

White Paper: Nailing your UV curing adhesive process

Process speed and simplicity are just two of the many productivity benefits that **light curing adhesives and coatings** bring to the table. If this is a new process for you, or you are setting up production on a new product, then you will want to figure out how to get it working reliably and repeatably.

To help, we've released a new white paper entitled, [***Nailing Your UV Curing Adhesive Process***](#). Highlighting the key UV curing adhesive process variables that need to be understood, and either eliminated or kept within acceptable tolerances, our white paper aims to help you achieve process accuracy and repeatability.

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Nailing Your UV Curing Adhesive Process

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Introduction

The benefits of using a light cure adhesive or coating are well documented, including process speed and simplicity that lead to increases in productivity¹. To achieve accuracy and repeatability, all the process variables need to be understood, and eliminated or kept within acceptable tolerances. Clarity and control of the variables will give manufacturers confidence in their process.

Qualify the process

OK, the design has been finalised, the parts have been fabricated, and the adhesive has been specified². It was probably a quality person who originally said, "the task of engineering is to make it work once, while the task of quality assurance is to make it work all the time"; nevertheless, it is now the task of the process development team to take these parts and materials and establish a bonding process that works *all the time*. Prior to commencing production, the manufacturer should qualify this process, and in doing so gain a complete understanding of the process design.

In certain regulated industries (e.g., medical device manufacturing), the resulting process needs to be *validated*, a more onerous exercise; by collecting and assessing data, from process design right through to full production, we establish scientific evidence that the process is capable of consistently delivering quality product. There also needs to be a clear plan for how to maintain and verify the process on a continued and long-term basis.

Focal points

The two principal focal points are to ensure that a) the adhesive has undergone an optimal cure, and b) the adhesive is been applied in the correct quantity and in the correct place. In both cases, the key is to identify the process variables, which need to be understood and eliminated, or kept within acceptable tolerances. It is important to qualify the process by using actual production parts, with the final specified substrates and manufacturing tolerances.

Curing lamp wavelength and intensity

The adhesive product data sheet should give guidance on the appropriate curing lamp. This should include types of bulb if a mercury arc lamp — a long wave UV-A metal halide bulb is most commonly specified for adhesive curing. If an LED UV curing lamp is recommended, then a wavelength or wavelengths should be stated — 365 nm, 385 nm, 395 nm or 405 nm are common. Some guidance on the required intensity may be given; if not, we recommend a minimum of 50 mW/cm². Once specified, the lamp type and wavelength should not be changed without a requalification.

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Last updated: August 2021

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