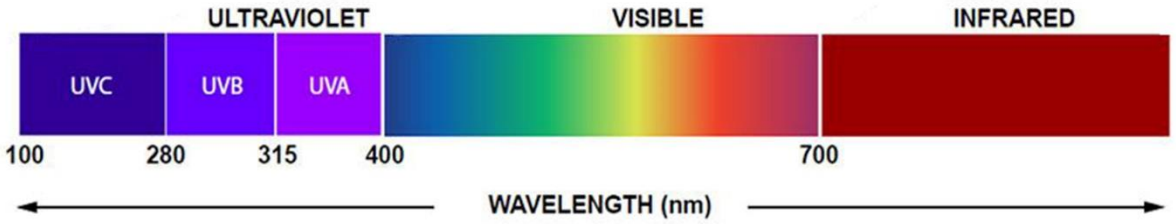
Glass Campus

UV Light for Glass Art

It's a mistake to assume ultraviolet light is a specific colour. It is instead a spectrum of light as broad as the spectrum of light we see as visible colours. At one end of the visible light spectrum is red. At the other end is purple. All the other colours we see as different colours are spread out in between. Red light and blue light are all in our visible light spectrum but they are not the same colours. The same colour difference applies in the ultraviolet light range.

Different colours are measured in nanometers. The colours we see as visible light range from 400 to 700 nanometers. The ultraviolet light spectrum ranges from 100 to 400 nanometers. In the same way visible light is divided into different colours, the ultraviolet spectrum is divided into 3 categories.

UV-A 315 – 400 nanometers
UV-B 280 – 315 nanometers
UV-C 100 – 280 nanometers



The light spectrum below infrared is microwave and radio wave. Above ultraviolet is xrays and gamma rays.

It's important to understand the different groups of UV light because they are each used in different ways in glass art. We use UV light to cure glue and we use it to test the tin side of float glass but the spectrum of UV for each is significantly different. The colour range that works for glue will not work to test tin side and the colour range that works to test tin side will not work to cure UV glue. Some types of UV light will pass through window glass and some will not. UV-C produced by the sun does not penetrate the earth's atmosphere but when produced artificially will pass through standard window glass. Glass blocks passage of UV-B & UV-C

UV-A passes through glass
UV-B partially blocked by glass
UV-C totally blocked by glass.

UV Light for Glass Art

UV Light for Glue

UV curing uses ultraviolet light to create a photochemical reaction in a polymer compound to create an unbreakable bond. The light spectrum of UV light to cure glue is between in the UV-A range between 365 and 405 nm. This is commonly referred to as **long wave** UV light.

It's important you use the correct light to produce a strong bond. Sunlight will cure UV glue but will take a lot longer and produce a weaker bond than if cured with a long wave UV lamp.

Application

UV cure glue is excellent for bonding glass to glass or glass to metal.Unlike epoxy where the surfaces to be bonded must be roughened to produce tooth, UV glue work best on a perfectly smooth surface.

Advantages of UV curing

- Speed. The bond can be create in as little as 1 minute.
- Strength. The bond from properly applied UV glue is unbreakable.
- Permanent. The bond is permanent.
- Eliminates drilling holes and cutting notches.
- Working time. UV glue remains liquid until UV light is applied.

Disadvantages of UV curing

- Works only with clear glass.
- Requires near perfectly smooth surface.
- Requires special wavelength light to cure the clue

UV Light for Glass Art

UV Lights for Tin Side Testing

When glass is made by floating molten glass on a bed of molten tin a small amount of tin is absorbed by the glass on the side touching the tin. Glass artists sometimes need to identify the tin side for working on glass art projects. A lamp that produces shortwave UV light is used to identify the tin side of float glass. When directed at the glass the tin side will glow. The other side will not

The light spectrum needed to detect tin is the range of light referred to as UV-C at approximately 254 nanometers. This is commonly referred to as **short wave** UV light.

Why test?

- Cutting – more reliable break when scored on the air side.
- Lifting– suction cups are more trustworthy on the air side.
- Fusing – many paints, enamels and mica will not fuse to the tin side.
- Devitrification likelihood depends on which side is fired facing up.

Testing with a UV lamp

Turn all the lights off and rotate the light from the UV lamp across the edge of the glass. The tin side of the glass will glow. The other side will not. If the tin side of the glass is facing the UV lamp you will see a fluorescent blue glow in the glass. With a little experimentation shining the light on different side you will easily see which side produces the most glow.

WARNING

When using a UV light take special care to not look directly into the light. It can cause permanent eye damage.