PRIVA-LITE® SWITCH P

TECHNICAL BULLETIN

ATTENTION!!
CAREFULLY READ ALL INSTRUCTIONS BEFORE INSTALATION

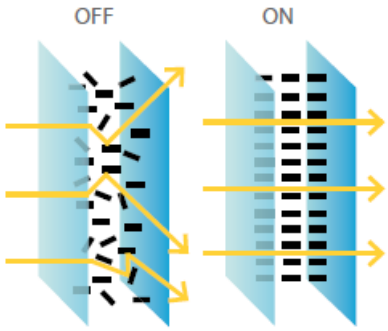
USE ONLY VALIDATED SILICONES

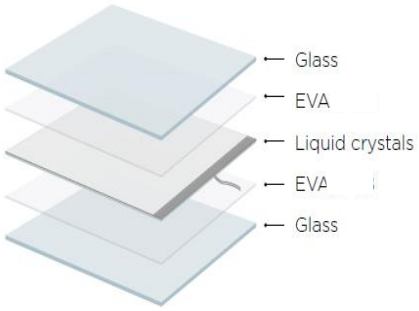
This document provides information on the inherent characteristics and features of the PRIVA-LITE®. SWITCH P.

1. PRODUCT and FUNCTIONS

PRIVA-LITE® SWITCH P is a Laminated Safety Glass (According to EN 14449 norm), using EVA foil.

It is composed of 2 Diamant Glasses which encapsulates a liquid crystal (LC) film inserted between EVA layers.
The LC film is composed of two PET films coated with a transparent metallic deposit and laminated together by means of a very fine layer of liquid crystal gel.





Due to voltage application liquid crystals orient themselves toward the same direction, and glass switches from translucent to transparent with almost no alteration of light transmission.

PRIVA-LITE® Switch P is translucent when not powered, and becomes transparent when voltage is applied.

Retro-projection : In 'Privacy' OFF state, PRIVA-LITE® may also be used as retro-projection screen. The retro-projection result will also be dependent on ambient lighting and beamer capacity.

T

Transparency
(Switch ON)

Privacy
(Switch OFF)

Retro-projection
(Switch OFF + retro-projection)

1.1 Haze

In its transparent state, PRIVA-LITE® SWITCH P will never be as clear as normal float glass.
A light haze will always be visible. This haze effect is considered normal and unavoidable due to the nature of the product technology.

It should also be noted that factors such as ambient lighting (intense diffuse daylight, direct lighting…), compositions (thickness, double and triple glazing unit, bent panel…), position of the glazing (inclined panel, roof application…) **and position of the viewer** (non-perpendicular observation, facing glass façade…) **will increase this effect of haziness**.

Glassolutions Saint-Gobain taking all the necessary precaution to ensure minimum haze, and making sure that all delivered panels are within tolerances described in point 2.1 (Optical and solar control performances).Claims for haze, if within tolerance, will be refused.

1.2 Hiding power

PRIVA-LITE® is a translucent glass in its natural state (switch OFF). It's not an opaque glass.
"Translucent", means that it allows light to pass through, but cause sufficient diffusion to prevent the perception of distinct images (hiding power).

The shape of colored items placed close to the PRIVA-LITE® will in consequence stay visible.
Strong light and sun light image cannot be blocked by this glass.

2. PERFORMANCES

2.1 Optical and solar control performances

Optical /thermal performances		LT*	Haze*
STADIP Planiclear 55.2 (12mm) (Comparison)		85%	~ 0.5%
PRIVA-LITE® SWITCH P Diamant 55.4 (12mm)	ON	82 %	**6 %**
	OFF	68 %	**99%**

*Spectrophotometric data's are given with a tolerance of +/-2%
LT = Light Transmission

Above performances are valid only for standard applications and for PRIVA-LITE® SWITCH P panels installed and maintained according to our installation and maintenance guides.

Above performance may alter ca 1% per year depending on installation conditions.

Specifications for other compositions are available on demand.

2.2 Acoustical performances

ACOUSTIC	$R_{a,tr}$	Rw(C;Ctr)
Stadip protect 55.2 (for reference)	34 dB	36 (-1;-2) dB
PRIVA-LITE® SWITCH P 55.4 (12mm)	35 dB	38 (-2;-3) dB

Specifications for other compositions are available on demand.

2.3 Electrical performances

	PRIVA-LITE®
Supply voltage	45VAC ~ / 50Hz
Consumption ON mode @ 25°C	2,5W/m²
Life test	3 000 000 cycles ON/OFF

2.4 Power supplies

The power supply units delivered by Glassolutions Saint-Gobain have been developed to ensure a safe operation of the PRIVA-LITE® SWITCH P. Only power supplies from Saint-Gobain Glassolutions are allowed to be installed with PRIVA-LITE® SWITCH P. Power supply units are CE marked.

					Dimensions [mm]			
	Input Voltage [VAC]	Frequency [Hz]	Output Voltage [VAC]	Surface supply [m²]	L	W	H	Weight [kg]
PSU S	230	50	45	5,25	115	125	60	0,88

2.5 Protection Indexes/ classes

PRIVA-LITE® glass	PRIVA-LITE® 55.4 (12mm)
Electrical protection index	IPX7 (EVA moldings) or IPX4 (Hotmelt)
Impact safety class (EN 12600)	1B1
Electrical protection class	Class I

Laminated safety glass / thickness	55.4	66.8
Resistance according EN 356	P5A	P6B

Power supply unit	PSU S
Electrical protection class (IEC 60950-1) :	Class I (in electrical box)

3. NORMS

PRIVA-LITE® SWITCH P is " CE" marked

REACH Declaration (See SG Document 01/2019)

PRIVA-LITE® SWITCH P is conform to the following norms

- EN12543 Glass building – Laminated glass and laminated safety glass
- EN14449 Glass building – Laminated glass and laminated safety glass
- EN12600 Pendulum test
- EN1279 Insulating glass

4. PRIVA-LITE® SWITCH P possible dimensions

Minimum	Maximum standard (IPX7)	Maximum (IPX4)	Maximum (IPX4)
200 x 300mm	1500x2500mm	1500 x 3500mm	1000x3750mm

5. PRIVA-LITE® SWITCH P thicknesses

Standard: 12mm (55.4)
Minimum: 8mm (33.4)
Maximum: 33mm (1515.6)

Maximum possible sizes depend on glass thickness (see Glassolutions norms on laminated glass). PRIVA-LITE® SWITCH P composition shall be balanced (top and bottom glass with identical thickness).

6. PRIVA-LITE® SWITCH P WORKING TEMPERATURE LIMITS / OFF mode

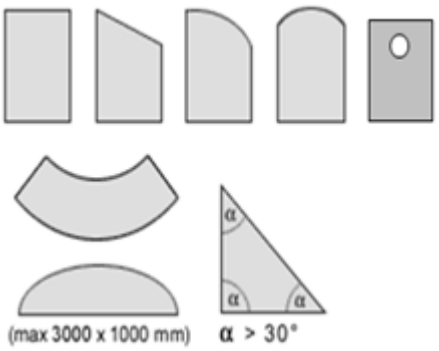
Minimum temperature	- 20°C
Maximum temperature	+70°C

PRIVA-LITE® SWITCH P may not be installed in a place exposed to temperatures outside these limits.Direct use in façade or exposed to sun is allowed only as ISO glass, mounted with solar control glass on the outside, and Priva-Lite inside.

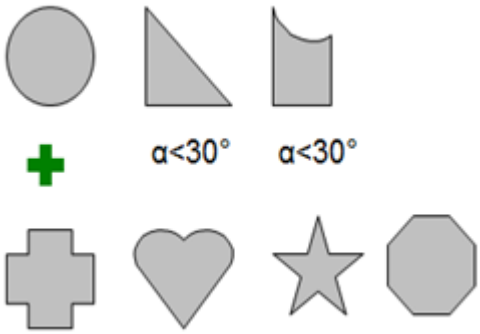
PRIVA-LITE® SWITCH P must be switched OFF at least 4h per 24h.

7. SHAPES

7.1 Available shapes:



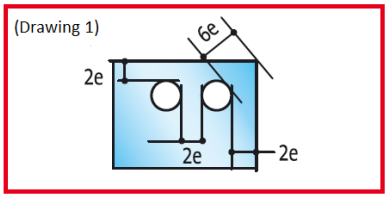
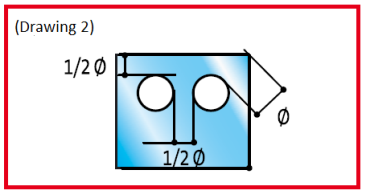
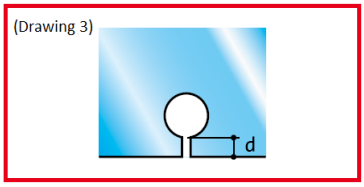
7.2 Unavailable shapes:



8. Holes and notches

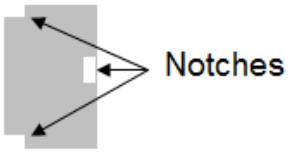
8.1 Holes in PRIVA-LITE® SWITCH P are possible when Ø 10~50mm.

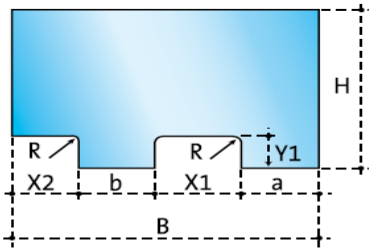
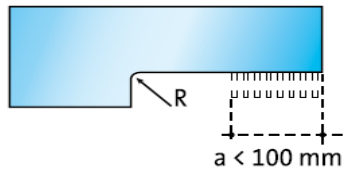
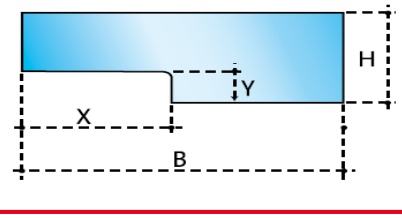
Attention: 1. LC film is separated from glass edges of the hole by 3mm +/-2mm inactive zone.
2. Screws pressure of the fittings on a PRIVA-LITE® glass cannot squeezed 10N/cm

a) holes Ø ≤40 mm	 e = SGG Securit glass thickness
b) holes Ø >40 mm	 Ø = Hole diamater
c) d ≤ 2x glass thickness (released hole)	

8.2 Glass notches available when conditions passed as below in the table.
Attention:

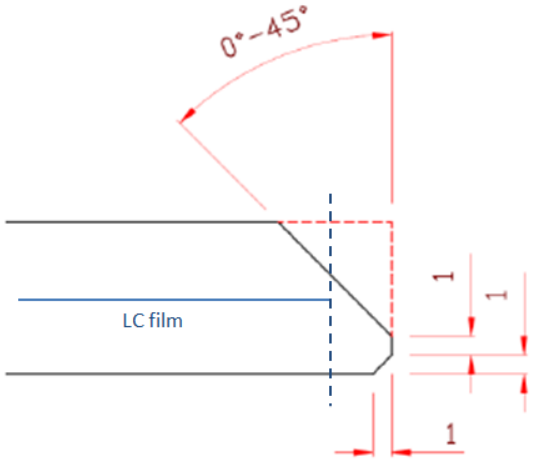
1. LC film is separated from glass edges of the notch by 3mm +/-2mm inactive zone.
2. Screws pressure of the fittings on a PRIVA-LITE® SWITCH P glass cannot cross 10N/cm².



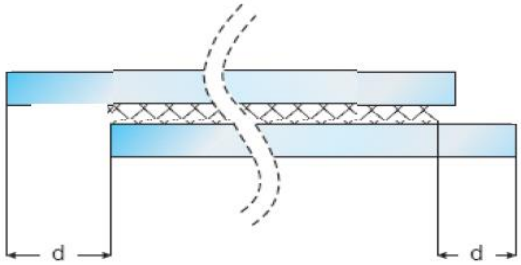
1) Notch height should not cross its width.	(Drawing 1)  B = glass width H = glass height X1, X2 = notch width Y1 = notch height a = distance: notch - edge glass b = distance between notches R = radius
2) b ≥ X1/2: Distance between two notches should be at least equal half the width of the bigger one.	
3) R ≥ e: Arising → r ≥ 10 mm, Grinding or Polishing → r ≥ 15 mm Radius of a notch should be at least equal to the thickness of the glass and additionally depends on the kind of edge deleting.	
4) a ≥ X1/2 i a ≥ 100 mm: distance between a notch and a glass edge should be at least equal to half of its width, but bigger than 100mm.	(Drawing 2) 
5) X ≤ B/3 i X ≤ 200 mm and Y ≤ H/3 i Y ≤ 200 mm: Width of a notch cannot cross 1/3 of glass width; in case of horizontal tempering neither notch height nor width cannot cross 200mm.	(Drawing 3) 

9. Mitered edges

Mitered edges are possible in range between **0 ÷ 45°** for annealed and tempered glasses, with thickness 66.4 and above.

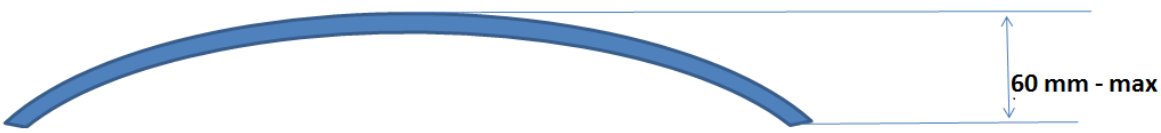


For PRIVA-LITE® glass shift of glasses tolerance d = +/-2mm [PN-EN ISO 12543-5 § 3.2.3].



10.Curved (bent) glass

PRIVA-LITE® SWITCH P is available as a bent glass.
Minimum radius 2000mm – Maximum 40.000mm. Deflection ≤ 60mm (see drawing)
Maximum glass dimension 1000 x 2400mm. (Other sizes on request)

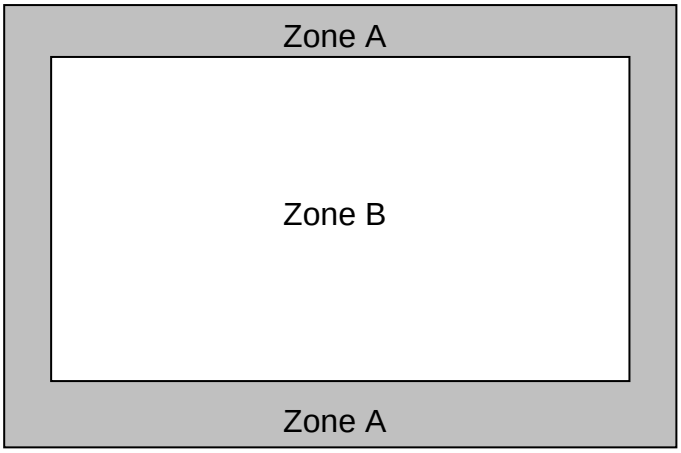


11. QUALITY TOLERANCES

Optical tolerances

	Area A (15mm from the edge)	**Area B**
Spot defects Black, white or transparent spots Foreign bodies	If diameter < 5mm then OK	If diameter <1mm and if no accumulation** then OK If 1mm ≤ d ≤ 3mm and max 2 spots then OK If diameter >3mm then NOK
Scratches on the LC film	If not visible when subjected to the test method EN12543-6 then OK	If <150mm, no accumulation** and not visible when subjected to the test method EN12543-6 then OK
Scratches on the glass	If not visible when subjected to the test method EN12543-6 then OK	If <30mm, no accumulation** and not visible when subjected to the test method EN12543-6 then OK
Bubbles	If diameter < 5mm and if bubbled area doesn't exceed 5% of the edge area then OK	If diameter <1mm and if no accumulation** then OK If 1mm ≤ d ≤ 3mm and max 2 bubbles then OK If diameter >3mm then NOK
Orange Skin	A light orange skin effect will always be visible in reflection and under certain conditions such as direct lighting, compositions and position of the viewer. This orange skin effect is considered normal and unavoidable due to the nature of the product makeup.	
LC waviness	Acceptable*	Unacceptable

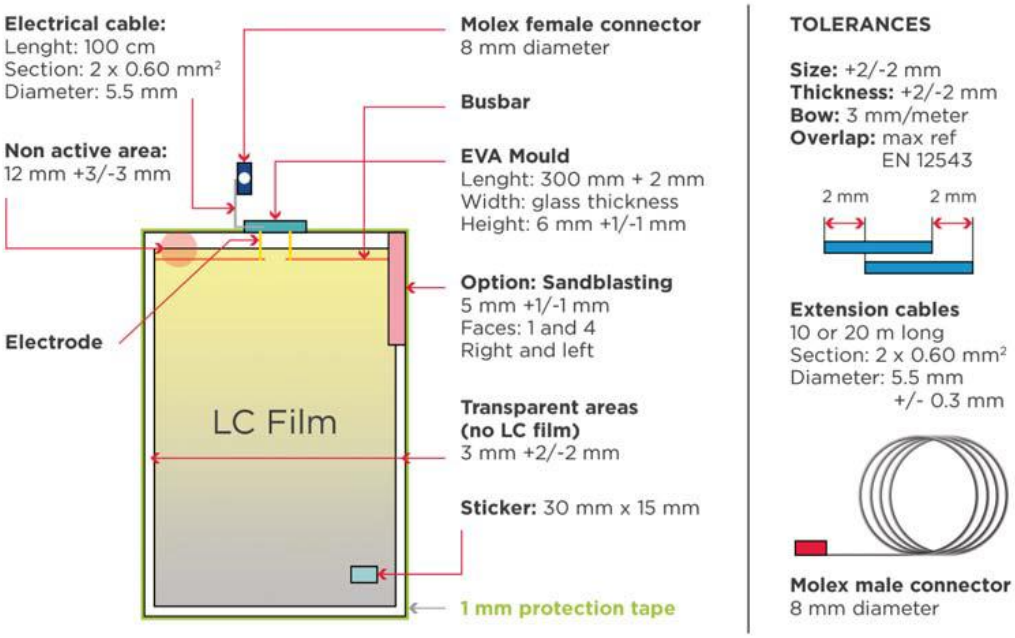
* Allowable up to 20mm only on edges where electrode is located.
**An accumulation of defect occurs if 4 or more defects are at a distance of < 200mm from each other.



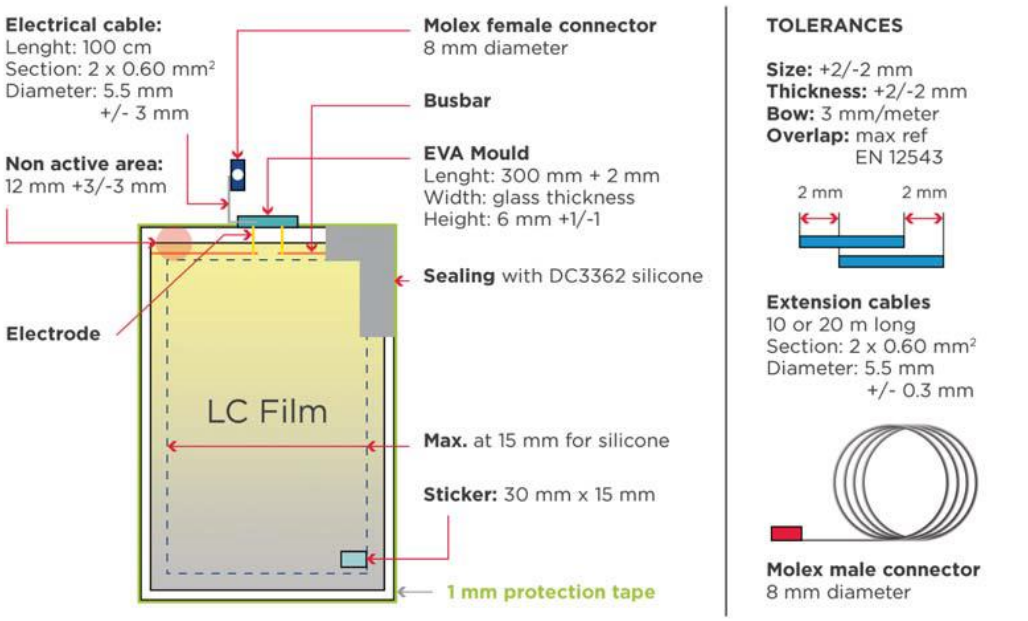
Test method EN12543-6
The laminated glass to be observed is put in a vertical position, in front of and parallel to a matt grey screen, lit by diffuse daylight or equivalent.
The observer will be at a distance of 2m from the glass observing it perpendicularly (the matt screen being on the other side of the glass).

12.SPECIFICATIONS

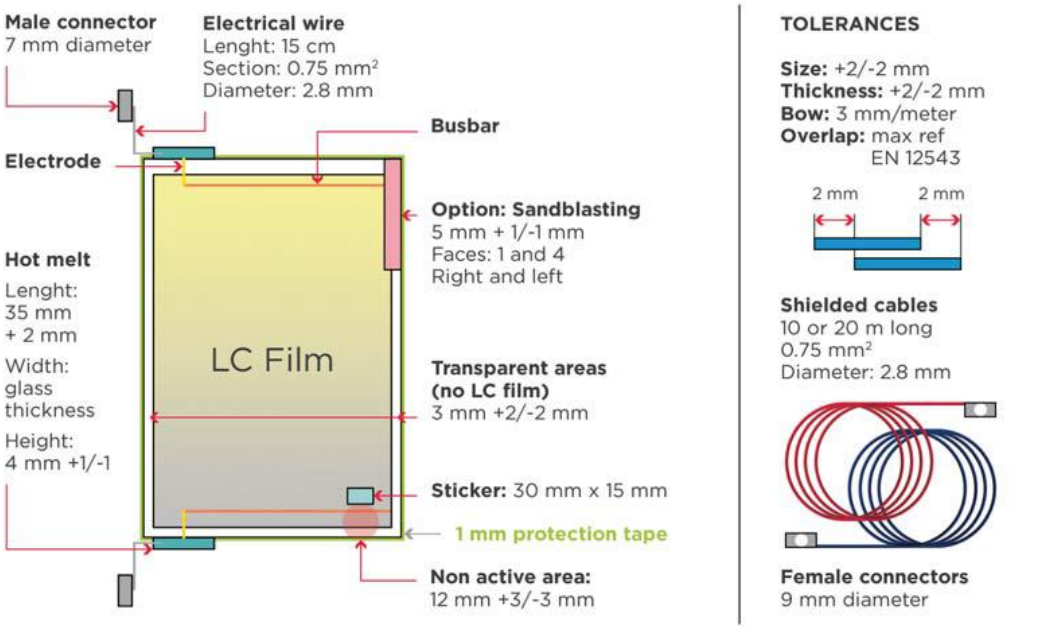
12.2.1 PRIVA-LITE® SWITCH P IPX7 single glazing technical data



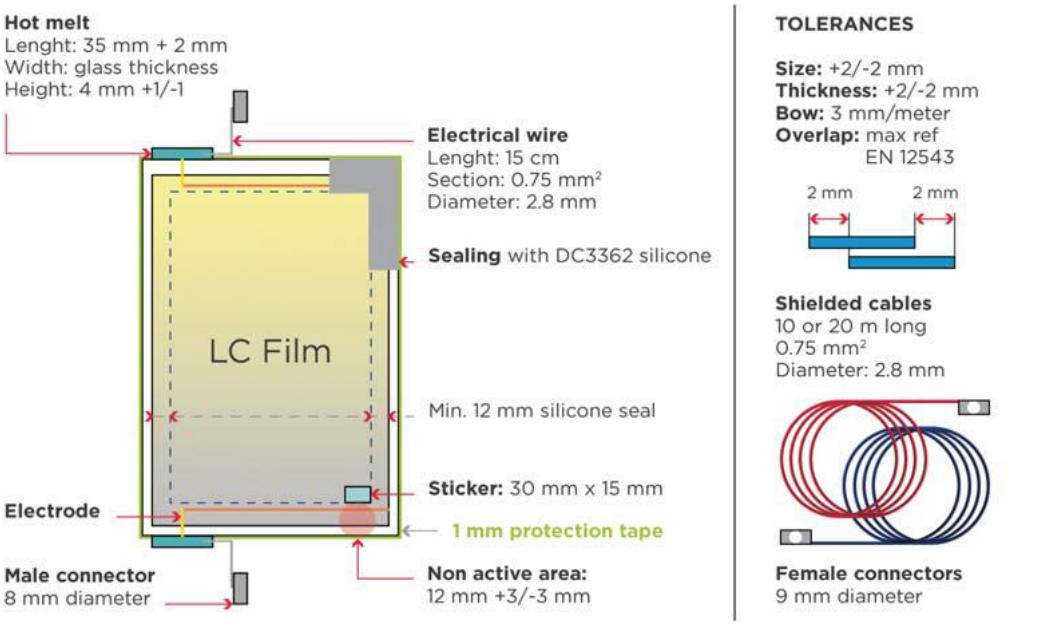
12.2.2 PRIVA-LITE® SWITCH P IPX7 : ISO glazing technical data



12.2.4 PRIVA-LITE® SWITCH P IPX4 (HOTMELT) single glazing technical data



12.2.5 PRIVA-LITE® SWITCH P IPX4 double glazing technical data



13. Electrodes positions depending on PRIVA-LITE® SWITCH P dimension:

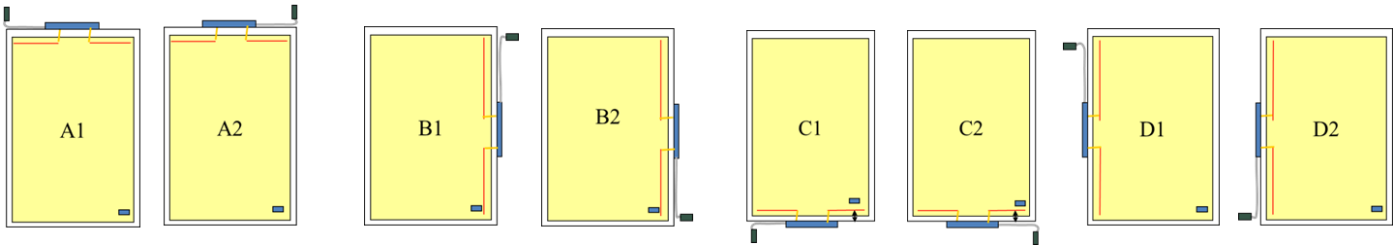
Electrodes positions are always with view from INSIDE

13.1 : Standard (IPX7)

If the **1:5** ratio of edges length is not crossed and the longest edge is not crossing **2500mm** then busbars can be applied on shorter edge - top or bottom.

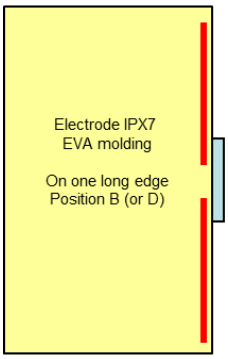
Below IPX7 solutions are possible:

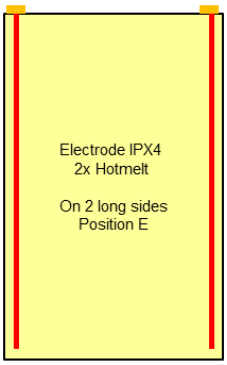
STANDARD Electrode (EVA molding – 1 cable exit – 1 MOLEX connector) INTERIOR VIEW

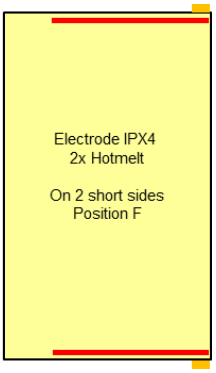


13.2 Non-standard

If the 1:5 ratio of edges length is crossed OR/AND the longest edge is longer than 2500mm, then electrodes must be on the two edges - top + bottom, or on one of the long edges.







14.Installation silicone

The Momentive Mutilsil Silicone, and the Dow Corning DC 799 supplied by Saint-Gobain are the only silicones, validated as compatible with PRIVA-LITE® SWITCH P edges and accepted for PRIVA-LITE® installation.

The silicone delivered by Glassolutions Saint-Gobain is regularly tested.

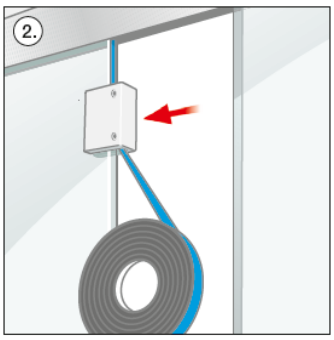
However, qualities and performances of the silicone are under the sole responsibility of manufacturer.

15. TESA ACX 7058 tape and applicators

TESA ACX 7058 double side adhesive tape has been tested by Glassolutions Saint-Gobain, and is compatible with PRIVA-LITE® SWITCH P. It is used for butt-joined applications as an alternative to Multisil silicone.

Only the TESA ACX 7058 delivered by Saint-Gobain Glassolutions is allowed for installation.

TESA tape is 2mm thick and 9mm wide, and may be installed by dedicated applicator.



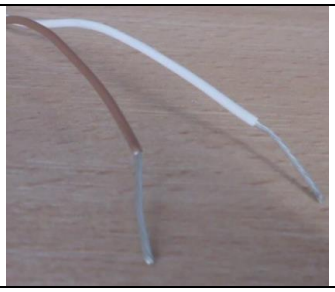
16. Electrical installation

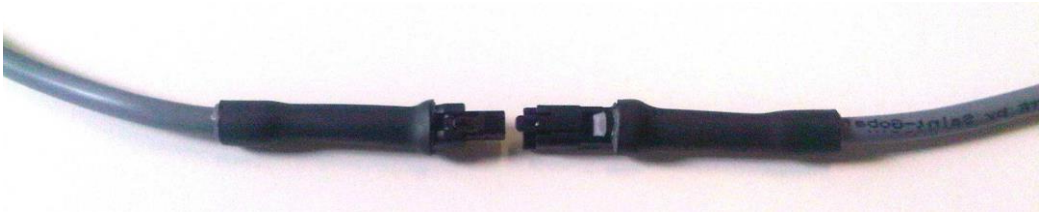
- PRIVA-LITE® element must be connected to the electrical system by a qualified electrician with valid E1 certificate or similar certificate in force in the country of installation.
- Power supply / timer / Remote control must be always installed in electrical box with min. IP4X

17. Electrical extension cables

The extension cables delivered by Glassolutions Saint-Gobain are the only ones tested and validated as compatible with the PRIVA-LITE® SWITCH P:

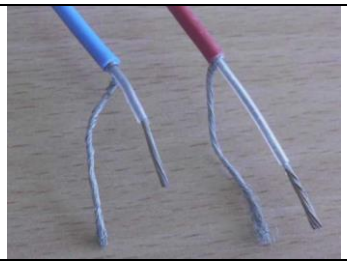
1. Standard IPX7 extension cable : Single cable with Molex male connector :

		
Molex male connector	Cable (transformer side)	Molex Extension cable



Molex female connector (on Glass) Molex Male connector (extension cable)

2. IPX4 shielded extension cables (for hotmelts): 2 cables (Red and Blue) with female connectors.

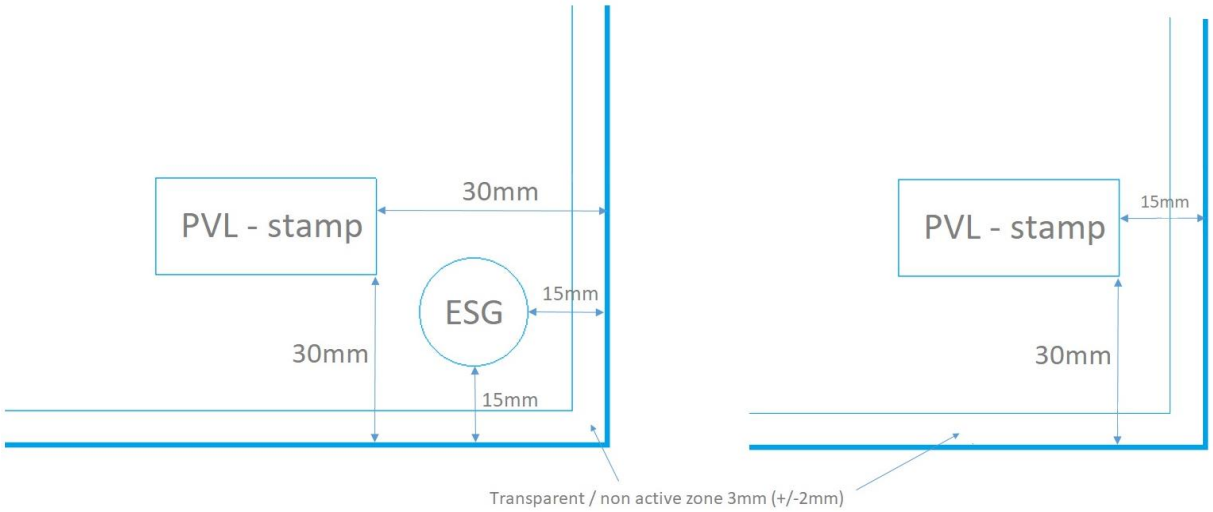
		
Female connector	Red /Blue + Shield mesh	Red/ blue shielded cable

3. For sliding door application, a specific extension cable may be needed. Please contact Glassolutions Saint-Gobain for more information

18. PRIVA-LITE® SWITCH P MARKING

Each PRIVA-LITE® SWITCH P has an individual number to enable its tracking.
The PRIVA-LITE® SWITCH P insert with numer and CE Marking ensures that the glass is an authentic 'PRIVA-LITE® SWITCH P' and its presence is also a condition to the glass warranty. Label size is 30x15mm.
The Priva-Lite SWITCH P label is laminated between the glass and is not removable.

PRIVA-LITE® SWITCH P label is located on the bottom right edge (as below) to be readable after installing. Other label positions are possible on request.



19. Warranty of PRIVA-LITE® SWITCH P:

Please refer to the Saint-Gobain Glassolutions Polska 'PRIVA-LITE® Warranty' document, for full conditions and warranty details.

Under the conditions mentioned below, Glassolutions Saint-Gobain guarantees the functionality of the PRIVA-LITE® SWITCH P for a period of **5 years**, and of its power supply unit for a period of 2 years, starting from the invoice date Saint-Gobain Glassolutions Polska.

The warranty shall be invalidated if the instructions contained in our installation and maintenance guides are not followed.