

Jigsaw
RUBBER MATTING

COBASWITCH BS EN: 61111

Electrical insulating matting that conforms to BS EN 61111:2009

USER AND MAINTENANCE MANUAL

Jigsaw Rubber Matting | 01260 272313 | info@rubber-matting.co.uk
www.rubber-matting.co.uk

Technical Specification COBASWITCH BS EN: 61111	
Material	EPDM rubber
Surface Finish	Fine fluted ribs
Product Height	3 mm, 4 mm, 5 mm
Roll Length	10 m
Min. Operating Temperature	-30°C
Max. Operating Temperature	+80°C
Resistance to Chemicals	Resistant to acid and oil at low temperatures
Environmental Resistance	Suitable for dry indoor environments
UV Resistance	Yes
Typical Applications	High voltage areas, Open switchboards
Installation Method	Loose lay
Cleaning Method	Hose down or pressure wash using a mild detergent
COO (Country of Origin)	LK

Voltage Information			
BS EN 61111:2009 Class	**Thickness**	**Working Voltage**	**Withstand Tested To**
Class 0	3mm	1KV	10KV
Class 2	4mm	17KV	30KV
Class 4	5mm	36KV	50KV

General information
Electrical insulation mats prevent people working in high voltage areas from being earthed and suffering an injury. Insulation mats protect against electric shocks when working on electrical items – e.g. generators. A distinction is made between different classes, divided by the thickness of the insulation mat and the dielectric strength. The operator must be placed at the centre of the mat. The insulating mat must be adequate for to the maximum service voltage of the installation!
COBAswitch electrical insulating matting conforms to BS EN 61111:2009 (Class 0 -4).

Please note: Electrical insulation mats must be inspected every 6 months to ensure occupational safety.
The insulation mat is made of rubber, grey colour, with non-slip surfaces on both sides.

Class 0 - 4: Specialist electrical insulating matting to protect operatives from electrical shocks.

COBASWITCH CLASS 0 - SM010050 / SM010050C

Colour marking class 0: RED
insulating mat is electrically tested every meter.

WORKING VOLTAGE	1,000 V
PROOF VOLTAGE	5,000 V.
WITHSTAND VOLTAGE	10,000 V
Thickness:	3.1mm.
Width:	1m
Length:	10m (cut to length)



COBASWITCH CLASS 2 - SM010060 / SM010060C

Colour marking class 2: YELLOW
insulating mat is electrically tested every meter.

WORKING VOLTAGE	17,000 V
PROOF VOLTAGE	20,000 V.
WITHSTAND VOLTAGE	30,000 V
Thickness:	3.61mm
Width:	1m
Length:	10m (cut to length)



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COBASWITCH CLASS 4 - SM010070 / SM010070C

Colour marking class 4: ORANGE
insulating mat is electrically tested every meter.

WORKING VOLTAGE	36,000 V
PROOF VOLTAGE	40,000 v
WITHSTAND VOLTAGE	50,000 V
Thickness:	4.8mm
Width:	1m
Length:	10m (cut to length)



2. PRODUCT DETAILS:

COBASWITCH BS EN: 61111 (CLASS 0-4)

Specialist electrical insulating matting to protect operatives from electrical shocks.
Conforms to the most recent internationally recognised safety standard IEC 61111:2009 /BS EN 61111:2009.
Designed specifically for use in front of switchboards and for other areas with high voltage equipment.
Three thicknesses available to meet the different classes of working voltage, Class 0, Class 2 and Class 4.
Colour coded on the reverse clearly identifying the working voltage classification.
Ribbed surface helps to provide a firmer footing, reducing the risk of slips while improving standing comfort

3. Product codes

SIZE	Black	TESTED TO	WORKING VOLTAGE	WITHSTAND TESTED TO
1 m x 10 m (3 mm)	SM010050	BS EN 61111:2009 Class 0	1KV	10KV
1 m x per linear metre (3 mm)	SM010050C	BS EN 61111:2009 Class 0	1KV	10KV
1 m x 5 m (3 mm)	SM010050C5	BS EN 61111:2009 Class 0	1KV	10KV
1 m x 10 m (4 mm)	SM010060	BS EN 61111:2009 Class 2	17KV	30KV
1 m x per linear metre (4 mm)	SM010060C	BS EN 61111:2009 Class 2	17KV	30KV
1 m x 5 m (4 mm)	SM010060C5	BS EN 61111:2009 Class 2	17KV	30KV
1 m x 10 m (5 mm)	SM010070	BS EN 61111:2009 Class 4	36KV	50KV
1 m x per linear metre (5 mm)	SM010070C	BS EN 61111:2009 Class 4	36KV	50KV
1 m x 5 m (5 mm)	SM010070C5	BS EN 61111:2009 Class 4	36KV	50KV

4. USE.
Lay the insulating mat near the work station with the ribbed surface facing upwards. The operator must be placed at the centre of the mat. The insulating mat must be adapted to the maximum service voltage of the installation. Perform your work by always keeping your feet to the area of the insulating mat.

5. CHECKS AND MAINTENANCE
Examination before use:
Check for breaks, scratches, holes, cuts, foreign bodies or defects due to misuse of the product.
Regular checks are required and should be documented in Annex C

Regular maintenance
After use, clean the mat with a dry brush to remove dust or other material that may adversely affect the insulation characteristics.
If foreign bodies like nails / screws have penetrated the mat and damaged it, the mat should be replaced.
Insulating mats delivered in roll format must be cut in a way that the marking remains visible. Before use, inspect visually each side of the electrical insulating mats. If mat is dirty, wash it with soap and water and dry it with respect of the operating temperature range.

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Do not use whilst wet or damp!
Periodic inspection

- Electrical insulation mats must be tested every 12 months to comply with BS EN 61111:2009. The tests consist of visual inspection, and then a proof dielectric test without moisture conditioning, except for class 0 where visual inspection only is required.
- Mats should be visually checked every 6 months for breaks, scratches, holes, cuts, foreign bodies or defects.
- In case of exposure of the product to voltages exceeding its range of use the mats should be replaced.
- In case of breakage or defects due to misuse the mats should be replaced.
- Do not use insulating mats, even those kept in storage, unless they have been inspected and/or electrically tested within the previous 12 months.

It is recommended to ensure occupational safety by replacing mats annually.

Test requirements

Class of electric insulating mat (IEC / BS 61111)	Type test	
	Voltage (kV)	Duration (minutes)
0	Visually inspected	
1	10	1
2	20	
3	30	
4	40	
+ test requirements according to IEC 61111		

6. STORAGE

- Ensure that the insulation mat is not folded or stored near steam pipes, radiators or other artificial heat sources or exposed to direct sunlight, artificial light or other ozone sources. It is desirable that the storage temperature be between 10°C and 21°C.
- Avoid contact with oils, oily substances and acids.
- Insulating mats that have kept in storage should not be used before they have been inspected and/or electrically tested.

7. CODES, CLASSES AND TEST REPORTS

COBA Product code	Class	Test Certificate No.	Released by
SM010050 and SM010050C	0	NTH(SR)/EL(C)/2020/0049B-M 29/10/2020	National Test House (SR)
SM010060 and SM010060C	2	NTH(SR)/EL(C)/2019/009-M 28/07/2020	National Test House (SR)
SM010070 and SM010070C	4	NTH(SR)/EL(C)/2019/0049-AM 29/10/2020	National Test House (SR)

ANNEX

A. GUIDE TO BS EN 61111:2009

1976 — Standard BS921:1976

1992 — First international standard for electrical insulated matting. **BS EN 61111:1992**

2006 — **BS EN 61111:1992** Standard was revised by CENELEC

2009 — Revised again to the current standard - **BS EN 61111:2009**

2012 — **1st June 2012** - ALL conflicting national standards are withdrawn, including **BS921**

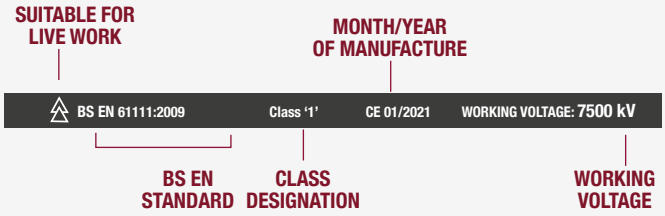
2021

COLOUR CODES EXPLAINED

A new feature of the **BS EN 61111** is that all classes are colour coded on **EVERY RUNNING METRE** on the underside.

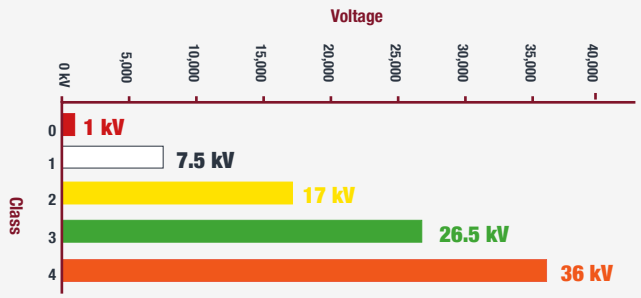
BS EN 61111:2009	Class '0'	CE 08/2013
BS EN 61111:2009	Class '1'	CE 08/2013
BS EN 61111:2009	Class '2'	CE 08/2013
BS EN 61111:2009	Class '3'	CE 08/2013
BS EN 61111:2009	Class '4'	CE 08/2013

MARKINGS



MAXIMUM WORKING VOLTAGE

The BS EN standard offers a class selection system from 1000V to 36,000V for end users to select the correct product to protect themselves against the possible working voltages they may be exposed to.



ELECTRICAL TESTING EXPLAINED

PROOF TEST

5 kV 10 kV 20 kV 30 kV 40 kV

BS EN 61111:2009

CLASS '0' | CLASS '1' | CLASS '2' | CLASS '3' | CLASS '4'

A dielectrical resistance test is carried out on **EVERY RUNNING METRE** of matting for a set time, to ensure a standard conformity of resistance throughout the entire area of the product.

WITHSTAND TEST

50 kV 40 kV 30 kV 20 kV 10 kV

Every batch manufactured is tested to **specific high voltages**, to ensure the matting does not break down.

These tests should not be confused with the **working voltages** above.

MATERIAL TEST

SLIPS | OIL | FLAME RETARDANCY | AGEING | DURABILITY | ACID RESISTANCE | PUNCTURE RESISTANT

B) Electrical Properties:

1. COBASWITCH CLASS 0 - SM010050 / SM010050C

Clause No.	PROPERTIES	TEST METHOD	SPECIFICATION
	Specific gravity	DIN53508	1.50±0.05
	Hardness,Shore A	DIN53505	70±5
	Tensile Strength,Kg/cm²	DIN53504	40
	Elongation at Break,%	DIN53504	200
5.6.2.2	**PROOF TEST**		
	Class-0(1.5mm) Base thickness	5KV for 3 Minutes	
5.6.2.3	**WITHSTAND TEST**		
	Class-0(1.5mm)	10KV-No electrical puncture	
5.5.2	MECHANICAL PUNCTURE RESISTANCE, MIN	70N	
5.7	AGEING TEST AT 70ºC/168HRS	PUNCTURE RESISTANCE SHOULD BE MINIMUM 80% OF ORIGINAL VALUE - PASS	
5.9	ACID RESISTANCE TEST AT SULFURIC ACID SOLN/23ºC/8HRS		
	A) WITHSTAND TEST	10KV-NO ELECTRICAL PUNCTURE(1MIN.)- PASS	
	B)MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.1	OIL RESISTANCEAT70ºC/24HRS/OIL#1		
	A) WITHSTAND TEST	10KV-PHOTO ELECTRICALLY(1MIN.)-PASS	
	B) MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.5.3	SLIP RESISTANCE TEST	AVG. FORCE HIGHER THAN 50N-PASS	
5.8.2	LOW TEMPERATURE FOLDING TEST AT -25ºC for 4hrs	NO CRACK,NO ELECTRICAL PUNCTURE-PASS	
	COLOUR	BLACK	
	SURFACE FINISH	FINE RIB	

2. COBASWITCH CLASS 2 - SM010060 / SM010060C

Clause No.	PROPERTIES	TEST METHOD	SPECIFICATION
	Specific gravity	DIN 53508	1.50 ± 0.05
	Hardness, Shore A	DIN 53505	70 ± 5
	Tensile Strength, Kg/cm²	DIN 53504	40
	Elongation at Break, %	DIN 53504	200
5.6.2.2	**PROOF TEST**		
	Class -2 (4 mm)Base thickness	20 KV for 3 Minutes	
5.6.2.3	**WITHSTAND TEST**		
	Class -2 (4mm)	30 KV - No electrical puncture	
5.5.2	MECHANICAL PUNCTURE RESISTANCE, MIN	70 N	
5.7	AGEING TEST AT 70ºC/168 HRS	PUNCTURE RESISTANCE SHOULD BE MINIMUM 80% OF ORIGINAL VALUE - PASS	
5.9	ACID RESISTANCE TEST AT SULFURIC ACID SOLN/23ºC/8HRS		
	A)WITHSTAND TEST	10 KV - NO ELECTRICAL PUNCTURE (1 MIN.) - PASS	
	B) MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.1	OIL RESISTANCE AT 70ºC/24HRS/OIL # 1		
	A)WITHSTAND TEST	10 KV - NO ELECTRICAL PUNCTURE (1 MIN.) - PASS	
	B) MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.5.3	SLIP RESISTANCE TEST	AVG. FORCE HIGHER THAN 50 N - PASS	
5.8.2	LOW TEMPERATURE FOLDING TEST AT -25ºC for 4 hrs	NO CRACK, NO ELECTRICAL PUNCTURE- PASS	
	COLOUR	BLACK	
	SURFACE FINISH	FINE RIB	

3. COBASWITCH CLASS 4 - SM010070 / SM010070C

Clause No.	PROPERTIES	TEST METHOD	SPECIFICATION
	Specific gravity	DIN 53508	1.50 ± 0.05
	Hardness, Shore A	DIN 53505	70 ± 5
	Tensile Strength, Kg/cm²	DIN 53504	40
	Elongation at Break, %	DIN 53504	200
5.6.2.2	**PROOF TEST**		
	Class -4 (5 mm) Base thickness	40 KV for 3 Minutes	
5.6.2.3	**WITHSTAND TEST**		
	Class -4 (5 mm)	50 KV - No electrical puncture	
5.5.2	MECHANICAL PUNCTURE RESISTANCE, MIN	70 N	
5.7	AGEING TEST AT 70ºC/168 HRS	PUNCTURE RESISTANCE SHOULD BE MINIMUM 80% OF ORIGINAL VALUE - PASS	
5.9	ACID RESISTANCE TEST AT SULFURIC ACID SOLN/23ºC/8HRS		
	A)WITHSTAND TEST	10 KV - NO ELECTRICAL PUNCTURE (1 MIN.) - PASS	
	B) MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.1	OIL RESISTANCE AT 70ºC/24HRS/OIL # 1		
	A)WITHSTAND TEST	10 KV - NO ELECTRICAL PUNCTURE (1 MIN.) - PASS	
	B) MECHANICAL PUNCTURE RESISTANCE	PUNCTURE RESISTANCE SHOULD BE MINIMUM 75% OF ORIGINAL VALUE - PASS	
5.5.3	SLIP RESISTANCE TEST	AVG. FORCE HIGHER THAN 50 N - PASS	
5.8.2	LOW TEMPERATURE FOLDING TEST AT -25ºC for 4 hrs	NO CRACK, NO ELECTRICAL PUNCTURE- PASS	
	COLOUR	BLACK	
	SURFACE FINISH	FINE RIB	

C) REGULAR CHECKS AND MAINTENANCE DOCUMENTATION

Date	Checks and Interventions	Signature

Manufacturer
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Jigsaw
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Product advice and enquiries

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