



KNOWLEDGE



EDUCATION

BETTER
RESULTS
THROUGH
KNOWLEDGE

OUR MISSION



SUPPORTED BY

Explaining initial strength

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.



Explaining initial strength

GENERAL INFORMATION

The market for constructive sealants is fast growing. More and more mechanical fasteners are replaced by constructive elastic bonds. In today's building and construction markets ease of use and unburden are trends. Constructive sealants do come with many advantages, of which time saving is one of the key criteria. The proven concept of bonding has been excepted in the aerospace and aviation industries and is becoming more and more accepted in building and construction segment. High modules polyurethane and hybrid sealants are the most common sealants used for this purpose. Compared to mechanical fasteners these sealants are often stronger and don't cause corrosion on metals. Other benefits of using these high module sealants: makes drilling unnecessary, reduces sound transmission and can also provide a watertight seal.

TENSILE STRENGTH

In the sealing and bonding world, technical datasheets display in the technical specification and product performance sections most often the phrase tensile strength. Tensile strength is a measurement of the force required to pull two surfaces bonded with an adhesive, from each other to the point where it breaks. In other words, the tensile strength of an adhesive is the maximum amount of tensile stress that it can take before failure. In our state of the art Bostik laboratories we test accordingly the guidelines of the DIN 53504 S2 and the ISO 37. Tensile strength is often measured in N/mm^2 or MPa.

Adhesives with a high tensile strength, such as the **Bostik H550 SEAL'N'BOND ALL-IN-ONE** - which comes with $2,00 N/mm^2$ - do not have the full (tensile) strength available when the product is applied. Therefore high (tensile) strength but low initial tack adhesives need support during its full curing period.

Bostik H785 HIGH TACK and **Bostik H980 HIGH TACK PREMIUM** offer a tensile strength of $2,20 N/mm^2$, but have also the high initial tack properties, an instant bond!



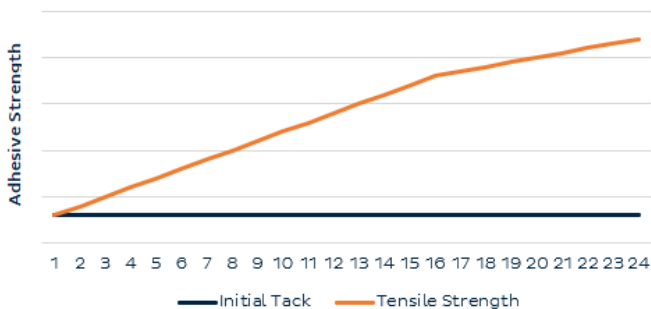
INITIAL TACK

Initial tack is a property that controls the instant bond formation when an adhesive and a surface are brought together. High initial tack adhesives, other than standard adhesives, do have the opportunity to instantly hold two substrates/materials together without the use of supporting the connection during the full cure period. Initial tack adhesives are specially designed to make a heavy adherence application possible on both vertical and horizontal surfaces, even without support materials. Many cartridges available on the market now do show impressive figures of the initial tack or grip capacity of the product. Bostik offers the **Bostik H785 HIGH TACK** and **Bostik H980 HIGH TACK PREMIUM**, which are outperforming on initial tack.

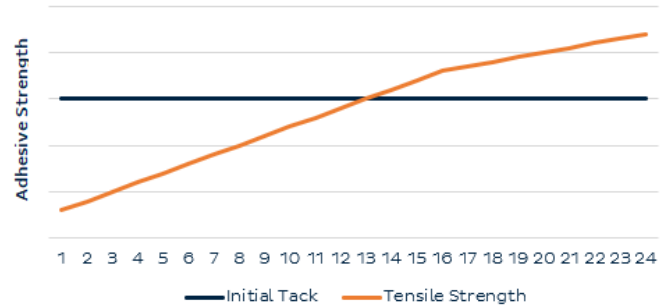
TENSILE STRENGTH VS. HIGH INITIAL TACK

In the two graphs below we have compared two extremely successful products from the Bostik range. The **Bostik H550 SEAL'N'BOND ALL-IN-ONE** and the **Bostik H785 HIGH TACK** both have a comparable tensile strength in the fully cured phase, namely 2.20 N/mm². The difference between these two products is in the initial adhesion. The ability of immediate bond between two substrates. The **Bostik H785 HIGH TACK** has an extreme initial adhesion that does not require support during curing in many situations.

Bostik H550 SEAL'N'BOND ALL-IN-ONE
Initial Tack vs. Tensile Strength



Bostik H785 HIGH TACK
Initial Tack vs. Tensile Strength



MOISTURE CURING PRODUCTS

High initial tack adhesives are mostly one component moisture curing products. These type of products can only cure if moisture is able to reach the product. If an one component moisture curing product is applied between two non-porous substrates, and the surface is completely covered with the sealant, the product will not fully cure. For correct bonding the product must be applied in vertical beads, with a minimum distance between the beads of 30 mm. This will provide correct ventilation between both bonded surfaces so the material is able to cure and accumulation of water can be avoided.

CALCULATION

Results can differ due to applied amount of adhesive, application method, type of substrate and other environmental factors.

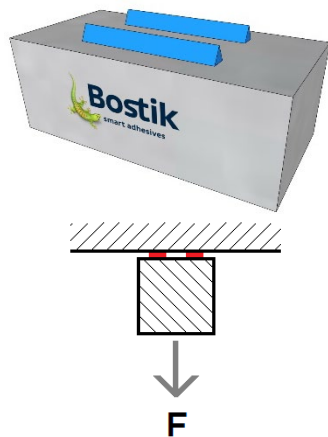
We often see that people start the initial tack calculating based upon strength versus square meter. Now that we have explained the difference in initial tack and tensile strength of an adhesive, we hope that we provided the correct information about what's what. Still, for high initial tack and standard adhesives, it is important to understand how a certain building material will be bonded to a surface. Let us explain.

If we have two identical concrete blocks with a dimension of 100 (w) x 250 (l) x 100 (h) mm with a weight (mass) of 5 kg on which we apply the exact same amount of adhesive, 2 beads of 90 mm in length applied both with an V-nozzle, the position of the adhesive will make a huge difference in correlation with the force acting.



EXAMPLE A:

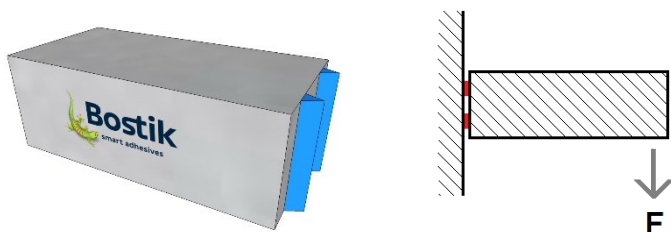
In this situation we apply two beads of **Bostik H785** HIGH TACK of 90 mm in length, applied in the correct way in the middle of the top side and stick it to the ceiling, you will get the following calculation:



The mass of the block is 5 kg. The gravity acting on the block is 9,81 m/s, meaning that the force 'F' ($F = m \cdot a \Leftrightarrow 5 \times 9,81$) equals 49,03 N/5 kg.

EXAMPLE B:

In this situation have an identical concrete block on which we apply two beads of **Bostik H785** HIGH TACK of 90 mm in length, applied in the correct way in the middle of the vertical side and stick it to the wall. The mass and the gravity hasn't changed but an additional force, the 'distance', has to be taken in account.



The equation we need to use is: ' $m = F \times L$ '. The force (F) and the length (L) are two factors we know, so the sum will be ' $m = 49,03 \text{ (N)} \times (1000/250\text{mm})$ '. The mass of the so called free hanging part of the concrete block equals 196,12 N/20 kg.

APPLICATION GUIDELINES H785 AND H980

- Although **Bostik H785** HIGH TACK and **Bostik H980** HIGH TACK PREMIUM are the highest initial strength constructive elastic adhesives available, we always recommend testing prior to the application
- Prepare always both surfaces, clean them thoroughly and follow the surface preparation as mentioned in the technical data sheet **Bostik H785** HIGH TACK and **Bostik H980** HIGH TACK PREMIUM
- Apply the **Bostik H785** HIGH TACK and **Bostik H980** HIGH TACK PREMIUM with the attached V-shaped nozzle

APPLY IN AN 90° ANGLE TO ONE OF THE TWO SURFACES

- Always apply the **Bostik H785** HIGH TACK and **Bostik H980** HIGH TACK PREMIUM beads vertically for optimum ventilation and to avoid water accumulation
- Always ensure centre-to-centre distance/spacing between the **Bostik H785** HIGH TACK and **Bostik H980** HIGH TACK PREMIUM with a minimum of 30 mm.
- If in doubt, use of support is recommended

CONCLUSION

Although the two block are 100% identical as is the amount of applied adhesive, the result in 'F', Force, working on the adhesive is different in situation B compared to situation A. So to avoid complains, Bostik is not communicating figures for initial tack. However we are still convinced we offer the highest initial grab adhesives in the market.