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Raw Materials for Flexible Packaging:
Fulfilling Your Specific Needs

Bayhydur® Desmodur® Desmophen® Dispercoll®
Contents

04  Our mission: INVENTING VISIONS FOR YOU
06  Where the market for flexible packaging is heading
08  Quality & supply security – sustainability
10  Our technology – the right answer to your needs
12  An overview – polyurethane adhesives by technology
16  Our mission – safe raw materials for safe packaging laminates
19  A broad portfolio to suit your needs
26  Fast-lane access to polyurethane innovations
As your leading partner for polyurethane chemistry, we know you are competing in increasingly challenging environments. Your customers are becoming more and more demanding in their expectations for the quality, durability, sustainability and aesthetics of products. And they have more choices. For you this means that cost pressure is rising – while innovation cycles are becoming faster and faster.

Helping you to turn this challenge into your competitive advantage is the goal that drives our daily work. We call it: INVENTING FOR YOU. But what exactly are the basic values underlying this promise? What principles enable us to improve your productivity, drive sustainability, ensure reliability and co-create future-proof businesses? First and foremost, we are curious. Because only if we listen closely to you and ask the right questions can we respond to your individual needs with new, creative and unexpected solutions that make a real difference to you. That’s why inventing for us always starts with thinking about your unmet business challenges. It requires an in-depth understanding of your needs along the whole value chain. To ensure that what we invent stands the test of time. Living up to this aspiration requires more than competencies – it calls for a corporate culture of being courageous.

A culture that is defined and lived by dedicated people who cooperate to push the boundaries of invention founded on knowledge and experience. Our courage permeates our entire business – from partnerships to business models. This is also reflected in our colorful business philosophy. We appreciate partnerships that go beyond traditional black-and-white ways of acting and thinking. An attitude of openness that invites you to co-create new things – enabling you rather than just providing. We are optimistic and resourceful in finding solutions that inspire our customers and partners.

This set of fundamental values adds up to an unrivaled performance orientation to constantly strive for something better, be it through big or small changes. A true sense of business regardless of function. And a deep commitment to delivering our promise every day. Anywhere. Again and again.

INVENTING FOR YOU.
Flexible packaging is growing as a result of several lifestyle and other social trends. One of them is the trend towards more convenience. People like to buy products that are easy-to-open and re closable for use on the go. This situation-based convenience trend underlines the growing importance of functional integration and new solutions such as reclosing, lightweight, and easy-opening packaging.

Other lifestyle changes impacting on the industry include the increasing number of single households in developed countries, which is boosting the demand for more and smaller packaging sizes; the fast-growing market for pre-cooked meals in several regions of the world; and the need for flexible packaging to prolong shelf life and thus tackle the serious issue of food waste.

Demand for greater sustainability

The growth in flexible packaging is partly due to the fact that it is lighter than other packaging solutions like glass or metal, which makes it the more sustainable choice. This saves energy during transportation, which also makes it more cost-efficient. At the same time, the flexible packaging industry is constantly looking for solutions to make its packaging even more sustainable, i.e. through bio-based raw materials, even thinner materials, or recyclable solutions.

Stricter food safety regulations

Packaged food regulations are becoming stricter, with new regulations frequently issued. As a result, every member of the value chain from the raw material provider to the brand owner has to be extremely careful about ensuring the safety of their products. The question of which raw materials are used for which individual packed product has to be considered throughout the value chain. And that is why the industry is looking for economical products that simultaneously deliver a high degree of safety and avoid risk.

Maximizing efficiency

In a competitive environment it is crucial for converters to operate at the highest possible level of efficiency. That means high lamination speeds as well as the shortest possible production-to-customer times. Since ever-faster changes in packaging design are leading to smaller order sizes, converters need to adapt their production to this changing environment with a high degree of flexibility, while at the same time maintaining a high level of efficiency.

Covestro is working on new product developments that will enable the flexible packaging industry to respond to these trends.
Quality & supply security
Our products are of outstanding quality and we offer supply security – worldwide.
Covestro, the world’s leading manufacturer of aliphatic and aromatic polyisocyanates, offers an extensive range of raw materials and services for the coatings and adhesives industry. This allows the very latest technology to be used extremely effectively for a variety of applications. Our global setup enables you to increase your competitive advantage.

What we offer:
• A global network of research & development centers where our staff are dedicated to offering solutions for the coating and adhesive industry.
• A unique setup and worldwide network of state-of-the-art production sites ensuring short lead times and supply chain flexibility.
• Outstanding product quality through fulfilling the requirements of state-of-the-art quality, environmental and safety (HSEQ) as well as energy management standards; we are proud of having enjoyed ISO 9001, ISO 14001, ISO 18001 and ISO 50001 certifications for many years.

Covestro is your reliable partner for polyurethane chemistry.

Solutions to enhance your process efficiency
Nowadays, the quality demands made on industrial processes are very high. This is equally true of the cost-cutting requirements. However, both goals can be achieved by increasing process efficiency. At Covestro we have a wide range of solutions designed to enhance your process efficiency. Why not take advantage of our know-how? These solutions will benefit your bottom line.

High performance – enabled by nature
Sustainability drives innovation at Covestro. We are committed to optimizing our manufacturing processes, reducing the impact of logistics, and enabling sustainability along the value chains. Renewable feedstocks offer opportunities for developing more sustainable building blocks for flexible packaging – with significant potential for reducing the carbon footprint of end products while also reducing our overall dependence on fossil-based resources. But to make more sustainable solutions not just possible but also economically feasible, the performance of polyurethane adhesives, as the main technology for flexible packaging, needs to satisfy high industry standards. To this end, we are evaluating the use of renewable raw materials and will enlarge our product portfolio with new biobased and mid- to long-term cost-competitive products, provided the raw materials become commercially available. In all these efforts we are committed to focusing on products that perform at least as well as established products but are at the same time more sustainable.

Sustainability
Sustainability is at the heart of the Covestro strategy. We inspire innovation and drive growth through profitable products and technologies that benefit society and reduce the impact on the environment.

Our coatings, adhesives and specialty products and solutions contribute to sustainability through:

• Saving energy – fast and smart
Polyurethane systems represent a benchmark in productivity and process efficiency in many industries. We strive to further push the limits of efficiency by developing game-changing new solutions.

• Reducing waste
We offer solutions such as innovative 1K technologies that enable our value chain partners to use materials more efficiently and reduce waste.

• Cutting emissions
Bayhydur® and Desmodur® grades are key enablers for low-emission solutions in the coatings and adhesives industries – waterborne and high solids/solvent-free!

• Responsible management of natural resources
Highly durable PU-based coatings and adhesives significantly extend the lifetime of a coated product and thus help to prolong resource use.

• Closing the loop (circularity)
Through economically viable products made from biobased raw materials – with no deterioration in performance – we help our customers and value chain partners to reduce their carbon footprint and offer solutions that incorporate renewable building blocks.
Our technology – the right answer to your needs

Polyurethane adhesives – the main technology for flexible packaging
Polyurethane (PU) adhesive polymers can be produced from a wide range of raw materials. The enormous adaptability of PU polymers allows adhesive manufacturers to provide tailor-made adhesive polymers for flexible packaging applications. PU adhesives are therefore the number one choice for producing film/film or film/foil laminates. PU adhesives are in use for all classes of laminates from general-purpose laminates for dry food up to high-performance laminates for steam sterilization processes at temperatures of up to 134°C and/or aggressive products. At Covestro we offer a broad range of raw materials for PU adhesives used for flexible packaging applications. Our product range comprises aromatic and aliphatic disocyanates, pre-polymers, aliphatic and aromatic cross-linkers for solvent-based adhesives, as well as difunctional or polyfunctional polyester and polyester polyols. The raw materials we provide are manufactured in compliance with good manufacturing practice and fulfill the requirements of regulation (EC) 1935/2004.

The requirements for adhesives differ from market segment to market segment. Laminated film/film or film/foil composites are generally divided into three quality clusters: general-purpose, medium-performance, and high-performance laminates. The filling, the filling process, and the final use of the product determine the type of raw material to be used.

General-purpose laminates comprise film/film- or film/paper composites and are typically used to pack dry food in room-temperature storage conditions.

Medium-performance laminates are used in fatty or acid food packaging, temperature treatment up to pasteurization temperatures, and foil laminates.

High-performance laminates are used for boil-in bag applications, hot fillings, sterilization processes up to 134°C, pharmaceuticals, etc.

The more demanding the application, the higher the degree of resistance required against chemical degradation and heat in the adhesive polymer, and the more food safety aspects that have to be taken into account. The resistance of a polyurethane adhesive polymer can be significantly influenced by means of the polyurethane polymer building blocks, i.e. polyester or polyester polyol, the crosslinking density, and the molecular weight of the adhesive polymer. Our raw materials for polyurethane adhesives can be used to produce single- and two-component solvent-based, solvent-free and water-based adhesives.

Safe adhesives for safe food
Laminated films and foils for flexible packaging need to meet demanding and very specific requirements. This is particularly true when they are being used for food or in medical applications. A polymer used in food packaging applications – in either direct or indirect food contact – has to comply with various regulations depending on the region the flexible packaging laminate is used in, for example:

- Regulation (EU) No. 10/2011
- BfR recommendation XXVIII (cross linked polyurethanes as adhesive layers for food packaging materials)
- FDA regulations in 21 CFR 175.105 (adhesives) and 21 CFR 177.1390 (laminate structures for use at temperatures of 250°F and above)
- Chinese hygienic standard GB 9685-2008

Upon request, we can provide you with a food contact use statement for suitable adhesive raw materials. Nevertheless, every adhesive manufacturer needs to make their own assessment of compliance for each particular adhesive formulation and provide a declaration of compliance to downstream users, i.e. converters and food manufacturers.
Flexible Packaging 13

Solvent-based polyurethane
Solvent-based polyurethane adhesives can be used as single-component NCO-terminated pre-polymers or as a combination of an OH-terminated polyurethane pre-polymer processed in combination with an isocyanate crosslinker (two-component solution). Since NCO-terminated pre-polymers require moisture to cure, they can only be used for laminates containing at least one moisture permeable substrate (e.g. paper). NCO-terminated pre-polymers are based on polyester and/or polyether polyols, which are chain-extended by monomeric diisocyanates. Typically, we supply Desmodur® 44M for this. The chain extension can be adjusted to the specific requirements with regard to the solid content, viscosity and adhesion properties of the adhesive polymer.

Two-component solvent-based adhesives typically consist of:
• an OH component ranging from low molecular weight polyfunctional polyols to chain-extended polyester/polyether polyols; the chain extension reaction is carried out with difunctional monomeric isocyanates; plus.
• an isocyanate component, comprising one or more NCO-terminated pre-polymers which are based on polyether/polyester polyols and monomeric isocyanate (e.g., Desmodur® 44M); a low monomeric isocyanate content is an important aspect for product safety.

Solvent-free polyurethane
Solvent-free polyurethane adhesives can be used as one-component NCO-terminated pre-polymers or as two-component adhesives consisting of an OH component and an isocyanate component. Since one-component adhesives are NCO-terminated pre-polymers that need moisture to cure, the NCO pre-polymers can only be used for laminates containing at least one moisture permeable substrate (e.g. paper). NCO-terminated pre-polymers are usually based on polyester and/or polyether polyols that are chain-extended by monomeric diisocyanates (typically Desmodur® 44M). The chain extension can be adjusted to suit the requirements with regard to viscosity and adhesion properties of the adhesive polymer.

Two-component solvent-free adhesives typically consist of:
• an OH component ranging from low molecular weight polyfunctional polyols to chain-extended polyester/polyether polyols; the chain extension reaction is carried out with difunctional monomeric isocyanates; plus.
• an isocyanate component, comprising one or more NCO-terminated pre-polymers which are based on polyether/polyester polyols and monomeric isocyanate (e.g., Desmodur® 44M); a low monomeric isocyanate content is an important aspect for product safety.

Modern two-component solvent-free polyurethane adhesives therefore work with isocyanate components featuring low or ultra-low free monomeric isocyanate content. This improves food safety as well as making the converting process more economical. In addition, NCO-terminated pre-polymers with a low or ultra-low monomeric MDI content can be processed in combination with polyfunctional aliphatic isocyanates such as Desmodur® N 3600. The co-use of Desmodur® N 3600 helps to increase the functionality and the isocyanate content, reduce the viscosity of the two-component adhesive, and improve product safety.
Water-based polyurethane

Water-based polyurethane adhesives contain discrete droplets of polyurethane polymer. This is why even adhesive polymers of very high molecular weight can be applied as low-viscous adhesives. The polymer content is limited by the volume of polymer droplets in the dispersion. The polymer content of a polyurethane dispersion is typically in the 40–50% range.

For two-component solvent-based and in particular solvent-free polyurethane adhesives, in contrast, the processing viscosity depends to a high degree on the molecular weight of the adhesive polymers. The higher the molecular weight, the higher the processing viscosity or, in the case of solvent-free adhesives, the higher the required application temperature has to be. Due to the lower molecular weight of their adhesive polymers, the initial bond strength of these adhesives is limited.

Polyurethane dispersion adhesives overcome this barrier. Polyurethane dispersion adhesives permit the application of adhesive polymers with higher initial bond strength and thus allow a fast further processing of the laminate (slitting). Another important aspect is the fact that polyurethane adhesive dispersion polymers contain a much lower amount of low molecular weight constituents, which improves food safety even further by reducing the maximum migration from the adhesive polymer.

Polyurethane dispersion adhesives can be used individually or in conjunction with a crosslinker. Two crosslinking technologies are available:

- Hydrophilic-modified aliphatic isocyanate (e.g. Bayhydur® 3100)
- Polycarbodiimide dispersion (e.g. Desmodur® XP 2802)

The hydrophilic-modified aliphatic isocyanate is added to the polyurethane dispersion prior to use. The pot life of the two-component adhesive dispersion ranges from 3 to 6 hours depending on the type and amount of crosslinker used.

A new and innovative crosslinking technology offered by Covestro is polycarbodiimide crosslinking (Desmodur® XP 2802) for polyurethane dispersions. Desmodur® XP 2802 enables the preparation of reactive one-component polyurethane dispersions that are storage-stable for up to six months, which makes processing very easy. Crosslinking is blocked as long as the system is still in dispersion state; the reaction of the adhesive polymer starts with the film formation of the adhesive layer, but, once it has started, it proceeds at very high speed.
Our mission –
safe raw materials for
safe packaging laminates

Innovations for safe packaging and more efficient processes
Modern PU adhesives for flexible packaging applications ideally combine three aspects: good processability, fast curing and safe use for consumers. The high reactivity of the adhesives enables converters to further process the laminate within a short period of time, which in turn allows laminates to be produced more economically.

By using our PU raw materials adhesive manufacturers can offer their customers convincing answers to industry trends.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PU ADHESIVE</th>
<th>CHARACTERISTIC FEATURE</th>
<th>OPPORTUNITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desmodur® quix 175</td>
<td>2K solvent-based PU adhesive</td>
<td>Highly reactive crosslinker with aliphatic bound NCO groups</td>
<td>Crosslinker for solvent-based adhesives for high-performance laminates; aliphatic but significantly faster curing at room temperature. Suitable for retort packaging. Desmodur® quix 175 complies with FDA § 177.1390: Laminate structures for use at temperatures of 250°F and above.</td>
</tr>
<tr>
<td>Desmodur® XP 2802</td>
<td>1K reactive PU dispersion</td>
<td>Highly reactive polycarbodiimide crosslinker dispersion</td>
<td>Crosslinker for 1 component water-based adhesives containing carboxyl groups in the polymer chain; with long pot life (6 months) &amp; very fast curing, direct slitting after lamination.</td>
</tr>
<tr>
<td>Desmodur® UL-75 XP</td>
<td>2K solvent-based PU adhesive</td>
<td>Aromatic crosslinker with ultra-low monomeric diisocyanate</td>
<td>Crosslinker for solvent-based adhesives; low monomeric TDI content (&lt; 0.1%) allows fast curing for earlier further processing and filling.</td>
</tr>
</tbody>
</table>
A broad portfolio to suit your needs

Diisocyanates as building blocks for pre-polymers

Diisocyanates, and in particular the MDI-grades, are used in combination with polyether or polyester polyols for manufacturing NCO-terminated pre-polymers.

Desmodur® T, Desmodur® I and Desmodur® H are usually used to extend the molecular weight of polyether or polyester diols in order to adjust the processing window and adhesion properties of the adhesive polymer.

PAA migration

Please note: When using MDI-based pre-polymers it is the converters’/packagers’ responsibility to make sure that only laminates that display no monomeric MDI migration are used. The absence of MDI migration can be controlled by testing the primary aromatic amine (PAA). In conducting such tests, converters and packagers have to take into account the storage length and conditions of the packaged food for which the laminate is used (see Regulation (EU) No. 10/2011).

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>TYPE</th>
<th>NCO CONTENT [%]</th>
<th>VISCOSITY [mPa·s]</th>
<th>PROPERTIES/ APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desmodur® 44M, liquid</td>
<td>4,4’ MDI</td>
<td>33.6</td>
<td>4 at 40°C</td>
<td>Chain extender; pre-polymers for solvent-free adhesives.</td>
</tr>
<tr>
<td>Desmodur® LS 2424</td>
<td>MDI with high 2,4’-MDI isomer</td>
<td>33.6</td>
<td>12 at 25°C</td>
<td>Chain extender; pre-polymers for solvent-free adhesives with reduced viscosity and/or reduced monomer content.</td>
</tr>
<tr>
<td>Desmodur® 2460 M</td>
<td>MDI with high 2,4’-MDI isomer; color-stabilized</td>
<td>33.6</td>
<td>12 at 25°C</td>
<td>Chain extender; pre-polymers for solvent-free adhesives with reduced viscosity and/or reduced monomer content.</td>
</tr>
<tr>
<td>Desmodur® T 100</td>
<td>TDI with &gt; 99.0% 2,4-TDI</td>
<td>48</td>
<td>3 at 25°C</td>
<td>Chain extender.</td>
</tr>
<tr>
<td>Desmodur® T 80</td>
<td>TDI with 60.5% 2,4-TDI</td>
<td>48</td>
<td>3 at 25°C</td>
<td>Chain extender.</td>
</tr>
<tr>
<td>Desmodur® I</td>
<td>IPDI</td>
<td>37.5</td>
<td>10 at 25°C</td>
<td>Chain extender.</td>
</tr>
<tr>
<td>Desmodur® H</td>
<td>HDI</td>
<td>49.7</td>
<td>3 at 25°C</td>
<td>Chain extender.</td>
</tr>
</tbody>
</table>
**A broad portfolio to suit your needs**

NCO-terminated pre-polymers and polyfunctional isocyanates for solvent-free adhesives

NCO-terminated pre-polymers are reaction products of aromatic or aliphatic isocyanates and polyols, such as polyethers or polyesters. Thanks to the wide variability of the isocyanate content and functionality, the viscosity of the pre-polymers and the mechanical properties of the finished products can be precisely adjusted. NCO-terminated pre-polymers can be used as the isocyanate components of 2K solvent-free adhesive. The pre-polymers can be used individually or in combination with other pre-polymers, e.g., to adjust the processing viscosity or cross-linking density of the adhesive polymer.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>TYPE</th>
<th>NCO CONTENT [%]</th>
<th>VISCOSITY AT 23°C [mPa·s]</th>
<th>PROPERTIES/APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desmodur® E XP 2726</td>
<td>MDI pre-polymer</td>
<td>6.0</td>
<td>ca. 15%</td>
<td>4,500</td>
</tr>
<tr>
<td>Desmodur® E 23</td>
<td>MDI pre-polymer</td>
<td>15.4</td>
<td>ca. 40%</td>
<td>1,800</td>
</tr>
<tr>
<td>Desmodur® XP 2617</td>
<td>HDI pre-polymer</td>
<td>12.5</td>
<td>≤ 0.5%</td>
<td>4,250</td>
</tr>
<tr>
<td>Desmodur® N 3600</td>
<td>HDI trimer</td>
<td>23.0</td>
<td>≤ 0.25%</td>
<td>1,200</td>
</tr>
<tr>
<td>Desmodur® N 3300</td>
<td>HDI trimer</td>
<td>21.8</td>
<td>≤ 0.15%</td>
<td>3,000</td>
</tr>
</tbody>
</table>
A broad portfolio to suit your needs

Isocyanate crosslinkers for solvent-based adhesives
Crosslinkers are used to crosslink solvent-based OH-terminated pre-polymers manufactured from polyester and/or polyester diols. The dosage of isocyanate crosslinker is usually in the range of isocyanate index 1.2–1.4. All isocyanate crosslinkers except Desmodur® N 3300 are dissolved in ethyl acetate. As an innovative product for flexible packaging, Desmodur® quix 175 provides both aliphatic-bound isocyanate groups and high reactivity, which means a high degree of safety and efficiency for the converter.

Solutions for waterborne adhesives
Our water-based raw materials enable adhesive solutions that are both highly efficient and sustainable. Laminates made from water-based adhesives can be immediately processed and thus help to optimize and reduce costs in a converter’s production process.

Advantages of water-based adhesives in flexible packaging:
• Immediate slitting after lamination
• Very short post-curing time needed
• Quick response to customer requests
• Easy production handling thanks to 1K processing reactive adhesives
• Crosslinkers for water-based adhesives based on purely aliphatic raw materials

Dispersions

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>TYPE</th>
<th>NCO CONTENT [%]</th>
<th>VISCOSITY AT 23°C [mPa.s]</th>
<th>PROPERTIES/ APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispercoll® XP 2643</td>
<td>Polyester-based PU dispersion</td>
<td>39–41</td>
<td>&lt; 1,000</td>
<td>Dispercoll® polymer containing carboxyl groups in the polymer chain; can be crosslinked.</td>
</tr>
<tr>
<td>Dispercoll® U 2824 XP</td>
<td>Polyester-based PU dispersion</td>
<td>38–41</td>
<td>50–400</td>
<td>Dispercoll® polymer containing carboxyl groups in the polymer chain; can be crosslinked with isocyanate and polycarbodiimide.</td>
</tr>
<tr>
<td>Dispercoll® U 42</td>
<td>Polyester-based PU dispersion</td>
<td>48–52</td>
<td>150–800</td>
<td>Dispersion polymer can be crosslinked with isocyanate.</td>
</tr>
<tr>
<td>Dispercoll® U 2882</td>
<td>Polyester-based PU dispersion</td>
<td>49–51</td>
<td>&lt; 1,000</td>
<td>Dispersion polymer can be crosslinked with isocyanate for formulation of industrially compostable adhesives.</td>
</tr>
</tbody>
</table>

Crosslinkers

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>ACTIVE INGREDIENTS</th>
<th>VISCOSITY AT 23°C [mPa.s]</th>
<th>PROPERTIES/ APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayhydur® 304</td>
<td>18.2% NCO</td>
<td>Approx. 4,000</td>
<td>Isocyanate crosslinker for water-base adhesives + higher functionality.</td>
</tr>
<tr>
<td>Bayhydur® 3100</td>
<td>17.4% NCO</td>
<td>Approx. 2,800</td>
<td>Isocyanate crosslinker for water-based adhesives.</td>
</tr>
<tr>
<td>Desmodur® XP 2802</td>
<td>Approx. 1 mol/g -N=C=N-</td>
<td>Approx. 30</td>
<td>Crosslinker for 1 component water-based adhesives containing carboxyl groups in the polymer chain; with long pot life (6 months) &amp; very fast curing, direct slitting after lamination.</td>
</tr>
</tbody>
</table>
A broad portfolio to suit your needs

**Polyether and polyester diols**

Polyester and polyester polyols can be used to produce both NCO- and OH-terminated pre-polymers for solvent-based or solvent-free one-component or two-component adhesives. Polyester polyols generally provide better adhesion to many substrates. Polyether polyols are used to reduce the processing viscosity and adjust the reactivity of the 2K polyurethane adhesives. Covestro offers a broad portfolio of polyester and polyether polyols that are suitable as building blocks for adhesives. The following table shows some selected examples. Please see also our brochure “Resins – Polyols and Aspartics for Reaction with Polyisocyanates” for additional products.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>TYPE</th>
<th>OH NUMBER [mg KOH/g]</th>
<th>VISCOSITY [mPa·s]</th>
<th>PROPERTIES/APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baycoll® AD 2047</td>
<td>Polyester diol</td>
<td>Approx. 56</td>
<td>Approx. 7,000 At 75°C</td>
<td>Hydrolysis resistance, slip agent compatibility.</td>
</tr>
<tr>
<td>Baycoll® AD 2055</td>
<td>Polyester diol</td>
<td>Approx. 56</td>
<td>Approx. 630 At 75°C</td>
<td>Hydrolysis resistance, slip agent compatibility.</td>
</tr>
<tr>
<td>Baycoll® CD 2084</td>
<td>Polyester diol</td>
<td>Approx. 84</td>
<td>Approx. 120 At 75°C</td>
<td>Compatibility.</td>
</tr>
<tr>
<td>Desmophen® BD 2060</td>
<td>Polyether diol</td>
<td>Approx. 56</td>
<td>Approx. 310 At 25°C</td>
<td>Low viscosity, compatibility.</td>
</tr>
<tr>
<td>Desmophen® BD 1110</td>
<td>Polyether diol</td>
<td>Approx. 112</td>
<td>Approx. 140 At 25°C</td>
<td>Low viscosity, compatibility.</td>
</tr>
<tr>
<td>Desmophen® 1400 BT</td>
<td>Polyether triol</td>
<td>Approx. 400</td>
<td>Approx. 370 At 25°C</td>
<td>Long pot life, short reaction time, compatibility, increase functionality.</td>
</tr>
</tbody>
</table>
Fast-lane access to polyurethane innovations

At Covestro, innovation is in our DNA. Ever since Otto Bayer discovered polyurethanes in 1937, we have been driving polyurethane innovations in coatings and adhesives as well as in other application areas. As our partner, you enjoy fast-lane access to polyurethane innovations, and can help us in developing the next generation of polyurethanes to meet the industry’s upcoming challenges and needs. What can we offer you?

• Powerful know-how on both established and new polyisocyanates, as well as on new polyurethane hybrid technologies.
• The prospect of new application technologies to enable efficient processes.
• More sustainable, biomass- or CO₂-based materials that do not sacrifice high performance.

Join us to shape the future!