



Transforming cast PU
Unleashing specific properties



Qualify cast PU for applications requiring challenging properties

How to further improve the versatility of cast PU

The realm of materials engineering continues to evolve, providing exciting opportunities to enhance and adapt the properties of various elastomeric materials. Cast polyurethane (PU) has long been a versatile and popular choice for a wide range of applications, but it does not always develop the specific properties required for demanding applications.

Covestro explored all the possible solutions to confer or improve specific properties to cast PU:

- antistatic or low resistivity
- fire resistance
- heat dissipation
- hydrolysis resistance
- fungal resistance
- bacterial resistance
- UV stability
- abrasion resistance



Cast PU may not naturally meet all these attributes with a level of excellence. The solutions we developed take up the challenges of transforming cast PU into the material of choice able to meet the extreme requirements of specific applications.

Benefits of cast PU transformation are multiple

Transforming cast PU opens the door to new possibilities as specific properties are essential for numerous applications. Cast PU, once limited by its inherent properties, can now be adapted to meet the unique requirements of various industries and applications with several benefits:

Unlimited potential

These solutions greatly expand the range of applications where cast PU can be effectively used. Depending on the application's environment, they unlock a world of possibilities.

Customization

Our solutions offer a highly customizable approach to tailoring cast PU for specific applications. Manufacturers can fine-tune the material to meet the precise needs of a given industry, providing an effective and efficient solution.

Reliability

While these solutions transform cast PU, the mechanical properties of the material have been balanced to ensure that the material retains the level of performance required for the applications.

Safety and compliance

In applications that require fire resistance, anti-fungal, or anti-bacterial properties, additives can ensure that the material complies with safety and regulatory standards, making it suitable for sensitive environments such as healthcare and construction.

Choose the properties that unlock the world of possibilities for cast PU

Antistatic properties

Typically, cast PU acts as an insulator, offering substantial resistance to electric current flow. However, in specific environments or applications, static electricity can occur. To counter this buildup and avoid any risks like fire hazards, damage to electronics, or interference with machinery due to sudden discharges, an antistatic agent is formulated and introduced into the cast PU mixture.

Typical applications

Wheels, Pipe Inspection Gauges, rollers, railway connectors, unloading pipes in dusty environments

Wear resistance

Cast PU is already known for its excellent resistance to wear. However, specific applications require even better wear resistance properties, notably to extend the service life. We have developed a solution capable of improving the abrasion resistance of cast polyurethane.

Typical applications

Mining and agricultural applications, wheels, rollers

Biocide properties

Under specific conditions involving moisture and warmth, fungi or bacteria can thrive on surfaces within cast PU applications. This growth raises concerns due to its impact on altering the material's mechanical properties, potentially leading to its deterioration or destruction. Our solutions are specifically designed to prevent the growth or spread of fungi and bacteria.

Typical applications

Mining screens, scrapers for agriculture, marine applications

Fire resistance

For some cast PU applications, safety regulations demand the material to shield against the effects of fires. These standards necessitate the material to function as a fire retardant, emitting fewer toxic gases and smoke. We have identified solutions that empower cast PU to meet and pass fire resistance standards.

Typical applications

Gaskets, mining screens, conveyor belts

UV stability

Exposure to ultraviolet radiation can change the molecular structure of polymers. Known as photo-degradation, it can lead to deterioration and damage the application. To prevent any risks of failure, we have developed solutions to guarantee UV stability that limit the action of ultraviolet radiation.

Typical applications

Printing rollers, squeegees, bend stiffeners, bollards

Antihydrolysis properties

For cast PU, hydrolysis can pose a significant risk, leading to extensive damage. It degrades the polymer structure, weakens mechanical properties, alters appearance, and ultimately results in material breakdown. We developed a strategy to counter this water-induced reaction, enabling applications to effectively mitigate the damaging process of hydrolysis.

Typical applications

Offshore applications, water cleaning applications, hydrocyclones, wheels in high moisture conditions, Pipe Inspection Gauges, scrapers



Covestro Elastomers SAS
46 avenue des Allobroges - BP 116
26103 Romans cedex - FRANCE
TEL +33 4 75 72 72 75

info.elastomers@covestro.com

elastomers.covestro.com

The manner in which you use our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products to determine suitability for your processing and intended uses. Your analysis must at least include testing to determine suitability from a technical, health, safety, and environmental and regulatory standpoint. Such testing has not necessarily been done by Covestro, and Covestro has not obtained any approvals or licenses for a particular use or application of the product, unless explicitly stated otherwise. If the intended use of the product is for the manufacture of a pharmaceutical/medical product, medical device¹ or of pre-cursor products for medical devices or for other specifically regulated applications which leads or may lead to a regulatory obligation of Covestro, Covestro must explicitly agree to such application before the sale. Any samples provided by Covestro are for testing purposes only and not for commercial use. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information, including technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed by you that you assume and hereby expressly release and indemnify us and hold us harmless from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent. The values presented are typical values only. Unless explicitly agreed in written form, they do not constitute a binding material specification or warranted values.

¹) Please see the «Guidance on Use of Covestro Products in a Medical Application» document.