



Glazing systems

Intro

A good execution of the glazing system significantly influences the durability of the total construction.

For the execution and construction of glazing systems there are standards in place: NEN 3576 and NPR 3577. These standards indicate what glazing systems should be compliant with and how this can be achieved. For a correct application these standards should be consulted. (The Dutch standards can be obtained at Nederlands Normalisatie Instituut). This technical bulletin is meant as a complement to these standards.

Standards

The standards demand that glazing systems should be compliant with water and airtightness as given in NEN 3661. Besides that the glazing system should prevent water to enter the groove, and if water enters the groove it should be eliminated by the glazing system

As sealant joints are applied in a wide range of circumstances during construction, we can never be totally sure the glazing will be watertight, making facilities to eliminate water from the groove mandatory.

In case of glazing placed from the outside this is achieved by using a nose-shaped glazing bead on the bottom sill. In case of glazing placed from the inside, this can be achieved by creating ventilation openings in the bottom sill, connecting the circumferential backlash with the air outside. These are normally drilled under an angle of 45 degrees allowing eventual water to easily drain.

An extra problem with "inside glazing" is that in the event of water entering the construction it can cause water leakage to the inside. In this case water can run underneath the bottom glazing bead. To prevent this the standards prescribe to apply a "bead seal" in these cases, acting as a water-stop.

The NPR 3577 is a Dutch Practical Guideline indicating how the job should be done to be compliant with NEN 3576. This standard is introduced in 1988 and adjusted to current insights in November 2011.

For every glazier it is of importance to know what this standard indicated about dimensions, size of sealant joints, distance between nails or screws fixing the glazing beads etcetera.

Not only of importance to get a good end result, but also in case of eventual damage claims, as glazing not conform the standard can be rejected.

In the NPR two sealant systems for glazing are mentioned: System K (sealing with elastically sealant) and System P (sealing with rubber profiles).

For system K the revised standards indicate, elastically sealant compliant to International standard ISO 11 600 (Class G 20 LM+HM and Class G 25 LM+HM) should be used as glazing sealant.

Surfaces

With glazing we mostly deal with wooden or steel frames provided with one or more layers of coating.

Although glazing sealants do bond well to these layers, it can happen the coating contains substances who prevent this bonding. E.g.: paraffin based weakeners or wax additives added to the powder coating.

The only manner to be assured of good bonding to these surfaces is the execution of a bonding test, by applying a small amount of sealant, and judge bonding after it has been cured.

While applying the foam tape and sealant joint the surface should be clean, dry and free of grease, with a minimal temperature of +5°C.

P.E. Tape

Start with applying the self-adhesive PE tape in the right thickness (minimal 4mm) and the right width. Apply tape to the groove and the glazing bead (do not extract tape) leaving a minimal depth of 6mm for the sealant joint. Apply as straight as possible.

Supports

Apply two supports to the lower sill. Wedge-shaped supports for the sloping under sill with outdoor glazing. Place the blocks at 1/4th of the width, allowing the glass to stand in the frame free of tension. Place the glass on the supports and press it well to the tape in the frame.

Application of elastic sealant

Completely fill joints of minimal 4mm wide 6mm deep, on the inside and outside. The joint needs to be **fully filled** without the lock-in of air, which can be prevented by letting sealant run in front of the nozzle during application.

In joint which are insufficiently filled there is a big risk the sealant did not contact the frame or glazing bead and so does not bond to it.

Finishing

The surplus of sealant can, dependent to the type of sealant, be smoothed dry or wet. When smoothed wet the best is to use a soapy-water of pure soap. When joints are smoothed with soapy-water, a somehow "greasy" layer remains, which can interfere with the lacquer applied later on. Lower bonding and paint cracking can be the result. Before painting the surface needs to be cleaned.

Choice of sealant

For glazing a number of elastic glazing sealants can be used. The choice of sealant can be influenced by several factors e.g. paint ability of sealant, type of glass.

The overview on the next page shows which sealant is best used for what application



X = Suitable 0 = Limited suitability - = Not suitable		Monustop	Putty paint	Silstop	Hybriseal 2PS*	Spurflex 25	Windowseal Plus	Sil-Sealant BB	Sil-Sealant N	Sil-Sealant NO	Pyropol
Compliant to ISO 11600 class G20-25 LM-HM		-	-	-	X	-	X	X	X	X	X
Suitable as "bead seal" conform NPR 3577		X	-	X	X	X	X	-	X	X	X
Burglar-proof		-	-	-	X	X	X	X	X	X	X
Fire-resistant		-	-	-	-	-	-	-	-	-	X
Single Glass	Side	X	X	X	X	X	X	X	X	X	X
	Face side	X	X	X	X	X	X	X	X	X	X
Insulation Glass	Side	X	-	X	X	X	X	X	X	X	X
	Face side**	X	-	X	X	X	X	-	X	X	X
Layered Glass***	Side	X	-	X	X	X	X	-	X	X	X
	Face side	X	-	X	X	X	X	-	X	X	X
Suitable for	Poly-acrylic glass	-	-	-	-	-	-	-	X	-	X
	Poly-carbon glass	-	-	-	-	-	-	-	X	X	X
	"self-cleaning" glass	-	-	-	X	-	-	-	-	-	-
Paint able see TB122013-005	With Alkyd paint (synthetic)	X	X	X	X	X	X	-	-	-	-
	With Dispersion paint (water based)	X	-	X	X	X	X	-	-	-	-

* excluded transparent.

** A big number of combinations of sealants with systems of insulation-glass is tested and are either found to be sufficient or not. However it is not possible to test every combination, where it is worth to be mentioned systems can be changed by manufacturer without notice. Test results from the past do not give any secure outcome in future. The given information is only based on experience, where no responsibility can be given. Direct contact of sealant with the edges can best be avoided.

*** Layered glass can show delamination of the foil between glass (mostly a depth up to 10mm), also white rash in the foil (by affection of water or damp).

The eventual appearance of this "affection" is cause by plural factors, as:

- ▶ Damages on the edge as a result of transport or cutting to the right size.
- ▶ Intensity of moisture and UV-exposure after placement.
- ▶ Type of sealant, which contacts directly with the foil.
- ▶ The applied layer of sealant (a thicker layer needs longer curing, causing the soft sealant to contact the foil for a longer time).

The sealants marked with 'X' have shown the best results in practice. Due to sensitivity of foils the result cannot be granted.



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Use of putty paint

For new building projects putty paint is no longer used. However we still have buildings featuring glazing systems with putty paint. When renovating these building sometimes the bead of putty paint is replaced by a wooden glazing bead. When allowed by construction the single glass is replaced by insulation. Other objects are close with the same materials as has been done originally. Putty paints with or without an added hardener are still available, but can actually only be used with single glass. To cap insulation glass "putty paint" based on silicon (Zwaluw Sil Stop) or MS polymer (Zwaluw Monustop) can be used. These products have a significant better bonding to glass and frame, are more elastic and are insensitive to wrinkling or cracking. Also for combinations of new types of glass in old frames Zwaluw Monustop is applicable.

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Den Braven Sealants warrants that the product complies, within its shelf life, to its specification. The liability shall in no case exceed the amount fixed in our Condition of Sale. In no event Den Braven Sealants is liable for any kind of incidental or consequential damages.

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Den Braven Sealants B.V.

Denariusstraat 11 | 4903 RC Oosterhout | P.O. Box 194 | 4900 AD Oosterhout | The Netherlands
T +31 (0)162 - 491 000 | F +31 (0)162 - 451 217 | E info@denbraven.nl | www.denbraven.nl