



## Patented Color-Change Technology

- Easy visual confirmation of material placement, quantity, and cure
- Validation of cure for the entire bond line, not just for select areas
- Blue to clear, blue to pink, or purple to blue color changing formulas available
- No special equipment required
- No additional floor space or employee training needed
- Medical-grade and LED-curable products available

Dymax light-curable adhesives with patented See-Cure technology have built-in cure validation that makes it easy for operators, or simple automated inspection equipment, to confirm cure without investing in additional specialized equipment. See-Cure technology is an indicator of cure that intentionally transitions the color of the adhesive after it has cured and builds a visible safety factor into the assembly process. The color transition is directly linked to the photoinitiator in the adhesive.

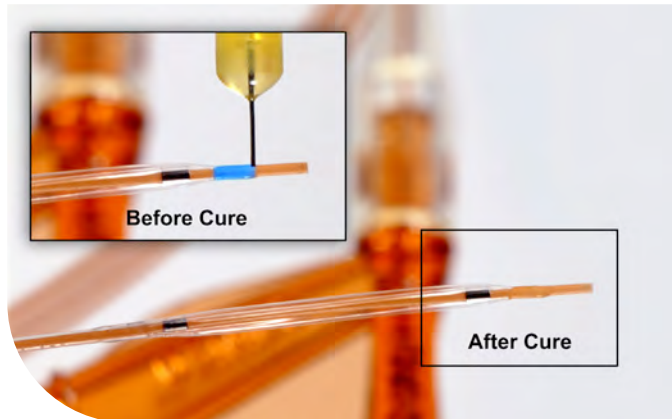
See-Cure technology answers the two most often asked questions about light-curable products:

- How do I know that I've dispensed enough adhesive in the prescribed area?
- How do I know when the adhesive is cured?



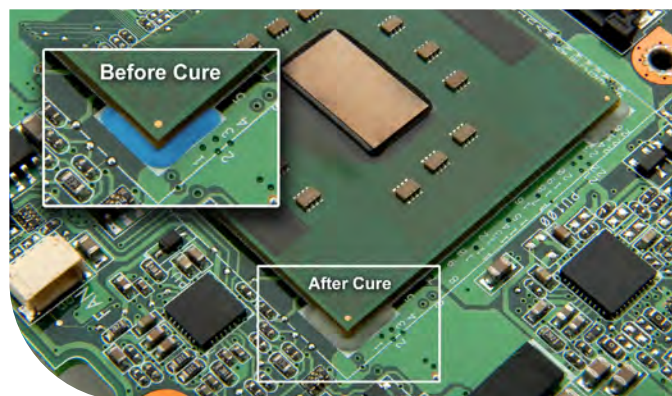
## See it Dispense!

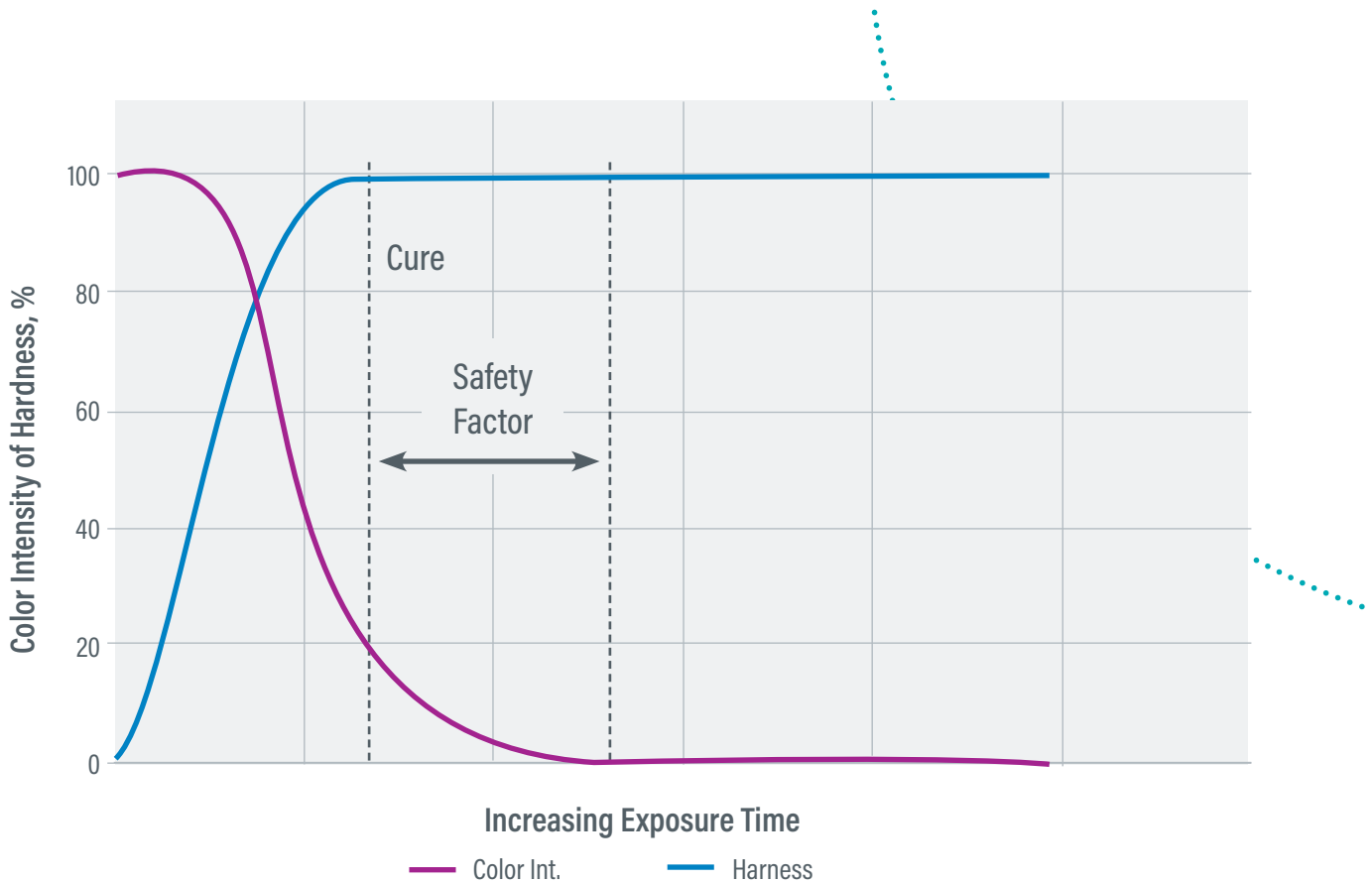
Dymax adhesives that are formulated with See-Cure technology are bright blue in an uncured state. This makes them easy to see on the surface of substrates, in deep wells, or when placed between two layers of materials, while enabling simple confirmation of the quantity and location of placement. The adhesives' blue color will not permanently stain or affect the biocompatibility of the component surfaces they contact. Because the blue color is extremely visible, simple vision systems can be incorporated into automated assembly processes prior to curing in order to easily identify adhesive coverage and profile.



## See it Cure!

As the adhesive begins to cure, its blue color begins to fade and ultimately turns clear after full cure. See-Cure adhesives are specifically formulated to ensure that this visually obvious, blue-to-clear color change occurs only after the adhesive is cured. This serves as a visible confirmation that the adhesive has received a sufficient dose of energy to cure. See-Cure technology that transitions the adhesive from blue to pink or purple to pink is also available. These products are ideal for applications in which post-cure confirmation of adhesive cure and placement is critical.

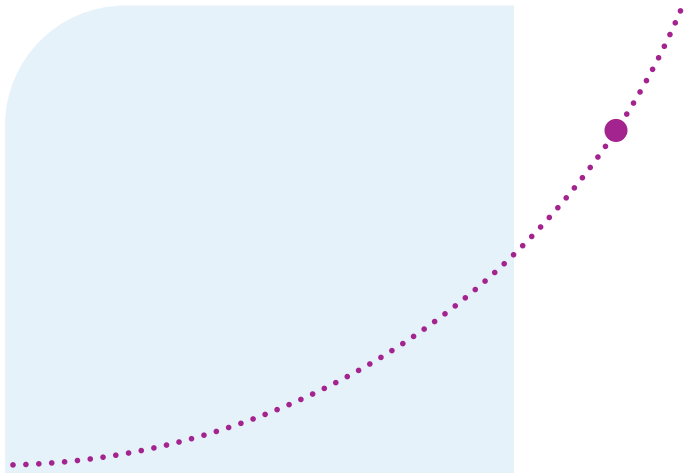




To absolutely ensure the relationship of visual clarity and full cure, Dymax intentionally formulates See-Cure adhesives so that the color change occurs 5-15% slower than the actual adhesive cure. (As light curing adhesives often cure in fractions of a second, the added time required to complete the color transition from blue to clear is typically negligible.) This programmed delay supports good engineering and manufacturing practices which mandate that bonding processes be qualified with a reasonable period of “over-curing” as a safety factor.

To verify that See-Cure technology consistently serves as a reliable indicator of full cure, Dymax performed extensive testing with a wide variety of its light curing adhesive products. The test matrix included standard adhesives with a broad range of adhesive cure speeds and cured properties. Using existing specifications from each standard adhesive as a control, the adhesives adjusted with See-Cure were again tested to the same specifications. All physical cured properties of the sample group remained within the measured values of the original specifications. In addition, adhesive products designated for medical device assembly were formulated with the See-Cure technology and tested for biocompatibility. The test results confirm that the addition of See-Cure technology has no effect on the biocompatibility rating of the original product.

To illustrate the concept of See-Cure technology, measurements of product hardness were taken during curing cycles to determine the point of full cure. These were plotted against measurements of adhesive color intensity at the same time intervals. The graph below depicts the typical relationship between the progression of adhesive cure and the diminishing color of See-Cure technology within the adhesive. As verified by the graphed measurements, the final color change from blue to clear occurs after adhesive curing has taken place.



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