

Parts of our world

All about components of glazing



Learn more about:

- PVB Interlayers
- Sensors & Heating Foils
- Brackets
- Assembly Plates
- Electrical Connections
- Extrusion & Encapsulation

**YOUR
BUSINESS
MATTERS**

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A Saint-Gobain brand

EVERY COMPONENT TELLS A STORY

From a windshield made from a single piece of window-pane glass to shock-resistant car glass equipped with advanced optics sensors and an augmented reality Head-Up display; car glazing has come a long way since its introduction in the early 1900s. And Saint-Gobain Sekurit has been at the forefront of that industry for more than 90 years, always pushing the limit of every component in the world of automotive glazing.

Sekurit Service gives you access to this wealth of knowledge and expertise – up to the smallest details. Whether it's the unique features of the life-saving PVB interlayer or the watertight seal between glass and vehicle body made possible by robot extrusion; we know every single component tells a story. And we want to share these stories with you, so you have everything you need to help your customers in the best possible way.

PVB: QUALITY THAT STICKS

Short for Polyvinyl butyral, PVB is a resin that's been used as the main laminated safety glass interlayer material since the late 1930s.

It's easy to see why: not only does PVB guarantee a strong bond between two sheets of glass, it also provides optical clarity, unparalleled toughness, flexibility and protection against UV-radiation.

Unlike other adhesive materials, PVB interlayers are both durable and pliable, which means cracks will not pass from one side of the laminated glass to the other. This also makes chips and small cracks easy to repair. When shattered, the glass remains bonded and relatively transparent, significantly increasing driver and passenger safety. Additionally, it provides acoustic comfort and enhanced security.

With continuous research and development, Saint-Gobain Sekurit keeps improving the PVB interlayer, adding functionalities and finding new applications for the unique material. Among these are:

- Sun shading
- Solar reflecting properties
- Sound insulating properties
- Integrated heat generating wires for de-icing (Icecontrol Wires®)
- Integrated antennas for radio, telephone and more
- Customized wedged PVB for sharp HUD-images

MANUFACTURING

After the silk printing, glass plates are prepared for heating and bending. Once the bending is finished, the PVB interlayer is applied by a machine automatically. Any air trapped between the sheets of glass must be removed through a mechanical or vacuum squeezing process.

To achieve the final properties of the windscreen, it needs another heating at 140°C in what's known as an autoclave, where a 12 bar pressure is applied. This ensures the bonding of the two glass plates as well as transparency. The entire process takes several hours.

SENSING A SMARTER FUTURE

Once merely a vision in the realm of science fiction, semi-autonomous and completely self-driving cars are now quickly becoming a reality. With the development of advanced driver assistance systems (ADAS) and camera sensors, the integration of state-of-the-art technology and automotive glazing is becoming more common every day.

Thanks to Saint-Gobain Sekurit's unequalled glass shaping expertise, our glazing systems ensure the best optical conditions for even the most advanced sensors to work optimally. There are many different sensors for driver assistance systems. Sometimes they come as separate units, sometimes a number of functions are combined into a single device.

Sensors can also be part of a complete electronic unit attached to the windscreen. No matter what type of sensors your customers' vehicles are equipped with, you can count on Sekurit Service's expertise when it comes to installation. Today and in the future.



FOILING HUMIDITY

Camera optics use lenses and they only function correctly if their sight is not blocked by humidity. To cancel humidity some manufacturers implement heating foils near the optics.

1. Light and rain sensor
2. Humidity sensor
3. Rain/light sensor combination
4. Camera module
5. Heating foil

COST-SAVING ASSEMBLY PLATES

More and more windscreens come pre-assembled with large plates that allow for easy mounting of a variety of sensors and cameras. Many car manufacturers have developed their own system of attaching components. For instance, a windscreen can be equipped with just a few studs. These studs function as hinges to attach the actual plate with all the necessary components. This is a cost-efficient solution as the plates don't need to be fitted somewhere in the windscreen production process.



Assembly plate bonded to the windscreen.

Opel assembly plate, attached to the windscreen using pre-installed studs.



TECHNOLOGY BETWEEN BRACKETS

The various components for driver assistance technologies, such as sensors, cameras, wire holders, electronic units and more, can be attached to the windscreen in a number of ways. Some are attached using a pre-installed bracket, others are directly attached to the windscreen using adhesive.

THE ELECTRICAL CONNECTION

The electronic systems attached to the windscreen are very diverse – these do differ per brand, model and even more per type of windscreen in a model range. See examples below and right.

Example top - Skoda Fabia

1. Top connector
2. Bottom connector

Example bottom - Ford Puma

3. Side flat connectors



EXTRUSIONS: BREAKING THE MOULD

Most modern cars come with a narrow gap between the glass and the vehicle body, leaving no sufficient space for a press-fitted moulding. This requires an extruded profile. An extrusion is either applied by robot or bonded by tape or a flexible adhesive material.

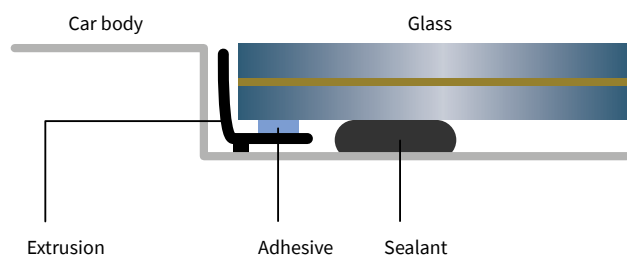
ROBOT EXTRUSION

Direct extrusion on glass is a process which is patented by Saint-Gobain Sekurit (in 1998). It provides a watertight seal between

glass and the car body. A robot extrusion requires only a short development time and low tooling costs.

ADHESIVE EXTRUSION

Also on the market are similar profiles that are equipped with an adhesive. These profiles are not applied to the glass by robot. This type is called an adhesive extrusion and is bonded to the glass by tape or a flexible adhesive material (as butyl or Hot-melt).



ENCAPSULATING QUALITY

With glass encapsulation, a hard rubber or plastic frame is created around the glass. Contrary to an extrusion, an encapsulation is done around the glass, so the glass is 'encapsulated' by the profile. Whereas an extruded profile is applied by a robot, an encapsulation is applied in a mould.

BENEFITS OF ENCAPSULATION

- Styling flexibility
- Flexibility in appearance (choose between glossy, matt and more)
- Car body tolerances can be easily absorbed by the encapsulation frame
- Integration of other vehicle components such as studs, hinges, brackets, threads and connectors
- Easy fitting in the assembly line

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