

ALBUS INDUSTRIES PTY LTD



Innovative Busbars

Pre-Insulated Busbars

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We reserve the right to make changes consistent with our policy of product improvement.

Introduction

ALBUS INDUSTRIES' pre-insulated busbars is a patented innovation that makes insulating busbars in electrical switchboards and motor control centres simple, effective and economical.

This is achieved through an insulation coating that will not tear or crack during the cutting or bending of the bars, but can be deliberately removed for joints.

The insulation does not soften at the maximum thermal rating of the bars, or during a short-circuit.

Only the mating surfaces need to be exposed, reducing or eliminating the need for additional covers over busbar joints. This lends itself in particular to small bars and systems where covers are cumbersome and impractical.

The insulation can also be applied to non-standard profiles, unlike heat shrink and other types of sleeving.

Reasons for Insulation

Internal Arcing Faults

Insulation of busbars in electrical switchboards is the most direct and economical means of reducing the risk of an internal arcing fault. This method is recommended in Annex ZC of AS/NZS 3439.1 - 2002.

Personnel Protection

A fully insulated system reduces the possibility of inadvertent personnel contact during maintenance and operation.

The consequences of either can be catastrophic. This includes-

- Damage to equipment
- Loss of production
- Injury or death
- Insurance/legal issues.

Insulation Methods

The pre-insulated bars reduce the work normally associated with insulation. This is-

- Make the bars
- Assemble (to some extent)
- Remove
- Fit the insulation (rigid sleeving, heat shrink) and trim.
or-
Prepare for powder coating, then remove tape and clean
- Assemble bars.

The steps for pre-insulated bars are typically-

- Make the bars
- Remove insulation as required
- Assemble.

Standards and Compliance

The thickness of the powder coated insulation is 0.3mm (min) in accordance with clause 7.4.2.1 of AS/NZS 3439.1 - 2002 (IEC 60439.1).

Dielectric strength is in accordance with clause 8.2.2.2 and table 10 of AS/NZS 3439.1 - 2002.

Test voltage 3500v + 50% = 5250v.

Rated Insulation Voltage 1000v.

Flammability Rating (Glow Wire) 960°C to AS/NZS 60695.2.11-2001.

Thermal Effect of Insulation

The insulation improves the thermal rating by an average of 10% over bare busbars.

Colours

The insulation is supplied in black and all standard phase colours.

Powder Coating Data

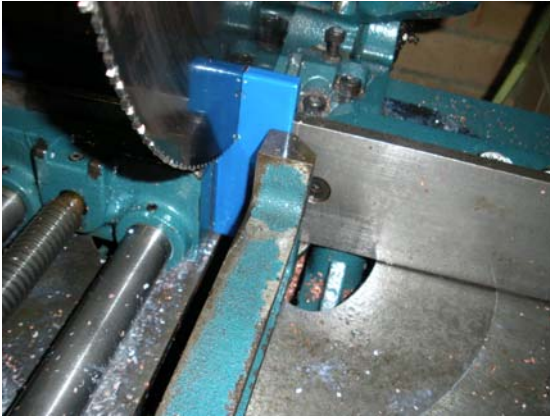
This is a tough epoxy thermoset coating with excellent corrosion and chemical resistance. The insulation is not intended for outdoor installation.

It will withstand temperatures of up to 200°C, and to 130°C continuously.

Hardness	90-100	DIN EN 150 2815
Elongation	>17%	DIN 30671
Flammability		UL94-VO
Surface Resistivity	>10 ¹³ Ωcm	DIN 53482-A
Dielectric Strength	>30kV/mm	DIN 30671
Emissivity ε	0.9	(at 300k)

Fabrication

The pre-insulated busbars are cut, bent and punched or drilled as for standard bars.



Cutting



Cleaning



Drilling or punching



Bending

Bending

Sharp bends (which is not good practice for busbars) should be avoided as these may cause the outside edge of the insulation to tear.

Bars up to 12mm thick should be bent with a radius not less than 1.5 x the thickness of the bar.

Removal of Insulation

This may be done with the use of a 'Stanley Trimmer' or similar device. However, the use of tools made specially for the purpose are recommended as they are designed not to score the busbars.



Holder contains a standard 'mini' blade, exposing less than 0.3mm of blade when used in conjunction with the guide angle. The guide can be made to suit standard distances from the end of the bar.



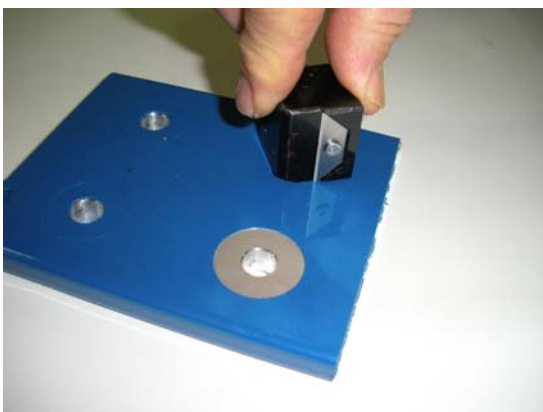
Special tool with rotating blade, exposing less than 0.3mm of cutting edge.



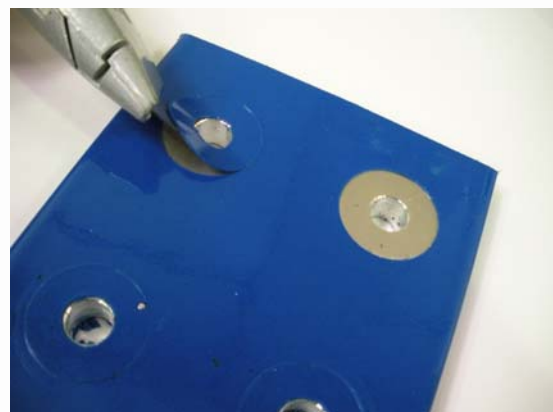
Insulation being peeled off the busbar.



Typical joint preparation



Tool to cut circles for connection bolts. Uses standard 'mini' blades, exposing less than 03.mm of cutting edge.



Insulation being removed

Joint Insulation

There are two ways in which the busbar connections are recommended to be insulated.



The insulation is removed all around the busbar and the exposed metal is covered by a proprietary busbar joint cover.



Only the mating surfaces (including the area around the bolts) are removed. Ends of bars are insulated by moulded plastic caps, and may be glued in place. Bolt heads and nuts are covered by a proprietary insulating cap with provision for tool only removal. The joint at the other side of the connection may be covered by a high quality insulation tape.

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