



Den Braven

Glazing systems

Technical Bulletin TB122013-009



KNOWLEDGE



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Glazing systems

Introduction

This technical bulletin is addressing the Dutch market and gives in insight how to interpret and combine local regulations with this bulleting. Please familiarize yourself with local laws and regulations.

A well - constructed glazing system significantly influences the durability of the entire construction. There are standards in place for the execution and construction of glazing systems: NEN 3576 and NPR 3577. These standards indicate with what glazing systems they should be compliant, and how this can be achieved. For correct application, these standards should be consulted. (The Dutch standards can be obtained at Nederlands Normalisatie Instituut). This technical bulletin is intended as a compliment to these standards.

Standards

The standards demand that glazing systems should be compliant with water and airtightness as given in NEN 3661. The glazing system should prevent water from entering the groove. If water does enter 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 elimination of water from the groove mandatory. In exterior glazing this is achieved by using a nose-shaped glazing bead on the bottom sill. In interior glazing this can be achieved by creating ventilation openings in the bottom sill, connecting the circumferential backlash with the air outside. These are normally drilled at an angle of 45 degrees allowing any water easily to drain out.

An extra problem with interior 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 lower glazing bead. To prevent this the standards prescribe applying 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 was introduced in 1988 and adjusted to current insights in November 2011. For every glazier it is of importance to know what this standard indicates about dimensions, size of sealant joints, distance between nails or screws fixing the glazing beads, etcetera. Not only to achieve a good end result, but also in case of eventual damage claims, as glazing not that does not conform to the standard may be rejected.

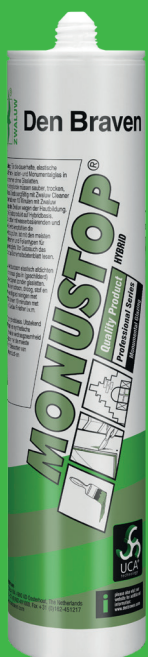
In the NPR two sealant systems for glazing are mentioned: System K (sealing with elastic sealant) and System P (sealing with rubber profiles). For system K the revised standards indicate elastic sealant compliance to International standard CE EN 15651-2:G-CC (Class 20 LM+HM and Class 25 LM+HM) should be used as glazing sealant.

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Surfaces

System K deals with glazing using wooden or steel frames provided with one or more layers of coating. There are instances of the coating containing substances that prevent 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 by performing a bonding test. Apply a small amount of sealant, and judge bonding after it has cured.

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

PE. Tape

Start with applying the self-adhesive PE tape in the correct thickness (minimal mm) and 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. Use 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 x 6mm deep, on the inside and outside. The joint need to be fully filled without any trapped air, which can be prevented by letting sealant run in front of the nozzle during application.

In joints 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 extra sealant can, depending on the type of sealant, be smoothed out dry or wet. When smoothed wet the best is to use soapy water or pure soap. When joints are smoothed with soapy-water, a greasy layer remains, which can interfere with the lacquer to be applied later on. Less bonding and then paint cracking can be the result. Before painting the surface must 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.

		Zwaluw Monustop	Zwaluw Stopverf	Zwaluw Slistop	Zwaluw Hybriseal® 2PS	Zwaluw Windowseal Plus	Zwaluw Silicone-BB	Zwaluw Silicone-N	Zwaluw Silicone-NO	Zwaluw FP Silicone Sealant
 = Suitable  = Limited suitability (test prior to application)  = Not suitable										
Compliant to CE EN 15651-2: G-CC class G20-25 LM-HM					✓	✓	✓	✓	✓	✓
Suitable as "bead seal" conform NPR 3577		✓		✓	✓	✓	✓	✓	✓	✓
Burglar-proof					✓	✓	✓	✓	✓	✓
Fire-resistant*										✓
Single Glass	Side	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Face side	✓	✓	✓	✓	✓	✓	✓	✓	✓
Insulation Glass	Side	✓		✓	✓	✓	✓	✓	✓	✓
	Face side**	✓		✓	✓	✓	✓	✓	✓	✓
Layered Glass*** see TB122013-019	Side	✓		✓	✓	✓		✓	✓	✓
	Face side	✓		✓	✓	✓		✓	✓	✓
Suitable for	Polyacrylic							✓		✓
	Polycarbonate							✓		✓
	"self-cleaning" glass				✓					
Paintable see TB122013-005	With alkyd paint (synthetic)	✓	✓	○	✓	○				
	With dispersion paint (water based)	✓		○	✓	○				

* Fire resistant installation of glass with standard sealants is only possible in combination with flame retardant backer rod material.

** Large number of combinations of sealants with systems of insulation-glass are tested and are either found to be sufficient or not. However, it is not possible to test every combination. Glazing systems can be changed by manufacturers without notice. Test results from the past do not give an accurate outcome in the future. The information provided is based on experience, therefore no responsibility will be taken whatsoever. Direct contact of sealant with the edges must 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 affliction is caused by many factors, such as:
- Damages to the edge as a result of transport or cutting to the correct size.
- Intensity of moisture and UV-exposure after placement.
- Type of sealant, which has contact directly with the foil.
- The layer of sealant applied (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.



Use of putty paint

Putty paint is no longer used in new building projects. However, we still have buildings featuring glazing systems with putty paint. When renovating these buildings, 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 similar to the same materials as have been beautifully, originally restored.

Putty paints with or without added hardener are still available, but can 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 bond significantly better to glass and frames, are more elastic, and are insensitive to wrinkling or cracking. For combinations of new types of glass in old frames Zwaluw Monustop should be used.

Compatibility

The mutual compatibility of all materials used (such as support and setting blocks, films, tapes, coatings, paints and edge sealants) should be tested in advance. Any incompatibility of the applied materials are excluded from warranty and/or liability by Den Braven.

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