Busbar Insulation
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Since product improvement is a continuing policy, we reserve the right to change specifications without notice.
Use
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.

Methods 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 3439.1 : 2002
7.4.2.1 Protection by insulation of live parts

- Live parts shall be completely covered with insulation which can only be removed by destruction or by use of a tool.
- Solid extruded PVC tubing, min. 1.0 mm thick.

Used with the BUSBAR JOINT COVERS, the insulation system can be classified as a busbar enclosure, (separation of busbars from functional units) as per clause 7.7.2.2

Insulation
Test Voltage 3500V x 1.5 = 5250V AC
Rated Insulation Voltage 1500V

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 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)

Material Details
Extrusion
Product name      PVC Compound
Chemical name     Polyvinyl chloride mixture
Flammability      UL94 VO (self extinguishing)
Vicat Softening Point (c)  ASTM D1525  120°C/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       120°C
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.

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 Stops

These seal the ends of the extrusions to complete the insulation. End stops are cut from sponge rubber and are held in place by being compressed by the extrusion. They may be glued if desired. An overhang of at least 10mm on the sleeving is recommended.

Installation

Rear of switchboard showing busbars insulated by rigid sleeving and busbar joint covers.
(Picture by kind permission, SRS COMCELL SWITCHBOARDS)
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