



INVENTING
MASTERPIECES
FOR YOU



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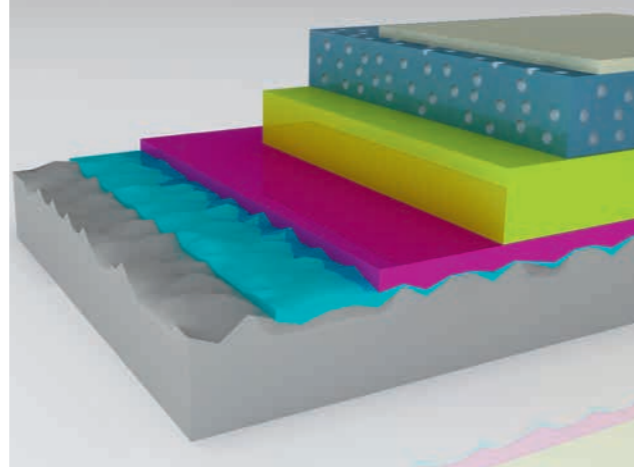
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The State of the Art in Raw Materials
for the Building & Construction Industry

Bayhydrol® Bayhydur® Desmophen®
Desmodur® Desmocap® Desmoseal®





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Bayhydrol® Bayhydur® Desmophen® Desmodur® Desmocap® Desmoseal®



INVENTING VISIONS FOR YOU

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 everyday. Anywhere. Again and again.

INVENTING FOR YOU.

Key trends in the construction industry



Key trends in the construction industry are influencing the market for protective building coatings:

- **More refurbishment and renovation:**
In recent years, the construction market in Europe has experienced a clear shift from construction to renovation work. Whereas new buildings previously accounted for most construction work, it is now refurbishment and renovation.
- **Minimizing construction-site downtime:**
The focus in many segments is increasingly on minimizing construction-site downtime and the associated loss of earnings for the owners or occupiers of buildings. These factors have led, among other things, to a greater demand for more efficient, long-lasting coating solutions.
- **Growing demand for decorative floorings:**
As more and more end users call for customizable solutions, there is also a growing demand for high-class decorative floorings.

- **Expanding segments:**
With the number of greenfield shopping centers, storage facilities and logistics depots continuing to rise, more and industrial and decorative floorings are required.
- **Stricter VOC regulations:**
As stricter VOC regulations are introduced in Europe, there is a greater need for low- to zero-emission coatings.
- **Enhancing energy efficiency:**
Most of the world's energy is consumed to heat or cool buildings. Fortunately, this is a sector where Covestro is making a significant contribution to enhancing energy efficiency. One solution to the increasing demand for more energy-efficient building shells is the use of high-quality movement or connection joint sealants.



What this means for our Coating, Adhesive & Specialty business

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 poly-isocyanates, 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.

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 & 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.

What we do

As a world-leading polymer and material science company, we inspire innovation and drive growth through profitable products and technologies that benefit society and reduce the impact on the environment.

Who does all this?

It's our people! And the way we work together as one global team following a set of six elementary principles – value creation, sustainability, innovation, focus on people, safety and fair play. This is our formula for success.

Stability, reliability and safety – with polyurethane raw materials

Since stability, reliability and safety are top priorities in the construction industry, the production of customized, high-quality construction materials has always been a key market segment for us. Consequently, we produce a comprehensive range of polyurethane raw materials for a wide range of applications in the construction industry. Covestro markets these polyurethane raw materials for manual coating, adhesive or sealant application on construction sites. Or they are used to manufacture sports and industrial flooring and coatings for roofs and many other specialist building applications. Whether they are enabling vehicle tires to grip on parking decks or simply protecting concrete patios from corrosion, the chemical formulation of polyurethane coatings can be adapted to meet your every need and, in special cases, even be enhanced with decorative designs.

This brochure explains why our products offer such outstanding quality, details the chemical properties of polyurethane products, and outlines the one- and two-component technologies used to manufacture multifunctional construction materials. These processes, along with polyurea technology, form the building blocks for the wide range of possible applications. We also describe numerous areas of application of our successful product technology, and show how the diverse capabilities of our polyurethanes can help you to resolve numerous demanding tasks.

From our position as Europe's leading manufacturer of polyurethane raw materials in both volume and technological terms, we are ideally placed to serve as your competent partner – not just through our extensive product portfolio but also through the comprehensive technical service we provide our customers in the construction industry.

All you need to know about polyurethane

Polyurethane is the term generally used for the product of reactions between polyisocyanates and polyalcohols, polyamines and/or water, whereby the latter can be in the form of liquid or moisture in the air. However, not every polyurethane formulation is suitable for the same areas of application, and careful distinctions have to be made.

With the exception of diphenylmethane diisocyanates (MDI), which are unique because of their low vapor pressure and correspondingly low volatility, monomer diisocyanates such as toluene diisocyanates (TDI), hexamethylene diisocyanate (HDI) or isophorone diisocyanate (IPDI) are, for industrial hygiene reasons, only

used in the coating sector as higher molecular polymers (adducts, homopolymers, and prepolymers). In the production of polyisocyanate coating raw materials, the main aim is to achieve the lowest possible residual monomer content.

Coating materials also differ in the way they are processed. In the case of two-component (2K) technology, two components are mixed homogeneously prior to processing the structural protection product, resulting in a reaction mix that needs to be processed within a limited period of time. One-component (1K) technology, by contrast, requires no mixing to stimulate the reaction between a formulated polyisocyanate and moisture in the air, and thus permits long processing times.



2K polyurethane technologies

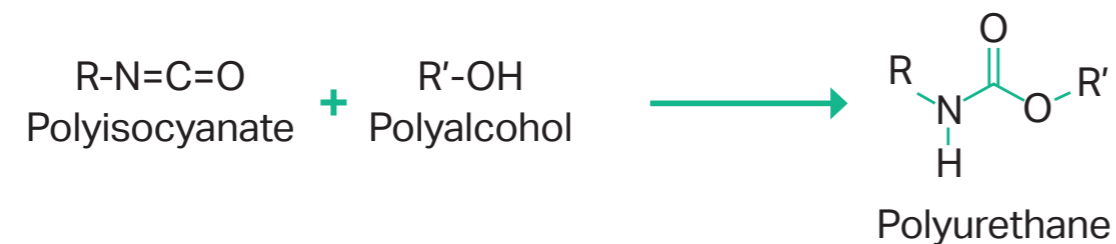
At Covestro we supply three different types of 2K polyurethanes: solvent-free, solvent-based and water-based.

Solvent-free 2K polyurethanes

The use of solvent-free raw materials allows coatings of any thickness to be produced. With 2K polyurethane systems consisting of solvent-free polyalcohol (Desmophen®) and polyisocyanate (Desmodur®) components, it is the functionality of both these components, their molecular weight, and the chemical structure that are instrumental in determining the mechanical properties and resistance to chemicals of the reaction product. Low functionality (but of at least 2) and a high molecular weight, for example, produce plastic to elastic coatings with low chemical resistance. If, however, the functionality of reactants is high and their molecular weight low, the outcome is extremely hard coatings with excellent chemical resistance. Solvent-free 2K polyurethane systems are usually hydrophobic. This largely prevents any competing chemical reaction with air moisture, which is to be avoided since it generates carbon dioxide. Although air moisture enters the reaction system



through the addition of fillers and pigments, the use of water scavengers prevents the polyisocyanate coming into contact with it. Zeolites with an adsorbent effect are normally added. These types of standard polyurethane systems based on castor-oil polyalcohols and, where possible, modified polymer MDIs (Desmodur®) cure at temperatures between 5°C and 30°C, even at a relative humidity of over 90%. The result is a pore-free coating of high thickness and excellent surface quality. If higher color stability is required, aliphatic polyisocyanates based on HDI or IPDI (Desmodur® N) can be used.

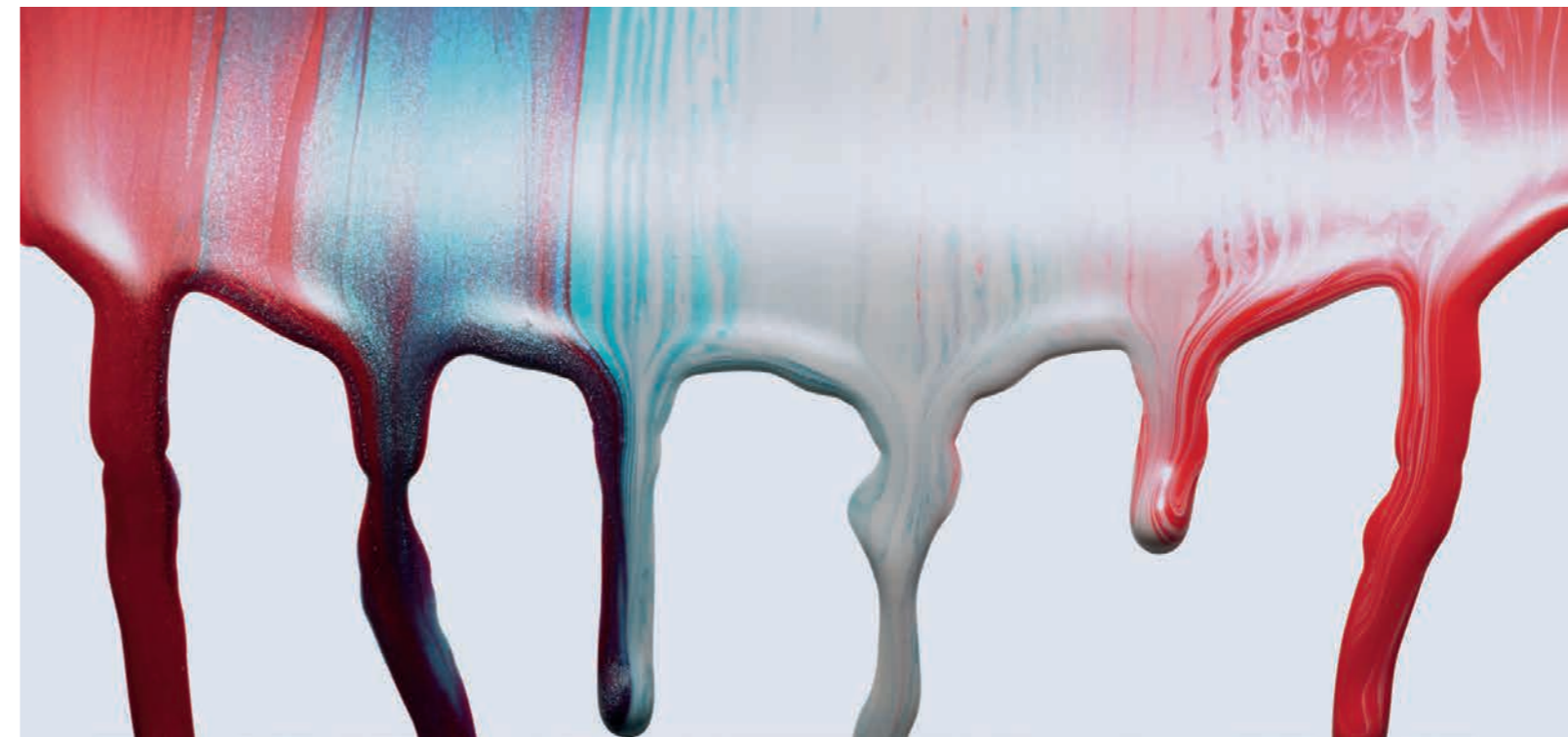


Solvent-based 2K polyurethanes

The solvents used in these 2K polyurethane systems (Desmodur® and Desmophen®) limit the coating thickness and prevent foaming. However, it is also possible to use more hydrophilic substances whose viscosity can be set via the volume of solvent. Solvent-based 2K polyurethane systems are mainly used in the production of topcoats. The properties of these topcoats (e.g., gloss, abrasion resistance or chemical resistance) can be adjusted to meet your needs and wishes. The exceptional properties of this type of coating, and in particular its weathering resistance in outdoor applications, has reliably protected concrete surfaces from environment-related attacks for many years. Our decades of experience in selecting binder components and formulations enable properties to be customized to your specific requirements.

Water-based 2K polyurethanes

As with any polyurethane, hydroxyl groups have to react with isocyanate groups to produce water-based polyurethane coatings. This is the chemical basis. However, this particular process has one special feature: the binders consist of a water-based dispersion (Bayhydrol®) component and a hydrophilic polyisocyanate (Bayhydur®). This means that a secondary reaction takes place between the isocyanate groups and water. Urea groups are formed during this process. The scope of this reaction is much smaller than the reaction that produces polyurethane because the reaction rate is slower. In addition, the water evaporates from the coating film relatively quickly after application. Another benefit of 2K polyurethane technology is that the crosslinking reactions can be accurately controlled by selecting suitable raw materials and additives. Pot life and curing time can also be decoupled using internally activated dispersions. Final hardness can thus be reached much more quickly at the same pot life, or the hardening reaction can take place at lower temperatures.

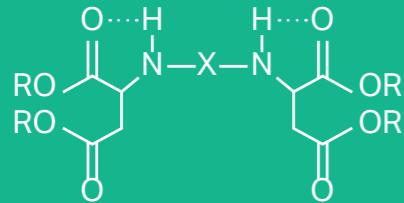


Innovative fast-curing 2K polyaspartic technology

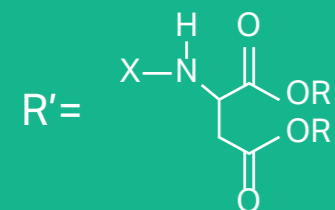
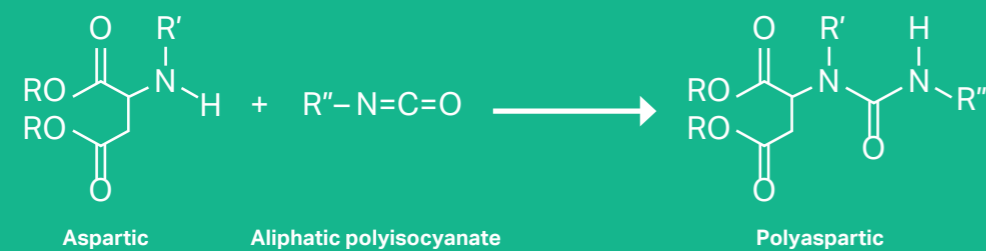
At Covestro we supply different types of 2K polyaspartics – from high-solid to 100% solids .

2K polyaspartics

2K polyaspartic coatings (Pasquick™ technology) based on amine-functional polyaspartic acid esters (Desmophen® NH) and aliphatic HDI-based polyisocyanates (Desmodur® N and E) combine the advantages of aliphatic 2K polyurethane technology with the fast-setting properties of polyurea technology. A variety of properties from flexible to hard can be achieved by selecting the right combination of binders and hardeners. In addition, this technology allows short curing times, even with a moderate pot life. Furthermore, our technology allows formulations fulfilling the high requirements in line with indoor-air-quality regulations (AgBB).



General structure of aspartics



Reaction of aspartics with aliphatic polyisocyanate to give polyaspartics



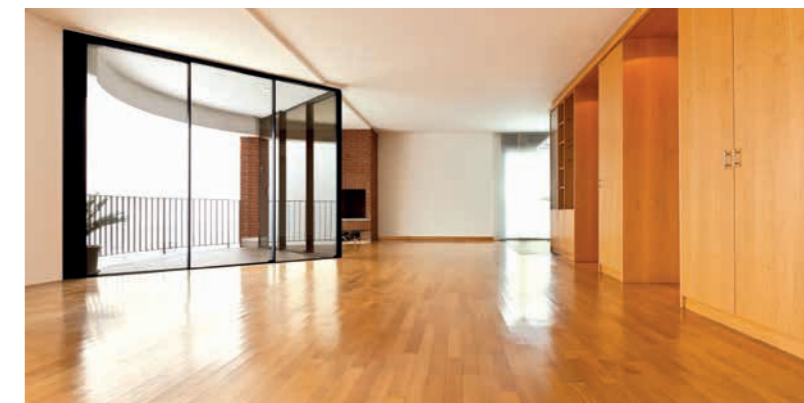
Convenient 1K polyurethane technologies

1K moisture-curing polyurethanes

1K coatings react with water, which is present almost everywhere as substrate or air moisture. The second component needed for the hardening process is therefore delivered to your doorstep free of charge, so to speak. This avoids any uncertainty as to whether the two components are mixed homogeneously. Since carbon dioxide is produced during the hardening reaction, 1K polyurethane products based on this conventional process have to be used in low coating thicknesses, mostly in conjunction with solvents. This stops blisters forming in the coating. The use of latent hardeners triggers a type of chain reaction. Just one water molecule provides several reactive groups for the reaction with the latent hardener. As a result, less carbon dioxide is produced and significantly thicker coatings can be applied without blisters forming.

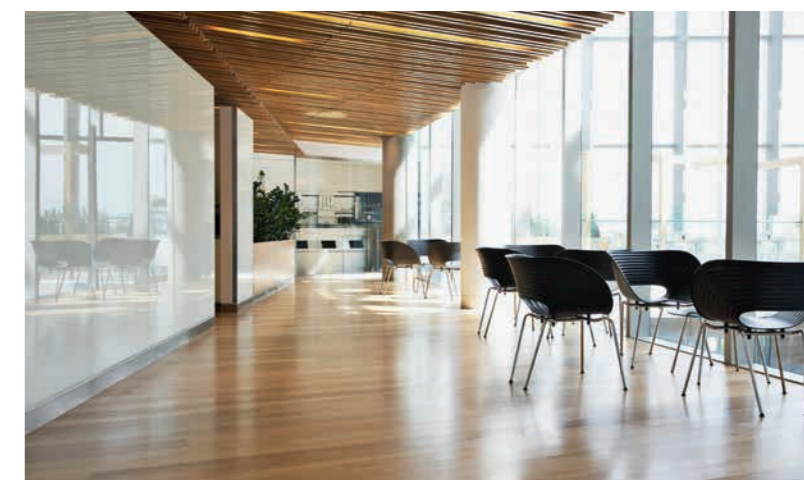
In view of the limited coating thickness, this technology is particularly suited to seals and impregnation. Depending on the prepolymer (aromatic, Desmodur® E grades) and low-viscosity aliphatic polyisocyanate (Desmodur® N) used, elastomer or duromer coating films with differing degrees of weathering resistance are formed. The underlying products penetrate well into absorbent substrates. Moreover, the end products are incredibly tough, abrasion-resistant, and highly resistant to water, chemicals and solvents.

1K polyurethane technology offers yet another attractive possibility – highly filled, mortar-like coatings that are used mainly without solvents. After hardening, these products form breathable, open-pore coatings with thicknesses of 4–10 mm. If required, a liquid-tight surface can also be created using an additional seal. Such products are commonly used in load-transforming topcoats and decorative gravels.



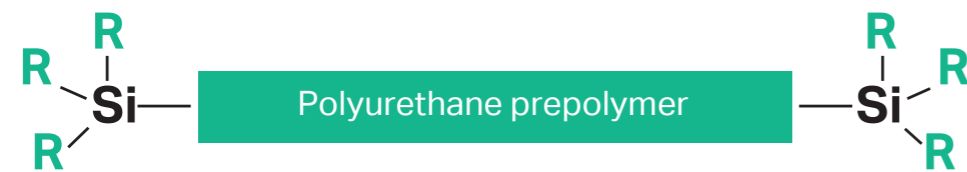
1K water-based polyurethane technology

1K water-based, high molecular weight, dispersed polyurethane can be easily applied on flooring, either manually or even industrially. The ease of application, rapid curing and good mechanical properties of these polyurethanes make them the standard technology for parquet coatings. Such systems are environmentally friendly and allow formulations with low levels of VOC and good results in indoor air quality tests. Covestro supplies proven raw materials for water-based systems under the trade name Bayhydrol® UH. The combination of these products with a polyisocyanate hardener (Bayhydur®) leads to a still higher performance coating through the formation of polyurea on the surface. Highly hydrophilic polyisocyanate leads to an easy incorporation of the hardener into the polyols, resulting in highly transparent films.



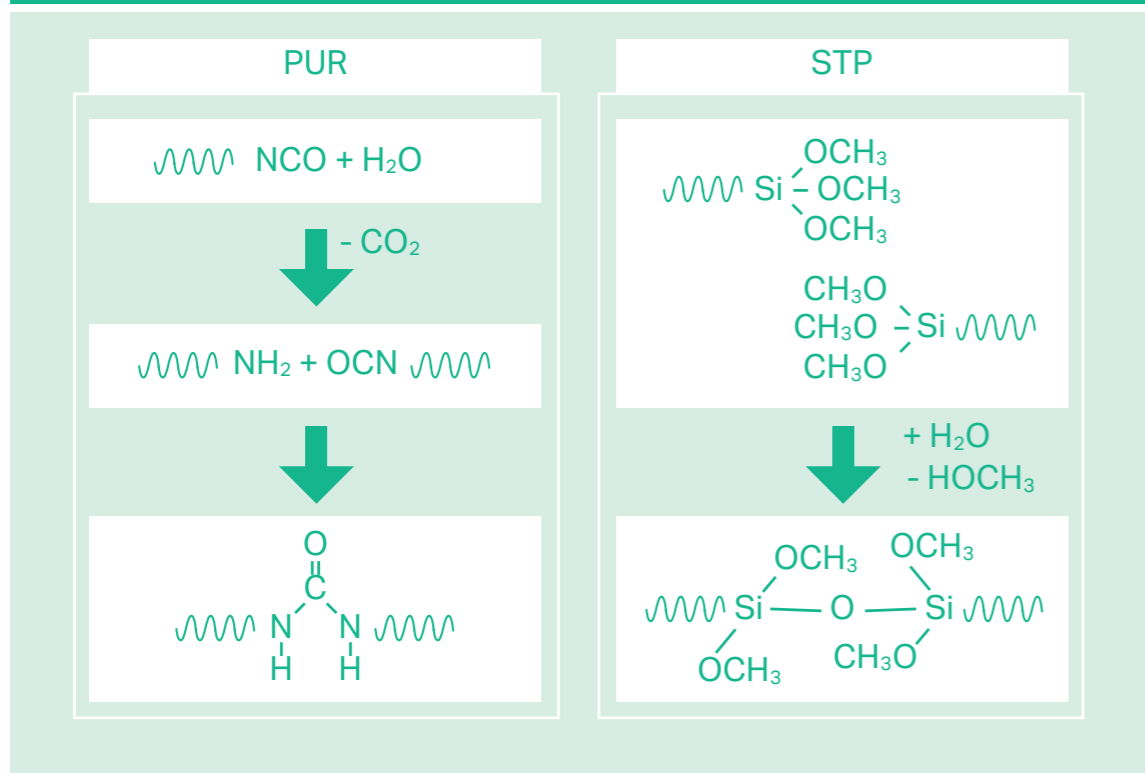
The best of both worlds – polyurethanes and silicones

Silane-terminated prepolymers (STPs) marketed under the Desmoseal® S trade name are the latest generation of polymers for moisture-curing elastic bondings and highly flexible sealants. They are based on a polyurethane prepolymer terminated by a specific and unique tri-functional alkoxy-silane end group.

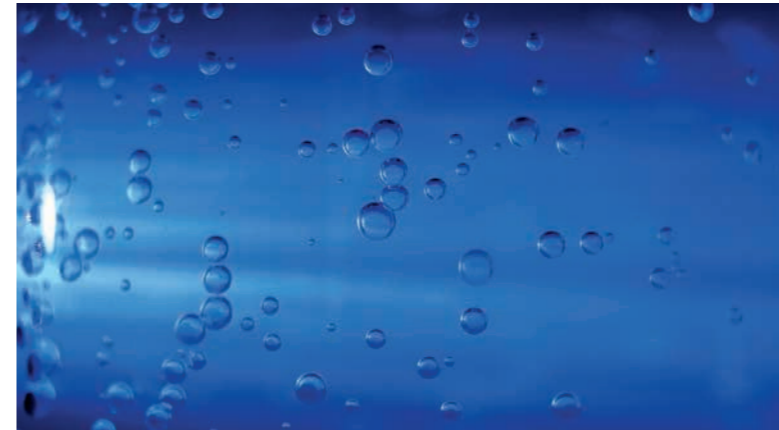


Representing so-called hybrid systems, they combine in an ideal way the advantages of polyurethane chemistry with the chemistry of silicones in sealant and adhesive formulations.

Basic principles: crosslinking mechanism



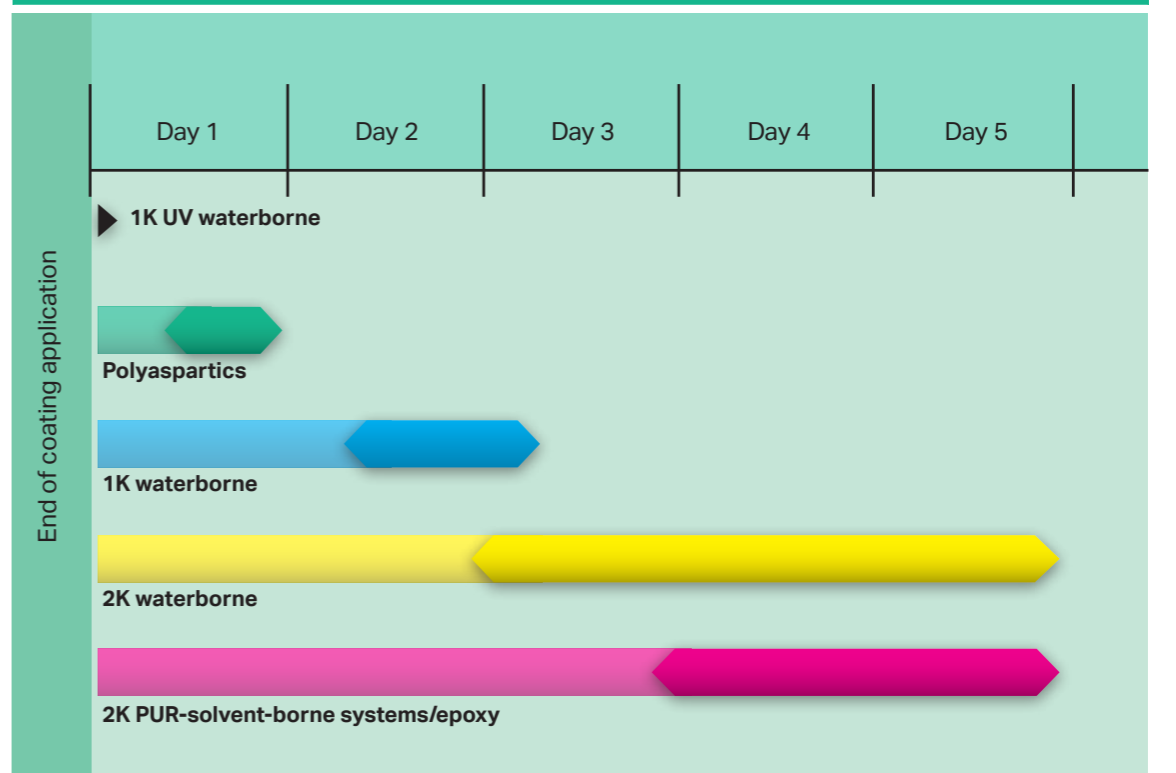
Highly productive UV technology



UV-curing polyurethane dispersions (Bayhydrol® UV) are the most promising technology where there is a need for a highly efficient coating system with a fast return-to-service of the floor.

Additional key benefits are the ease of application of a 1K waterborne system, low VOC emissions, and the high performance of the UV crosslinked coating.

Time until ready for reuse of common on-site coating systems



Industrial flooring

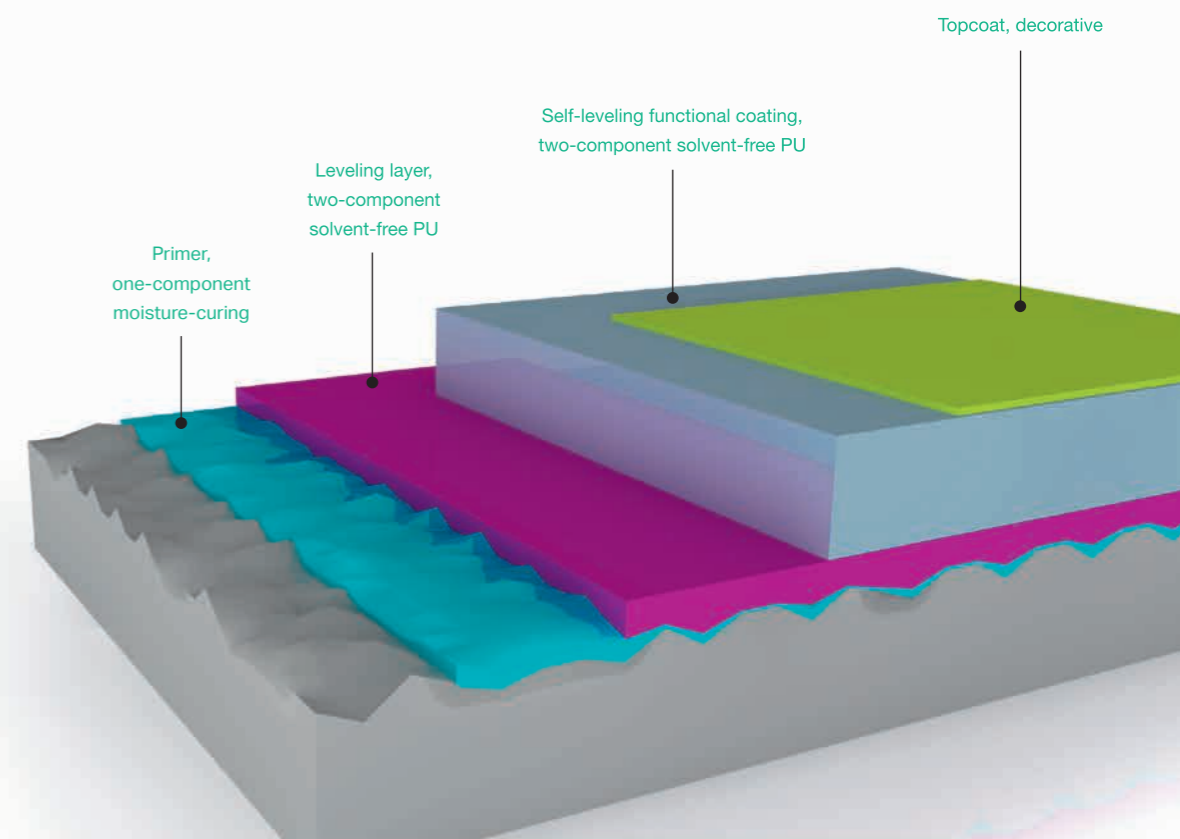
Outstanding quality for tough environments

Mechanical, dynamic and thermal stress, chemicals and water: industrial flooring in production plants and warehouses has to be extremely resistant. If the right quality standards are not met, any damage or signs of wear in the concrete substrate quickly become a safety risk, disrupt production routines and give rise to additional costs.

That is why industries such as automotive, food, pharmaceuticals, electrical engineering, metalworking and chemicals have been relying on tough to ultra-hard synthetic resin coating systems for years to provide effective protection for indoor floors exposed to extreme stresses. Thanks to a range of properties that is as broad as it is varied, polyurethane is increasingly the material of choice. Worldwide, around a quarter of the many millions of square meters of industrial flooring is coated with polyurethane as a durable and cost-effective solution.

Ease of cleaning and outstanding slip and abrasion resistance are exemplary qualities in all applications. Moreover, design-friendly polyurethane coatings can also be customized for industrial flooring to meet your specific requirements, e.g., in terms of electrical conductivity, antibacterial properties or emission behavior. What's more, the toughness of polyurethane systems even allows them to be used to coat asphalt screeds.

Polyurethane coatings are capable of satisfying even the toughest of demands and thus make a substantial contribution to the long-lasting functionality of industrial flooring. They can be applied using common procedures, set new technical safety standards and even reduce machine noise – much to the delight of factory workers. And they also ensure that those omnipresent forklifts enjoy a good grip on factory floors.



Sports flooring

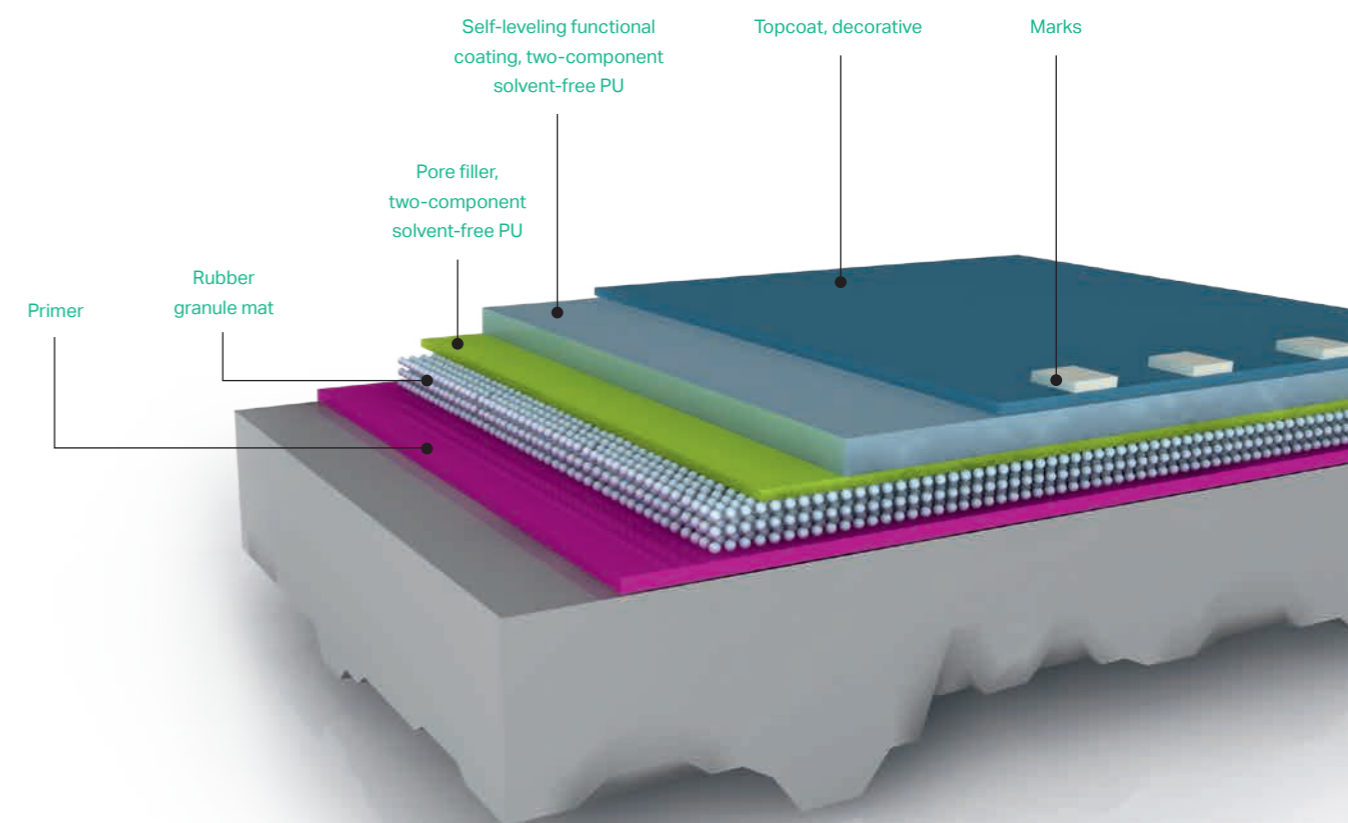
A valuable and very sporty team player

Polyurethane is incredibly sporty for a plastic. When used as an elastic point or area covering for indoor or outdoor sports floors, smart polyurethane coatings ensure perfect bounce – a must-have quality for basketball or handball players, for example.

Track and field athletes also benefit from the optimal and customizable elasticity of polyurethane systems for sports halls and outdoor facilities. The good rebound properties and outstanding slip resistance of running surfaces coated in polyurethane systems help to enhance sporting achievements. Besides offering excellent elasticity, these largely wear-resistant polyurethane sports surfaces also greatly reduce the risk of

injury – in any sport. Surfaces coated in this way provide excellent grip, go easy on the athletes' bodies, and cushion impact. Suitably formulated polyurethane coatings meet international quality standards for the use of plastic in sports flooring, and extend the service life of these surfaces. What's more, the variable hardness of polyurethane topcoats even meets strict physiotherapeutic requirements.

Polyurethane systems can also be used for multipurpose hall flooring. Here, multiple coatings are recommended to withstand the higher loads caused by mass events, table and chair legs, or stiletto heels. And should any damage occur, it can usually be repaired quickly and simply.



Decorative flooring

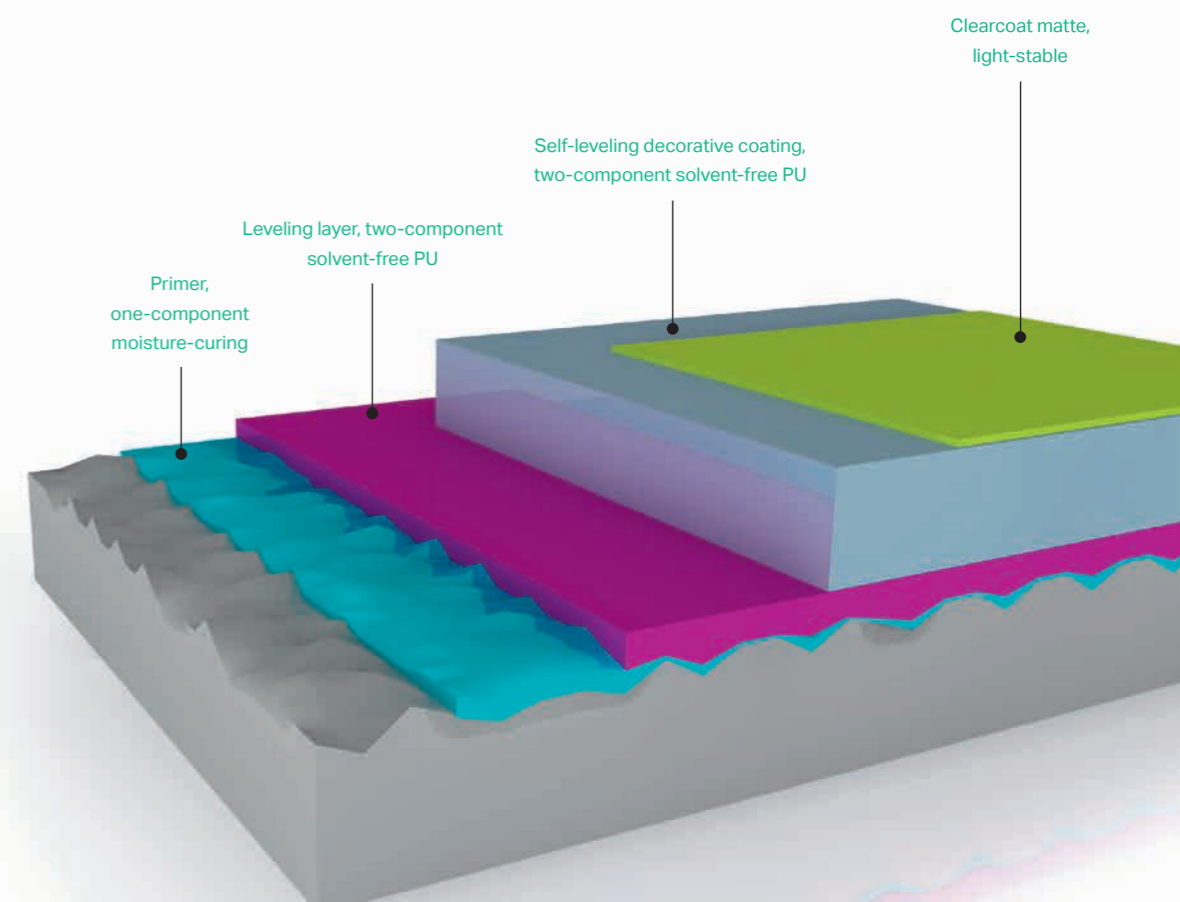
A treat for tired eyes

Ever greater demands are being made of flooring in public or commercial facilities, such as administrative buildings, offices, foyers, exhibition and concert halls, shops, and malls. And they are not just functional demands. Besides the usual considerations such as ease of cleaning, excellent durability, antiallergenic aspects, cost effectiveness and above-average safety, greater emphasis is now being placed on decorative features. As well as fulfilling their actual purpose, highly stressed large areas of flooring also have to look good.

The extensive properties of polyurethane/polyaspartics open up new possibilities for attractive and even highly artistic floor designs. Additional color chips or other design elements can easily be added to the transparent or single-color synthetic resin matrix during application.

This transforms what would otherwise be boring flooring into a stylishly designed "polyurethane carpet" that is jointless, colorful, non-yellowing and, above all, much more resilient than any textile counterparts.

Self-leveling polyurethane floor coatings allow you to combine all the advantages of polyurethane technology with decorative designs and a high degree of design flexibility. The outcome is real works of art that can withstand even heavy loads with barely a scratch thanks to the tough, impact- and chemical-resistant topcoat. And if any damage does occur, it can easily be repaired. As with other polyurethane floor coating, it just needs to be sanded down to the required level and resealed with a transparent coating.



Parking decks

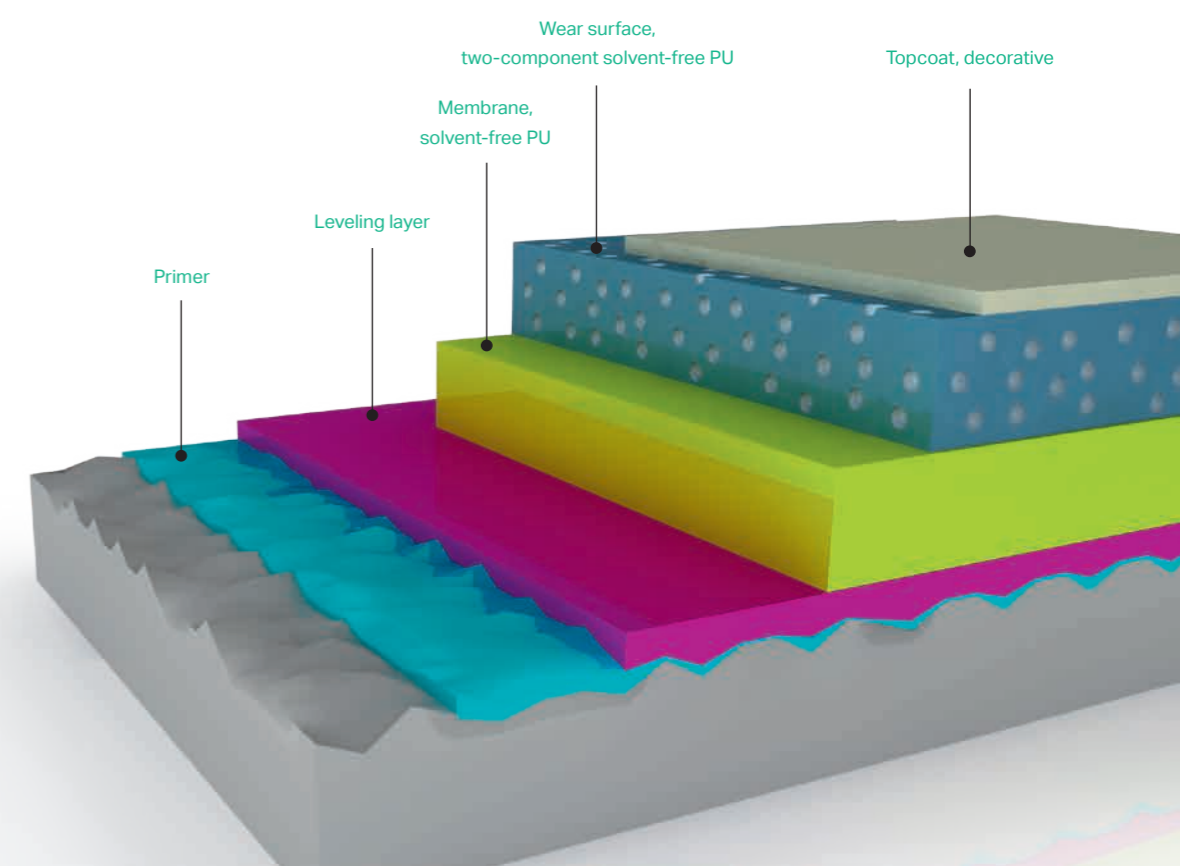
Strong and safe surfaces

At first glance you'd never think that the reinforced concrete floors of parking decks have a lot to put up with. But not only do they have to withstand the weight of cars; their lanes, entrances and exits also have to ensure vehicles can be driven safely at all times.

The exceptional slip resistance and high mechanical and dynamic load-bearing qualities of viscoplastic and abrasion-resistant polyurethane coatings make them the ideal solution for large-area application on parking deck substrates. Jointless and usually processed in combination with epoxy resin primers, they bridge the unavoidable cracks in concrete surfaces caused by consistently heavy loads while easily coping with road salt, automobile fluids, and rainwater. This ensures that the underlying steel structure is permanently protected against corrosion.

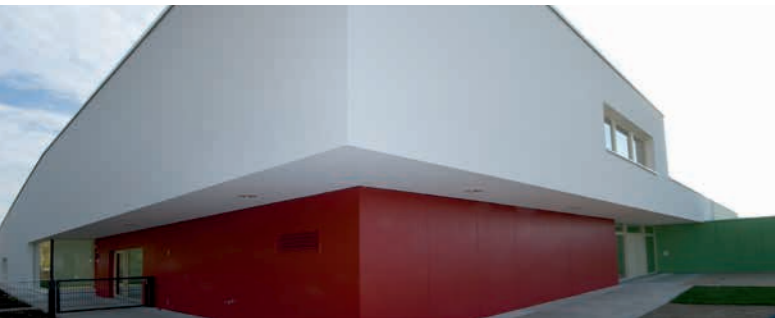
Since older cars tend to leak, the polyurethane coatings on parking decks are also useful in stopping harmful substances leaching into the soil and groundwater. So they protect the environment while providing excellent reliability, optimal surface grip even in rainy weather, no-fuss cleaning, and resistance to temperature changes and weather influences all year round. Operators of multistoried car parks thus have an extremely cost-effective technology at their disposal.

There is one more decisive advantage. While more costly high-tech systems are generally used on top and bottom decks in view of the greater stress caused by wind and weather, and on the lower levels due to more frequent parking, simpler solutions usually suffice on the intermediate levels. In each and every case, parking safety is ensured and comes complete with the wide range of decorative design options polyurethane offers.



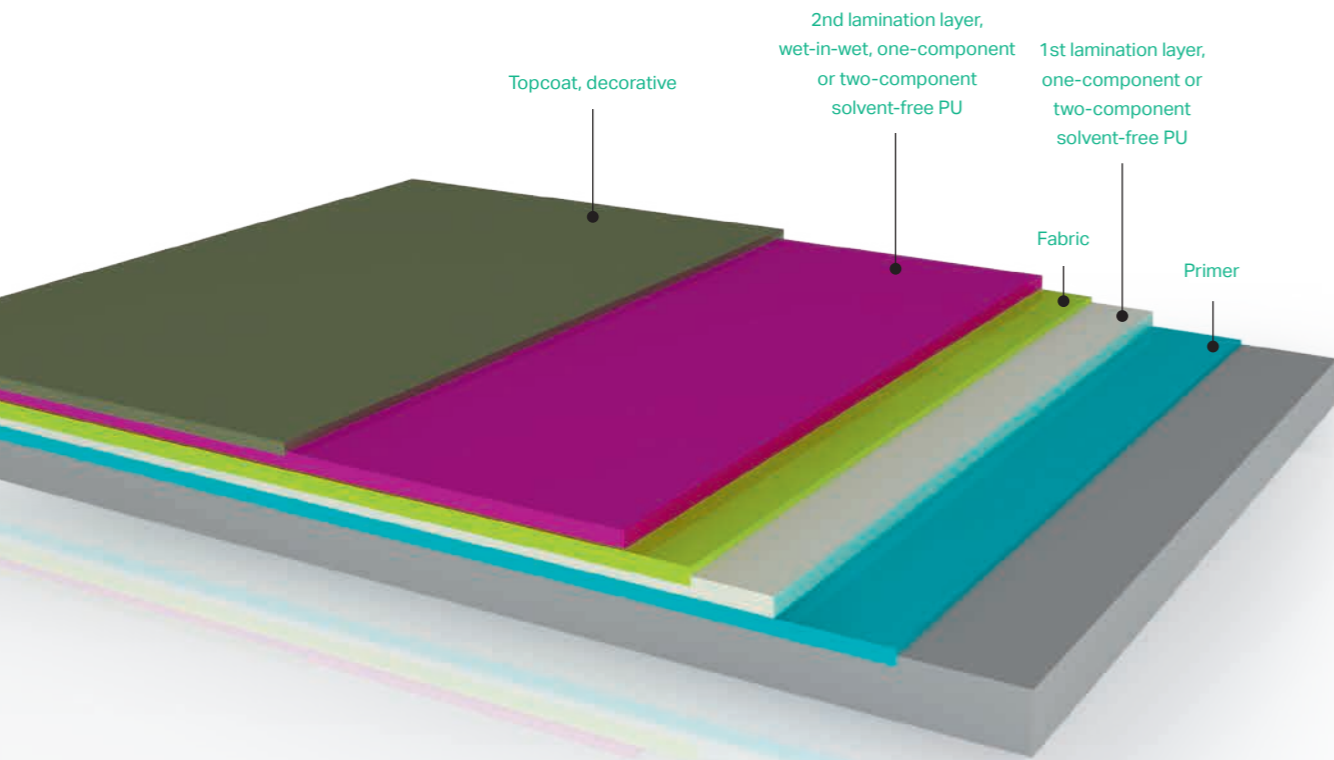
Flat roofs

Sleep soundly under a secure roof



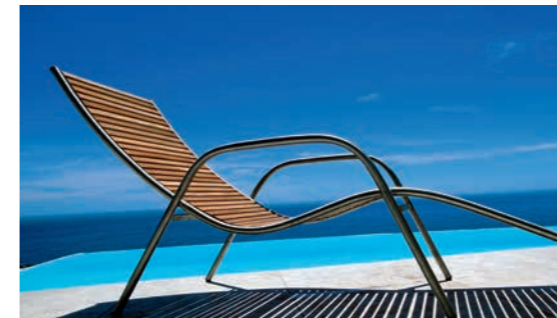
What would a house be without a roof? By protecting the inhabitants from wind and weather, rain, frost and snow, it is a key guarantee for cozy security. That's why it's all the more important to protect the roof itself from harmful external influences by means of elastic polyurethane coating systems based on raw materials from Covestro. Flexible even at high and low temperatures, crack bridging, and consistently waterproof despite good water vapor transmission, roofing applications show polyurethane at its very best.

With customized formulations that meet the relevant international, national or regional legal standards, flame-retardant polyurethane coatings also help to enhance the safety of buildings. And by using light-resistant, non-yellowing raw material components, they also reflect some of the sun's rays. In a nutshell, polyurethane flat roof seals play a major role in prolonging the life of real estate and thus boost its usability and resale value.



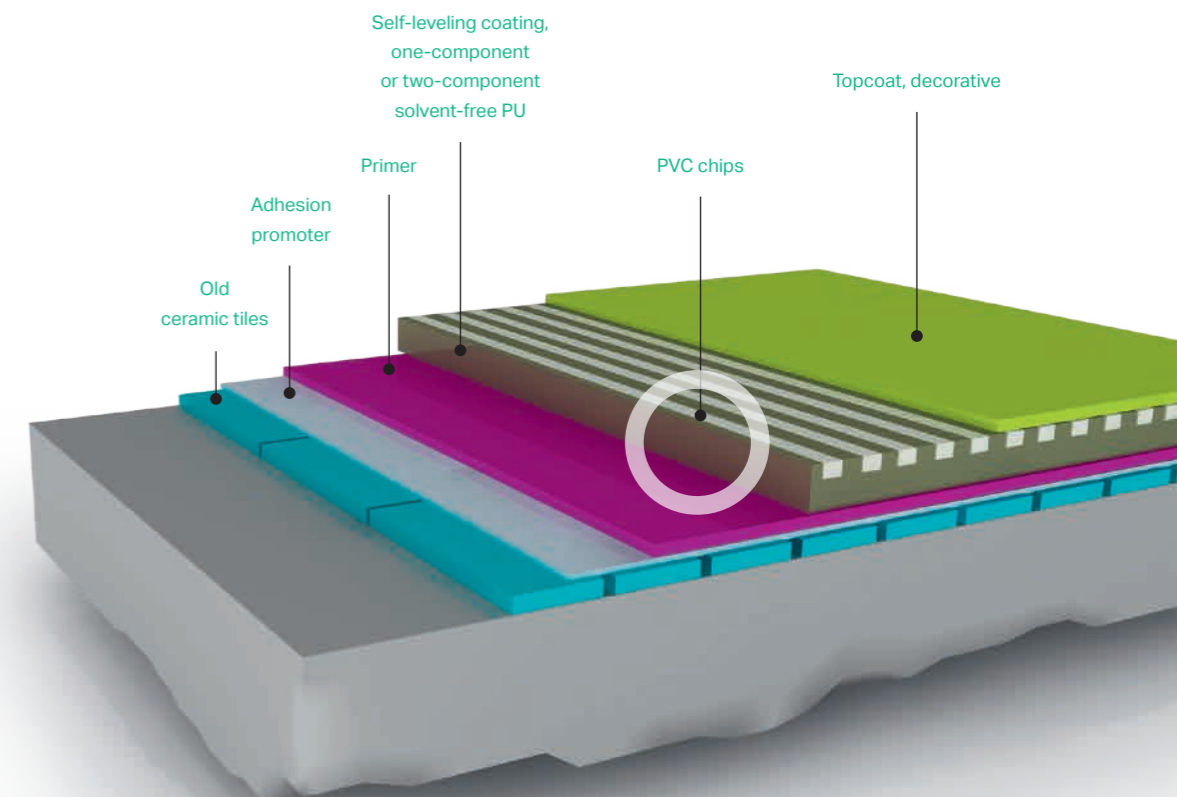
Balconies & patios

A climate-stable fountain of youth



Like roofs, balconies and patios are exposed to fluctuating climatic conditions – not only day and night, but also from season to season. Load-bearing concrete substrates and their steel reinforcements can be effectively protected against corrosion caused by moisture penetration and also given a design boost by applying an all-over layer of polyurethane membranes. In addition to exemplary weathering stability, the mechanical resistance of the protective coating is particularly

important. On the one hand, it has to ensure that balcony chairs and tables do not damage the coating; on the other hand, the higher slip resistance required for greater safety should not mean the furniture sticks to the floor. Meeting both demands is absolutely no problem with polyurethane coatings. And if the owner opts for a light-fast aliphatic system, it will also provide added protection against premature aging by the sun.



Garages & basements

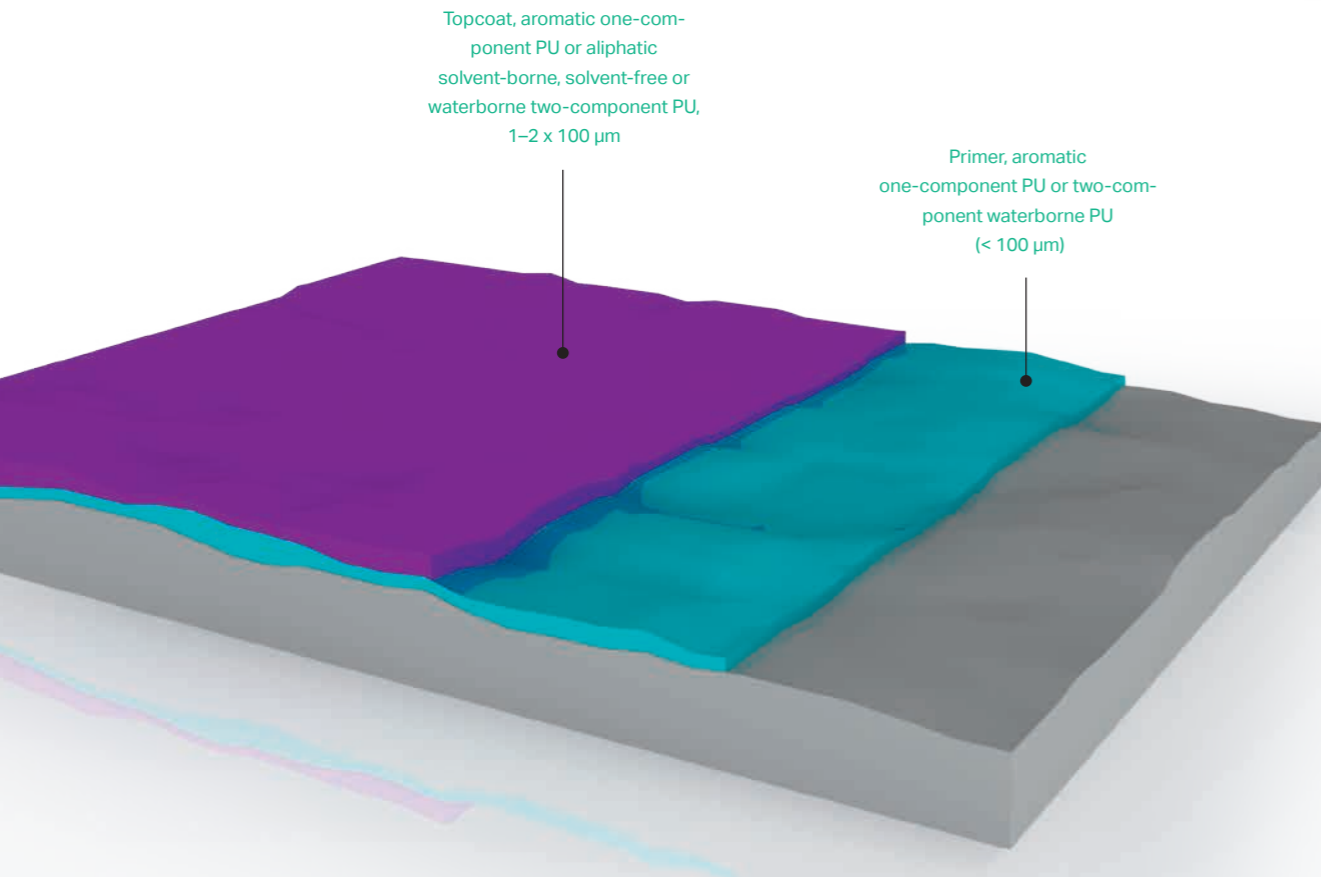
Absolutely indestructible in everyday use



Polyurethane floor applications are increasingly used in houses to protect basements and garages from wear and tear and premature aging as well. Since the concrete floor of garages has to withstand heavy loads and aggressive automobile fluids, it makes perfect sense to use hydrolysis- and chemical-resistant polyurethane floor coatings with a wide range of mechanical, dynamic and thermal properties. Since nobody wants car tires to leave unsightly prints on the garage

floor, even if the car is left standing for lengthy periods, this is where comparatively hard polyurethane systems of the kind used in automobile showrooms come into their own.

Polyurethane coatings are also ideal because they harden and dry quickly after processing, produce hardly any emissions during application, are available in attractive colors, and are slip-resistant, resilient and easy to maintain in everyday use.



Walls & facades

A fine solution – inside or out

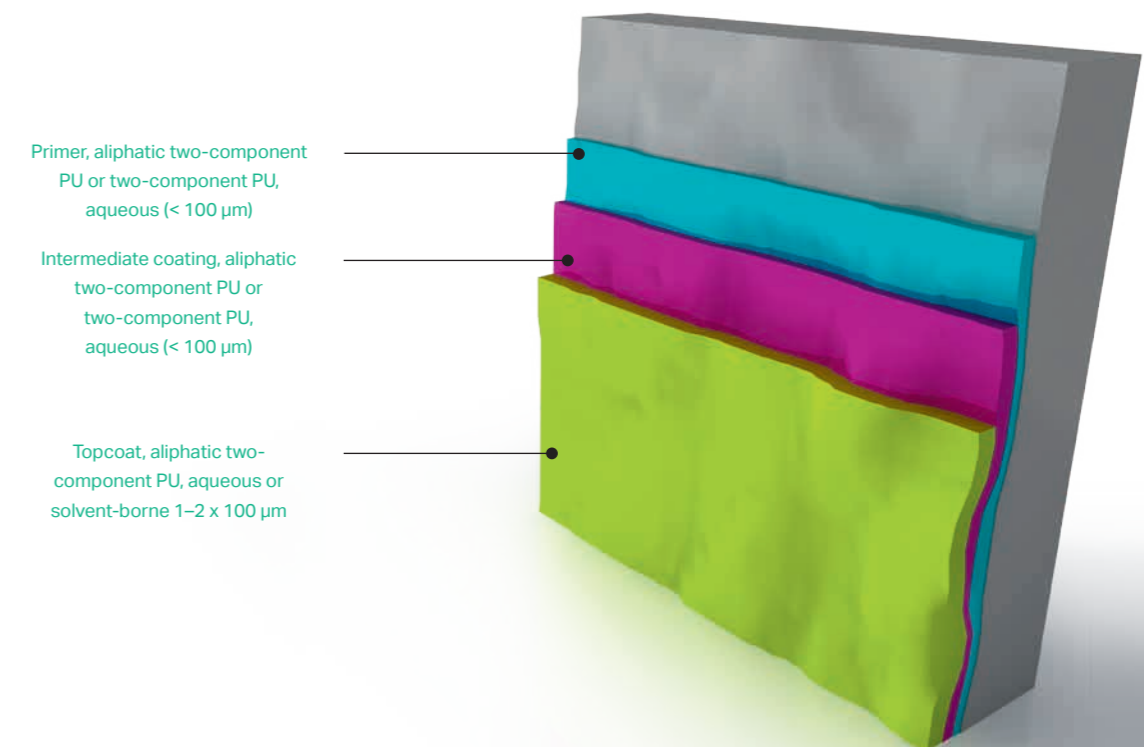


High-quality polyurethane systems have an equally impressive track record as protective surface coatings for interior walls and exterior facades. That is why formulations with high cross-linking densities, optimized chemical resistance, and ease of cleaning are chosen over competing but less effective technologies, for example in public buildings such as hospitals, nursing homes, schools and kindergartens.

Public authorities also choose such easy-to-clean solutions for outdoor areas. The impressive weathering resistance and sealing properties of polyurethane systems – even in driving rain – and

their good water vapor diffusion properties are all excellent reasons for selecting high-quality polyurethane construction materials based on raw materials from Covestro.

What's more, polyurethane products offer outstanding protection against carbonation. Their use in protective coatings for bridges, train stations, underpasses or administrative buildings prevents corrosion in the steel reinforcements of the concrete so no dangerous fragments can break off the facades. In other words, polyurethane raw materials from Covestro are crucial for safe and sustainable construction materials.



Parquet

Wood at its natural best

High-performance parquet adhesives

Parquet adhesives not only have to offer the necessary mechanical properties; they also need to comply with the indoor air-quality requirements for applications in enclosed rooms. That is why solvent-free reactive adhesives based on polyurethane and its hybrids are the raw material of choice. They do not cause the wood to swell, display good adhesive qualities, and are available as low-emission formulations.

Key benefits of polyurethane technology:

- Outstanding flexibility
- Good initial strength
- Good adhesive strength
- Good adhesion to wood and concrete
- No moisture expansion, as no water from the adhesive can impact the substrate
- Low emissions for environment-friendly application in enclosed rooms

We offer a broad range of raw materials for such applications under the brand names Desmodur® E, Desmoseal® M and Desmoseal® S – from products suitable for screed priming, raw materials for 1K or 2K polyurethane adhesives to silane-terminated polyurethanes for formulating low-emission, soft-elastic hard parquet adhesives.

All the formulated binder systems are easy to process and form a tough bond on substrates such as concrete, ceramic, stone and various nonabsorbent substrates.

Coatings that enhance the beauty of wood

Polyurethane dispersions have been in use for years and nowadays they are one of the leading technologies for parquet coatings. The clear advantages include outstanding mechanical properties, mild odor, ease of application and rapid curing.

The choice of the right Bayhydrol® UH grade allows the formulation of coatings with the necessary hardness, elasticity, abrasion, black heel mark resistance and chemical resistance. Introducing fatty acids into the chain increases the crosslinking, resulting in greater chemical and black heel mark resistance. Film properties can be enhanced by adding a polyisocyanate to produce a high-quality 2K coating. We offer these hydrophilic polyisocyanates under the brand name Bayhydur®.

Bayhydrol® UV grades are the binders of choice for the formulation of coatings for UV on-site.



Joint sealants

The seal of quality

The polyurethane sealants based on the Desmoseal® product range are characterized by a high degree of elasticity and cohesion. They can be painted over, are easy to apply, and capable of withstanding the everyday challenges presented in a wide variety of application areas. Key challenges include mechanical loads caused

by, for example, traffic, which shifts the relative positions of floor slabs, or seasonal temperature fluctuations, which cause structural components to expand or shrink. Such movements obviously affect the shape and size of the relevant joints and the sealant in each joint is subjected to constant tensile, compression, peel or shear stresses.

Key benefits of sealants based on Desmoseal® raw materials:*

- Long-lasting elasticity, even at low temperatures
- Good adhesive strength, adhesion to different substrates and flank adhesion
- Simple to process (1K formulations)
- Good extrudability
- Weather-resistant
- Extremely malleable
- Good elastic recovery
- Odorless
- Low shrinkage during curing
- Overcoating possible
- Bubble-free curing due to low NCO content or silane crosslinking
- Highly reactive
- Can be formulated with amines or low levels of tin catalysts
- Excellent mechanical properties:
 - Tensile strength > 2 MPa
 - Elongation at break up to 1,200%
 - Shore hardness as low as A15
 - Modulus at 100% as low as 0.2 MPa

*The specific properties depend on the formulation chosen.

The Desmoseal® S range is made up of silane-terminated prepolymers (STPs) and used for sealants that combine the outstanding properties of polyurethane with those of silicone-based sealants. The inherent good cohesion of polyurethanes combined with the well-known good

adhesion of silicones results in a unique profile of beneficial properties. STPs are usually formulated as 1K sealants, but can, if required, be formulated as 2K systems to modify certain properties. The chemical structure is a polyurethane backbone with silane end groups.

Typical applications for sealants based on Desmoseal® products:

- All kinds of connection joints, e.g., around windows, doors, roller blind housings, facades, metal housings, indoor and outdoor plastic components, etc.
- Edge joints on parquet flooring

PRODUCTS	KEY FIGURES (SUPPLY FORM)					TECHNOLOGY			APPLICATION AREA					
	SUPPLY FORM [%]	VISCOSITY AT 23°C [mPa · s]	OH CONTENT [%] IN RELATION TO SUPPLY FORM	EQ WEIGHT [g/mol]	NCO CONTENT [%] IN RELATION TO SUPPLY FORM	1K MOISTURE-CURING		1K STP	INDUSTRIAL FLOORING	DECORATIVE FLOORING	WATER-PROOFING MEMBRANES	WALL & FASSADES	SEALANTS	
		VISCOSITY AT 25°C [mPa · s]	1K PUR			2K	1K UV	SPORTS FLOORING	PARKING DECKS	GARAGES & BASEMENTS	PARQUET			
HDI- and IPDI-based														
Desmodur® N 3200	100	2,500		23.00	185									
Desmodur® N 3300	100	3,000		21.80	195	●	●	●		●				
Desmodur® N 3600	100	1,200		23.00	185			●	●	●	●			
Desmodur® N 3800	100	6,000		11.00	380				●	●	●			
Desmodur® N 3900	100	730		23.50	180	●	●	●	●	●	●	●		
Desmodur® N 100	100	10,000		22.00	190				●	●	●	●		
Desmodur® N 75 MPA	75	250		16.50	255				●	●	●	●		
Desmodur® N 75 MPA/X	75	250		16.50	255				●	●	●	●		
Desmodur® Z 4470 MPA/X	70	1,500		11.90	360				●	●	●			
Desmodur® Z 4470 SN	70	2,000		11.90	360				●	●	●			
Prepolymers based on aliphatic isocyanates														
Desmodur® E 2863 XP	100	1,400		11.00	380				●	●	●	●		
Desmodur® XP 2599	100	2,500		6.00	700	●	●	●		●				
Desmodur® XP 2617	100	4,250		12.50	335		●	●					●	
Desmodur® VPLS 2371	100	9,800		3.70	1,100		●	●		●			●	
Desmodur® XP 2747	100	2,600		16.90	250	●	●	●				●	●	
Desmodur® XP 2838	100	3,000		21.00	200			●		●				
Desmodur® XP 2840	100	500		23.00	185		●	●		●				
Desmodur® XP 2860	100	500		20.00	215			●	●	●	●		●	
Desmodur® XP 2406	80	7,000		2.80	1,500	●		●		●				
Polymeric MDI products/ Prepolymers based on MDI														
Desmodur® VL	100		90	31.50	135	●	●	●		●	●			
Desmodur® VL R 10	100		120	31.50	135	●		●		●				
Desmodur® VL R 20	100		200	31.50	135	●		●		●				
Desmodur® VL 50	100		23	32.50	130	●		●		●			●	
Desmodur® VH 20 N	100		280	24.50	170	●		●		●				
Desmodur® XP 2551	100		66	32.00	130			●		●				
Desmodur® E 20100	100	1,100		15.70	265		●							
Desmodur® E 21	100		5,400	16.00	260		●			●	●	●		
Desmodur® E 22	100	2,800		8.60	490		●			●	●			
Desmodur® E 23	100	1,800		15.40	270		●			●	●			
Desmodur® E 29	100		220	24.00	175		●			●	●			
Desmoseal® M 280	80	33,000		2.10	2,000	●	●	●		●			●	
Desmodur® E XP 2723	100		1,500	15.40	270	●	●	●		●			●	
Desmodur® E XP 2727	100	800		15.25	275			●		●	●			
Desmodur® E XP 2762	100	2,800		15.90	265	●	●	●		●			●	

PRODUCTS	KEY FIGURES (SUPPLY FORM)					TECHNOLOGY			APPLICATION AREA										
	SUPPLY FORM [%]	VISCOSITY AT 23°C [mPa · s]	VISCOSITY AT 25°C [mPa · s]	OH CONTENT [%] IN RELATION TO SUPPLY FORM	NCO CONTENT [%] IN RELATION TO SUPPLY FORM	EQ WEIGHT [g/mol]	1K MOISTURE-CURING		1K STP	1K UV	INDUSTRIAL FLOORING	SPORTS FLOORING	DECORATIVE FLOORING	PARKING DECKS	WATER-PROOFING MEMBRANES	GARAGES & BASEMENTS	WALL & FASSADES	PARQUET	SEALANTS
Prepolymers based on TDI																			
Desmodur® E 1160 MPA/X	60	550		5.4	775														●
Desmodur® E 1361 MPA/X	61	250		6.8	615														●
Desmodur® E 14	100	6,800		3.30	1,270		●	●		●				●	●				●
Desmodur® E 15	100	7,000		4.40	955	●		●		●				●	●				
Desmodur® L 67 MPA/X	67	1,600		11.90	350			●		●	●	●					●	●	
Blocked TDI-Prepolymers																			
Desmocap® 11	100	100,000						●			●			●				●	
Desmocap® 1190	90	30,000						●			●			●				●	
Desmocap® 12	100	40,000						●			●			●				●	
Desmocap® 14 CNB	100	30,000						●			●			●				●	
Waterdispersible polyisocyanates																			
Bayhydrol® XP 2547	100	650		22.50	650			●		●	●	●	●	●	●	●	●		
Bayhydrol® XP 2451/1	100	800		20.30	207			●		●	●	●	●	●	●	●	●		
Bayhydrol® 3100	100	2,800		17.40	240		●	●									●	●	
Bayhydrol® 304	100	4,000		18.20	230			●										●	
Bayhydrol® 305	100	6,500		16.20	260			●										●	
Bayhydrol® XP 2700	65	77		10.6	400			●										●	
Bayhydrol® 2858 XP	70	500		13.3	316			●										●	
Aqueous acrylic polyol dispersions for waterborne 2K																			
Bayhydrol® A 2457	40			2.7				●		●	●	●	●	●	●	●	●		
Bayhydrol® A 2542	50			3.8				●		●	●	●	●	●	●	●	●		
Bayhydrol® A 2546	41			4.1				●		●	●	●	●	●	●	●	●		
Bayhydrol® A 2646	50			3.8				●		●	●	●	●	●	●	●	●		
Bayhydrol® A 242	42			2				●		●	●	●	●	●	●	●	●		
Bayhydrol® A 2846	40			1.5				●										●	
NH-reactive resins, Aspartics for coatings																			
Desmophen® NH 1220	100	100			234			●				●							
Desmophen® NH 1420	100	1,500			276			●		●	●	●	●	●	●				
Desmophen® NH 1422	100	1,500			276			●											
Desmophen® NH 1520	100	1,500			290			●			●								
Desmophen® NH 2850 XP	100	120			290			●		●	●	●	●	●	●				

PRODUCTS	KEY FIGURES (SUPPLY FORM)					TECHNOLOGY			APPLICATION AREA					
	SUPPLY FORM [%]	VISCOSITY AT 23°C [mPa · s]	OH CONTENT [%] IN RELATION TO SUPPLY FORM	EQ WEIGHT [g/mol]	NCO CONTENT [%] IN RELATION TO SUPPLY FORM	1K MOISTURE-CURING		1K STP	INDUSTRIAL FLOORING	DECORATIVE FLOORING	WATER-PROOFING MEMBRANES	WALL & FASSADES	SEALANTS	
		VISCOSITY AT 25°C [mPa · s]	1K PUR			2K	1K UV	SPORTS FLOORING	PARKING DECKS	GARAGES & BASEMENTS	PARQUET			
Polyols – the reactive partners														
Desmophen® 1100	100	30,500	6.50											
Desmophen® 1200	100	23,500	5.00											
Desmophen® C 1100	100	3,200	3.30	500		●	●			●				●
Desmophen® C 1200	100	16,500	1.70	1,000		●	●			●				●
Desmophen® VPLS 2249/1	100	1,900	15.50				●							
Desmophen® VPLS 2328	100	800	8.00				●			●				
Desmophen® 650 MPA	65	20,000	5.30	320			●		●	●	●			
Desmophen® 651 MPA/X	65	25,000	5.50	310			●		●	●	●			
Radiation curing polyurethane dispersions														
Bayhydrol® UV 2280	39													●
Bayhydrol® UV 2282	39													●
Bayhydrol® UV 2317/1	37													●
Aqueous high molecular weight polyurethane dispersions														
Bayhydrol® UH 240	40					●	●							●
Bayhydrol® UH 340/1	40					●	●							●
Bayhydrol® UH 2342	35					●	●							●
Bayhydrol® UH 2557	35					●	●							●
Bayhydrol® UH 2558	37					●	●							●
Bayhydrol® UH 2593/1	35					●	●							●
Bayhydrol® UH XP 2719	40					●	●							●
Impranil® DLU	60					●				●				
Silan-terminated polyurethanes														
Desmoseal® S XP 2458	90	35,000					●			●				●
Desmoseal® S XP 2636	100	40,000					●							●
Desmoseal® S XP 2749	100	4,500					●							●
Desmoseal® S XP 2774	100	50,000					●			●				●
Desmoseal® S XP 2821	100	20,000					●							●

Abbreviations used in tables

- 1K = One-component
- 2K = Two-component
- 3K = Three-component
- BA = Butyl acetate
- BG = Butyl glycol
- CNB = Cashew nut shell liquid blocked
- DPGDME = Dipropylene glycol dimethyl ester
- EA = Ethyl acetate
- EDIPA = Ethyldiisopropylamine
- EP = Epoxy resin
- HDI = Hexamethylene diisocyanate

- MDI = Diphenylmethane diisocyanates (methylene diphenyl diisocyanate)
- MEK = Methyl ethyl ketone
- MFT = Minimum film formation temperature
- MPA = 1-methoxypropyl acetate-2
- MIBK = Methyl-isobutyl ketone
- NMP = N-methyl pyrrolidone
- PAC = Polyacrylate
- PnB = Dowanol PnB
- PUR = Polyurethane
- SN = Solvent naphtha 100

- TDI = Toluene diisocyanate
- TriEtA = Triethanolamine
- TSCA = Toxic Substance Control Act (U.S. Agency for Toxic Substances & Disease Registry)
- UA = Unsaturated acrylate
- UP = Unsaturated polyester
- VOC = Volatile organic compounds
- X = Xylene

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!

