

# 0361TQ BS EN 60332-1-2 BS 638 Black Welding Cable



Eland Product Group: **A1G**

## APPLICATION

For the transmission of high currents from the electric welding machine to the welding tool. Suitable for flexible use under rough conditions, on assembly lines and conveyor systems, in machine tool and motor car manufacturing, ship building, for manually and automatically operated line and spot welding machines.

## CONSTRUCTION

### Conductor

16mm<sup>2</sup> to 95mm<sup>2</sup>: Class 6 extra flexible copper conductor according to BS EN 60228 (previously BS 6360)  
120mm<sup>2</sup> and above: Class 5 flexible copper conductor

### Separator

PET (Polyester Tape)

### Insulation

EPR (Ethylene Propylene Rubber) Type GP4 according to BS 7655

### Sheath

HOFR (Heat and Oil Resistant and Flame Retardant) Type EM5 according to BS EN 50363

## CABLE STANDARDS

BS 638 Part 4\*, BS EN/IEC 60332-1-2



The electrical and dimensional properties of this product are measured by the Technical and Quality Assurance department at the Eland Cables laboratory. Cable performance in respect of conductor resistance, construction quality (workmanship), dimensional consistency, and other parameters are verified to published standards and approved product drawings. Conformance to RoHS (Restriction of the use of Hazardous Substances) is determined and confirmed.

## CHARACTERISTICS

### Voltage Rating

100V (450V for non-welding applications if suitably protected from mechanical damage)

### Temperature Rating

Flexed: -20°C to +85°C

### Minimum Bending Radius

Flexed: 6 x overall diameter

### Sheath Colour

● Black

### Note

\*Sizes up to and including 185mm<sup>2</sup> conform to BS 638 Part 4  
Sizes above 185mm<sup>2</sup> are generally to BS 638 Part 4

## DIMENSIONS

### Type 0361TQ - Plain Copper Conductors

ELAND PART NO.	CONDUCTOR CLASS	NOMINAL GROSS SECTIONAL AREA mm <sup>2</sup>	TOTAL RADIAL THICKNESS OF COVERING mm	NOMINAL OVERALL DIAMETER mm	NOMINAL WEIGHT kg/km
A1G016	6	16	2	9.7	215
A1G025	6	25	2	11.2	305
A1G035	6	35	2	12.4	400
A1G050	6	50	2.2	14.3	587
A1G070	6	70	2.4	16.3	775
A1G095	6	95	2.6	18.6	1040
A1G120	5	120	2.8	20.3	1256
A1G150	5	150	3	22.6	1360
A1G185	5	185	3.2	24.7	1875
A1G240	5	240	3.4	27.8	2534

Aluminium Conductor cable also available, Eland Part Numbers A3D

## CONDUCTORS

### Class 6 Flexible Copper Conductors for Single Core and Multi-Core Cables

NOMINAL GROSS SECTIONAL AREA mm <sup>2</sup>	MAXIMUM DIAMETER OF WIRES IN CONDUCTOR mm	MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C
		Plain Wires ohms/km
16	0.21	1.21
25	0.21	0.78
35	0.21	0.554
50	0.21	0.386
70	0.21	0.272
95	0.21	0.206

The above table is in accordance with BS EN 60228 (previously BS 6360)

### Class 5 Flexible Copper Conductors for Single Core and Multi-Core Cables

NOMINAL GROSS SECTIONAL AREA mm <sup>2</sup>	MAXIMUM DIAMETER OF WIRES IN CONDUCTOR mm	MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C
		Plain Wires ohms/km
120	0.51	0.161
150	0.51	0.129
185	0.51	0.106
240	0.51	0.0817

The above table is in accordance with BS EN 60228 (previously BS 6360)

## ELECTRICAL CHARACTERISTICS

### Duty Cycle and Current Carrying Capacity

The current carrying capacity of a welding cable depends on the length of the duty cycle. The duty cycle is the length of time during which a loaded current passes through the cable over an operation period of 5 minutes, expressed as a percentage of that period. For example, if the current is flowing for the whole 5 minutes the duty cycle is 100%, and if the current is flowing for 1 minute the duty cycle is 20%.

As conductor temperature varies according to the time in use as well as current, ratings shown are given as a guide.

The permissible loading of the cable for duty cycles other than those shown in the table can be calculated using the following formula:

$$I = I_{100} \times \sqrt{100/F}$$

Where:

I: is the maximum permissible loading current for the required duty cycle.

$I_{100}$ : is the maximum permissible loading current for a duty cycle of 100%.

F: is the required duty cycle calculated as a percentage of the 5 minute operation period.

Typical guidance values for different welding processes are as follows:

Fully automatic welding 100%

Semi-automatic welding 65 - 85%

Manual welding 30 - 60%

Very infrequent or occasional welding 20%

### Current Carrying Capacity

NOMINAL CROSS SECTIONAL AREA mm <sup>2</sup>	CURRENT RATING FOR SINGLE CYCLE OPERATION OVER A MAXIMUM PERIOD OF 5 MINUTES Amps			
	100%	85%	60%	35%
16	135	145	175	230
25	180	195	230	300
35	225	245	290	375
50	285	305	365	480
70	355	385	460	600
95	430	470	560	730
120	500	540	650	850
150	580	630	750	980
185	665	720	860	1120
240	780	850	975	1250

The above table is in accordance with Table A.5 of BS 638 Part 4

### DE-RATING FACTORS

AMBIENT TEMPERATURE	25°C	30°C	35°C	40°C	45°C
DE-RATING FACTOR	1.0	0.96	0.91	0.87	0.82

The above table is in accordance with Table A.7 of BS 638 Part 4