



KNOWLEDGE



EDUCATION

BETTER  
RESULTS  
THROUGH  
KNOWLEDGE

OUR MISSION



SUPPORTED BY

# Influence of temperature

## FACTSHEET



## GLOBAL LEADER IN ADHESIVE TECHNOLOGIES

Bostik is one of the largest adhesive and sealant companies. Worldwide, we employ some 6,000 people in 50 countries across five continents. Our customers come from diverse markets, most notably the industrial manufacturing, construction and consumer sectors.

## SMART INNOVATIONS

Our smart identity is underpinned by innovation. We pursue innovation vigorously, applying the latest technological advances to developing 'smart' adhesives. Our archives are laden with examples of Bostik technologies that have disrupted markets - from potato starch-based wallpaper paste to elastic attachment adhesive for diapers.

Today, our commitment to innovation is as strong as ever. We innovate with our customers through a global R&D network, comprising three international Smart Technology Centres and 8 regional centres. And we differentiate our business through this investment.



## Influence of temperature

### INFLUENCE OF TEMPERATURE IN STORAGE AND/OR APPLICATION

Be aware of where and how you store your materials and when your climate during storage falls out of Bostik's prescribed and recommended specifications. (too) High and (too) low temperatures can have an adverse effect on the product and its processing.

In the technical documentation for of all Bostik products the minimum shelf life after production is given as between + 5°C and +25°C. When products are stored in higher temperatures this will shorten their shelf life. A

maximum temperature of +45°C can be maintained. Above this temperature problems might occur. For instance, too much pressure may build up in canisters of PU foam. In neutral silicone sealants the chemical reactions can be changed. Temperatures below +5°C until ca. -5°C do not directly cause problems. Below -5°C dispersion products can freeze. Most dispersion products like Bostik A325 UNIVERSAL ACRYLIC can be thawed once frozen, and be used normally.

In silicone sealants that contain acid, the cross linker can crystallize at temperatures below -5°C. By warming the sealant to above +5°C this crystallization can be reversed.

### INFLUENCE OF TEMPERATURE DURING APPLICATION

#### Influence of material in the packaging

Generally, materials will be thinner at higher temperatures and thicker at lower temperatures, making the required pressure during application dependent on the temperature. Exceptions to this are silicone based products, which are almost totally indifferent to temperature. Thinner products normally do not cause any problems during application. At lower temperatures some products can be more difficult to process, hybrid sealant or PU-sealant. We recommend storing as described above. Quick heating on the construction site in warm or hot water is not recommended, as the cartridge itself can reach +50°C to +60°C while the sealant within is still cold and rigid. Use in air pressured guns can cause problems, as the hot cartridge can deform allowing air in the cartridge. This air will leave the cartridge together with the sealant, causing many irregularities.



### **Influence of temperature during application**

Temperatures, but also air humidity during the application of the products, which fall outside the prescribed and recommended specifications of Bostik, are of influence on the skin forming time, but also on the curing time of the applied product.

All sealants can be processed from + 5°C. This temperature is given because at lower temperatures condensation or ice can occur on the surfaces. This could make the bonding of the sealant fail. In controlled circumstances some products can be applied below +5°C. Each situation should be individually assessed. Temperatures up to +30°C to +40°C do not cause problems with application. It has to be taken into account that during warm periods all building materials and construction(s) expand, making the joint smaller. When the joints expand later on when temperatures drop, constant pressure will be placed on the sealant, increasing the chance for de-bonding. For this reason it is not recommended to seal highly operating joints during hot weather, or in full sunlight. Solvent based sealants should not be used in full sunlight, as this can cause blistering of the sealed joint.

### **Influence of temperature after application**

While the sealant is curing, 1-component, moisture cured products this might take up to a few weeks, depending the type and layer-depths) the sealant is too sensitive to too much operation in the joint. During periods of high temperature fluctuations the joints are exposed to the shrinkage and expanding of building materials. When this happens during curing, in extreme situations the sealant can become deformed, showing cracks or surfaces pressed together in the sealant joint. When the sealant is completely cured, it's elasticity can be fully utilized. Higher temperatures will not cause many problems. Temperatures as low as -10°C will make the sealant more rigid, while due to the cold and shrinkage, the joints are at their widest. Maximum pressure is now exerted on the sealed joint. The exception to this is the silicone based products, being indifferent to temperature, and being as elastic at -10°C as at +20°C. This is why mostly neutral silicone sealants with low modulus are used for dilatation joints in facades. Products based on hybrid technology maintain elasticity over a wide range of temperatures.

#### **Disclaimer**

All information in this document and in all our other publications (including electronic ones) is based on our current knowledge and experience and is the exclusive (intellectual) property of Bostik. No part of this document may be copied, shown to third parties, reproduced, communicated to the public or used in any other way without Bostik written consent. The technical information in this document serves as an indication and is non-exhaustive. Bostik is not liable for any damage, either direct or indirect, due to (editorial) errors, incompleteness and/or incorrectness of this document. This includes, but is not limited to, incompleteness and/or incorrectness due to technological changes or any research conducted between the date of publication of this document and the date on which the product is acquired. Bostik reserves the right to amend the wording of this document. Bostik cannot be held liable for any damage, either direct or indirect, due to the use of the product depicted in this document. The user must read and understand the information in this document and other documents relating to the products prior to the use of the product. The user is responsible for performing all the requisite tests to make sure that the product is suitable for its intended use. We have no influence in what way the product is applied and/or any circumstances relating to events occurring during storage or transport and therefore we do not accept any liability for damage. All deliveries are made exclusively in accordance with our general terms of conditions which have been filed at the Dutch Chamber of Commerce.