UV Curing adhesive

UV curing adhesives are 1 part adhesives that cure extremely quickly when exposed to UV-rays at the right intensity and wavelength, improving production efficiency. UV curing adhesives create a very tough plastic film and provide transparent, not subject to yellowing over time bonding, with excellent mechanical resistance. Loxeal acrylic based UV adhesives are specifically designed for bonding, even structurally, glass, metal and plastics, if and only if, at list one substrate is transparent to UV-radiation. Other grades are available for potting, coating and sealing electronic components. Some of them have a secondary cure mechanism (UV-anaerobic / UV-heat) to cure the shadow areas.
In Loxeal UV adhesive range, some products are Toxicon approved for medical applications, to bond needle for syringes and other medical devices.

BENEFITS:

- Single component, easy dispensing either manually or with dosing systems.
- Solvent free.
- Long open time together with extremely short fixture time (seconds).
- The bonding process is repeatable and can be highly controlled.
- Create clean and aesthetically perfect joints.
- Keep transparency overtime, without yellowing.
- 3 chemical bases allow to solve different applications:
  - Acrylics: bonding glass, metal plastics, high transparency.
  - Modified acrylics: for coating, potting and sealing, tack free.
  - Epoxy: high temperature resistant, low shrinkage.

SUBSTRATES:

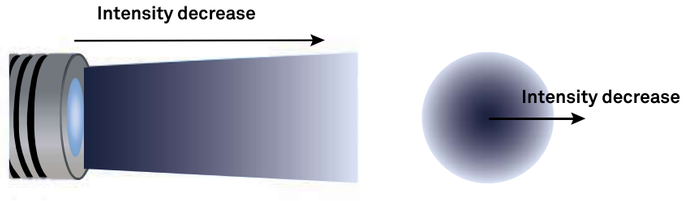
- Glass
- Crystal
- Metal
- Trasparent plastics (PC, ABS, PMMA, PET, PETG and others)

TIPS FOR GLASS BONDING

- It's recommended to clean this material with Acetone and a cellulose cloth to remove contaminants on the surface.
- Dry the parts with a hot air gun (+70/+100°C) immediately before bonding, in order to remove the humidity halo that is formed quickly on the surface when exposed to air.
- In case of Float glass sheets, it's recommended to not apply the adhesive on the tin side. Detect which is the tin side with the appropriate lamp before bonding.
- In case of colored glass, tempered glass, laminated glass, verify that the material does not absorb the UV-radiation at the wavelength specific for the polymerization of the adhesive.

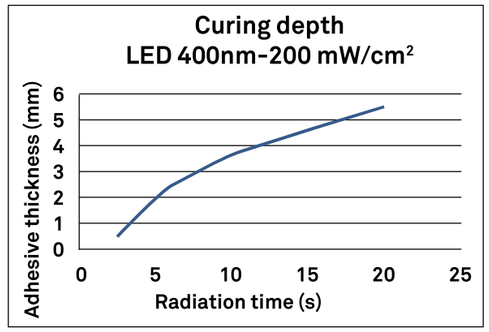
CONTROL PARAMETERS FOR UV CURING ADHESIVES

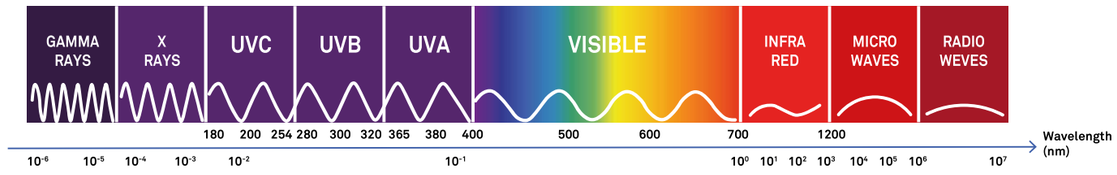
- Radiation intensity (mW/cm²) depends on several factors, such as:
  - Distance of the light source from the bonding area
  - Distance from the center of the radiation



  - Radiation absorption caused by the material placed between the light source and the adhesive
  - Life of the lamp

- Radiation time
  Other things being equal, a thicker adhesive layer requires a longer irradiation time to achieve full cure.
- Radiation wavelength (nm)
  For better results, when using LED lamps, it is recommended to use lamps with emission peak at 365nm or 400nm, depending on the material to be bonded and the adhesive used.





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DIRECTIONS FOR USE

- First of all, it is necessary to make sure that the light source is suitable to the substrate and the product. Use a radiometer to evaluate the transparency of the material through which the radiation should pass.
- It is suggested to use UV-light sources that are able to provide radiation intensity at more than 5mW/cm^2, emitted at a wavelength between 365nm and 400nm.
- Record the intensity of the radiation (expressed in mW/cm^2) that will irradiate the adhesive, set the distance between the parts and the lamp, to ensure the bonding process repeatability and control.
- It is recommended to apply the adhesive on clean and dry surfaces. The cleaning can be done with a suitable solvent, such as Acetone for glass/metals and isopropyl alcohol for plastics.
- Surface treatments, suitable to the substrate, such as mechanical treatment (abrasion) or chemical treatment on metals improve the bonding durability and its mechanical strength.
- Couple the parts not applying added pression to avoid internal stresses that may occur when the pressure is released.
- Start the radiation at the chosen intensity, for the time necessary to fix the parts.
- The adhesive excess on the bonding area can be cleaned mechanically (UV30-23 and UV30-30 make this operation particularly easy).
- Continue the radiation up to full cure that is achieved when increasing the radiation time, the adhesive properties, such as adhesion, hardness and shear strength do not improve.
- Wait for 24h before stress the joint to allow the polymer chains relaxation.
- Cured product can be removed mechanically only.

TIPS FOR PLASTIC BONDING

- It is recommended to clean the surfaces before bonding, use suitable solvents such as isopropyl alcohol.
- Typically, plastics absorb radiations at wavelengths lower than 380/400nm.
- Before bonding, check at which level the plastic surfaces absorb the radiation, to be sure that the lamp and the adhesive are suitable to the substrate.
- The heat generated by the lamps (except for the LED lamps), may damage the plastic material. It is suggested to set a system to cool the parts.

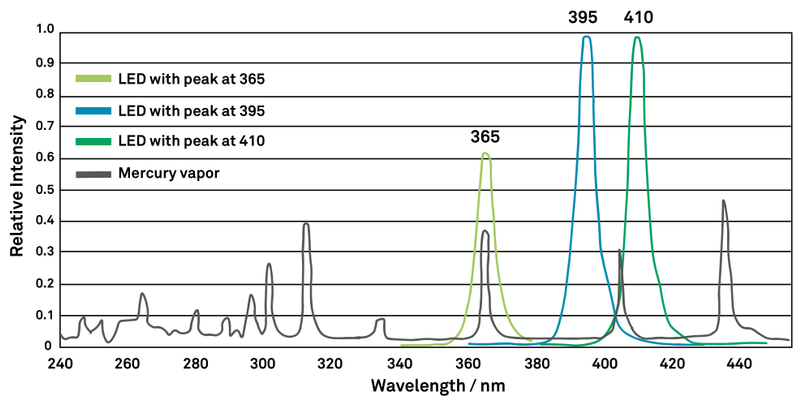
LOXEAL LAMPS for curing uv-adhesive

Loxeal offers different kind of lamps to cure UV-adhesives in order to provide a full bonding solution to the client, from the adhesive to the UV-light source at the suitable intensity and wavelength.

LED TECHNOLOGY: FEATURES AND BENEFITS

- Emission spectrum more concentrated compared to the broad-spectrum mercury arc lamp.
- Emission at UVA and visible wavelength, no emission at dangerous wavelengths (UVB, UVC).

UV LED radiation spectrum compared to the traditional mercury vapor lamp



- Immediate switch-on, while bulb lamps require time to achieve the maximum efficiency.
- Cold light emission. Avoid possible damages on parts, caused by heating, mostly on polymer materials.
- More system efficiency and durability (not depending on the quantity of usage cycles).
- Possibility to provide higher intensity radiations.
- Environmentally friendly.

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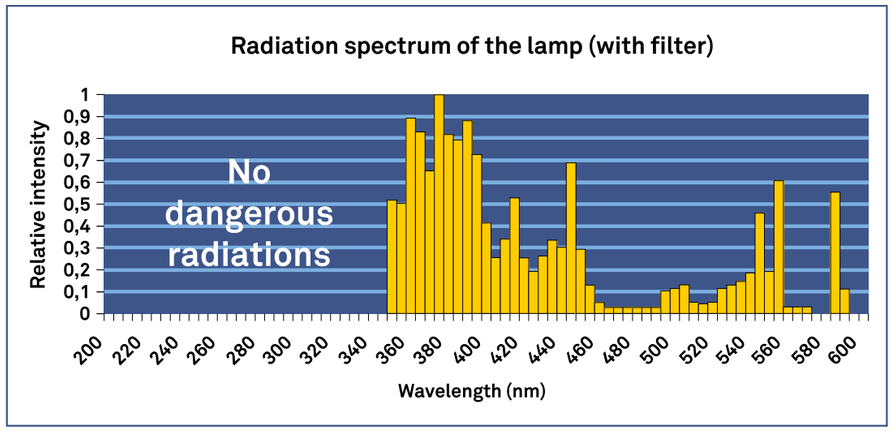
UV LAMP 400 Watt

High-pressure quartz metal-halogen lamp with iron halides additives, ozone-free.
The lamp can be used alone to radiate small surfaces or as a part of a multiple system to radiate wide and complex surfaces. Power supply and projector are in aluminum, so that they are light and easy-to-handle. The power supply includes thermal safety in case of overheating, counter and timer. Also available with lens hood.
The lamps cover square area of around 30-35 cm side, with a UV-A intensity of 35mW/cm^2.
It ensures:
- High light efficiency
- Short time for curing UV adhesives
- Low heat emission

The emission spectrum is in the range of 300 and 600nm, with maximum emission at UVA band (340-400nm). Dangerous radiations below 340 nm are blocked by professional dichroic filter.

Measure and weight

Lamp:	180x190x120 mm 2,7 kg
Power supply:	mm 230x190x140(h) 6,8 kg



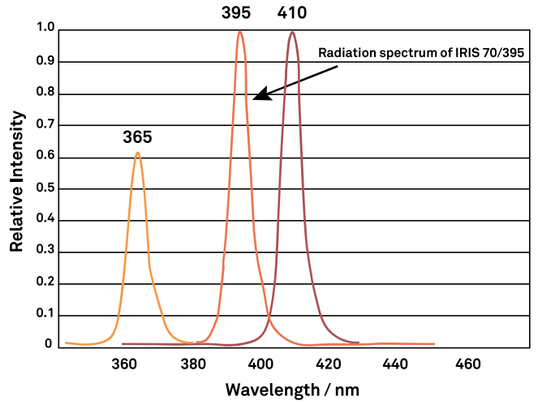
IRIS UV LED LAMP 70

The lamp UV IRIS 70 has a multi-die UV LED, with high total capacity, up to 70W.
The lamp is compact and air-cooled, its special torch-shape allows the operator either to use it manually or to fix it on production lines. UV LED sources are highly efficient and have a quick economic return thanks to the low electric energy consumption and little or no maintenance needed.
The device includes: LED lighting structure, wire with dedicated connector and power supply.
LED lighting structure contains the LED chip, that is the UV light emitter, the cooling system (heatsink + fan), dedicated optics and electronics. Ozone-free, it doesn't contain mercury and doesn't emit UVB and UVC radiations.

The lamp is available in different versions depending on the UV emission peak wavelength (365nm, 395nm or 410nm).

Measure and weight

LED lighting structure:	50x50x125 mm
Optional power supply: (wire excluded)	0,24kg



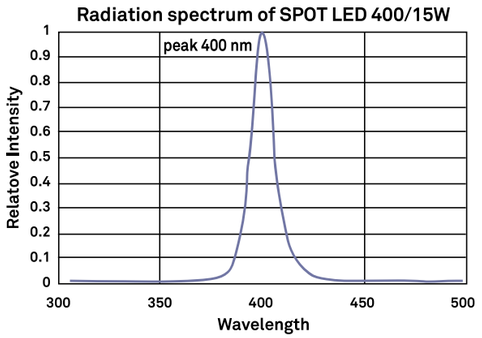
UV SPOT LED LAMP 15 Watt

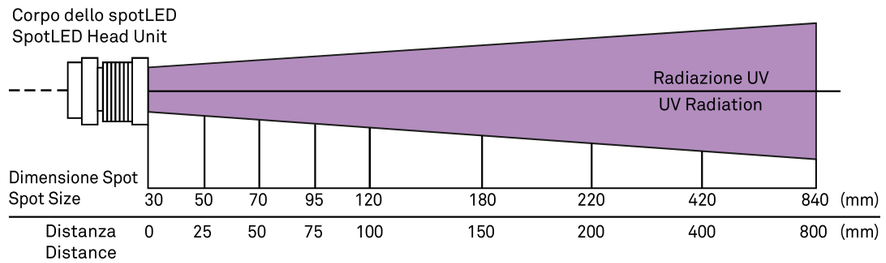
The lamp UV Spot LED has a multi-die UV LED, with high total capacity, up to 15W. The Spot LED is a compact system, ideal either to be used by the operator manually or to be fixed on production lines. UV LED sources are highly efficient and have a quick economic return thanks to the low electric energy consumption and little or no maintenance needed. The device includes: LED lighting structure, wire and power supply. The long-lasting LED lighting structure contains the LED UV, the cooling system, dedicated optics and electronics. Ozone-free, it doesn't contain mercury and doesn't emit UVB and UVC radiations. The lamp is available in 5 different versions depending on the UV emission peak wavelength: 365, 390, 400, 410, 460nm. Spot dimension at contact: diameter 30 mm.

Measure and weight

LED lighting structure
(wire excluded):
outer diameter 49,5 mm
length 126,2 mm
0,290 kg

Optional power supply
(wire excluded):
0,240kg





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	GRADE	VISCOSITY (+25°C mPa.s)	GAP FILLING (mm)	CURING TIME	UV CURING (nm)	HARDNESS (Shore D)	ELONGATION AT BREAK (%) DIN 53504	TENSILE STRENGTH D 2095-69 (N/mm^2)	DESCRIPTION
PLASTIC	**30-11**	200- 300	0,03 - 0,20	+	365 - 400	50 - 65	100 - 150	-	Low viscosity, for PC, rigid PVC, ABS and other plastics. Provides tough and resistant bonding. ISO10993 approved for use on medical devices. Compatible with both ETO and gamma-rays sterilization.
	30-12	200- 400	0,03 - 0,20	++	365 - 400	50 - 65	120 - 200	-	Low viscosity, excellent for bonding PC, PMMA, PVC, ABS, PET and other plastics. Good resistance to humidity and thermal cycles. Excellent aesthetic finishing.
	30-12 Gel	GEL	0,03 - 2	++	365 - 400	70 - 80	120 - 200	-	Gel, for vertical application or large gaps. Excellent for bonding PC, PMMA, PVC, ABS, PET and other plastics. Good resistance to humidity and thermal cycles. Excellent aesthetic finishing.
	UV3013	1500 - 2000	0,03 - 1,5	++	365 - 400	40 - 50	200 - 250	-	Medium viscosity, maximum performance and aesthetic finishing on PMMA, PC, PETG and other plastics, also in combination with other thermoplastic materials, glass and metals. Low shrinkage and stress cracking.
	30-27	90 - 150	0,03 - 0,20	++	365 - 400	70 - 80	10 - 50	-	Medium-low viscosity, fluorescent. High strength, recommended for the assembly of medical syringes, may be used to bond thermoplastic parts with metal and glass. ISO10993 approved for use on medical devices. Compatible with both ETO and gamma-rays sterilization.
GLASS	**30-20**	2200 - 2900	0,03 - 1,5	+	365 - 400	50 - 65	80 - 100	10 - 14	Medium viscosity, for bonding glass/glass, glass/metal and fine crystal. Ideal for furniture and art-objects.
	30-21	600 - 1300	0,03 - 1,5	+	365 - 400	50 - 70	90 - 150	10 - 14	Low viscosity, good toughness. For glass/glass, glass/metal bonding. Ideal for pieces of furniture and edge-bonding on glass, crystal and metal plates.
	30-22	5500 - 7500	0,03 - 2	++	365 - 400	50 - 65	80 - 100	8 - 12	High viscosity, for large gaps, for bonding glass/glass, glass/metal and fine crystal.
	30-23	50 - 100	0,03 - 1,5	+	365 - 400	60 - 75	60 - 100	10 - 14	Very low viscosity, for glass/glass, glass/metal with excellent aesthetical finishing on large flat surfaces. Adhesive excess is easy to remove after few seconds of exposure to UV-radiation.
	30-24	2200 - 2900	0,03 - 2	++	365 - 400	50 - 70	60 - 100	12 - 16	Medium viscosity, good strength and toughness, for glass/glass, glass/metal bonding. Ideal for furniture and art-objects.
	30-30	500 - 800	0,03 - 1,5	++	400	50 - 60	60 - 120	8 - 14	Medium-low viscosity, optical clarity over time even in thick layer. High impact and vibrations resistance. Designed for flat glass and crystal. Adhesive excess is easy to remove after few seconds of exposure to UV-radiation.
	30-33	1000 - 2000	0,03 - 1,5	++	365 - 400	65 - 75	80 - 150	6 - 10	Designed for bonding glass (flat, tempered, colored) and glass/metal. Suitable for glass and furniture industries, that require joints with high quality finishings.
	30-34	2500 - 3500	0,03 - 1,5	++	365 - 400	60 - 70	80 - 120	8 - 14	For glass/glass, glass/metal bonding. High transparency even in thick layer. Ideal for bonding fine crystal in furniture and art-objects production.
	30-35	5000 - 8000	0,03 - 1,5	++	365 - 400	40 - 50	150 - 200	8 - 12	For glass/glass, glass/metal bonding, with long lifetime in wet environments. High impact and vibrations resistance. Ideal for bathroom scales, door hinges for showers, metal profiles on glass, traffic signs devices.
	30-36	5000 - 8000	0,03 - 2	++	365 - 400	60 - 70	100 - 150	8 - 12	High viscosity, for large gaps, for bonding glass/glass, glass/metal. Thanks to its transparency even in thick layer is ideal for bonding fine crystal and glass tableware.
	30-37	2200 - 2900	0,03 - 1,5	++	365 - 400	50 - 60	90 - 150	6 - 10	Medium viscosity, it creates an elastic adhesive film, resistant to shocks and bending force. Ideal for bonding glass/glass, glass/metal, glass/metallized plastics. Suitable for art-objects and furniture industries.
	30-38	20000 - 30000	0,03 - 2	++	365 - 400	50 - 75	100 - 150	5 - 10	High viscosity, for large gaps, high transparency even in thick layer. It is ideal for bonding glass/glass, glass/metal and fine crystal.
	30-60	GEL	0,03 - 2,5	+	365 - 400	60 - 70	60 - 100	4 - 8	Gel, for vertical application and large gaps. Designed for glass/glass, glass/metal bonding. Ideal for glass block bonding.
	30-83	1000 - 1600	0,03 - 1	++	365 - 400	50 - 65	50 - 100	-	Medium viscosity, for coating and doming, on glass and metal. The surface exposed to the air is tack-free in seconds. Resistant to high temperature, up to +200°C for short time. Low shrinkage.