Medical Plastics News publishes UV curing article

The latest issue of ***Medical Plastics News*** (issue 51, November/December 2019) is out today. We are proud to be featured on page 17 with an article entitled *All of the lights* – an overview and some hints about using **UV curing adhesives for medical device assembly**. Read the complete issue, or click on the picture below to read our piece. Subscribe to ***Medical Plastics News*** here.

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All of the lights

PETER SWANSON, MANAGING DIRECTOR AT ADHESIVES SPECIALIST INTERTRONICS, GIVES HIS TOP TIPS FOR GETTING THE BEST FROM YOUR ULTRAVIOLET (UV) CURING PROCESS.

Since its introduction in the 1960s, UV curing technology has streamlined adhesive applications for medical devices. Over the last few years new UV curing technologies have been emerging, resulting in greater equipment choices and process considerations than ever before.

Typical applications for UV curing medical device adhesives include needles and cannulas, reservoirs, tube sets and catheter bonding. When an adhesive is required in a medical device assembly, manufacturers have a range of adhesives chemistries and cure options to choose from.

When assembling a medical device, it is critical that processes are reliable, consistent and are able to be validated. For bonding parts, UV light curing adhesives perform well against these criteria. This is because they are single part systems and come in a range of viscosities, facilitating precise, repeatable dispensing, both in quantity and location. Curing is fully completed in seconds and within a controlled process window which means that immediate on-line quality assurance checks are possible. Understanding and managing process variables is key for a robust procedure, as mandated by the industry.

The choice of adhesive is substrate dependent. For example, an adhesive which adheres well to PolyVinyl Chloride (PVC) may not adhere well to stainless steel. However, ensuring good adhesion to all of the substrates is particularly challenging in medical device manufacturing, possibly due to the use of less common plastics, such as PolyEther Ether Ketone (PEEK). A capable supplier will be familiar with industry-specific substrates and have appropriate adhesives for evaluation. In some cases, plasma surface treatment can be used to improve adhesion to low surface energy polymers.

Medical device manufacturers will want to consider selecting adhesives that pass ISO 10993 or USP class VI testing, which indicates that they are non-toxic. In addition, the adhesive will need to withstand the required sterilisation process (e.g. EtO - ethylene oxide). Intertronics supplies a wide range of ISO 10993-tested UV-curable adhesives that are able to withstand sterilisation. Opting for a biocompatible adhesive will help the device to pass toxicity testing later on.

LAMP CHOICE

UV curing lamps are usually based on two types of quite different technology. Mercury arc lamps produce a broad spectrum of light and have been used successfully for decades, making them the predominant type of lamp for UV curing. However, despite their popularity, this type of lamp does have some drawbacks. They typically have a less than 2,000-hour bulb operational life; the intensity of the lamp degrades over time and is therefore a process variable which needs measurement and understanding. To guarantee a complete cure it is important to compensate for this. The bulb will need replacing before the output becomes inefficient.

Light Emitting Diode (LED) lamps are a more recent technology and, unlike mercury arc lamps, produce a narrow spectrum of light. When using a LED UV curing lamp, the output does not appreciably degrade over time, there are no bulbs to replace and there is no warm-up time required. One of the major

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