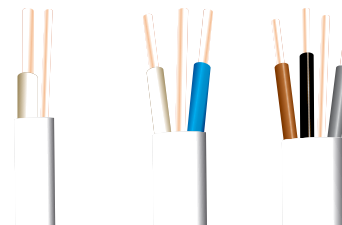


Conductor (CSA mm <sup>2</sup> )	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)		Conductor Resistance ohm/km @20°C
		1 Core / 6181Y	2 Core / 6192Y	
1.0	1 / 1.13	4.10	4.30 x 6.50	18.10
1.5	1 / 1.37	4.45	4.55 x 7.70	12.10
1.5 (x7)	7 / 0.53	4.70	4.75 x 7.80	12.10
2.5	1 / 1.77	5.05	5.45 x 8.85	7.41
2.5 (x7)	7 / 0.67	5.30	5.80 x 9.45	7.41
4.0	7 / 0.85	6.05	6.20 x 10.0	4.61
6.0	7 / 1.04	6.60	6.95 x 11.65	3.08
10.0	7 / 1.35	7.90	8.50 x 14.55	1.83
16.0	7 / 1.70	9.10	9.70 x 16.75	1.15
25.0	7 / 2.14	11.15	–	0.727

### 300/500V SINGLE CORE, FLAT TWIN AND THREE CORE

#### REFERENCE

NO5VV-U	6241Y	Single and EEC
NO5VVH4-U	6242Y	Twin Flat with Earth
NO5VVH4-U	6243Y	Three Core Flat with Earth



**MANUFACTURED TO:** IS201; BS6004. +Available with a large CPC for the Irish market

**COLOURS:** Grey or Red sheath

**CORES:** 6241Y Blue or Brown. Brown and Brown for 1.0mm<sup>2</sup> and 1.5mm<sup>2</sup> sizes also available.

**PACKAGING:** 50 and 100 metre lengths. Other lengths available on request.

**ALSO AVAILABLE:** \*6242Y SE 1.0mm<sup>2</sup>, 1.5mm<sup>2</sup> and 2.5mm<sup>2</sup> with a Green/Yellow sleeved Earth Continuity Conductor

Conductor (CSA mm <sup>2</sup> )	Conductor Construction No. of Wires/Diameter (mm)	Mean Overall Diameter (mm)			Conductor Resistance ohm/km @20°C
		1 Core / 624Y	2 Core / 6242Y	3 Core / 6243Y	
1.0	1 / 1.13	4.15 x 5.40	4.20 x 8.20	4.60 x 9.70	18.10
1.5	24 / 0.20	4.65 x 5.80	4.55 x 8.85	4.75 x 11.45	12.10
1.5 (x7)	7 / 0.53	–	4.80 x 9.15	–	12.10
2.5	1 / 1.77	–	5.30 x 10.40	5.45 x 13.40	7.41
2.5 (x7)	7 / 0.67	–	5.60 x 10.55	–	7.41
4.0	7 / 0.85	–	6.05 x 11.80	–	4.61
6.0	7 / 1.04	–	6.80 x 13.70	–	3.08
10.0	7 / 1.35	–	8.80 x 18.30	–	1.83
+16.0	7 / 1.70	–	9.55 x 20.45	–	1.15



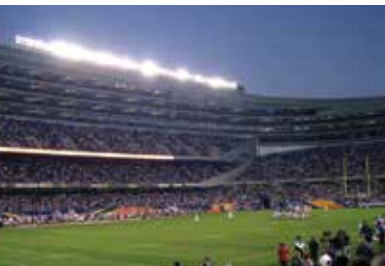


# IDH

**Cables Limited**

MADE IN IRELAND SINCE 1934

QUALITY  
APPROVED  
CABLES



IDH CABLES LIMITED

# GUARDIAN™

MECHANICALLY PROTECTED CABLES



The original BS-8436, IS-273 multifunctional, easy to install, “connect-and-protect” cable system

## OVERVIEW

IDH Guardian™ is a new fixed cable concept that has been specifically developed against the ever-changing requirements and pressures placed upon the Electrical Services Engineer within the building service installation industry. IDH Guardian™ is manufactured under IDH's Quality System, which is certified by BASEC and LPCB, and is constructed with the latest Low Smoke Halogen Free technology. This new cable's performance standards include significant impact resistance and nail penetration capabilities which have been independently verified by the internationally recognised cables division of ERA Technology.

IDH Guardian™ is a very user friendly, easy to install lightweight cabling system. It is a robust yet pliable multi-purpose cable, which includes a full sized circuit protective conductor for electrical circuit protection. Amongst its many benefits, Guardian™ offers greatly reduced electrical interference through the use of an aluminium screen, which also gives the cable a good level of impact resistance.

The speed and ease of installation of Guardian™ is significantly improved when compared to traditional cabling systems, e.g. small armoured cables and cables within a conduit. Installation times can be reduced by as much as 40% compared to alternate systems and result in lower scrap rates and permits installation in tandem with data cables where EMI is a concern.

### RANGE OF AVAILABILITY

Guardian™ is available in 2, 3 and 4 cores, 1.0mm<sup>2</sup> to 6.0mm<sup>2</sup>, each having a circuit protective conductor (CPC) of equal cross sectional area to its respective phase conductor. Guardian™ is offered in white and black as standard, other colours available on request and can be supplied on 100m or 500m reels.

Changes in building design and construction practices has seen the use of thin partition walls. The latest wiring regulations in the UK 17th Edition of IEE Wiring Regulations clause 5226.5 and the Irish Wiring Regulations ET 101:2009 4th Edition clause 5226.3 and 5226.6 recognised these changes and now allow the use of metal screen cables such as Guardian™ where cables cannot be buried 50mm or more within such walls.

**IDH Guardian™ is a BASEC approved product.**

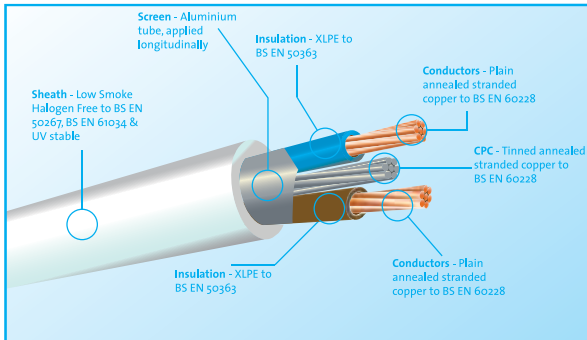
**Guardian™ sets new cable performance standards including improved impact resistance and nail penetration capabilities.**

**These capabilities have been independently verified by the internationally recognised cables division of ERA Technology.**



## CABLE CONSTRUCTION & STANDARDS

Guardian™ is manufactured under IDH's Quality Management BS EN ISO 9001–2008 System which is certified by BASEC and LPCB. Guardian™ Cables are BASEC approved to I.S. 273 – BS 8436.



<b>VOLTAGE GRADE:</b>	600/1000volts
<b>CORE COLOURS:</b>	2 core – Brown & Blue 3 core – Brown, Black & Grey 4 core – Blue, Brown, Black & Grey
<b>APPROVALS:</b>	BS EN 60332-1, IEC 60332-1
<b>PERFORMANCE STANDARDS</b>	
<b>SMOKE EMISSIONS:</b>	IEC 61034-2
<b>ACID GAS EMISSIONS:</b>	BS EN 50267-1-2
<b>FLAME RETARDANT:</b>	BS EN 60332-1, IEC 60332-1

## APPLICATIONS

IDH Guardian™ is suitable for a wide range of applications. These include:

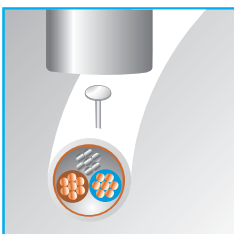
- Lighting and ring main small power wiring
- Outside lighting
- Perimeter and concourse lighting circuits
- Stadium floodlighting
- Air-conditioning
- Ventilation circuits and controls
- Computerised checkouts
- Call systems
- Data networks
- Landlords' services
- Motor fans
- Compressor supplies
- Signage supplies
- Sub-mains

## APPROVALS

IDH Guardian™ is approved by BASEC – British Approval Service for Cables

### Earthing capabilities of the screen under nail penetration test condition – The Nail Test

A sample of Guardian, 1m long, is connected to a 230V circuit, the cable screen earthing is left purely to its contact with the CPC and is not earthed directly. The circuit impedance is adjusted to achieve the prospective fault current required to operate at 40 amp type B MCB in 1 second.



A 40mm panel pin is driven into the live core. The fault current and the voltage is recorded. If the nail remains live after 1 second the cable will have failed the test. If failure occurs, the prospective fault current is reduced by 10% and the test repeated until the nail is shown not to be live after 1 second. The cable only passes if six consecutive samples pass the test and there are no failures at a given fault current.

The results have shown the screen on Guardian can withstand a fault current with over 200A, which is the fault current required to operate a 40 A Type B circuit breaker instantaneously.



The test used is the impact test called in the recognized BS 6387 standard, 'Performance requirements for cables required to maintain circuit integrity under fire conditions'. The requirement in this standard is that a fire performance cable should withstand a 500g weight dropped from 0.25 metres on to a chisel edged former resting on the cable. The cable then has to withstand 3.5kv for one minute, and the conductor is also continually checked after each test. A cable only passes when 10 consecutive samples pass the test.

Guardian passed these conditions and eventually reached the level of 1.0kg weight dropped from a height of 0.8m, at ambient temperature, thus exceeding the requirements of fire performance cables.

## CABLE CONSTRUCTION & STANDARDS

Guardian™ can help to save up to 40% on installation times when compared to traditional cables systems such as steel wire armored and steel conduit.

Ease and speed of installation including simple termination techniques

Reduced installation times when compared to traditional cabling systems

Pliable yet robust

Offers impact resistance, retains its shape when bent and dressed

### Technical Solutions

There are times when it is not possible or extremely difficult to use trunking or conduit as a means of offering cable protection as called up in BS7671, 'Requirements to Electrical Installations' – IEE Wiring Regulations – 17th Edition, e.g. low ceiling voids

Guardian by nature of its design can withstand a short circuit fault current – e.g. if a nail or screw accidentally penetrates the cable and a live phase conductor. It will successfully operate and 40A Type B current breaker, to BS EN 60898, instantaneously

Lightweight, up to 60% less weight and 20% less space required than traditional small armoured cables

Easy to handle and install, lighter cable tray could be used for multiple layers of cables.

Aluminium screen – EMI Shielded

Reduced electrical interference and compatible with EMC requirements. Can be laid in cable trays next to data cables

Can be installed with many surfaces and within different bulking structures

Flexible in the applications it can be used for

Full sized CPC

Compliance with BS7671 earthing requirements

Compatible with expanded Polystyrene thermal insulation

PVC-sheathed cables must be in a conduit when adjacent to Polystyrene

Under new wiring regulations Guardian screen cables can be installed in all locations in thin partition walls

There are restrictions on the location of PVC house wiring cables when used in thin partition walls

## TECHNICAL DATA

<b>MAXIMUM CONTINUOUS CONDUCTOR OPERATING TEMP:</b>	90°C
<b>MINIMUM INSTALLATION TEMPERATURE:</b>	-10°C
<b>MINIMUM BENDING RADIUS:</b>	6D, where D is the Nominal Cable Diameter

## PHYSICAL DATA

Area mm <sup>2</sup>	Conductor No. of Strands /mm	CPC No. of Strands /mm	Nominal Insulation Thickness mm	Nominal Cable Diameter mm			Approx. Weight of Cable kg/km		
				2 Core	3 Core	4 Core	2 Core	3 Core	4 Core
1	7 / 0.53	7 / 0.53	0.7	9.6	10.2	11.0	105	140	160
2.5	7 / 0.67	7 / 0.67	0.8	10.7	11.0	13.2	137	184	258
4.0	7 / 0.85	7 / 0.85	0.8	11.0	13.2	13.8	209	267	320
6.0	7 / 1.04	7 / 1.04	0.8	13.2	14.2	15.7	260	330	433

## ELECTRICAL DATA

Area mm <sup>2</sup>	Maximum DC Resistance ohm/km@20°C	Nominal AC Resistance ohm/km@90°C at 50Hz	Inductive Reactance ohm/km@Hz	Maximum Continuous Conductor Operating Temperature °C	Short Circuit Rating in kA for 1 second*
1.5	12.1	15.3	0.100	90	0.21
2.5	7.41	9.43	0.097	90	0.35
4.0	4.61	5.86	0.092	90	0.57
6.0	3.08	3.93	0.088	90	0.85

\*Based on a K value of 143, taken from BS7671 Table 43A. For short circuit durations of other than 1 second, divide the tabulated rating by  $\sqrt{t}$  where t is the duration in seconds. This calculation is valid for values of t between 0.2 and 5 seconds.

## TEMPERATURE CORRECTING FACTORS

Correction for ambient temperature

Ambient Temperature °C	25	35	40	45	50	55	60	65	70	75	80	85
Fuse to BS88 or BS1361 or circuit breakers to BS3871 or BS60898	1.02	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41	0.29
Semi-enclosed fuse to BS3036	1.02	0.98	0.95	0.93	0.91	0.89	0.87	0.85	0.79	0.69	0.56	0.39

Correction for grouping

No. of cables	2	3	4	5	6	8	10	12
Clipped direct	0.80	0.70	0.65	0.60	0.57	0.52	0.48	0.45
On cable tray	0.86	0.81	0.77	0.75	0.74	0.73	0.71	0.70

## CURRENT RATINGS

Ambient temperature at 30°C, conductor operating temperature 90°C as BS7671 *Clipped direct - ref method C*

Area mm <sup>2</sup>	Two core cable, single phase AC or DC		Three or four core cable, three phase AC	
	Current Rating amp	Volt drop mV/amp/meter	Current Rating amp	Volt drop mV per amp per metre
1.5	24	31	22	27
2.5	33	19	30	16
4.0	45	12	40	10
6.0	58	7.9	52	6.8

On cable tray - ref method E

Area mm <sup>2</sup>	Two core cable, single phase AC or DC		Three or four core cable, three phase AC	
	Current Rating amp	Volt drop mV/amp/meter	Current Rating amp	Volt drop mV per amp per metre
1.5	26	31	23	27
2.5	36	19	32	16
4.0	49	12	42	10
6.0	63	7.9	54	6.8

The above current ratings are based on a 'single circuit' in accordance with IEE Wiring Regulations BS7671, Table 4E2A. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductors is suitable for the conductor operating temperature, (BS7671, reg 512-02). The above tabulated current ratings should be multiplied by the rating factor (0.8) when conductor operating temperature has not to exceed a recommended terminal temperature of 70°C.



## INSTALLATION GUIDELINES

### TERMINATION

Guardian™ can be simply terminated by scoring the outer sheath and with slightly bending at the score point the sheath and bonded aluminium screen will separate and pull away. The insulated cores can then be stripped. IDH recommends using standard low smoke halogen free or brass glands of a relevant IP rating for the applications. For totally dry conditions ordinary grommets can be used as an entry into fittings, complying with IEE regulations BS7671, 523-21.

### FITTING AND FIXINGS

Guardian can be fixed by using standard cable fixing systems. It is recommended that installation of Guardian be in accordance to BS7671.

## PROJECTS

Guardian has been used in a number of prestigious projects in the United Kingdom and Ireland. These include:

**Savoy Hotel, London** – *Hotel refurbishment*

**Lansdowne House offices, Dublin** – *Third and fourth floor refurbishment. Applications: Final circuits, lighting and general utilities*

**Hull Royal Hospital, Kingston-Upon-Hull** – *Applications: General power circuits in clinics. Required screen cable to be used within the Special Strokes Unit and Gamma Camera Suite*

**Galway Clinic, Cancer Care Unit, Galway** – *For use in the highly sensitive radiological department*

**Marks & Spencer, various locations in the UK** – *General circuit data sensitive drop down to check-outs etc*

**Castle Hill Hospital, East Yorkshire** – *Applications: General power circuits*

**Benetton Retail Outlets, Brent Cross & Birmingham**

**Leisure And Indoor Sports Centres** – *Applications: General utilities. Purple cable to signify Low Smoke Halogen Free sheaths*



*Soldier Field Stadium in Chicago, the Savoy Hotel London, the Dubai Metro and the Galway Clinic in Ireland – just some of the projects that have chosen IDH Cables.*

**All our cables are manufactured with materials which are compliant with RoHS and WEEE directives.**

### **IDH Cables Limited**

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