Rubber Crumb Adhesive Systems

Huntsman Polyurethanes is committed to your business and can offer fast and flexible response to your needs. Believing in confidential dialogue, we offer direct links into the laboratories with full technical, commercial support and dedicated customer service. Contact us through our website throughout Europe, Asia and the US.

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The Huntsman story
Global resources for local needs
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creative design
• different colors
• different combinations and patterns
• longer life cycle
• chemical resistance
• easy to repair
• improved mechanical properties

Granules of different origin can be used:
• Styrene Butadiene Rubber (SBR)
• Ethylene Propylene Diene Monomer (EPDM)
• Ethylene Vinyl Acetate (EVA)
• ...

One-component adhesive systems.

One-component adhesive systems are most commonly used. The granules are tumbled in a mixer and coated with the isocyanate. The isocyanates are cured by reaction with water which is either added, or more commonly present in the atmosphere.

Prepolymer adhesives for wet-lay process.

Huntsman offers to formulators a number of isocyanates for in-house variant production. Rather than pure MDI, liquid pure MDIs are used for the production of prepolymer as they improve liquid stability and facilitate storage and handling conditions.

SUPRASEC® MDI
Rubber crumb adhesives

Moisture-cured polyurethane adhesives are used to bind re-milled rubber waste or rubber crumb. Designed to meet the specific needs of a variety of applications, from running tracks to garden tiles, rubber crumb adhesives need to suit a range of processing conditions, including wet-lay and moulding processes. Each demands a different adhesives mix—from high flexibility to rigid, low to high viscosity—and very low to highly reactive types. All these mixes are covered by the SUPRASEC® MDI*–based product range from Huntsman Polyurethanes.

* Methylene di-isocyanate

Application techniques

To manufacture these polyurethane composites the rubber granules are wetted with a prepolymer and transferred to a mould or press, where the mix is compressed and cured. Or for sports/play surfaces laid directly at the building site, by processes similar to those employed in road construction for the laying of asphalt. The properties of the composites depend on the particle size of the rubber granules, the constitution and the amount of the polyurethane one-component adhesives and in case of the moulding process also on the degree of compaction during curing.

Advantages

Bonding rubber granules with polyurethane adhesives opens possibilities to create high attractive products for:

- improved comfort
- noise and vibration dampening
- slip resistance
- shock absorption

Prepolymer adhesives used for the wet-lay process for sport flooring applications usually have an isocyanate value of about 10 percent and are produced from linear or slightly branched polyether polyols and MDI, a mixture of MDI and TDI, or TDI alone, with the market trend moving towards use of all MDI systems.

e.g. with Daltocel F 456 (PO diol with OH value 56), in slow curing adhesives with easy-to-handle viscosities. An internal reference TDI is incorporated.

Typical properties

<table>
<thead>
<tr>
<th>SUPRASEC®</th>
<th>NCO(%)</th>
<th>Fix</th>
<th>Viscosity 25°C (mPas)</th>
<th>Storage conditions</th>
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</thead>
<tbody>
<tr>
<td>1004</td>
<td>32.9</td>
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<td>12</td>
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</tr>
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<td>15°C</td>
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<td>25</td>
<td>10°C</td>
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</tbody>
</table>

Reactivity

- Cure characteristics (23°C and 50% humidity)