



ARLANXEO

Performance Elastomers

BAYPREN® ADHESIVES PRODUCT PORTFOLIO

Nowhere visible but everywhere present in everyday life:
contact adhesives based on Baypren® from ARLANXEO

www.arlanxeo.com

Baypren® – Polychloroprene for contact adhesives

ARLANXEO's polychloroprene is a polymer made from the monomer 2-chloro-1,3-butadiene. It is produced by state-of-the-art processes with over 60 years of experience. Good resistance against ozone and oxidative stress, excellent solubility in many organic solvents and solvent mixtures, as well as a high rate of crystallization make it ideal for the production of solvent based contact adhesives. Contact bonding requires the application of the adhesive on both substrates. After brief surface drying the substrates are joined with pressure within the open time (contact bonding time) of the adhesive. One of the most prominent features of adhesives based on Baypren® is the high initial strength that is established instantly with joining. The bonded substrates can be handled immediately, fixation of the substrates until the cure is finalized is not needed. The initial strength as well as the open time can be influenced by the pressure during bonding. The higher the pressure, the higher is the initial strength and the longer is the contact bonding time (see chart).

Following momentary strength, crystallization of the polychloroprene further increases cohesion, resulting in a final bond strength, that exceeds the adhesion strength achievable with contact adhesives based on natural or nitrile rubber by far.

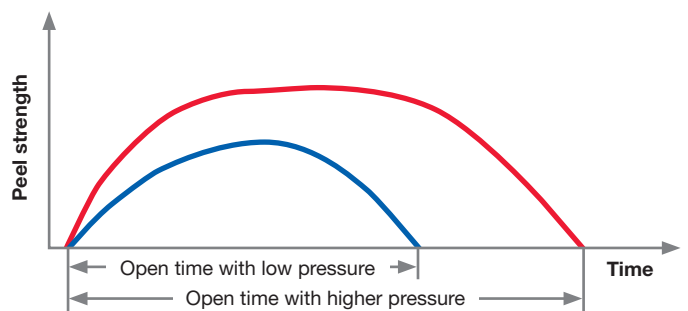
Apart from their simple, economical processing, contact adhesives based on Baypren® are distinguished by their excellent adhesion to a wide range of materials. Additionally they allow formation of soft bond lines for the joining of flexible substrates like rubber, foamed material or leather.

Main application industries

The demand for contact adhesives based on Baypren® is particularly high in the shoe industry, in fabrication of mattresses, in furniture production, in the construction and automotive industry and in the do-it-yourself sector.



Initial strength as a function of open time and applied pressure during bonding



BAYPREN®

SELECTION OF GRADES

Choice of crystallization rate and solution viscosity

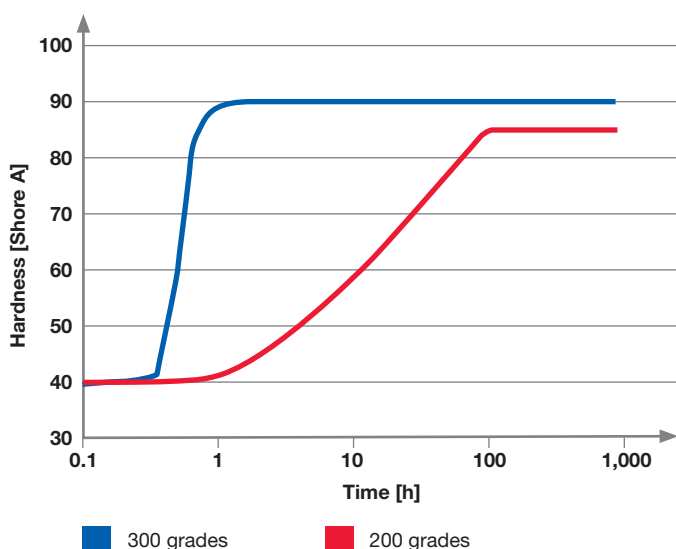
The Baypren® portfolio is consisting of two product lines, distinguished by their rate of crystallization. Crystallization of polychloroprene can be followed by measuring the Shore A hardness increase at -10 °C over time. As shown in the chart below, the 300 grades are crystallizing more readily and are reaching a higher final degree of crystallization than the 200 grades. Within both product lines different grades with varied viscosities (chain lengths) are available, to allow the choice of the best suiting raw material for the distinct application.

Fast crystallizing 300 grades

The fast crystallizing 300 grades are giving contact adhesives with high initial strength, high final strength and rapid bond formation. These adhesives are specially useful in industries with fast production cycles like the shoe industry. Due to the high initial strength, production processes following the bonding step can be done at once. The joined substrates can be handled immediately, without waiting for the final setting of the adhesive.

Baypren® can be dissolved directly, without a previous milling step. Most of the grades are delivered in approx. 2 mm chip thickness allowing a fast solvation of the polymer. Polymers with long chain length generally need a longer solvation time. To offset the longer solvation times the high viscosity grades Baypren® 340-2 to 350-2 are produced in 1 mm chip thickness.

Crystallization of the Baypren® adhesive grades at -10 °C

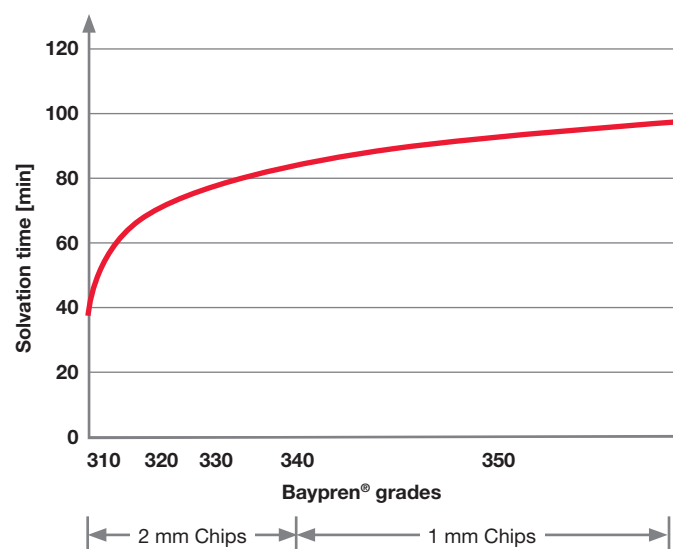


If the final application is challenging regarding flow properties of the adhesive, milling of the chips is helpful to reduce viscosity and normal stress of the adhesive formulation. With the Baypren® adhesives portfolio, the thiuram modified grades Baypren® 321 and 331 are specially suitable for milling and the preparation of smooth, easy-to-apply adhesives. Under unfavorable conditions, e.g. in the presence of certain leather greases or in contact with iron, the use of thiuram modified grades bears the risk of producing a yellowish discoloration. When bonding sensitive, light-colored materials, it is advisable to use the thiuram-free Baypren® grades.

Medium fast crystallizing 200 grades

In cases where high initial bond strength is not needed (e.g. flooring or roofing) the medium fast crystallizing Baypren® grades of the 200 range can be used. They prolong the open time of the adhesives, enhancing processing reliability and give a softer, more flexible bond line. The medium fast crystallizing Baypren® grades can be used both on their own or in combination with fast crystallizing Baypren® grades. Additionally the blending of grades of different viscosities is without problem, allowing the formulation of an adhesive with well-fitting viscosity and crystallization for the distinct application.

Solvation time of Baypren® 300 grades in toluene (5 wt.-% solutions)



Choice of solvent

Baypren® adhesive raw materials are soluble in many organic solvents and solvent mixtures. The solvent or solvent mixture used to produce the adhesive can have a considerable influence on:

- the viscosity of the adhesive
- the compatibility of the adhesive with an added crosslinking agent
- the behavior of the adhesive during storage at low temperatures
- the appearance of phase separation during the storage of resin-containing adhesives
- the wetting of the substrate surface
- the drying of the adhesive film
- the open time of the adhesive film
- the curing rate of the bond

Apart from the influence on the technical properties of the adhesives, the physiological effect of the solvents also has to be considered. The use of certain solvents is subjected to restrictions or is completely banned in some countries. Furthermore, attention must be paid to the flammability of many solvents and their ability to form explosive mixtures with air.

Modification of the adhesive formulation

Addition of zinc oxide and magnesium oxide to the adhesive formulation is advisable as these metal oxides are acting as acid scavengers and are increasing the bond strength. In combination with an alkyl phenolic resin magnesium oxide is additionally enhancing the temperature resistance of the bond. Resins in general are added to increase contact bonding time and tack.

If formulated well, adhesives based on Baypren® can be used in combination with isocyanates in two part adhesives, giving adhesives with higher cohesion, heat stability and adhesion to difficult-to-bond substrates.

Grades from the 300 product line are additional suitable for grafting with methyl methacrylate (MMA). By grafting with MMA, the adhesion to plasticized polyvinylchloride (PVC) is enhanced. If the grafting reaction is not possible, the adhesion to plasticized PVC can significantly be improved



■ Perfectly suited, efficient, economical – Baypren® adhesives, on which industries such as furniture production rely on

by addition of Levamelt® (ethylene vinyl acetate copolymers with 40 – 90 wt % vinyl acetate content) to the adhesive formulation.



■ High performance adhesives based on Baypren®

Fast crystallizing Baypren® adhesive grades

Grade	Chip-size [mm]	Viscosity [mPa s] 10 wt.-% solution in toluene
Standard grades		
310-1	approx. 2	70 – 220
310-2	approx. 2	220 – 380
320-1	approx. 2	350 – 550
320-2	approx. 2	550 – 810
330-1	approx. 2	700 – 1,000
330-2	approx. 2	900 – 1,400
340-1	approx. 2	1,130 – 1,800
340-2	approx. 1	1,600 – 2,500
350-1	approx. 1	2,200 – 4,000
350-2	approx. 1	2,500 – 5,300
Thiuram modified grades		
321-1	approx. 2	350 – 550
321-2	approx. 2	550 – 810
331-1	approx. 2	700 – 1,000
331-2	approx. 2	900 – 1,400

Medium fast crystallizing Baypren® adhesive grades

Grade	Chip-size [mm]	Viscosity [mPa s] 10 wt.-% solution in toluene
Standard grades		
213-1	up to 10	70 – 220
213-2	approx. 2	220 – 380
223-1	approx. 2	350 – 550
223-2	approx. 2	550 – 810
233-1	approx. 2	700 – 1,000
233-2	approx. 2	900 – 1,400
243-1	approx. 2	1,130 – 1,800
243-2	approx. 2	1,600 – 2,500
253-1	approx. 2	2,200 – 4,000
253-2	approx. 2	2,500 – 5,300

Medium fast crystallizing Baypren® adhesive grades

First digit: Indication of the crystallization rate

2 = medium

3 = fast

Second digit: Indication of the viscosity

1 = low

2 + 3 = medium

4 = high

5 = very high

Third digit: Indication of special properties

0 + 3 = standard grades

1 = thiuram modified grades

Fourth digit: Viscosity (subcategory)

1 = lower viscosity range

2 = higher viscosity range

Supply form

To ensure consistent pourability, the flat ivory colored Baypren® chips are talc coated. The material is filled in 25 kg multilayered paper bags, inside PE-coated and delivered on a wooden pallet containing 40 bags (net weight per pallet 1000 kg), covered by a PE shrinking film.

Thickness of Baypren® chips (approximate)



up to 10 mm:
Baypren®
213-1

2 mm: Baypren®
213-2 to 253-2
Baypren®
310-1 to 340-1

1 mm:
Baypren®
340-2 to 350-2

Your contact to Baypren® experts

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Trial product:

(VP = Versuchsprodukt = trial product). The information contained herein is merely preliminary. Testing as to properties and applications is not final. Further information, including data which could change or add hazards with use, may be developed by the manufacturer, the user or a third-party institute. Such information may be needed to properly evaluate or use this product. Use is undertaken at the sole risk of the user.

Quality & Environmental Management:

Baypren® is produced under strict control regarding safety, environmental protection and quality. The whole supply chain, from production to customer service, is covered by ISO 9001 and ISO 14001 certification.

Product Safety:

Relevant safety data and references as well as the possibly necessary hazard warning labels can be found in the Material Safety Data Sheets.

Health and Safety Information:

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the ARLANXEO products mentioned in this publication. For materials mentioned which are not ARLANXEO products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. Consult us through your ARLANXEO representative or the Health, Safety, Environment and Quality Department (HSEQ) of ARLANXEO.

Regulatory Compliance Information:

Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, BfR, NSF, USDA and CPSC. If you have any questions on the regulatory status of these products, contact your ARLANXEO representative.

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