# PERMABOND® UV7220

*UV-Curable Adhesive*

Provisional Technical Datasheet

## Features & Benefits

- Excellent environmental resistance
- Resistant to humidity
- 100% solids, no solvents
- Bonds glass filled PBT
- Low water absorption

## Description

**PERMABOND® UV7220** is a low viscosity Dual Cure (UV-Heat Curing) cationic adhesive. It is suitable for bonding plastics such as Polycarbonate and glass filled PBT. UV7220 is self-levelling, suitable for sealing or potting applications. It is formulated to have good resistance to humidity and thermal cycles.

## Physical Properties of Uncured Adhesive

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| Chemical composition | Epoxy resin |
| Appearance | Black |
| Viscosity @ 25°C | 700 – 1,300 mPa.s *(cP)* |
| Thixotropy index | 3.7 |
| Rewarming time from storage temperature | 50ml: 50 minutes at 25°C<br>160ml: 90 minutes at 25°C |
| Operation time | 3 days at 25°C |
| Specific gravity | 1.14 |

## Typical Curing Properties

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| Typical fixture time | LED 150mW/cm² lamp: 4s* |
| Cure wavelength | 325 - 365 nm*** |
| Maximum curing thickness (60s: 365nm, 150 mW/cm²) | 0.75 mm *(0.03 in)* |
| Alternative heat cure** | 80°C *(176°F)*: 50 mins<br>100°C *(212°F)*: 25 mins<br>130°C *(266°F)*: 10 mins |

**The cure time depends on the power of the UV lamp, its spectral output, the distance between the lamp and the components, and the transmission characteristics of the substrates.*

***Once cured, leave the components for 24 hours at 24°C to complete the polymerization.*

***LED UV lamps have a narrow range of spectral output. It is important to check suitability with Permabond in order to match the LED lamp's peak wavelength with that of the adhesive's photoinitiator to ensure optimal adhesive cure.

## Typical Performance of Cured Adhesive

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| Shear strength* (ISO4587) | Mild Steel (Heat cured): 15 N/mm² *(2175 psi)*<br>PETG: >3 N/mm² *(>435 psi)***<br>Polycarbonate/PETG: >3 N/mm² *(>435 psi)***<br>ABS: 2-4 N/mm² *(300-580 psi)*<br>PBT (Glass filled): 2-5 N/mm² *(300-725 psi)*<br>PETG / Stainless steel: >3 N/mm² *(>435 psi)*** |
| Elongation (ISO37) | >5% |
| Glass transition temperature Tg | 145-160°C *(293-320°F)* |
| Operating temperature | -40 to 150°C *(-40 to 302°F)* |
| Volumetric shrinkage | 1.6% |
| Water absorption 24h at 25°C (ASTM D 570) | 0.8% |
| Hardness (ISO868) | 70-90 Shore D |

**Strength results will vary depending on the level of surface preparation and gap.*

***Substrate failure was observed (PETG)*

## *Additional Information*

This product is not recommended for use in contact with strong oxidizing materials.
Information regarding the safe handling of this material may be obtained from the Safety Data Sheet.
Users are reminded that all materials, whether innocuous or not, should be handled in accordance with the principles of good industrial hygiene.

**This Technical Datasheet (TDS) offers guideline information and does not constitute a specification.**

## *Surface Preparation*

Surfaces should be clean, dry and grease-free before applying the adhesive. Particular care should be taken to remove silicone based cleaning agents which may have been used previously to clean glass.
Some metals such as aluminium, copper and its alloys, will benefit from light abrasion with emery cloth (or similar) to remove the oxide layer.
Isopropanol can be used to degrease most surfaces.
Where thermoplastic surfaces are involved we recommend tests are done to ensure compatibility, mold release agents may affect bond strength.

## *Storage & Handling*

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| Storage Temperature | -18°C to 0°C ***(-0.4 to 32°F)*** |
| Protect liquid adhesive from room lighting. | |

## *Directions for Use*

1. Adhesive can either be applied directly from the bottle or dispensed via automated dispensing equipment for more accurate dosing.
2. Apply the adhesive to one surface and assemble. Avoid entrapping air.
3. Parts should be firmly held and not disturbed during cure. Expose the joint to ultra-violet light for the appropriate time to ensure the components are fixed. Cure time depends on the power of the UV lamp, its spectral output, the distance between the lamp and the components, and the transmission characteristics of the substrates.
   Alternatively, the components can be cured with heat. Use a jig / clamp to prevent parts moving during cure and expose to the appropriate heating conditions.
4. Once cured, leave the polymerized product for 24 hours at 23°C in order to complete the cationic polymerization.

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