Application Guideline / Conditions of Use

POLYGARD®

GENERAL

This document applies to the entire range of the POLYGARD product family and its insulating glass units (IGU).

POLYGARD panes offer maximum safety and at the same time contribute to reducing the thickness and weight of a construction. POLYGARD panes only provide the optimum level of protection in each designated resistance classes when fully captured by a suitable frame on all (four) sides, which is also required due to the visual appearance of the glass edges. At the same time, the frames must comply with the individual resistance classes. Generally, glazing beads shall be installed on the side facing away from the anticipated attack.

POLYGARD typically consists of a variety of multilayer make-ups. Therefore, the glazing guidelines and, in addition to EN ISO 12543 Part 5 and 6, the specific POLYGARD quality guidelines must be taken into consideration.

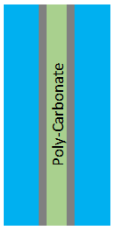
The national standards and guidelines must always be **followed** for installation, transport and storage.

PRODUCT MAKE-UPS

A basic distinction is made between two different POLYGARD product make-ups:

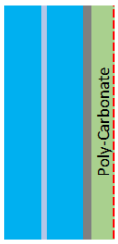
A) Glass combinations with embedded polycarbonate (GPG= Glass/PC/Glass)

Usually burglar-resistant glazing, but can also be bullet-resistant glazing. With this structure, the polycarbonate is protected by the glass panes.



B) Glass combinations with polycarbonate arranged on the protective side toward the room/interior side (GGP= Glass/Glass/PC)

Usually bullet-resistant glazing, but also combinations with burglar-resistant glazing. With this structure, the polycarbonate is exposed to environmental influences and, despite an additional protective coating, is very sensitive to scratches, cracks and chemical attacks when the wrong cleaning agents are used.



TRANSPORT, STORAGE and CONDITIONS OF USE

Transport and Storage

POLYGARD must be transported and stored at temperatures between -10 °C and +50° C. Extreme climatic conditions and exposure to direct sunlight must be avoided.

All POLYGARD glazing units must be stored dry, and must not be exposed to direct sunlight or other heat sources. Similarly, all heat build-up behind the glass caused by curtains, sun blinds, etc., must be avoided.

Each glass must be transported and stored in such a way that each individual pane in the make-up is fully supported. Panes must only be stored and transported vertically. Only suitable intermediate layers or spacers are to be used to prevent direct contact between the surfaces, e.g. cork buttons. It must be ensured that cork buttons in GGP structures adhere to the glass and not to the polycarbonate protective film. Paper interleaves are not suitable.

Conditions of Use

When installed in an unheated or air-conditioned building, the above instructions for storage and transport apply in the same way.

In the case of glazing in rooms with high humidity, inclined or horizontal glazing, glazing with high thermal, static or dynamic loads or insulating glass at altitudes of more than 700 meters above sea level, the customer must provide the supplier with precise information about the conditions at the destination and the type of use of the glass in advance goods and to obtain written approval.

Structural Strength

All products in the POLYGARD product group are non-load-bearing components of structural elements and are not to be exposed to mechanical stress.

Climatic and Environmental Conditions

When installed, the usual climatic conditions of a building in use are presupposed (normal room temperature).

In exterior wall applications, insulating glass unit make-ups with suitable heat or sun protection coatings or external shading must be used to prevent impermissible expansion stress in the product due to excessive temperature exposure. The POLYGARD glasses are always directed towards the interior.

For the same reason, any accumulation of heat, for example through slats, curtains, awnings, etc., behind the glass must be avoided.

The polycarbonate surface must not be exposed to permanently high humidity environmental influences.

Surface Applied Films

The application of additional films and stickers of any kind is not permitted on POLYGARD (not even on the polycarbonate protective film before and during installation).

Post Processing

Subsequent edge processing as well as drilling and cut-outs are not possible and inadmissible with POLYGARD glazing.

INSTALLATION / CLEANING DURING CONSTRUCTION

Preparation

All Polygard glazing must be inspected for visual defects or damage prior to installation. The protective film on each POLYGARD glazing must be checked for visible defects and damage right down to the Polycarbonate surface before installation.

Damaged or defective glass must not be installed. Labels and instructions on the installation position must be followed.

Installation

If POLYGARD glazing with exposed polycarbonate (GGP) is installed, this must always be oriented toward the room/interior side.

Important Safety Warning:

The glass panes cannot be picked up and manipulated with vacuum lifting devices on the protective film surface.

In case a vacuum lifting on the polycarbonate surface cannot be avoided, the protective foil must be removed and the suction cups have to be dry, clean and covered with an air-permeable protective cover. CAUTION: This protective cover may have a negative effect on the suction power.

Special Notes Polycarbonate

If the Polycarbonate protective film has to be removed to install the glass, it is recommended that the polycarbonate surface be reapplied with a new polycarbonate compatible protective film after installation (e.g. Bescherm film indoor, 50µ (article no. TTA00169) from Technotape B.V.). Polycarbonate is inherently static and will always attract dust and other particles if left unprotected, significantly increasing the risk of scratching before the end of construction despite the protective layer on the surface.

If the film remains on the polycarbonate, it must not be cut off at the edge, as this will damage the PC surface. It may only be pulled off approx. 30-50mm all around and must be attached to the frame again immediately after installation

Rabbet, Sealing and Setting

The rebate space between glass and frame must be ventilated in accordance with regulations and standards. Gluing or sealing the rebate is not permitted due to possible material incompatibility.

If, due to system-related specifications, POLYGARD laminated safety glass has to be installed by gluing it into window or facade systems, this must be coordinated with Vetrotech.

Only the following products may be used to seal the glazing beads:

- GE Momentive Multisil –schwarz
- DOWSIL 791 – black
- DOWSIL 895 – black
- DOWSIL 993 – black (2-component)

For installation, polycarbonate-compatible setting blocks made of hardwood, (density over 0.55 g/cm³) polyamide, chloroprene, APTK, PE or silicone flat profiles (not PVC) with a Shore A hardness of 60 to 70 degrees must be used. The thickness of these blocks must be at least 5 mm and the block length 80 to 100 mm.

Product-related distortions in the POLYGARD must be taken into account in addition to the thickness tolerances of the glass when selecting the glazing system. No pressure shall be exerted on the glazing (for the relevant tolerances, see the POLYGARD Quality Guideline document).

In particular, the following must be taken into account when selecting the glazing system:

a) Sufficient gap on both sides of the glazing beads to be able to absorb warped glass and glass warping.

b) In the case of dry glazing, the sealing profile must be able to absorb the maximum warping. See also the quality guideline for POLYGARD (5mm/lm edge length)

c) If sealing profiles have to be inserted between the glass and the glazing beads, no lever tools may be used and point loads shall never be applied. These can irreversibly damage the polycarbonate surface. Likewise, apart from a soap solution, no lubricants are to be used, as these are usually not compatible with the polycarbonate and can cause stress corrosion cracking.

d) All additional materials used (setting blocks, sealing profiles, etc.) must be compatible with the polycarbonate, in particular, only seals approved by the profile system manufacturer for polycarbonate may be used. Cleaning of the seals, e.g. made of EPDM, to remove adhering lubricants and lubricants is mandatory before installation.

The protective film on the bullet-resistant POLYGARD must be left on the polycarbonate surface until all interior work has been completed.

Cleaning After Installation

During construction phase, any aggressive surface contamination must be avoided as a matter of principle. Should this nevertheless occur, the contamination must be washed off immediately using non-aggressive agents (see the following chapter on Cleaning and Care).

In particular, alkaline concrete or cement sludge, plaster and mortar quickly lead to chemical burns (blinding) of both polycarbonate and glass if they are not rinsed off the surface immediately with plenty of water. Dusty or granular deposits on the surfaces must also be professionally removed immediately with plenty of water, but never dry.

Welding work in the area of glazing requires absolute protection of all glass and the polycarbonate against welding beads and flying sparks, for example, by temporarily installing protective devices in front of the glazing. Subsequent trades must be informed of the necessary protective measures.

PRODUCT CLEANING AND CARE

During use, professional mild cleaning at regular intervals is a prerequisite for a long product life. The following cleaning and care instructions must therefore be made available to the building owner, user and the persons responsible for cleaning these glasses.

Bullet-resistant POLYGARD glazing is made on the protective side with a polycarbonate plate, a plastic that is much more scratch-sensitive than a glass surface.

Therefore, once the protective film has been removed, POLYGARD polycarbonate surfaces shall only be cleaned by experienced persons in strict compliance with the following cleaning and maintenance instructions:

Generally, POLYGARD must not be cleaned with chemically aggressive, scratching or abrasive cleaning methods and agents.

Cleaning should only be done with plenty of clean water and possibly a mild soap solution to avoid scouring from dirt particles. If the polycarbonate surface is clean, it can be cleaned with a special and approved plastic cleaner, e.g. the antistatic plastic cleaner AKUR from Burnus GmbH, using a soft cloth.

Household cleaners can contain alkaline and concentrated additives as well as unsuitable surfactants and shall therefore not be used.

Likewise, no mixtures containing alcohol or solvents may be used for cleaning, as they can damage the polycarbonate surface and lead to stress corrosion cracking

The following procedure is recommended for normal cleaning:

1) Rinse the polycarbonate surface with plenty of clean mildly warm water
2) Carefully remove dirt and debris with a soft, clean cotton cloth and a mild soap solution and plenty of mildly warm water. Rinse with clean cold water and dry with a soft, dry clean cotton towel to avoid water stains.
3) Under no circumstances should microfiber or paper towels be used

IMPORTANT NOTES:

- Do not use any abrasive or alkaline cleaning agents
- Do not use microfiber or paper towels
- Do not work on the polycarbonate surfaces with squeegees, razor blades or other sharp objects
- Do not clean polycarbonate surfaces in direct sunlight or at elevated temperatures, otherwise discoloration and scratching are possible

A summary of the cleaning and installation instructions can be found on the product label..