LOGLI
MASSIMO
SAINT-GOBAIN

UV BONDING TECHNOLOGY

SAINT-GOBAIN

UV BONDING

INTRODUCTION:

Thanks to its undisputed advantages, UV Bonding Technology has become even more common during the years: its **versatility**, as it allows to bond different materials as well as complex shapes, and its **short execution times** with the relative cutback of production costs.
The information here contained are the result of our technical and practical experience that we gained over the years working in the field of industrial and artistic glass.
Nevertheless, each application is to be carefully evaluated in all its details and never underestimated.

We therefor invite you to contact our technical office to expose your application needs.
We would be glad to offer you our technical advice.

INTRODUCTION TO BONDING

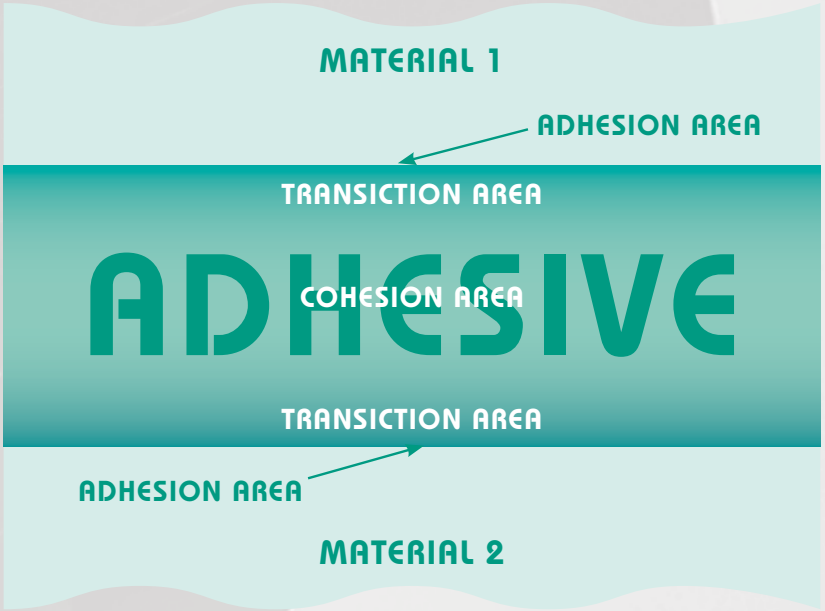
A bonding is the operation of a permanent adherence between two surfaces of the same or different materials through adhesives. By definition is an adhesive a:

"Non-metallic substance capable of joining materials by surface fixing (adhesion), in order that the achieved bond has an adequate inner strength (cohesion)".

The cohesion is the inherent strength of a material.

The adhesion is the molecular bonds as a whole, which are generated between the in-contact material and adhesive with the involvement of their contact area (bonding area) as well the adhesive layer near to the surface (transition area).

BONDING AFFECTS THREE DIFFERENT AREAS



- The adhesive in the cohesion area, which is its innermost part, is present in its unimpacted state and has the nominal properties reported in the data sheet.
- The closest to the surface adhesive layers are the adhesion and transition areas; here structure, composition and properties are different.

The quality and duration of a bonding are strongly linked to its moisture resistance.

The manufacturers guarantee the properties of an adhesive to be reached by users through its skillfully application and curing.

ADHESIVES - TECHNICAL READING

Physical and chemical peculiarities are guaranteed by the manufacturer, who also supplies:

TECHNICAL DATA SHEET
(Physical peculiarities)

SAFETY DATA SHEET
(Chemical peculiarities)

WETTABILITY:
NECESSARY CONDITION FOR BONDING

A necessary condition, yet not enough, to get a good bond is the adhesive's capacity to wet the surface to be bonded (adhesive wettability).

ASPECTS THAT AFFECT THE WETTABILITY

OF THE SURFACES TO BE BONDED:

- **Flatness** is the surface's condition where all its points belong to the same plane. The better the flatness is the more effective the bonding will be. Smooth surfaces generally need liquid adhesives while the irregular ones require viscous adhesives, which have a higher ability to fill the interstices.

- The **Roughness** of a surface is composed of inherent micro-geometrical imperfections or resulting from machining. These surface irregularities cause mechanic resistance, with a reduction of the N / mm^2 final resistance value.

- The **Porosity** of a material is a scalar quantity defined by the ratio of the volume of voids in it contained to its total volume. The absorption of the adhesive by the material before curing affects the quantity of the adhesive itself to be used: if it is too fluid or in poor quantity, it will be absorbed before hardening with an unsatisfactory bonding result. The more porous a material is, the denser the adhesive has to be.

OF THE ADHESIVE:

- **Viscosity** is the value that measures fluids' resistance to creep deformation in Pa.s or mPa.s; it has to be suited to the bonding method that fits in with the possible irregularities. In case of bonding for capillary use low-viscosity adhesives.

BONDING - IMPROVING SURFACE TREATMENTS

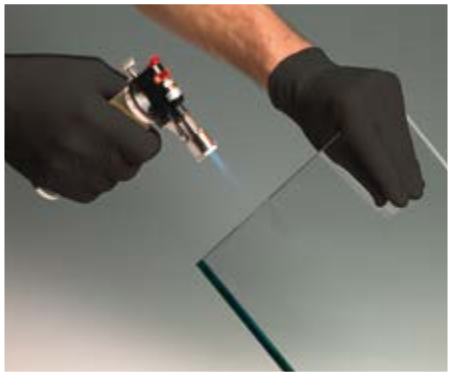
Subjecting the surface to several treatments, helps to improve the effectiveness of the bonding.

There are three kinds of surface treatments to mark off:

SURFACE PREPARATION

Cleansing, Degreasing
By using our **FIXGLASS 1000**

FLAME TREATMENT



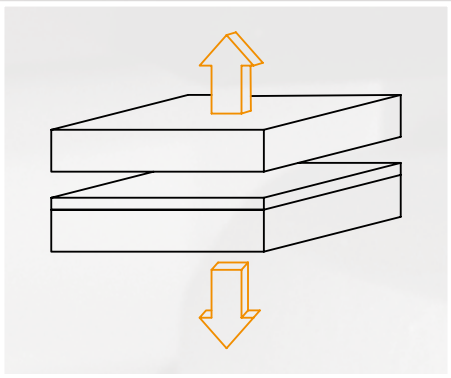
By using our
FIX FIRE

CONTROLLED ENVIRONMENT

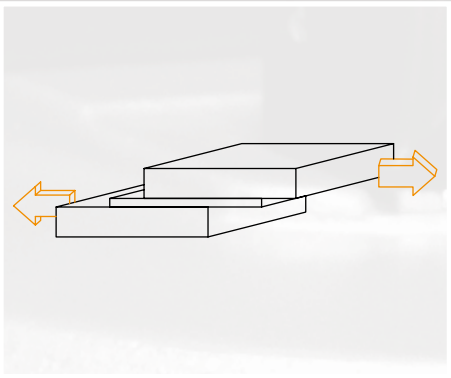
Acclimatization
the working environment has to have a humidity of <40% and an air temperature between 12°C and 35°C

REQUIRED RESISTANCE

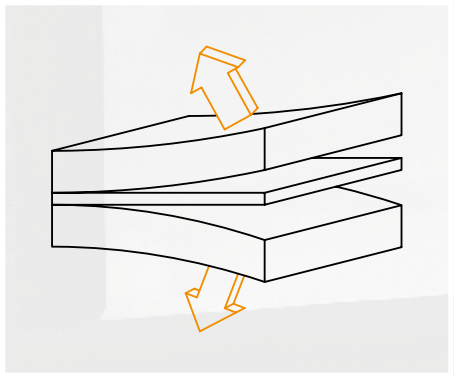
The adhesive to use has to be chosen also according to the stress the bonding components are subjected to, which could be: over-time-constant stress (a weight, for example); variable stress (in case of vibrations).



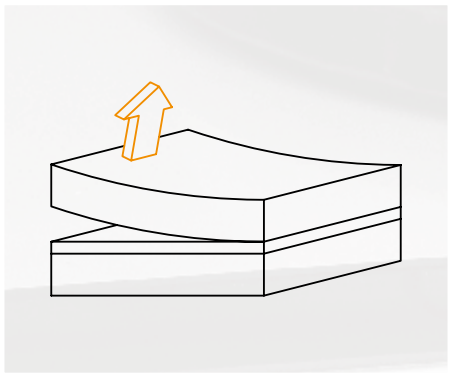
1) Tensile strengths, perpendicular to the bonded surfaces, tend to separate them.



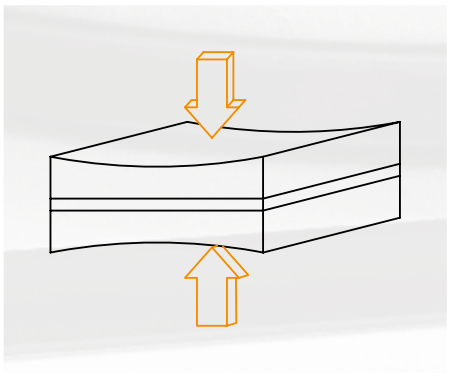
2) Shear strengths tend to make the bonded slip one on the other.



3) Cleavage strengths act as a leverage on the bonding edge



4) Peel strengths act on the bonding edge and on the flexible surface.



5) Compressive strengths push the two surfaces one toward the other.

UV ADHESIVES:

BY-CHEMICAL-PROCESS-CURING ADHESIVES BY UV-RADIATION EXPOSURE

The **necessary condition to use** UV adhesives is that **at least one of the materials has to be transparent to radiation**; otherwise, the polymerization will not be possible.

In order to polymerize and cure need these single-component adhesives a radiation with certain wavelength and intensity.

UV-curing adhesives may contain several photoinitiators that can activate the hardening with a wavelength of **365 nm (UV-A)** or **405 nm (Visible Light)**. Adhesives containing 365 nm photoinitiators are considered traditional, while the others are also known as "VISIBLE LIGHT adhesives".

The required energy for a total catalyzing of the adhesive is statistically of 40 mW/cm² for traditional adhesives and 10 mW/cm² for the VL ones.

Light exposures that produce lower quantities of energy may cause an incomplete hardening, producing short- and long-term ungluing phenomena as well as bonding strength, which is lower than what declared on the technical data sheet.

UV adhesives have short curing time, from a handful of seconds to few minutes and in case of no radiation, they keep their original non-catalyzed state for a long time being classified **ON-DEMAND** adhesives.

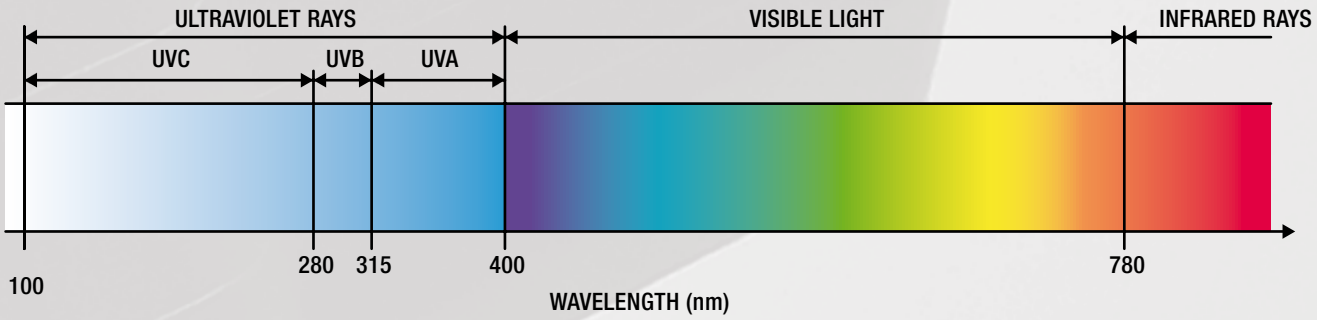
These adhesives can reach a shear strength higher than 17 N/mm²; the obtained bonding can be exposed to variable temperatures from -30° C to max. 140° C.

ADVANTAGES OF UV ADHESIVES:

1) Easy to use.
2) Fast and controlled polymerization with consequent increase in production and decrease in costs.
3) Excellent adhesion, therefore high resistance.
4) Transparency.
5) Possible bonding with different materials such as metal, glass, wood, plastic, marble.
6) No need of glass-processing operation that weaken the glass itself.

UV LAMPS

Traditional lamps emit UV-A rays with a peak wavelength of 365 nm. The PVB serves as a filter to the passage of those UV-A rays, so the use of lamps with a peak wavelength of 405 nm (VISIBLE LIGHT) is required. The known-as "VISIBLE LIGHT ADHESIVES" contain photoinitiators that allow to catalyze to 405 nm - peak wavelength not filtered by the PVB.



Is it possible to check intensity of UV lamps and the UV-A and VL rays required for UV and VL curing adhesives through a suitable measurement tool - the UV-Meter, which has to be set and provided with a proper photodetector.

WORKMANLIKE BONDING

A SKILLFUL BONDING DEPENDS ON:

- Materials to be bonded and their flatness
- Use of a proper adhesive
- Preparation of the surfaces to be bonded (cleansing, degreasing, flame treatment)
- Environment where the bonding will take place
- Proper realization
- Use condition of the object (possible stress)

CHOICE OF THE ADHESIVE

The wide range of available adhesives let you make the right choice according to different criteria.

The materials of the item:

- float glass (FIXGLASS UV 627, 630 and 629)
- laminated glass (FIXGLASS UV 635, 621 and 973);
- glass-glass (FIXGLASS UV 627 and 635);
- glass-metal (FIXGLASS UV 630 and 621);
- UVA or VL ray-filtering materials (FIXGLASS UV 629, 630 and FIXGLASS UV GEL mixed with our activator, BICOMPONENTE).

Environment where the bonding will take place:

- damp environment (FIXGLASS UV 629 and 973) or not.

Adhesive application method:

- bonding for capillary (FIXGLASS UV 627 and 635);
- before you place the pieces to be bonded (FIXGLASS UV 630, 621, 629, 973);
- with vertically-positioned pieces before bonding (FIXGLASS UV GEL).

PERFORMING AN UV-BONDING

CONTROLLED ENVIRONMENT CONDITION

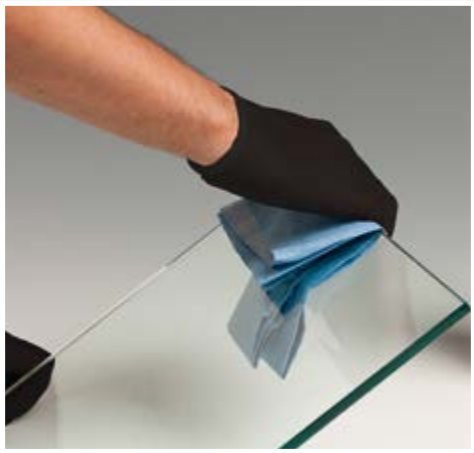
1) A bonding in an environment with a temperature between 12° C and 35° C and a humidity of less than 40% is recommended.

2) Choose the right adhesive according to the materials that have to be bonded, the stress they are subjected to and the environmental condition where the item will be located, with the support of the chart on our catalogue.

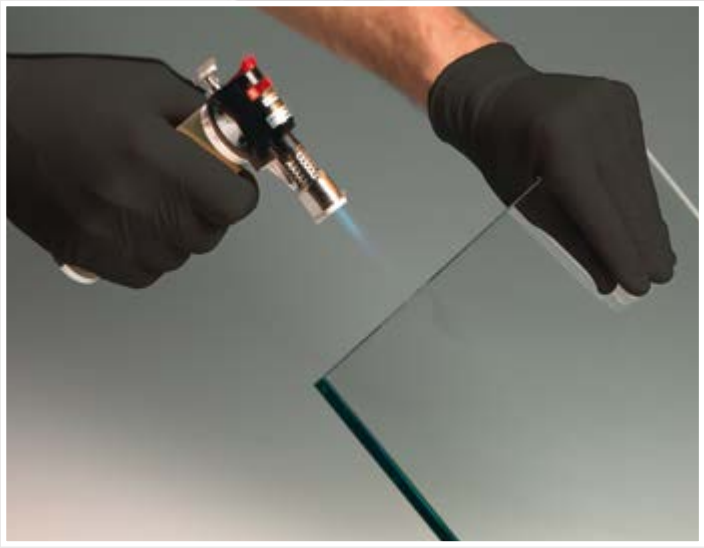
3) Check the flatness of the surfaces to bond in order to get a cheaper yet effective bonding. In order to verify the correct relative positioning of the pieces case of complex products, it is recommended to build it through proper bases before the bonding itself.

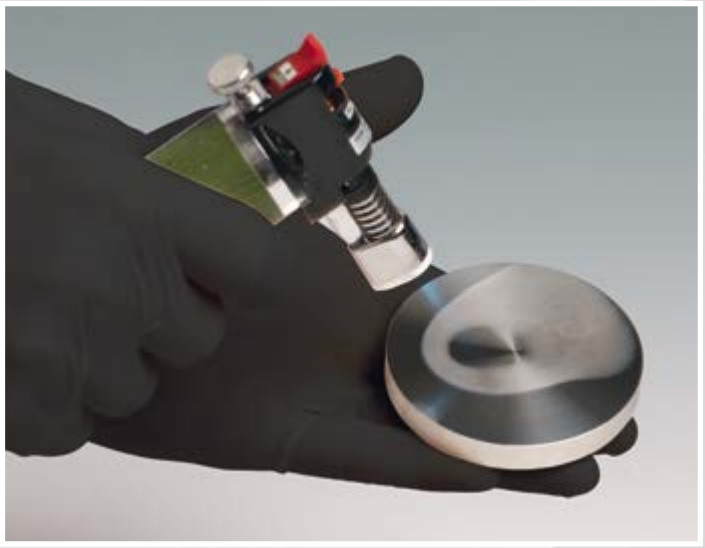
SURFACES GROUNDWORK

4) Prepare the surfaces to the bonding by cleaning them with FXTNT01 soaked in our FIXGLASS 1000 preparatory base. The use of paper or other materials that could dirty the surfaces by leaving inks or residuals is not suggested.



5) Proceed with the flame treatment by using our FIX FIRE: pass the flame on the surface to be bonded for about 5 seconds at a distance of 5-6 cm and wipe the forming humidity in the shape of condensation with our cloth FXTNT01; this way increases the bonding efficiency by 30%.





PERFORMING AN UV-BONDING

6) Clean again the surfaces with FXTNT01 soaked in our FIXGLASS 1000 first and with a neat and dry cloth then, in order to eliminate probable residuals and dirt.

USE OF THE ADHESIVE

IN CASE OF LOW-VISCOSITY ADHESIVES

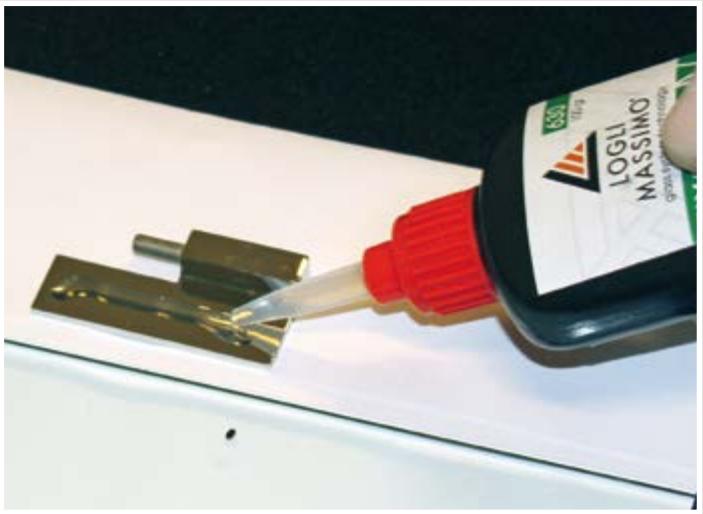
7A) Place firmly the pieces to be bonded with the help of supports and suction cups in order to leave the necessary space to let the adhesive to seep all across the surface by capillarity.

8A) Apply the adhesive sideways letting it seeping by capillary action. In case of adhesives with a higher viscosity, a longer seeping time is required.
Be sure that there are no air bubbles between the surfaces to be bonded.

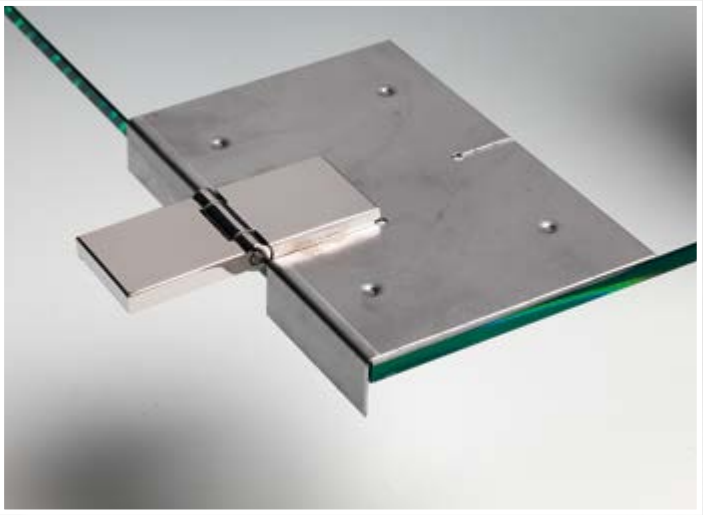
PERFORMING AN UV-BONDING

IN CASE OF HIGH OR MEDIUM-VISCOSITY ADHESIVES

7B) Apply the adhesive before placing the parts to be bonded.



8B) Place firmly the pieces to be bonded with the help of supports, suction cups or templates, useful during the pre-bonding phase in order to avoid even the littlest moves.



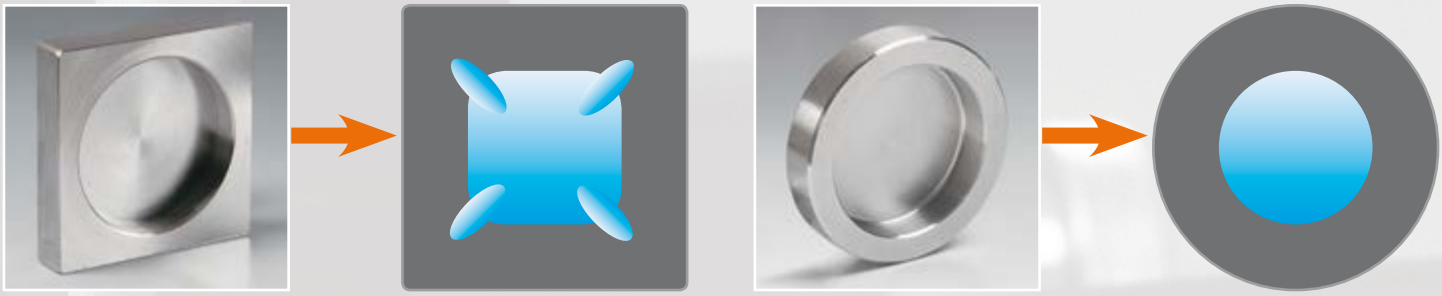
IN CASE OF THIXOTROPIC ADHESIVES

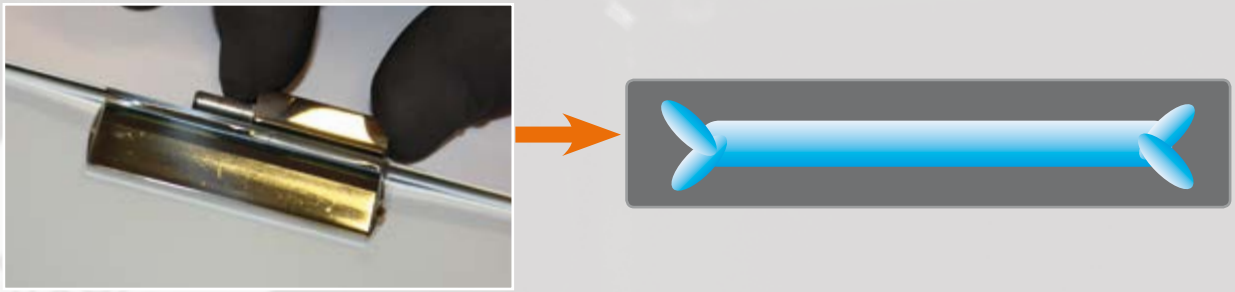
7C) Our FIXGLASS UV GEL is a highly viscous adhesive, which allows to be used for vertical bonding, given that it doesn't drip.

8C) Place firmly the pieces to be bonded with the help of supports, suction cups or templates.

PERFORMING AN UV-BONDING

The application of the adhesive is connected to the shape of the surfaces that have to be bonded: if they have some edges, apply it towards them in order to reach them easily.



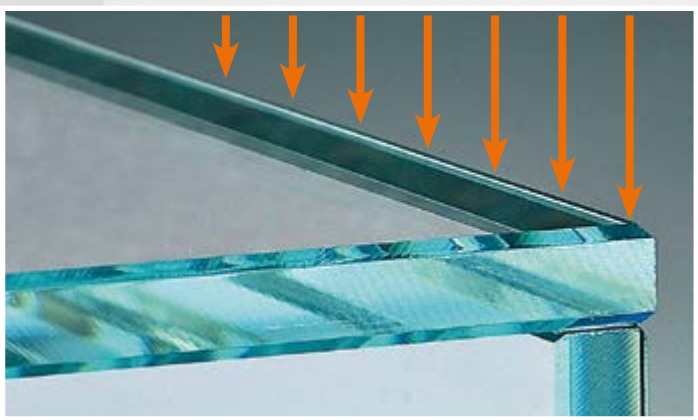


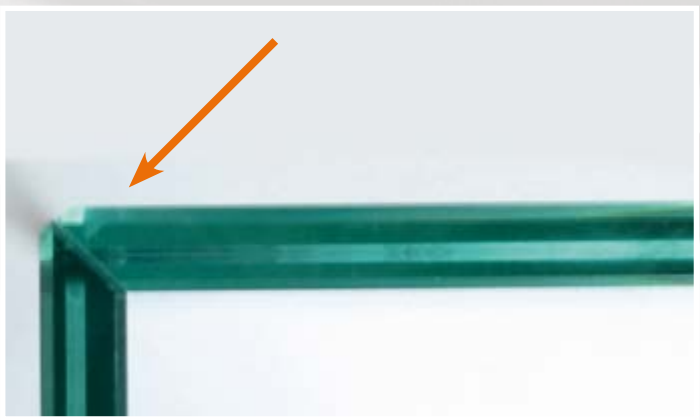
ACTIVATION OF UV ADHESIVES

9) Activate the applied adhesive by keeping the lamp at a distance of 5 cm for about 5-6 seconds. In case of a wide surface pass the lamp across the area that will be bonded (the global needed irradiation time is proportional to the size of the surface).

The direction of the irradiation has to be perpendicular to the surface.

When bonding 45-degree-cut glasses the catalyzing time has to be increased.





PERFORMING AN UV-BONDING

10) Remove any support.
11) Clean the glass by using our FIXGLASS 1000 to remove possible traces of non-cured adhesive with the help of a cutter and a cloth.

UV ADHESIVE CATALYZING

12) Complete the catalyzing phase by using the UV lamp for about 50-60 seconds.

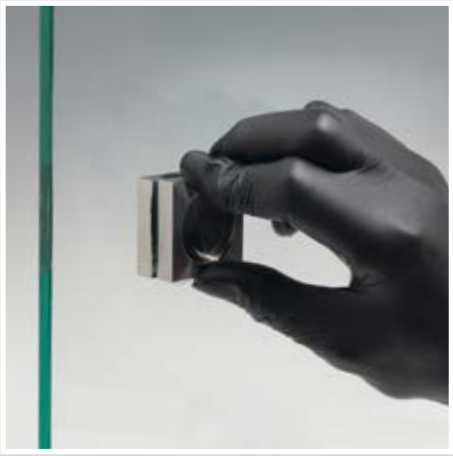
IF AT LEAST ONE OF THE TWO MATERIALS LEAVES THE RAYS OF THE LAMP TO FILTER

In this case, the lamp irradiation up to the inside of the adhesive seems to be almost impossible, as it happens for example when bonding two metal knobs with a glass panel in between.

Use in this case:

The activator together with FIXGLASS UV 629, 630 and FIXGLASS UV GEL adhesives. Perform steps from 1) to 6) concerning environmental conditions, choice of the adhesive and cleaning of the surface and subsequently:

- Before bonding, apply the activator on the glass by using its proper brush and the adhesive on the metal part to bond.
- Place firmly the pieces to be bonded and press one towards the other as long as adhesive and activator start to grip.
- Clean the glass by using our FIXGLASS 1000 and FXTNT01 cloth to remove possible traces of non-cured adhesive and activator with the help of a cutter.



It is also possible to spread the two-component adhesive with the help of a glue gun and a mixer, which allow a controlled and accurate dosage.

PERSONAL PROTECTIVE EQUIPMENT

When bonding wear protective gloves to avoid skin contact; when using an UV lamp use proper protective glasses (art. LAMP014 and LAMP016). The use of a black worktable when possible with a porous fabric (art. FN4), which avoids unexpected moves of the glass and the light of the lamp to reflect, is suggested.

The use of high-quality products is a necessary condition, yet not enough for the perfect outcome of the bonding.
The bigger part of its success depends on the worker.
Attending training courses is suggested to the workers who will realize the bonding.

L.I.S.VET.

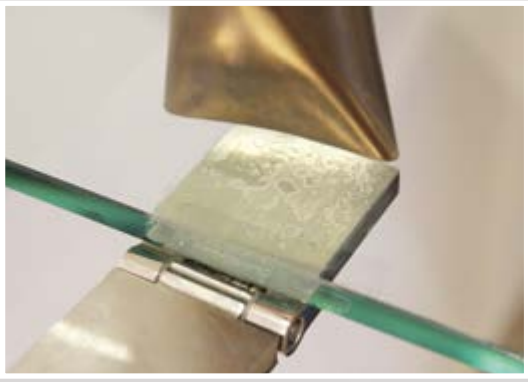
Laboratorio per l'Ingegneria delle Strutture in VETro

Glass door with CERUV1 hinge

Tensile/shear
strength resistance test
steel disc Ø 75 mm

Bonding surface stressed after tests

Load cell (maximum load: 2.0 kN)



Ungluing through heat

GAMB127 Test

LABORATORY TESTING

Test: 1

System: **GAMB127** + disc Ø 75 mm
+ 12mm tempered glass + **FIXGLASS UV 630**
UV Lamp: **FXUVLED 405**
Max. load: **48 Kg**
Load under deflection: **39.4 Kg**
Lowering: **47 mm**
Arm length: **650 mm**

Test: 2

System: **CEA42** + 8mm tempered glass
+ **FIXGLASS UV 621**
UV Lamp: **FXUVLED 405**
Max. load: **100 Kg**
Load under deflection: **98.7 Kg**
Arm length: **650 mm**
Centre-to-centre hinge distance: **390 mm**
Glass detachment: **0.09 mm**
Glass approach (base): **0.30 mm**

Test: 3

System: **TONDO Ø 40 mm** + disc Ø 75 mm
+ 12mm tempered glass + **FIXGLASS UV 621**
UV Lamp: **FXUVLED 405**
Max. load: **94 Kg**
Load under deflection: **86.8 Kg**
Lowering: **27 mm**
Arm length: **650 mm**
Backing pad: **2500 kg**

Laboratorio per l'Ingegneria delle Strutture in Vetro

ADHESIVES' FEATURES

TYPE OF ADHESIVE	FIXGLASS UV 627	FIXGLASS UV 635	FIXGLASS UV 10	FIXGLASS UV 630	FIXGLASS UV 621	FIXGLASS UV 629
RESIN	URETHANE ACYLATE	URETHANE ACYLATE	URETHANE ACYLATE	ACRYLATE	ACRYLATE	ACRYLATE
COLOUR	TRANSPARENT	TRANSPARENT	TRANSPARENT	TRANSLUCIDE	TRANSLUCIDE	TRANSPARENT
VISCOSITY [mPa.s]	(liquid) 20÷100	(liquid) 20÷100	(liquid) 40÷90	(medium) 800÷1200	(medium) 550÷1000	(dense) 700÷1400
CONSISTENCY	Rigid	Rigid	Rigid	Very rigid	Very rigid	Semi rigid
HARDNESS [Shore]	D 70÷80	D 70÷80	D 75÷85	D 70÷80	D 70÷80	D 60÷70
SHEAR STRENGTH [N/mm²]	9.0	9.0	14.0	>14	>14	14,5
ABILITY TO FILL SPACES [mm]	0,04÷0,1	0,04÷0,1	0,04÷0,1	0,09÷0,5	0,07÷0,4	0,06÷0,3
OPERATING TEMPERATURE [°C]	-40÷125	-40÷125	-40÷140	-40÷150	-40÷150	-25÷120
WATER ABSORPTION [massa -%]	<2.8	<2.8	<1.0	<2.8	<2.8	<1.5
PRECURING TIME [s]	5	5	5	5	5	5
CURING WITH ACTIVATOR	–	–	–	✓	–	✓
MIN. HARDENING TIME [s]	50	30	30	50	15	50
VISIBLE LIGHT	–	✓	✓	–	✓	–
APPLICATION RANGE	Applications that use the capillarity. Open glass constructions	Applications that use the capillarity. Open glass constructions	Applications that use the capillarity. Open/closed glass constructions For solutions located in highly damp	Solutions subjects to static and dynamic loads. Open glass constructions	Solutions subjects to static and dynamic loads. Open glass constructions	For solutions located in highly damp environments. Closed glass constructions
MATERIAL TO BE BONDED	Glass	Glass, laminate glass	Glass, laminate glass	Glass, metal/ stainless steel	Glass, laminate glass, metal/ stainless steel	Glass, tempered glass, metal/aluminium

ADHESIVES' GEL FEATURES

FIXGLASS UV 973	FIXGLASS UV 630 GEL	FIXGLASS UV 973 GEL	FIXGLASS UV 621 GEL
URETHANE ACYLATE	ACRYLATE	URETHANE ACYLATE	ACRYLATE
TRANSPARENT	TRANSPARENT	TRANSPARENT	TRANSPARENT
(dense) 1000÷1500	(very dense) THIXOTROPIC	(very dense) THIXOTROPIC	(very dense) THIXOTROPIC
Elastic	Semi rigid	Elastic	Semi rigid
A 70÷80	D 60÷75	A 60÷70	D 55÷75
5,7	17,7	6,9	17,7
0,09÷0,5	0,09÷0,5	0,09÷0,5	0,07÷0,4
-50÷150	-40÷130	-50÷150	-40÷150
<0.8	<2	<0.8	<2
10	5	3	3
–	✓	–	–
60	40	15	30
✓	–	✓	✓
Solutions subjects to impacts, vibration; for application in higly damp environments	Solutions subjects to static and dynamic loads. Vertical applications. IT DOESN'T GRIP. Open/closed glass constructions	For solutions located in highly damp environments. Vertical applica-tions. IT DOESN'T GRIP. Open/ closed glass constructions	Solutions subjects to static and dynamic loads. Vertical applications. IT DOESN'T GRIP. Open/closed glass constructions
Glass, metal/ aluminium, plastic materials, porous materials	Glass, tempered glass, metal/ stainless steel, plastic materials, porous materials	Glass, tempered glass, laminated glass, metal/ aluminium, plastic materials, porous materials	Glass, tempered glass, laminated glass, metal/ stainless steel, plastic materials, porous materials

NEWS!

FIXGLASS UV 10

Mainly used to bond,
Glass with: GLASS / LAMINATED GLASS

VISIBLE LIGHT

Areas of application:
For bonding by capillary.
Open/closed glass constructions.

Description:
UV low-viscosity adhesive, transparent.
For bonding by capillary,it can be measured from the outside as well, when the glasses have already been placed.

HIGH RESISTANCE TO DAMPNESS

Technical data:
Colour: transparent
Resin: urethane-acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **40 ÷ 90 (liquid)**
Consistency: hard
Flash point [°C]: > 90
Density [g/cm³]: 1.15 about
UV (UV-A 60mW/cm² Thickness 1mm) [s]: 15
Visible light (Lamp 20 Watt / distance 3 cm) [s]: 30
Final performances [h]: after 12
Max. thickness to catalyze [mm]: 3
Refillable thickness [mm]: 0,04 ÷ 0,1
Temperature resistance [°C]: -40 ÷ 140
Hardness [Shore D]: 75 ÷ 85
Elongation [%]: 2.4
Water absorption [mass-%]: < 1.0
CTE [ppm/K]: 95
Shear/compr. Strength (Glass/Glass) [N/mm2]: 14.0 about
Shear/comp. strength (Glass/Stainless steel) [N/mm2]: 12.0 about
Shear/compr. Strength (Glass/Aluminum) [N/mm2]: 11.0 about

Art.	Contents	Q.ty
FX10.100	100 gr	1 Pc
FX10.250	250 gr	1 Pc
FX10.1000	1000 gr	1 Pc

FIXGLASS UV 627

Mainly used to bond,
Glass with: GLASS

Areas of application:
For bonding by capillary
Open glass constructions.

Description:
UV low-viscosity adhesive, transparent.
For bonding by capillary,it can be measured from the outside as well, when the glasses have already been placed.

Technical data:
Colour: transparent
Resin: urethane-acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **20 ÷ 100 (liquid)**
Consistency: hard
Flash point [°C]: > 93
Density [g/cm³]: 1.12 about
Refractive index [nD20]: 1.501
UV (UV-A 60mW/cm² Thickness 0,05mm) [s]: 15
Final performances [h]: after 12
Max. thickness to catalyze [mm]: 3
Refillable thickness [mm]: 0,04 ÷ 0,1
Temperature resistance [°C]: -40 ÷ 125
Hardness [Shore D]: 70 ÷ 80
Elongation [%]: 2.3
Water absorption [mass-%]: < 2.8
Tg [°C] (DSC): 45 ÷ 60
CTE [ppm/K]: 62
Dielectric constant [10kHz]: 6.2
Thermal conductivity [W/m·K]: 0,22
Dielectric strength [kV/mm]: 20.4
Shear/compr. Strength (Glass/Glass) [N/mm²]: 16.0 about
Shear/comp. strength (Glass/Stainless steel) [N/mm²]: 15,0 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 16,0 about
Shear strength (Glass/Glass) [N/mm²]: 9,0 about
Shear strength (Glass/Steel) [N/mm²]: 11,5 about
Shear strength (Glass/Aluminum) [N/mm²]: 10,7 about
Elongation at break [%]:13,0 about
E Modul [N/mm²]: 420

Art.	Contents	Q.ty
FX627.100	100 gr	1 Pc
FX627.250	250 gr	1 Pc
FX627.1000	1000 gr	1 Pc

FIXGLASS UV 635

Mainly used to bond,
Glass with: LAMINATED GLASS
Glass

VISIBLE LIGHT

Areas of application:
For bonding by capillary.
Open glass constructions.

Description:
UV low-viscosity adhesive, transparent.
For bonding by capillary,it can be measured from the outside as well, when the glasses have already been placed.

Art.	Contents	Q.ty
FX635.100	100 gr	1 Pc
FX635.250	250 gr	1 Pc
FX635.1000	1000 gr	1 Pc

Technical data:
Colour: transparent
Resin: urethane-acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **20 ÷ 100 (liquid)**
Consistency: hard
Flash point [°C]: > 93
Density [g/cm³]: 1.12 about
UV (UV-A 60mW/cm² Thickness 1mm) [s]: 15
Visible light (Lamp 20 Watt / distance 3cm) [s]: 30
Final performances [h]: after 12
Catalyzing by heat 120°C [Min]: 40
Max. thickness to catalyze [mm]: 5
Refillable thickness [mm]: 0,04 ÷ 0,1
Temperature resistance [°C]: -40 ÷ 125
Hardness [Shore D]: 70 ÷ 80
Elongation [%]: 2.3
Water absorption [mass-%]: < 2.8
Tg [°C] (DSC): > 45
CTE [ppm/K]: 62
Dielectric constant [10kHz]: 6.2
Thermal conductivity [W/m·K]: 0,22
Dielectric strength [kV/mm]: 20.4
Shear/compr. Strength (Glass/Glass) [N/mm²]: 16.0 about
Shear/comp. strength (Glass/Stainless steel) [N/mm²]: 15,0 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 16,0 about
Shear strength (Glass/Glass) [N/mm²]: 9,0 about
Shear strength (Glass/Steel) [N/mm²]: 11,5 about
Shear strength (Glass/Aluminum) [N/mm²]: 10,7 about
Elongation at break [%]:13,0 about
E Modul [N/mm²]: 420

FIXGLASS UV 630

Mainly used to bond,
Glass with: METAL/ stainless steel
Glass

Areas of application:
Solutions subjected to dynamic and static loads. Open constructions of glass.

Description:
UV medium-viscosity adhesive, translucent. Thanks to its high mechanical strength it is the ideal adhesive for glass/stainless steel bonding, also subjected to heavy loads.


Activator Art. FXATT

Art.	Contents	Q.ty
FX630.100	100 gr	1 Pc
FX630.250	250 gr	1 Pc
FX630.1000	1000 gr	1 Pc

Technical data:
Colour: translucent
Resin: acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **800 ÷ 1200 (medium)**
Consistency: very hard
Flash point [°C] > 95
Density [g/cm³]: 1.12 about
UV (UV-A 60mW/cm² Thickness 1mm) [s]: 15
Final performances [h]: after 12
Catalyzing by heat 120°C [Min]: 40
Catalyzing by activator [Min]: 25
Max. thickness to catalyze [mm]: 3
Refillable thickness [mm]: 0,09 ÷ 0,5
Temperature resistance [°C]: -40 ÷ 150
Hardness [Shore D]: 70 ÷ 80
Elongation [%]: 3.3
Water absorption [mass-%]: < 2.8
Tg [°C] (DSC): 40 ÷ 60
CTE [ppm/K]: 62
Dielectric constant [10kHz]: 6.2
Thermal conductivity [W/m·K]: 0,22
Dielectric strength [kV/mm]: 18.7
Shear/compr. Strength (Glass/Glass) [N/mm²]: 12 about
Shear/compr. Strength (Glass/Stainless steel) [N/mm²]: 18 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 8 about
Shear Strength (Glass/Aluminum) [N/mm²]: >15
Shear Strength (Glass/Steel) [N/mm²]: >14
Elongation at break [%]:8 about
E Modul [N/mm²]: 420

FIXGLASS UV 621

Mainly used to bond,
Laminated glass with: GLASS
Laminated Glass • Metal/stainless steel

VISIBLE LIGHT

Areas of application:
Solutions subjected to dynamic and static loads. Open constructions of glass.

Description:
UV medium-viscosity adhesive, translucent. It is the ideal for metal/laminated glass bonding

Art.	Contents	Q.ty
FX621.100	100 gr	1 Pc
FX621.250	250 gr	1 Pc
FX621.1000	1000 gr	1 Pc

Technical data:
Colour: translucent
Resin: acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **550 ÷ 1000 (medium)**
Consistency: very hard
Flash point [°C] > 95
Density [g/cm³]: 1.12 about
UV(UV-A 60mW/cm² Thickness 1mm) [s]: 15
Visible light (400-500 nm) [s]: 15
Catalyzing by heat 120°C [Min]: 40
Final performances [h]: after 12
Max. thickness to catalyze [mm]: 5
Refillable thickness [mm]: 0,07 ÷ 0,4
Temperature resistance [°C]: -40 ÷ 150
Hardness [Shore D]: 70 ÷ 80
Elongation [%]: 3.3
Water absorption [mass-%]: < 2.8
Tg [°C] (DSC): 40 ÷ 60
CTE [ppm/K]: 62
Dielectric constant [10kHz]: 6.2
Thermal conductivity [W/m·K]: 0,22
Dielectric strength [kV/mm]: 18.7
Shear/compr. Strength (Glass/Glass) [N/mm²]: 12 about
Shear/compr. Strength (Glass/Stainless steel) [N/mm²]: 18 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 8 about
Shear Strength (Glass/Aluminum) [N/mm²]: >15
Shear strength (Glass/Steel) [N/mm²]: >14
Elongation at break [%]:8 about
E Modul [N/mm²]: 420

FIXGLASS UV 629

Mainly used to bond,
Glass with: GLASS
Laminated Glass • Metal/Aluminum

Areas of application:
Solutions subjected to high levels of damp. Closed constructions of glass.

Description:
UV high-viscosity adhesive, transparent.

HIGH RESISTANCE TO DAMPNESS

Activator Art. FXATT

Art.	Contents	Q.ty
FX629.100	100 gr	1 Pc
FX629.250	250 gr	1 Pc
FX629.1000	1000 gr	1 Pc

Technical data:
Colour: transparent
Resin: acrylate
Viscosity (Brookfield LVT/25°C) [mPa.s]: **700 ÷ 1400 (hard)**
Consistency: semi-hard
Flash point [°C]: > 100
Density [g/cm³]: about 1.15
Refractive index [nD20]: 1.499
UV(UV-A 40mW/cm²) [s]: 25
Catalyzing by heat 120°C [Min]: 15
Final performances [h]: after 12
Catalyzing by activator [Min]: 1
Refillable thickness [mm]: 0,06 ÷ 0,3
Temperature resistance [°C]: -25 ÷ 120
Hardness [Shore D]: 60 ÷ 70
Elongation [%]: 0.32
Water absorption [mass-%] < 1.5
Shear/compr. Strength (Glass/Glass) [N/mm²]: 14.5 about
Shear/compr. strength (Glass/Stainless steel) [N/mm²]: 17,7 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 12,6 about
Elongation at break [%]:7,1 about

FIXGLASS UV 973

Mainly used to bond,
Glass with: GLASS
Metal/auminum • Plastics
Porous materials

VISIBLE LIGHT

Areas of application:
Solutions subjected to strokes, vibrations and to high levels of damp.
Closed constructions of glass.

Description:
UV high-viscosity adhesive, transparent.
Elastic adhesive ideal solutions subjected to strokes and vibrations

HIGH RESISTANCE TO DAMPNESS

Technical data:
Colour: transparent
Resin: urethane-acrylate
Viscosity (Brookfield LVT/25°C) (hard) [mPa.s]: **1000 ÷ 1500**
Consistency: elastic
Flash point [°C]: > 93
Density [g/cm³]: 1.1about
Refractive index [nD20]: 1.4718
UV(UV-A 60mW/cm²) [s]: 10
Visible light (9W Röhre) [s]: 60
Final performances [h]: after 12
Max. thickness to catalyze [mm]: 5
Refillable thickness [mm]: 0,09 ÷ 0,5
Temperature resistance [°C]: -50 ÷ 150
Hardness [Shore A]: 70 ÷ 80
Elongation [%]: 4.3
Water absorption [mass-%] < 0.8
Tg [°C] (DSC): > -45
Shear/compr. Strength (PC/PC) [N/mm²]: 2.1 about
Shear/compr. Strength (PC/PMMA) [N/mm²]: 2,5 about
Shear/compr. Strength (PC/FR4) [N/mm²]: 2,4 about
Shear strength (Glass/Glass) [N/mm²]: 5,7 about
Shear Strength (Glass/Aluminum) [N/mm²]: 3,4 about
Shear strength (Glass/Steel) [N/mm²]: 2,6 about
Elongation at break [%]:204 about
E Modul [N/mm²]: 1.4

Art.	Contents	Q.ty
FX973.100	100 gr	1 Pc
FX973.250	250 gr	1 Pc
FX973.1000	1000 gr	1 Pc

GLUE NEEDLES with new connection system DUAL LOCK

Needles for a precise and controlled measuring.
To be directly applied to the bottle with its adapter.
Different diameters available according to the adhesive viscosity.
It is suggested to throw the used needle away after the first application: possible non-cured residuals (even if partially) may cause problems to the next bonding.

Art.	Description	Q.ty
FXGH	5-needle kit with adapter	1 Pc
FXGH33	Measuring needle, Ø 0.33 mm orange, for FX627 - FX10 adhesive	1 Pc
FXGH41	Measuring needle, Ø 0.41 mm blue, for FX627 - FX10 adhesive	1 Pc
FXGH58	Measuring needle, Ø 0.58 mm pink, for FX621 - FX635 - FX10 adhesive	1 Pc
FXGH84	Measuring needle, Ø 0.84 mm green, for FX621 - FX630 - FX635 - FX10 adhesive	1 Pc
FXGH1.37	Measuring needle, Ø 1.37 mm amber, for thick adhesives FX630	1 Pc
FXADGH	Needle measuring adapter to be screwed on the bottle	1 Pc

FIXGLASS 630 UV GEL

Mainly used to bond, Glass with: METAL/ALUMINUM

Glass • Plastics • Porous materials

Areas of application:

Solutions subjected to high levels of damp and vertical applications.
IT DOESN'T FLOW. Closed constructions of glass.

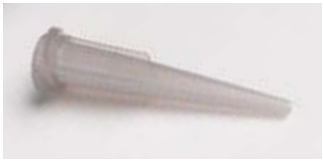
Description:

Thixotropic transparent UV adhesive. Thanks to its mechanical strength it is ideal for complex glass/glass, glass/metal and vertical bonding.

Activator Art. FXATT

Technical data:

Colour: transparent
Resin: acrylate
Viscosity: thixotropic (very thick)
Consistency: semi-rigid
Flash point [°C] > 93
Density [g/cm³]: 1.15 about
Refractive index [nD20]: 1.499
UV(UV-A 40mW/cm²) [s]: 25
Catalyzing by heat 120°C [Min]: 15
Refillable thickness [mm]: 0,09 ÷ 0,5
Catalyzing by activator [Min]: 1
Final performances [h]: after 12
Temperature resistance [°C]: -40 ÷ 130
Hardness [Shore D]: 60 ÷ 75
Elongation [%]: 0.32
Water absorption [mass-%]: < 2
Shear/compr. Strength (Glass/Glass) [N/mm²]: 14.5 about
Shear/comp. strength (Glass/Stainless steel) [N/mm²]: 17,7 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 12,6 about
Elongation at break [%]:7,1 about



Art.	Description	Q.ty
FXGEL30	Adhesive FIXGLASS 630 UV GEL 30 gr	1 Pc
FXGEL03	Single use plastic needles for FIXGLASS UV GEL cartridge - 5 Pc package	1 Pack.

FIXGLASS 621 UV GEL

Main material to be bonded, Glass with: METAL/STAINLESS STEEL

Glass • tempered glass • laminated glass • plastic materials • porous materials

Areas of application:

Open/closed glass constructions. Vertical applications - IT DOESN'T FLOW

Description:

Thixotropic, transparent UV adhesive. Thanks to its mechanical strength, it is ideal for significant bonding glass/glass, glas/metal, even vertically.

VISIBLE LIGHT

Technical data:

Colour: transparent
Resin: Acrylate
Viscosity: thixotropic (very dense)
Consistency: semi-rigid
Flash point [°C]: > 93
Density [g/cm³]: 1.1 about
Refractive index [nD20]: 1.47
UV (UV-A 60Mw/cm² [s]: 30 sec.
Curing with heat120°C [Min]: 15
Visible light (400-480 nm): 10 sec.
Thickness to be filled [mm]: 0.09 ÷ 0.5
Final performance [h]: after 12
Temperature resistance [°C]: -40 ÷ 130
Hardness [Shore D]: 55 ÷ 75
Elongation [%]: 3
Water absorption [mass-%]: < 0.8
Shear/compr. Strength (Glass/Glass) [N/mm²]: 14.5 about
Shear/comp. strength (Glass/Stainless steel) [N/mm²]: 17,7 about
Shear/compr. Strength (Glass/Aluminum) [N/mm²]: 12,6 about
Elongation at break [%]:7,1 about

Art.	Description	Q.ty
FX621GEL30	Adhesive FIXGLASS 621 UV GEL 30 gr	1 Pc
FXGEL03	Single use plastic needles for FIXGLASS UV GEL cartridge - 5 Pc package	1 Pack.

FIXGLASS 973 UV GEL

Main materials to be glued, Glass with: METAL / aluminium

Glass • Tempered glass • Laminated glass • Plastic materials • Porous materials

Main fields of use:

Solutions located even in settings with high humidity.
Vertical applications - DOES NOT DRIP. Open/closed glass constructions.

Description:

Thixotropic, transparent UV adhesive. Thanks to its elasticity in Shore A hardness scale, it is ideal for bonding glass/glass, glass/metal subject to vibrations or impacts, even vertically. **HIGH RESISTANCE TO HUMIDITY**

Technical data:

Colour: transparent
Resin: Urethane acrylate
Viscosity: thixotropic (very dense)
Consistency: elastic
Flammability point [°C] > 93
Density [g/cm³]: 1.1 approx.
UV(UV-A 60mW/cm²): 5 sec.
Maximum thickness to be catalysed [mm]: 5
Visible light (400-480 nm) [s]: 10
Thickness to be filled [mm]: 0.09 ÷ 0.5
Final performance [h]: after 12
Resistance to temperature [°C]: -50 ÷ 150
Hardness [Shore A]: 60 ÷ 70
Shrinkage [Vol-%]: 4.3
Water absorption [mass-%]: < 0.8
Cut/compr. resistance (Glass/Glass) [N/mm2]: 6.9 approx.

VISIBLE LIGHT

Art.	Description	Q.ty
FX973GEL30	Adhesive FIXGLASS 973 UV GEL 30 gr	1 Pc
FXGEL03	Single use plastic needles for FIXGLASS UV GEL cartridge - 5 Pc package	1 Pack.

FIXGLASS UV GEL GUN

Gun for dispensing FIXGLASS UV GEL.
Thanks to the precise mechanical movement it assures regular and controlled dispensing of the adhesive.

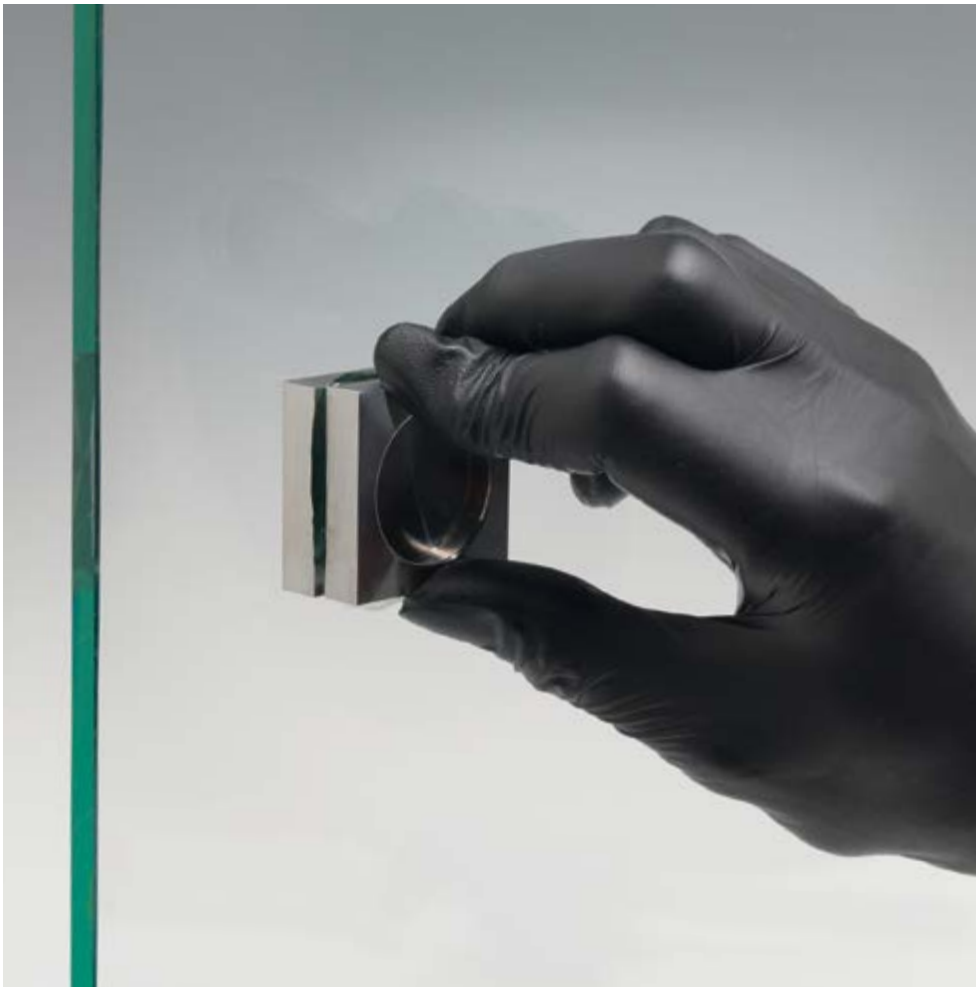
Art.	Description	Q.ty
FXGEL01	Gun for cartridge FIXGLASS UV GEL	1 Pc

UV ADHESIVES ACTIVATOR

When it is not possible or difficult to activate the adhesive with the lamp, this activator allow the adhesives FX629, FX630 and FXGEL630 curing.

Areas of application:
In case of coloured, painted, laminated glass, 2 opposing pieces like handles.

How to use:
Apply the activator with its special brush on the glass before bonding it: put the adhesive on the metal part to be bonded.
Pair the 2 pieces off and hold them tight as long as necessary.
A slight yellowish colour may occur due to the activator itself.



Art.	Description	Q.ty
FXATT	Activator for FIXGLASS UV 629,630 and FXGEL30 - 30 ml	1 Pc

BICOMPONENT

Mainly used to bond, Glass with: Glass
Metals/Stainless steel/aluminum
Plastics • Porous materials

Areas of application:
Solutions subjected to not-too-big static and dynamic loads
Open glass constructions.

Description
Epoxy not-filled bicomponent, fast and strong.
No solvents required.

Application:
Apply it on the glass before bonding with its gun and mixer or
by hand mixing resin and hardener together with a palette knife.
Join the two pieces together and hold them for the required time. Suitable for those bonding where the use of UV lamps and adhesives is not allowed.

Technical data:
Of the resin:
Colour: pale yellow
Viscosity: (25°C) [mPa.s]: 5000 ÷ 10000
Thickness: (25°C) [g/ml]: 1.13 ÷ 1.17
Of the hardener:
Colour: pale yellow
Viscosity (25°) [mPa.s]: 23000 ÷ 33000
Thickness (25°C) [g/ml]: 1.11 ÷ 1.15
Gelation time (25°C Thickness 2 mm) [s]: 120 ÷ 240
Time of use (25°C Thickness 2 mm) [s]: 120 ÷ 180
Setting time (25°C) [min]: 6 ÷ 7
Of the final system:
Colour: translucent
Resin: epoxy bicomponent
Texture: hard
Density (25°C) [g/ml]: 1.12 ÷ 1.16
Hardness (25°C after 1h) [Shore D]: 65 ÷ 70
Hardness (25°C after 24h) [Shore D]: 75 ÷ 80
Hardness (25°C after 7gg) [Shore D]: 78 ÷ 83
Tg (after 7days at TA) [°C]: 27 ÷ 32
Tg (after 16h at 40°C) [°C]: 27 ÷ 32
Tg (after 3h at 80°C) [°C]: 33 ÷ 38

Tensile-shear strength resistance
(Stainless steel AISI316 after 7days at TA) [MPa]: 9.0 ÷ 11.0
Tensile-shear strength resistance
(Stainless steel AISI316 after 16h at 40°C) [MPa]: 11.5 ÷ 13.5
Tensile-shear strength resistance
(Stainless steel AISI316 after 3h at 80°C) [MPa]: 15.0 ÷ 18.5
Tensile-shear strength resistance
(Aluminum after 7days at TA) [MPa]: 8.5 ÷ 10.5
Tensile-shear strength resistance
(Aluminum after 16h at 40°C) [MPa]: 10.5 ÷ 12.5
Tensile-shear strength resistance
(Aluminum after 3h at 80°C) [MPa]: 16.0 ÷ 18.0

Art.	Description	Q.ty
FXBC50	Epoxy bicomponent resin - 50 gr	1 Pc
FXBC03	Mixer for epoxy bicomponent resin FXBC50	1 Pc
FXBC05	Mixer for epoxy bicomponent resin FXBC50 - 5 piece box	1 Pack.

GUN FOR FXBC50 BICOMPONENT

Measuring gun for FXBC50.
Thanks to its precise mechanical movement it allows a precise and controlled measuring of the bicomponent.

Art.	Description	Q.ty
FXBC01	Gun for FXBC50 refill	1 Pc

FIXGLASS 1000

Surfaces preparatory for UV bonding.

Cleaning product for the surface to bond.
It is a concentrated alcoholic solvent; concentration higher than 99%.
It cleans and degreases glass, metal, marble.
Specifically designed for bonding by UV adhesives.
Equipped with ON/OFF nozzle.

- PRODUCT WITH NO EXPIRING DATE
- STORE IN A COOL AND SHADED PLACE
- THE USE OF NON-WOVEN FABRIC CLOTHES FOR THE APPLICATION IS SUGGESTED

WARNING: THE USE OF PROTECTIVE GLOVES IS SUGGESTED
FOR PROFESSIONAL USE ONLY

Art.	Description	Q.ty
FX1000	Surface preparer for UV bonding - 500ml - equipped with vaporizer	1 Pc

PROFESSIONAL VAPORIZER FIXGLASS 1000

Spare professional vaporizer for surfaces preparer FIXGLASS 1000 bottles.
Versatile and strong.
Designed for an ultimate use thanks to its rounded and ergonomic shape and a wide lever.
For frequent uses, long-lasting material.
Equipped with measurable nozzle.
Small tube with filter.
Complete with patent locking system to avoid unscrewing.
Product average delivery: 1.30 ml

Art.	Description	Q.ty
FXVP01	Professional spare vaporizer	1 Pc

FIXGLASS 1000 - 2 LITER BOTTLE

Surface preparer for UV bonding (refill)

Cleaning product for the surface to bond.
It is a concentrated alcoholic solvent;
concentration higher than 99%.
It cleans and degreases glass, metal, marble.
Specifically designed for bonding by UV adhesives.
Equipped with SAVE-CHILDREN DEVICE.
Bottle with nozzle for an easy refill of 500-ml bottles.

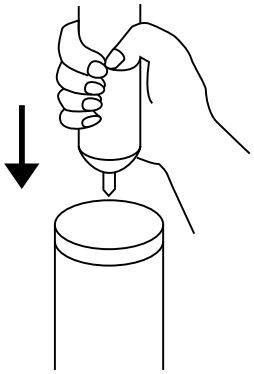
WARNING: THE USE OF PROTECTIVE GLOVES IS SUGGESTED
FOR PROFESSIONAL USE ONLY

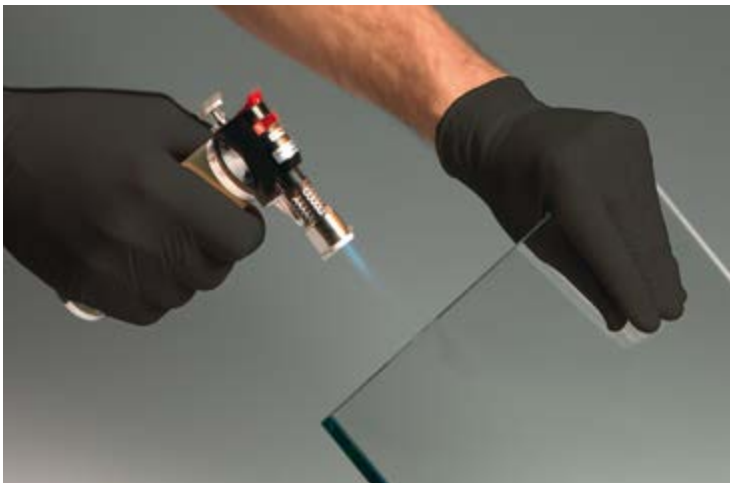
Art.	Description	Q.ty
FX2000	Surface preparer for UV bonding - 2000ml	1 Pc

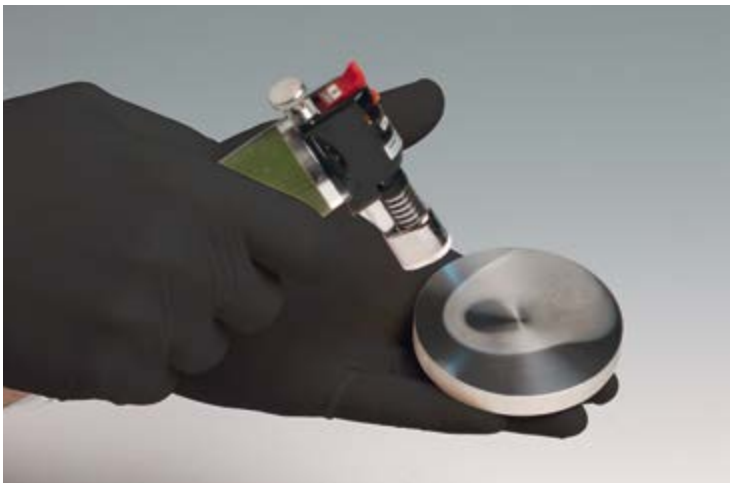
FIX FIRE

Flame treatment kit for glass, crystal, and metals before bonding.
It improves and increases glass/glass and glass/metal adhesion.
It removes damp - especially in wintertime when it impedes bonding - dirt and oil from every surface (sanded, etched, laminated or high - lead-content glasses as for example blown glass).

The kit is composed of:
1 micro slub device, refillable with piezoelectric kindling;
1 gas cylinder with low release of combustion residual.







Art.	Description	Q.ty
FXFIRE	Flame treatment kit (Slub device + refill 200ml)	1 Set

FIX FIRE GAS REFILL

GAS for flame treatment that emits a very low combustion residual release flame.
The proper mix of gas allows a good preparation of the surfaces to bond by letting the residual of damp to come out from the pores of the material with no residual.

Art.	Description	Q.ty
FXPIR200	FIX FIRE refill - 200 ml	1 Pc
FXPIR400	FIX FIRE refill - 400 ml	1 Pc

MAKITA HEAT GUN

Tool for controlled heat induction to be used in order to unglue UV bonded pieces.
UV adhesive softening temperature to be manually set, reducing the risk of glass breakage during the heating up.

Features:
Programmable.
Liquid crystal display that allows to control: kind of set work, temperature, fan speed.

Technical specifications:
Power input: 2000 Watt
Electronic switch: yes
Air flow: 200-550 l/Min
Temperature range: 80-650°
Cable length: 2.0 m
Dimension: 240x80x200 mm
Weight: 0.6 Kg

Supplied accessories:
Flat nozzle for heat gun

At a temperature of 130° C partially catalyzed adhesives soften, allowing to recover glass and tools.
Thanks to the temperature setting, this heat gun allows not to put the glass excessively under stress.

Art.	Description	Q.ty
FXTERM01	Makita heat gun with programmable temperature	1 Pc

BLACK FABRIC

Black fabric, h 4000 mm
To use in order to avoid the UV lamp rays to reflect during the bonding and unexpected moves of the glass.

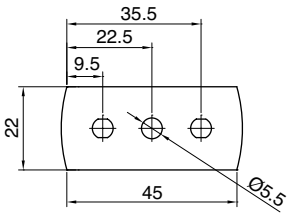
Art.	Dimension	Q.ty
FN4	Width 4000mm	Per m^2

DISPOSABLE BLADES FOR PLASTIC SHEAR

With cut prevention device.
To use to remove partially catalyzed adhesive residual in pre-bonding phase.
Keep the blade oblique to the surface in order not to scratch the glass.

Art.	Dimension	Available dimensions	Q.ty
LAME02	L 40 x 20 mm	Thickness 0.25 mm x 100 Pc	1 Kit

BLADES FOR PLASTIC CUTTING



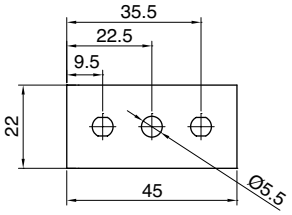
Art.	Dimension	Available sizes	Q.ty
LAME01	L 45 x 22 mm	Thickness 0.20 mm x 1000 Pcs	1 Set
LAME03	L 45 x 22 mm	Thickness 0.15 mm x 1000 Pc	1 Set

LAME05

LAME07

BLADES FOR PLASTIC CUTTING

Made in Denmark

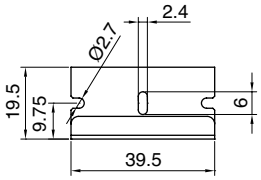


Art.	Dimension	Available sizes	Q.ty
LAME05	L 45 x 22 mm	Thickness 0.20 mm x 100 Pcs	1 Set
LAME07	L 45 x 22 mm	Thickness 0.15 mm x 250 Pcs	1 Set

DISPOSABLE BLADES FOR PLASTIC CUTTING

Spare blades with individual cutting edge for
scraping gasket labels etc.
The blades are made of carbon steel
thickness 0.009"/0.23 mm with an aluminium base.
Made in Mexico

Spare blades for **LAMRASCH003**



Art.	Dimension	Available sizes	Q.ty
LAME02	L 39.5 x 19.5 mm	Thickness 0.23 mm x 100 Pcs	1 Set

BLADE HOLDER WITH ARM

Blade holder designed to reach narrow spaces.
Supplied with 5 carbon steel blades for the removal of adhesives from glass.
The package also contains a plastic blade to prevent
scratches on more delicate surfaces.
The spring release makes changing the blade easier.
The compartment located in the handle enables to store the not used blades.

Art.	Description	Q.ty
LAMRASCH005	Blade holder with arm	1 Pc

RETRACTABLE BLADE HOLDING SCRAPER

Scraper with retractable blade, ideal for scraping or cleaning hard surfaces,
removing labels, traces of paint etc.
To be used with blades with a single cutting edge
Spare blades item **LAME02**
MADE IN U.S.A.

Art.	Description	Q.ty
LAMRASCH003	Retractable blade holding scraper	1 Pc

PROTECTIVE GLASSES 14 FOR UV BONDING

Filter and material of the lens:
Clear - Polycarbonate
Features:
• Protection from UV rays and impacts.
• For prolonged use too, since they do not cause optical distortions and visual fatigue.
• No colour distorsion.
Certified in accordance with: EN166/EN170 regulations
Markings: 2C – 1.2
VLT (visible light transmittance): 89%

WARNING:
TO BE WORN WHEN USING UV LAMPS

Art.	Description	Q.ty
LAMP014	Protective glasses for UV bonding with transparent lenses	1 Pc

PROTECTIVE GLASSES 16 FOR UV BONDING

Filter and material of the lens:
Orange – The UV blocking lens
Features:
• Protection from UV rays and impacts.
• Protection from UVA rays and visible light up to 525 nm.
• Raise contrast in case of low-light.
Certified in accordance with: EN166/EN170 regulations
Markings: 2C – 1.7
VLT (visible light transmittance): 55%

WARNING:
TO BE WORN WHEN USING UV LAMPS

Art.	Description	Q.ty
LAMP016	Protective glasses for UV bonding and visible light with orange lenses	1 Pc

PROTECTIVE GLOVES FOR UV BONDING

Protective ambidextrous antistatic gloves for UV bonding.
They stop UVA rays of the UV lamp, protecting the skin.
Low risk of allergies. Maximum elasticity with "memory effect" (through heat they adapt theirselves to the hand, and if stretched they recover their original shape).
Comfort and agility thanks to mat finger tips for a better grip.
Thickness: 0.1 mm

Test: UVA = 0.00 mW/cm²

Art.	Description	Size	Q.ty
FXGS50	Protective gloves for UV bonding - Box of 50 pieces	**S**	1 Pack.
FXGM50	Protective gloves for UV bonding - Box of 50 pieces	**M**	1 Pack.
FXGL50	Protective gloves for UV bonding - Box of 50 pieces	**L**	1 Pack.
FXGXL50	Protective gloves for UV bonding - Box of 50 pieces	**XL**	1 Pack.

TNT CLOTH

Non-woven-fabric cloth to clean the glass to be bonded.
No residual on the surface.
Together with FIX1000 and FX2000 it removes soiling and grease without leaving marks.

Art.	Description	Q.ty
FXTNT01	TNT cloth for the cleaning of the surfaces to bond - 40x 25 cm - 50 sheets	1 Pack.


Hönle
UV technology

FX UV LEDLINE 500 LAMP
HIGH INTENSITY LED LAMP
For irradiation of UV and Visible Light adhesives also in EXTENDED SURFACES

Latest generation LED technology – 60 High intensity LED
Lamp socket size: 503 x 96 x 46 mm - weight 2,8 kg
Output window: 500 x 15 mm
Without accessory feeder - direct connection to the mains
Power supply: 230 +10 Volt
Absorption: 120 Watt
Wavelength = 365 / 405 nm

Intensity*:
365 nm: 130 mW/cm²
405 nm: 300 mW/cm² - for **VISIBLE LIGHT** adhesives
* Intensity detected by UV Meter HONLE 2 cm from the lamp screen

Instructions inside the package

- LED TECHNOLOGY TO SWITCH ON AND OFF EVEN REPEATEDLY WITH NO BULB PROBLEMS
- LONG SERVICE LIFE - OVER **20.000** HOURS
- LIGHT RADIATION DISTRIBUTED UNIFORMLY ON THE WHOLE LINEAR SURFACE (bulb lamps concentrate the radiation into the screen focus), CAN AVOID **DIFFERENTIAL STRESSES** DUE TO CURING POINTS
- POSSIBILITY OF LAMPS BODY CONNECTION
- CONSUMPTION REDUCED TO 120 W ONLY (MORE EFFICIENT THAN 500 W BULB LAMP)
- EXCELLENT RESULTS EVEN AFTER ONLY A FEW SECONDS OF EXPOSURE
- HEATING TIME REDUCED TO ZERO - **INSTANT EFFICIENCY**
- **PROGRAMMABLE TIMER** WITH DOUBLE SWITCH (from 1 sec to 19 hours in continuous)
- DOES NOT HEAT - WORK SURFACE IS PROTECTED
- REMOVABLE ALUMINIUM SPACERS EQUIPED

WARNING: It is recommended to use the lamps protecting eyes and hands with proper IPD, protective glasses (LAMP014 / LAMP016) and gloves (FXG)

APPLICATION FIELDS: Curing of UV and Visible Light adhesives for glass, metals, plastics bonding

Art.	Description	Q.ty
FXUVLEDLINE365	Lamp HONLE LEDLINE500 wavelength 365 nm	1 Pc
FXUVLEDLINE405	Lamp HONLE LEDLINE500 wavelength 405 nm	1 Pc

HIGH INTENSITY LED LAMP
for irradiation of UV adhesives

Latest generation LED technology
Lamp socket size: 213 x 180 x 150 mm - weight 1.8 kg
Without accessory feeder - direct connection to the mains
230 Volt power supply
Absorption 64 Watt only
More than 20,000 hours service life!
Wavelength = 365 / 405 nm

Brightness:
365 nm: 130 mW/cm²
405 nm: 300 mW/cm² - for **VISIBLE LIGHT** adhesives

Instructions inside the package

- WITH LED TECHNOLOGY **SWITCH ON AND OFF EVEN REPEATEDLY** WITH NO BULB PROBLEMS
- LONG SERVICE LIFE - OVER **20,000** HOURS
- LIGHT RADIATION DISTRIBUTED CONSISTENTLY ON THE WHOLE SURFACE (bulb lamps concentrate the radiation into the screen focus), **WIDER BONDING AREA**
- ERGONOMIC AND LIGHT
- CONSUMPTION REDUCED TO 64 W ONLY
- EXCELLENT RESULTS EVEN AFTER ONLY A FEW SECONDS OF EXPOSURE
- HEATING TIME REDUCED TO ZERO - **INSTANT EFFICIENCY**
- DOES NOT HEAT - WORK SURFACE IS PROTECTED

It is recommended to use the lamps protecting eyes and hands with protective glasses (LAMP014 / LAMP016) and gloves (FXG)

Art.	Description	Q.ty
FXUVLED365	Lamp HONLE UV Hand LED for bonding at 365 nm	1 Pc
FXUVLED405	Lamp HONLE UV Hand LED for bonding at 405 nm - VISIBLE LIGHT	1 Pc
FXUVLED001	Container for lamp HONLE Hand LED	1 Pc

250 WATT REPLACEMENT BULB

Metal-halide bulb, peak emissions 365 nm.
Compatible with lamp **Art. FXUVHAND01**

Art.	Description	Q.ty
FXUVHAND03	Halide replacement bulb for UV Hand 250 Watt	1 Pc

250 WATT GALLIUM REPLACEMENT BULB

Gallium replacement bulb, peak emissions 405 nm (**visible light**) to bond laminated glasses bonding to glass or metal.
Compatible with lamp **Art. FXUVHAND01**

Art.	Description	Q.ty
FXUVHAND05	Gallium replacement bulb, laminated glass, for UV Hand 250 Watt	1 Pc

250 WATT REPLACEMENT BULB

NB: to set in order the item LAMP005, specify if the power supplier is HG200L or HG200 serie.
Compatible with lamp **Art. LAMP002**

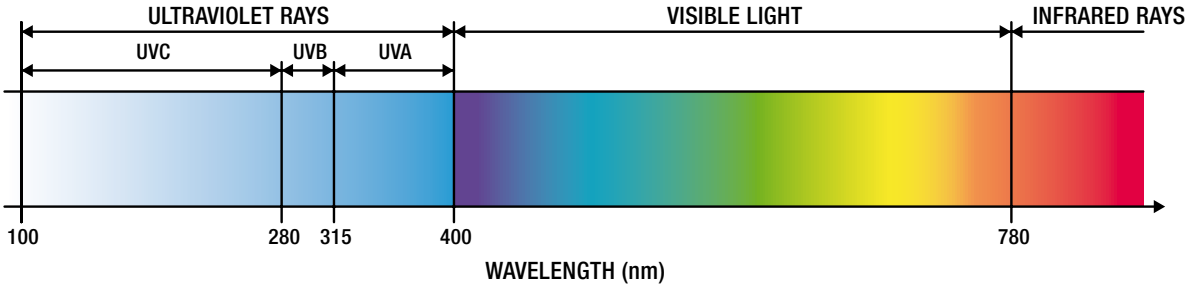
Art.	Description	Q.ty
LAMP005	Spare lamp 105 mm 250 watt for power supply unit HG200 (type JE3/5)	1 Pc
LAMP005L	Spare lamp 117 mm 250 watt for power supply unit HG200L (type JE3/5L)	1 Pc
LAMP008	Replacement filter 250 watt	1 Pc

500 WATT REPLACEMENT BULB

Compatible with lamp **Art. LAMP003**

Art.	Description	Q.ty
LAMP006	Spare lamp 117 mm 500 watt (type JE3/5L)	1 Pc
LAMP009	500 Watt replacement filter	1 Pc

UV RADIATION AND VISIBLE LIGHT

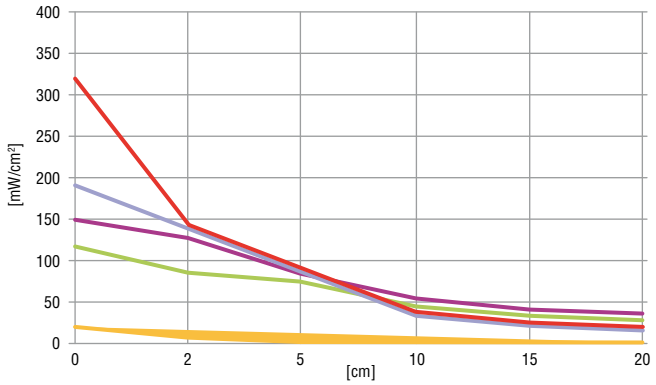


Traditional lamps emit UV-A rays with a peak wavelength of 365 nm. The PVB serves as a filter to the passage of those UV-A rays, so the use of lamps with a peak wavelength of 405 nm (VISIBLE LIGHT) is required. The known-as "VISIBLE LIGHT ADHESIVES" contain photoinitiators that allow to catalyze to 405 nm - peak wavelength not filtered by the PVB.

Is it possible to check intensity of UV lamps and the UV-A and VL rays required for UV and VL curing adhesives through a suitable measurement tool - the UV-Meter, which has to be set and provided with a proper photodetector.

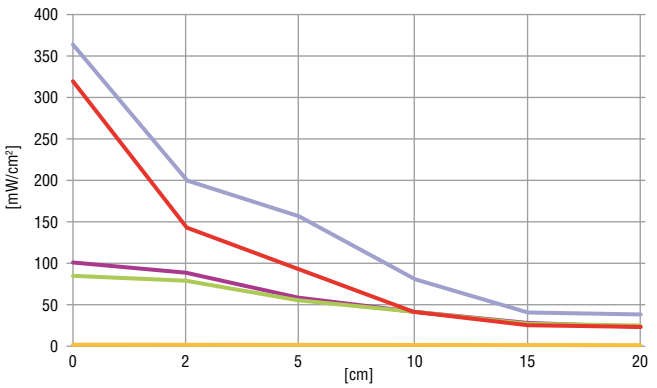
LINK BETWEEN INTENSITY OF UVA RAYS EMITTED BY THE LAMP AND THE DISTANCE

	Average values of UVA intensity [mW/cm²]				
Sensor - Lamp distance [cm]	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
0	317	186	151	119	14
2	139	135	127	88	6,7
5	88	82	84	75	3,6
10	43	41	55	47	2,2
15	25	23	38	32	1,5
20	17	15	29	23	1,1



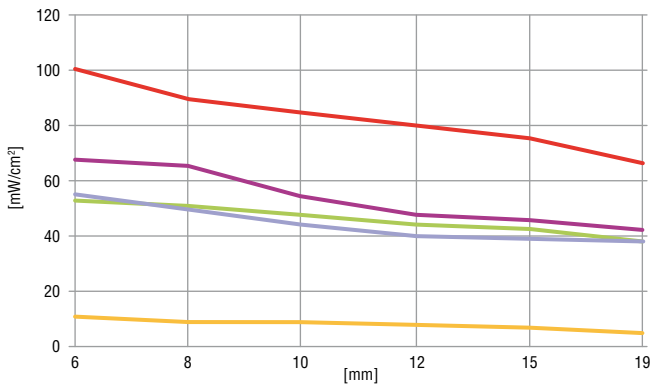
LINK BETWEEN INTENSITY OF LV RAYS EMITTED BY THE LAMP AND THE DISTANCE

	Average values of LV intensity [mW/cm²]				
Sensor - Lamp distance [cm]	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
0	317	355	102	89	2
2	139	201	88	78	1,2
5	88	159	58	58	0,7
10	43	74	40	38	0,4
15	25	44	27	25	0,2
20	17	29	19	18	0,1



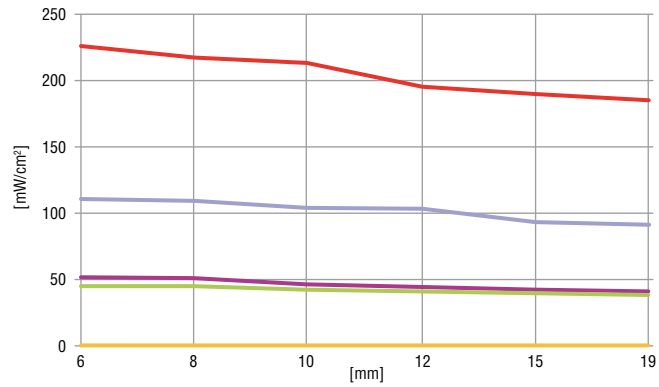
LINK BETWEEN INTENSITY OF UVA RAYS EMITTED BY THE LAMP AND THE THICKNESS

	Average values of UVA intensity [mW/cm²]				
Float and tempered glass thickness [mm]	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
6	100	54	68	53	9,4
8	90	49	65	50	7,8
10	84	44	53	47	8,0
12	80	40	48	44	6,8
15	70	39	46	43	6,5
19	67	38	41	38	4,4



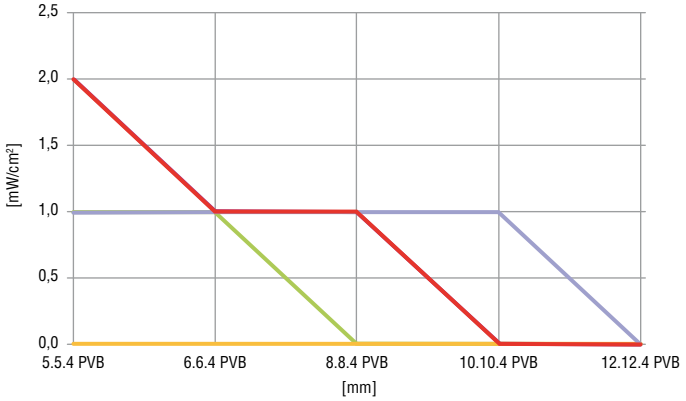
LINK BETWEEN INTENSITY OF LV RAYS EMITTED BY THE LAMP AND THE THICKNESS

	Average values of LV intensity [mW/cm²]				
Float and tempered glass thickness [mm]	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
6	225	110	52	47	1,8
8	215	109	51	46	1,7
10	212	105	48	44	1,6
12	196	103	45	41	1,5
15	191	94	43	40	1,4
19	183	91	41	38	1,0



LINK BETWEEN INTENSITY OF UVA RAYS EMITTED BY THE LAMP AND THE COMPOSITION OF LAMINATED GLASS

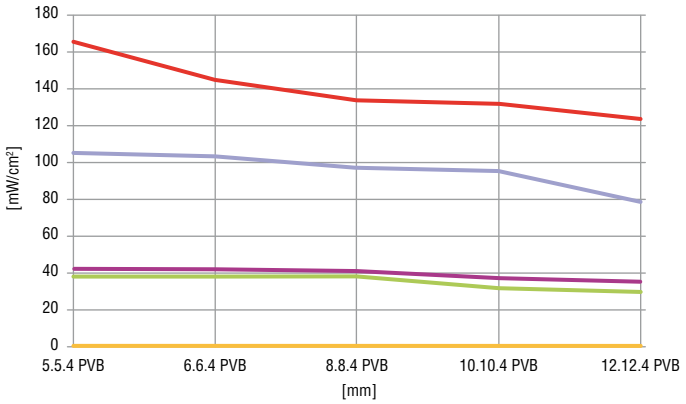
	Average values of UVA intensity [mW/cm²]				
Float and laminated glass thickness	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
5.5.4 PVB	2,0	1,0	2,0	1,0	0
6.6.4 PVB	1,0	1,0	1,0	1,0	0
8.8.4 PVB	1,0	1,0	1,0	0	0
10.10.4 PVB	0	1,0	0	0	0
12.12.4 PVB	0	0	0	0	0



Laminated glass composition

LINK BETWEEN INTENSITY OF LV RAYS EMITTED BY THE LAMP AND THE COMPOSITION OF LAMINATED GLASS

	Average values of LV intensity [mW/cm²]				
Float and laminated glass thickness	FXUVLED405 (64 W)	FXUVHAND01 (250 W)	LAMP003 (500 W)	LAMP002 (250 W)	PHILIPS TL-K ACTINIC BL (40 W) tubular
5.5.4 PVB	165	105	42	38	1,1
6.6.4 PVB	145	103	40	37	1,0
8.8.4 PVB	133	97	39	36	0,9
10.10.4 PVB	131	94	37	32	0,8
12.12.4 PVB	123	78	34	30	0,7



Laminated glass composition

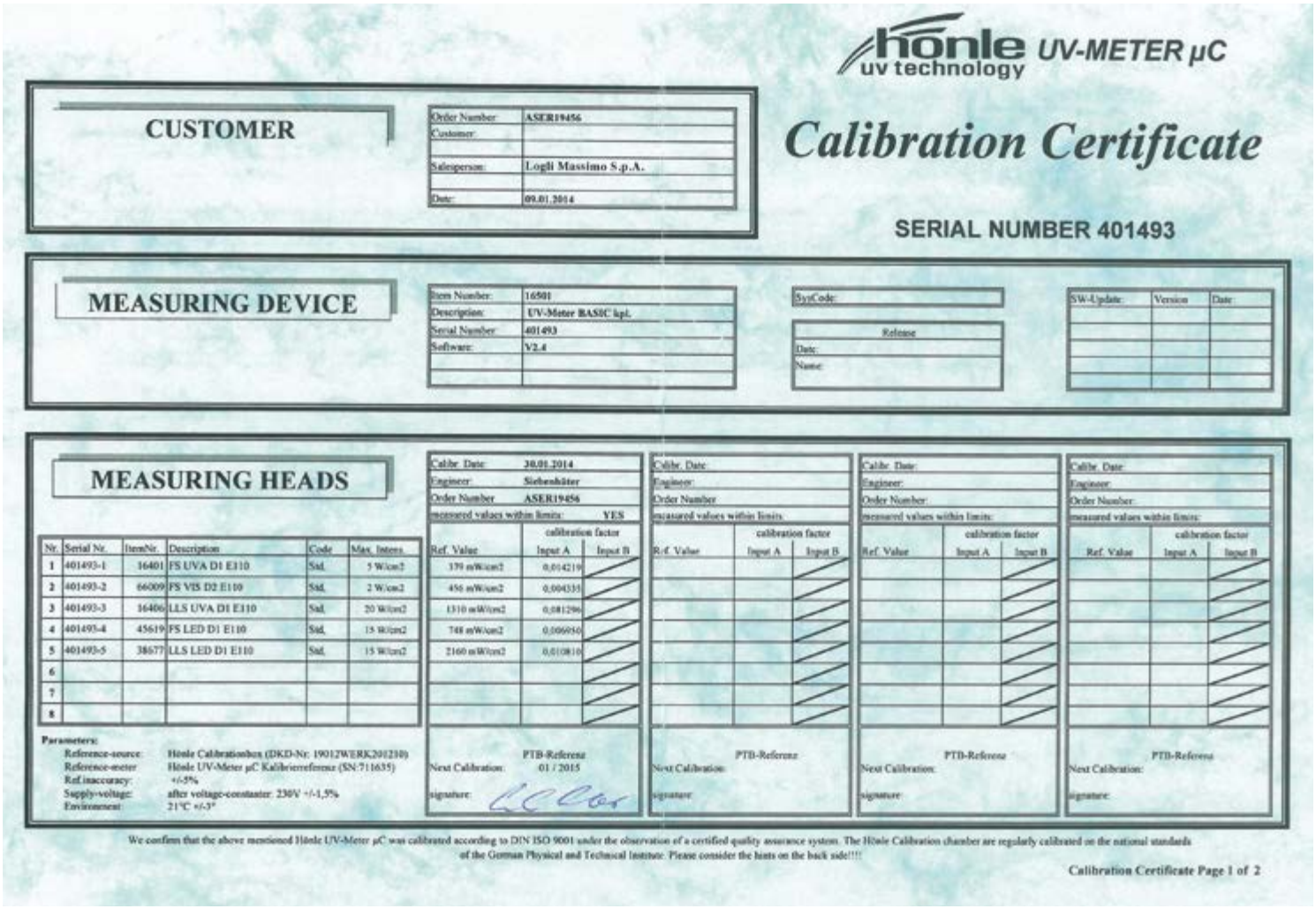
UV METER honle

Tools to measure UVA and VL rays intensity thanks to two specific sensors.
Values are displayed in mW/cm², W/cm² e W/m².

Useful tool for measurement of UV lamps power allowing an accurate check of their efficiency, which is a fundamental factor for a complete adhesive catalyzing and therefor for a good outcome of the bonding.

Measurement to be carried out periodically after having verified the cleaning of lamp and filter.

A calibration after every 12 months is suggested.



honle uv technology UV-METER µC

Calibration Certificate

SERIAL NUMBER 401493

CUSTOMER

Order Number:	ASER19456
Customer:	
Salesperson:	Logli Massimo S.p.A.
Date:	09.01.2014

MEASURING DEVICE

Item Number:	16501
Description:	UV-Meter BASIC kpl.
Serial Number:	401493
Software:	V2.4

SysCode:

Release
Date:
Name:

SW-Update:	Version	Date:

MEASURING HEADS

Nr.	Serial Nr.	ItemNr.	Description	Code	Max. Intens.
1	401493-1	16401	FS UVA DI E310	Std.	5 W/cm2
2	401493-2	66009	FS VIS D2 E110	Std.	2 W/cm2
3	401493-3	16406	LLS UVA DI E310	Std.	20 W/cm2
4	401493-4	45619	FS LED DI E110	Std.	15 W/cm2
5	401493-5	38677	LLS LED DI E110	Std.	15 W/cm2
6					
7					
8					

Parameters:
Reference-source: Hönle Calibrationbox (DKD-Nr: 19012WERK201230)
Reference-meter: Hönle UV-Meter µC Kalibrierreferenz (SN:711635)
Ref.inaccuracy: +/-5%
Supply-voltage: after voltage-constanter: 230V +/-1,5%
Environment: 21°C +/-3°

Calibr. Date:	30.01.2014		
Engineer:	Siebenhüter		
Order Number	ASER19456		
measured values within limits:	YES		
		calibration factor	
Ref. Value		Input A	Input B
379 mW/cm2		0,014219	
456 mW/cm2		0,004331	
1310 mW/cm2		0,081296	
748 mW/cm2		0,006916	
2160 mW/cm2		0,010810	

PTB-Referenz
Next Calibration: 01 / 2015
signature:

Calibr. Date:
Engineer:
Order Number
measured values within limits:
calibration factor
Ref. Value | Input A | Input B
PTB-Referenz
Next Calibration:
signature:

Calibr. Date:
Engineer:
Order Number:
measured values within limits:
calibration factor
Ref. Value | Input A | Input B
PTB-Referenz
Next Calibration:
signature:

Calibr. Date:
Engineer:
Order Number:
measured values within limits:
calibration factor
Ref. Value | Input A | Input B
PTB-Referenz
Next Calibration:
signature:

We confirm that the above mentioned Hönle UV-Meter µC was calibrated according to DIN ISO 9001 under the observation of a certified quality assurance system. The Hönle Calibration chamber are regularly calibrated on the national standards of the German Physical and Technical Institute. Please consider the hints on the back side!!!!

Calibration Certificate Page 1 of 2

Art.	Description	Q.ty
FXUVHAND09	HONLE UV METER (UVA+VL)	1 Kit
FXUVHAND11	Only body HONLE UV METER	1 Pc
FXUVHAND13	UVA sensor	1 Pc
FXUVHAND15	VISIBLE LIGHT sensor	1 Pc

365nm UV BONDING SAMPLE CASE

Case contents:

- ABS case with shockproof sponge
- 2x FIXGLASS UV 627 100g - UV Adhesive
- 2x FIXGLASS UV 630 100g - UV Adhesive
- 2x FIXGLASS UV 629 100g - UV Adhesive
- FIXGLASS 630 UV GEL 30g - UV Adhesive
- FXATT Activator for FIXGLASS629, 630 and FXGEL30 adhesives - 30ml
- Disposable plastic needle for FIXGLASS UV GEL adhesive cartridge
- Gun for cartridge FIXGLASS UV GEL
- FXBC50 Bi-component epoxy resin - 50 g
- Mixer for FXBC50 bi-component epoxy resin
- Gun for FXBC50 cartridge
- Flame treatment kit (flamer + 200 ml refill)
- Surface preparer FIXGLASS 100 UV - 500 ml
- HONLE lamp FXUVLED365 (365nm) - visible light
- Protective glasses for UV bonding and visible light, orange lenses
- TNT cloth to clean the surfaces to be bonded - 40x25cm (3pcs)
- Protective gloves for UV bonding (1 pair)
- Blades to cut disposable plastic needles - Thickness 0.25 (3)
- Kit of 5 measuring needles with bottle adapter

Art.	Description	Q.ty
FXBOXLED365	Case set with 365nm Honle LED lamp and relative accessories - 60x42x18.5cm	1 Kit

VISIBLE LIGHT 405nm UV BONDING SAMPLE CASE

Case contents:

- ABS case with shockproof sponge
- 2x FIXGLASS UV 635 100g adhesive - visible light
- 2x FIXGLASS UV 621 100g adhesive - visible light
- 2x FIXGLASS UV 973 100g adhesive - visible light
- FIXGLASS 973 UV GEL 30g - visible light
- FIXGLASS 621 UV GEL 30g - visible light
- Disposable plastic needle for FIXGLASS UV GEL adhesive cartridge
- Gun for cartridge FIXGLASS UV GEL
- FXBC50 Bi-component epoxy resin - 50 g
- Mixer for FXBC50 bi-component epoxy resin
- Gun for FXBC50 cartridge
- Flame treatment kit (flamer + 200 ml refill)
- Surface preparer FIXGLASS 100 UV - 500 ml
- HONLE lamp FXUVLED405 (405nm) - visible light
- Protective glasses for UV bonding and visible light, orange lenses
- TNT cloth to clean the surfaces to be bonded - 40x25cm (3pcs)
- Protective gloves for UV bonding (1 pair)
- Blades to cut disposable plastic needles - Thickness 0.25 (3)
- Kit of 5 measuring needles with bottle adapter

Art.	Description	Q.ty
FXBOXLED405	Case set with 405nm Honle LED lamp and relative accessories - 60x42x18.5cm	1 Kit

NOTES

The images and information contained in this catalogue are to be considered indicative and may be subject to variations without prior notice

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