General description
Nitto PVC 228 is a high-grade flame-retardant electrical insulating tape consisting of a pure PVC carrier coated with a pressure sensitive rubber-based adhesive. The tape is certified for electrical purposes and classified under IEC 60454-3-1-10/F-PVCp/105 and applicable for in- and outdoor uses.

Construction
Nitto PVC 228 is a genuine “soft” tape. No fillers of any kind are used to guarantee excellent physical properties. A good balance between adhesion strength, unwind force and film flexibility assures outstanding workability, high conformability and good sealing properties. The tape can be applied at very low temperature (-10°C).

Nitto PVC 228 is a 190 micron thick PVC tape with excellent electrical insulation properties and is self-extinguishing. The tape has a good resistance against abrasion, moisture, oils and solutions with acids and alkaline. The PVC tape is suited for outside use thanks to the good ageing properties.

Characteristics
Nitto PVC 228 is an electrical insulation tape for professionals with excellent conformability. The tape is used as protection and holding of wiring for electrical appliances. The tape is widely applied in the automotive field for wire harnessing, even in the engine compartment. In the telecom field, it is used for splicing and termination of wires and cables, colour identification, wire harnessing, cable repair and general purpose.

Application
- excellent workability: high conformability, no flagging, excellent elasticity, non-sticky sides
- good ageing properties
- good sealing properties
- self-extinguishing
- good moisture and chemical resistance
- filler free plasticized PVC
- WEEE compliant (2002/96/CE)
- RoHS compliant (2002/95/CE)
- REACH compliant

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Properties

<table>
<thead>
<tr>
<th></th>
<th>Typical Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total thickness</td>
<td>0.19 mm</td>
<td>IEC 60454-2 §4</td>
</tr>
<tr>
<td>Tensile strength LD*</td>
<td>183 N/10 mm² (section)</td>
<td>IEC 60454-2 §8</td>
</tr>
<tr>
<td></td>
<td>34.7 N/10 mm width</td>
<td></td>
</tr>
<tr>
<td>Elongation LD</td>
<td>270%</td>
<td>IEC 60454-2 §8</td>
</tr>
<tr>
<td>Adhesion to BA steel</td>
<td>2.9 N/10 mm</td>
<td>IEC 60454-2 §11 (Dwelling time 15 min.)</td>
</tr>
<tr>
<td>Adhesion to backing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at room temperature</td>
<td>2.85 N/10 mm</td>
<td>IEC 60454-2 §11</td>
</tr>
<tr>
<td>at low temperature (-10°C)</td>
<td>3.50 N/10 mm</td>
<td>IEC 60454-2 §12</td>
</tr>
<tr>
<td>Electrical strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at room temperature</td>
<td>8.7 kV</td>
<td>IEC 60454-2 §17</td>
</tr>
<tr>
<td>after humid conditioning</td>
<td>9.4 kV</td>
<td>IEC 60454-2 §18</td>
</tr>
<tr>
<td>Electrolytic corrosion</td>
<td>min. 1x10¹¹ Ohm/25mm width</td>
<td>IEC 60454-2 §7.6 (IEC 60167)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(23 °C, 40 °C and 55 °C)</td>
</tr>
<tr>
<td>Low temperature properties (-10°C) no cracking</td>
<td>IEC 60454-2 §9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>no unwinding, no breakdown</td>
</tr>
<tr>
<td>Penetration at elevated temperature</td>
<td>60 °C</td>
<td>IEC 60454-2 §10</td>
</tr>
<tr>
<td>Shear adhesion to backing after water immersion</td>
<td>26 N</td>
<td>IEC 60454-2 §13</td>
</tr>
<tr>
<td>Flammability</td>
<td>self-extinguishing</td>
<td>IEC 60454-2 §19</td>
</tr>
<tr>
<td>Max. Operating Temperature</td>
<td>+105 °C</td>
<td>IEC 60454-2 §21</td>
</tr>
</tbody>
</table>

* LD = Length Direction

Warranty
The product is guaranteed to be free from defect in material and workmanship at the time of delivery and will be suitable for use for a period of 12 months thereafter, subject to the conditions set out herein.

Availability
Colours: black, blue, green, red, grey, yellow, yellow-green, white, brown
Widths: 15, 19, 25, 30, 38 and 50 mm
Lengths: 10 and 20 m
Core diameter: 31.5 mm
* Please contact us for other dimensions and/or colours

Application guidelines
- The tape should be applied on a clean and dry surface.
- Apply the tape with a moderate tension and with an overlap of 50%.

General conditions of use and precautions:
The properties of the product might be adversely affected by various elements such as composition, condition and surface of and impurities in or on the substrate, temperature and humidity during storage, the surrounding environment at and after application and time of exterior use. When the product is used in combination with another material or process, the user shall assume the compatibility of the product in such combination and whether this combination results in the expected performance. The same principle applies in the event of product use in extreme conditions or circumstances, whether at or after the moment of application, including extended exposure to sunlight or extreme temperatures and pressure.

Packaging, transport and storage:
During transport and storage the product should always be protected against direct sunlight and extremes in temperature and humidity and contained in its original packaging. Once removed from its packaging, it should be promptly applied and remain shielded from direct sunlight and extreme temperature as well as protected against dust and other impurities.

Liability:
Except for its wilful misconduct, Nitto Belgium’s liability shall be limited to a replacement, a reimbursement or an additional delivery of the product, and shall not exceed the purchase price of the products. In no event shall Nitto be liable in respect of any indirect or consequential damages, including loss of profits.

The above limitations of liability shall equally apply if Nitto Belgium has assisted in any manner with the selection, treatment or application of the product.

Product information:
This datasheet provides a general description of the product properties and application scope. Full technical details in connection with this product are presented in the customer product specification, which is available upon request.

The information reflected in this datasheet is subject to change and the product described here- in may be modified or discontinued without notice.

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Code: DS/11.08/B1 PVC 228 ENG
This datasheet replaces all previous versions

Nitto Belgium NV has obtained following certificates:
- ISO 9001
- ISO 14001
- ISO/TS 16949
Please check our website for applicable scope

If you require additional information on technical properties and application as well as product sampling or testing, please contact your local Nitto sales office.

www.nitto.com