0361TQ BS EN 60332-1-2 BS 638 Orange Welding Cable

Eland Product Group: **A1E**

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
16mm² to 95mm²: Class 6 extra flexible tinned copper conductor according to BS EN 60228 (previously BS 6360)
120mm² and above: Class 5 flexible tinned copper conductor according to BS EN 60228 (previously BS 6360)

Separator
PET (Polyester Tape)

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

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

CABLE STANDARDS

BS 638 Part 4*, BS EN 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
● Orange

Note
*Sizes up to and including 185mm² conform to BS 638 Part 4
Sizes above 185mm² are generally to BS 638 Part 4

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DIMENSIONS

Type 0361TQ - Tinned Copper Conductors

ELAND PART NO.	CONDUCTOR CLASS	NO. OF CORES	NOMINAL CROSS SECTIONAL AREA mm²	TOTAL RADIAL THICKNESS OF COVERING mm	NOMINAL OVERALL DIAMETER mm	NOMINAL WEIGHT kg/km
A1E016	Class 6	1	16	2	9.7	215
A1E025	Class 6	1	25	2	11.2	305
A1E035	Class 6	1	35	2	12.4	400
A1E050	Class 6	1	50	2	14.3	587
A1E070	Class 6	1	70	2.2	16.3	775
A1E095	Class 6	1	95	2.4	18.6	1040
A1E120	Class 5	1	120	2.6	20.3	1256
A1E150	Class 5	1	150	2.8	22.6	1360
A1E185	Class 5	1	185	3	24.7	1875

Aluminium conductor cable also available, Eland Part Numbers A3D

CONDUCTORS

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

NOMINAL CROSS SECTIONAL AREA mm²	MAXIMUM DIAMETER OF WIRES IN CONDUCTOR mm	MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C
		Metal-Coated Wires ohms/km
16	0.21	1.24
25	0.21	0.795
35	0.21	0.565
50	0.21	0.393
70	0.21	0.277
95	0.21	0.21

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 CROSS SECTIONAL AREA mm²	MAXIMUM DIAMETER OF WIRES IN CONDUCTOR mm	MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C
		Metal-Coated Wires ohms/km
120	0.51	0.164
150	0.51	0.132
185	0.51	0.108

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

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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 mm²	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

Ambient Air Temperature: 25°C
Maximum Conductor Temperature: 85°C

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

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