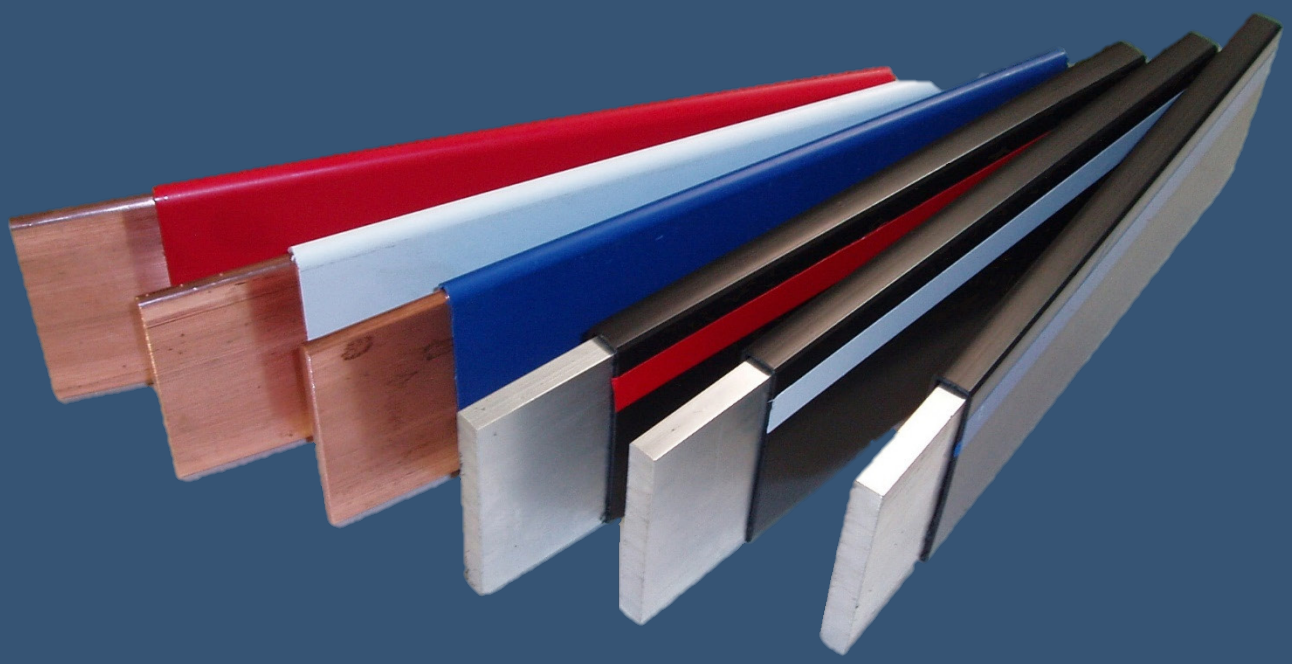
KENTAN

SWITCHBOARD EQUIPMENT AND AUTOMATION

Busbar Insulation

Low Voltage Switchboard Equipment



Publication BI 2020

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KENTAN BUSBAR SLEEVING provides a strong, durable and economical means of insulating busbars in electrical switchboards. Used with the JOINT COVERS (refer to Publication JC 2010) a completely insulated busbar system is possible.

Description

The sleeving is extruded from rigid high impact, bendable grade, flame retarded PVC. Wall thickness is 1.3 – 1.5mm. An extrusion is made for each size of busbar. The extrusions that are square edged can be used for full radius and square edged busbars.

Unlike heat shrink sleeving, this rigid sleeving will not tear during installation or become brittle due to time and heat.

Method of Supply

The extrusion is supplied in lengths of 3 metres.
Standard colour is Black. However, phase colours may also be stocked in some sizes.
Phase coloured extrusion is available to order, subject to quantity.

Black sleeving may be phase identified by a 12 mm strip of self adhesive vinyl, supplied in rolls of 46 metres.

Technical

Compliance to Standards

This sleeving complies with the following clauses of AS/NZS 61439.1:2016
8.4.2.2 Basic insulation provided by insulating material

Live parts shall be completely covered with insulation which can only be removed by destruction or by use of a tool.

Used with the BUSBAR JOINT COVERS, the insulation system can be classified as a busbar enclosure, (separation of busbars from functional units) as per table 104 of AS/NZS 61439.2:2016.

Insulation

Clause 10.2.4 of AS/NZS 61439.1:2016. Testing of enclosures made of insulating material.
Test Voltage 3500V x 1.5 = 5250V AC (table 8 only requires 3300V)
Rated Insulation Voltage 1000V

The sleeving has also been tested to 10kV, proving its suitability for use on 3.3kV systems.

Flammability / Fire Hazard

The sleeving has been tested to AS/NZS 60695.2.11:2001 and complies to glow-wire flammability rating of 960°C

Effect on Rating of Busbars

Short-Circuit Current

The sleeving has been used on bars tested on busbars up to 80kA for 1 second without deterioration.

Continuous (Thermal) Current

The use of this sleeving improves the thermal rating of the busbars. Tests to clause 8.2.1 of AS/NZS3439.1:2002 (equivalent to 10.10.1 of AS/NZS 61439.1) showed that:

1. 100 x 6.35 cu bars/phase with sleeving ran 4.6°C (average) cooler than bare bars (1200A)
2. 50 x 6.35 cu bars/phase with sleeving ran 2.1°C (average) cooler than bare bars (1140A)

Technical

Material Details

Extrusion

Product name	PVC Compound	
Chemical name	Polyvinyl chloride mixture	
Flammability UL94 VO	(self extinguishing)	
Vicat Softening Point (c)	ASTM D1525	120ºc/h
Hardness (Shore D)	ASTM D2240	82
Specific Gravity (g/cc)	ASTM D792	1.48
Impact Strength (J/mm)	Instrumental Input method	11
U/V Stabilised		

Coloured Tape

Product name	Vinyl tape, self adhesive
Temp-rating	120ºC
Flammability	Flame retarded

Installation

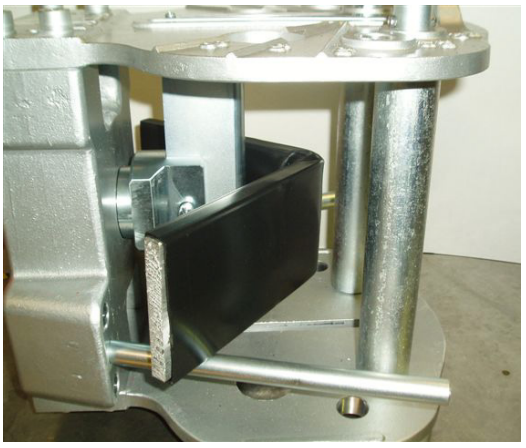
Straight Sleeving

The KENTAN BUSBAR SLEEVING is faster to install than heat shrink sleeving because it is simply cut to length and slipped over the bars. There is no need to apply heat, or to trim the ends. The extrusion can be cut by hacksaw, bandsaw, dropsaw or sharp knife. Cutting by means of a high speed saw is not recommended.

Bending Sleeving

This (bendable) grade of rigid sleeving is fitted over the bar prior bending, and is bent at the same time as the busbar.

A hand operated bar-bender where one side of the bar is clamped is not suitable as it does not allow the sleeving to move.



The bending stretches the sleeving on the outside of the bend and produces a “bubble” on each side of the inside of the bend. There is no puncturing in this process.

Sleeving for Busplugs

Where insulated vertical (dropper) bars are used to supply motor control or feeder circuits by busplugs, provision can be made at every likely connection interval.

Extrusions can be supplied with notches at the intervals specified by the customer.

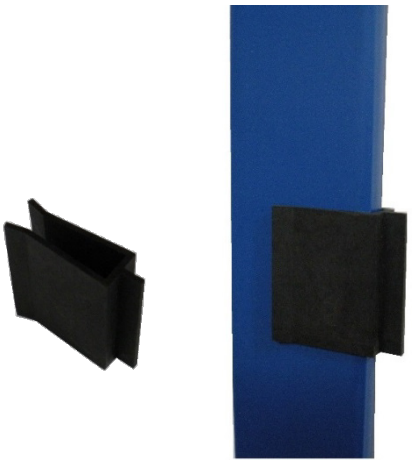
Standard notches are:	38H x 20D	63-400A
	72H x 20D	800-1200A

Other sizes can be made as required.

Installation

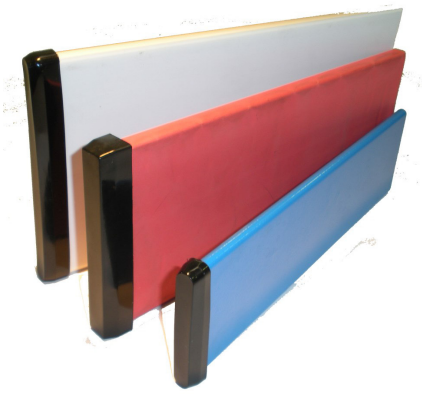
Busplug Blanks

Busbar blanks are used to cover the notched areas where they are not being used for connection. These are made from injection moulded nylon. A small ridge on the inside of the moulding rests on the cut-out of the sleeving to resist dislodgement.



End Caps

These seal the ends of the extrusions to complete the insulation. They are injection moulded from flexible PVC. The end caps suit all types of insertion. (Refer to Publication EC 2020 for further details)



Rear of a switchboard showing busbars insulated by rigid sleeving and busbar joint covers

KENTAN ENGINEERING

A.B.N. 21 009 217 654

Units 1-4, 8 Carole Road (Main Office Unit 3)
MADDINGTON, Western Australia 6109

PO Box 284
MADDINGTON, Western Australia 6989

International Telephone: +61 8 9493 5255
National Telephone: (08) 9493 5255
Email: sales@kentan.com.au
Internet: www.kentan.com.au

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