Bonding Agent® 2005
Plastic Additives / Bonding Agent

**Description**
Bonding Agent 2005 is a high performance, reactive and phthalate-free one component bonding agent used to improve the adhesion of PVC plastisol coatings to substrates made of polyester or polyamide. Bonding Agent 2005 has low viscosity and therefore easy to handle during processing. Bonding Agent 2005 is a formulation in n-butyl acetate.

**Chemical composition**
Formulation of an aromatic polyisocyanurate in n-butyl acetate

**CAS Registry Number**
123-86-4 (n-butyl acetate)

**Supply form**
Lightly yellow

**Typical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Nominal Value</th>
<th>Unit</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity at 23 °C</td>
<td>approx. 65 - 105</td>
<td>mPa·s</td>
<td>DIN EN ISO 3219/A.3 Rotation</td>
</tr>
<tr>
<td>NCO content</td>
<td>6.3 – 6.7</td>
<td>w/w %</td>
<td>DIN EN ISO 11909, app. A</td>
</tr>
<tr>
<td>(according to)</td>
<td></td>
<td></td>
<td>DIN 55956 Gas chromatography</td>
</tr>
<tr>
<td>Monomer content (TDI)</td>
<td>max. 0.2</td>
<td>% (m)</td>
<td>DIN 55956 Gas chromatography</td>
</tr>
<tr>
<td>Active ingredient content</td>
<td>approx. 40</td>
<td>%</td>
<td>DIN 51 757</td>
</tr>
<tr>
<td>Density at 20 °C</td>
<td>approx. 1.05</td>
<td>g/cm³</td>
<td>DIN 51 757</td>
</tr>
</tbody>
</table>

The analytical data are general guide values.

**Storage**
Bonding Agent 2005 is sensitive to moisture and must therefore always be kept in its tightly sealed original container in a cool and well ventilated place. Do not store above 40 °C. If correctly stored and kept in the original sealed package, the shelf life is at least 12 months.

**Packaging**
60 kg steel cans, 205 kg steel drums
Use and advice on quantities
The bond strength of a coating is wholly dependent on the composition of the base coat. For this reason, the section below deals with the base coat only. 2-6 % Bonding Agent 2005 is the quantity recommended for PVC base coat plastisols. Under standardised conditions, the addition of 4 % by wt. Bonding Agent 2005 led to average bond strength values of >250 N/5 cm for polyester fabric and >260 N/5 cm for polyamide fabric.
Bonding Agent 2005 is a moisture-sensitive reactive system. The bonding agent should not be mixed into the PVC base coat plastisol until shortly before coating. Care should be taken to prevent the PVC plastisol from becoming too hot during stirring and to stop air bubbles from becoming trapped. Overheating of the plastisol during stirring can have an adverse effect on potlife as it causes an increase in viscosity and a reduction in bond strength.

Instructions and recommendations for use
Bonding Agent 2005 is a formulation of a polyisocyanurate based on toluene diisocyanate (TDI). Although it contains the smallest amount of monomeric TDI possible according to the current state of the art (max. 0.2 % by wt.), traces of monomeric diisocyanate are nonetheless sometimes present in the air around where the product is handled. Workplaces must be adequately ventilated (occupational exposure limits such as German MAK values must be observed). Respiratory protection is necessary in cases where the product is applied by spraying. Employees with a particularly sensitive respiratory tract (i.e. those with asthma, chronic bronchitis etc.) must not be allowed to handle the product.

General instructions for processing bonding agents and information on the properties common to isocyanatecontaining bonding agent systems are found in specific literature. Of the bonding agent systems available, one-component bonding agent systems such as Bonding Agent 2005 are the easiest to handle. The solvent lowers the viscosity of the base coat plastisol, which is desirable in certain applications. The use of Bonding Agent 2005 in transparent, translucent or white-coloured coatings may cause yellowing on exposure to light owing to the product’s aromatic character.

Handling & Safety
Particular care must be taken when handling Bonding Agent 2005.
Technical protective measures
Containers must be kept tightly sealed in a cool, dry place which is adequately ventilated. They must not be exposed to temperatures of 40 °C or above. Adequate ventilation and/or extraction must be provided at the workplace. If the product is sprayed, extraction is necessary. During the handling of Bonding Agent 2005, explosive vapour-air mixtures may be formed, so precautionary measures must be taken to prevent electrostatic charging. The product must be kept away from any sources of ignition.

Personal protective measures
When handling bonding agents, care must be taken to make sure the substances are not swallowed or inhaled. Contact with the skin or eyes should be avoided. Soiled clothing should be removed at once. During handling, suitable protective clothing and (PVC or rubber) gloves should be worn, along with protective eye wear/facial protection. Respiratory protection must be worn in workplaces which are insufficiently ventilated and whenever the work involves spraying. Air-fed masks are recommended for longer periods of work, otherwise an ABEK-P3 combination filter should be worn.

Handling & Safety
A receiving inspection is recommended. The product should be stored in its tightly sealed original container in a cool, dry place. Once opened, containers should be resealed tightly after removal of product. Consult material safety data sheet (MSDS) for additional handling information on Bonding Agent 2005.

First aid in the event of accidents and fires
If the product comes into contact with the eyes, rinse the eyes with water ( min. 10 minutes ), keeping the eyelids occasionally open, and seek medical advice immediately, preferably from an eye specialist. If the product comes into contact with the skin, remove it mechanically and wash it min. 10 minutes off carefully with plenty of water. A doctor should be consulted if there is irritation of the respiratory tract or if the product is swallowed.

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The product must be prevented from entering the sewerage system. Spilled material should be removed mechanically and any remaining residue should be smothered with moist, liquid-binding material (e.g. sawdust, chemical binders based on calcium silicate hydrate or sand). After approx. 1 hour, the material can be transferred to a waste container, which should be left open (risk of CO₂ evolution). The waste should be kept moist in a safe place in the open for several days.

Fire may cause the formation of carbon monoxide, nitrogen oxide, isocyanate vapours and traces of hydrogen cyanide. Fire-fighters must wear self-contained breathing apparatus.

Dry powder, carbon dioxide and halons are suitable extinguishing agents. In the case of larger fires, foam or a water spray can also be used.

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