

See It Cure

See-Cure Technology from DYMAX

If seeing is believing, then DYMAX has developed the world's most persuasive light curing adhesive technology for industrial assembly processes. Whether the market is medical, electronics, aerospace, or automotive, two questions are often asked about light curing products:

- **How do I know that I've dispensed a sufficient amount of adhesive in the prescribed area?**
- **How do I know when it is cured?**

See-Cure technology was invented at DYMAX and is patent-pending. The technology is an indicator of cure that intentionally transitions color after the adhesive is cured, which builds a visible safety factor into the assembly process. The color transition is not the effect of bleaching from UV irradiation. The color change is directly linked to the photoinitiator in the adhesive.



See it Dispense!

DYMAX adhesives that are formulated with **See-Cure** technology are bright blue in color in the uncured condition. This makes them easy to see on the surface of substrates, in deep wells, or when placed between two layers of materials. The blue colored **See-Cure** adhesives will not permanently stain or affect the biocompatibility of the component surfaces that they contact. As the blue color is extremely visible, simple vision systems may be incorporated into assembly processes prior to curing in order to easily identify adhesive coverage and profile.



See it Cure!

The blue color of DYMAX See-Cure adhesives turns clear after the adhesive is cured. This serves as a visible indicator that confirms the adhesive has received a sufficient dose of energy to reach full cure. As the adhesive cures, the blue color within the adhesive fades and ultimately turns clear after full cure.

See it Cure from Blue to Clear



UNCURED



CURED



COLORLESS

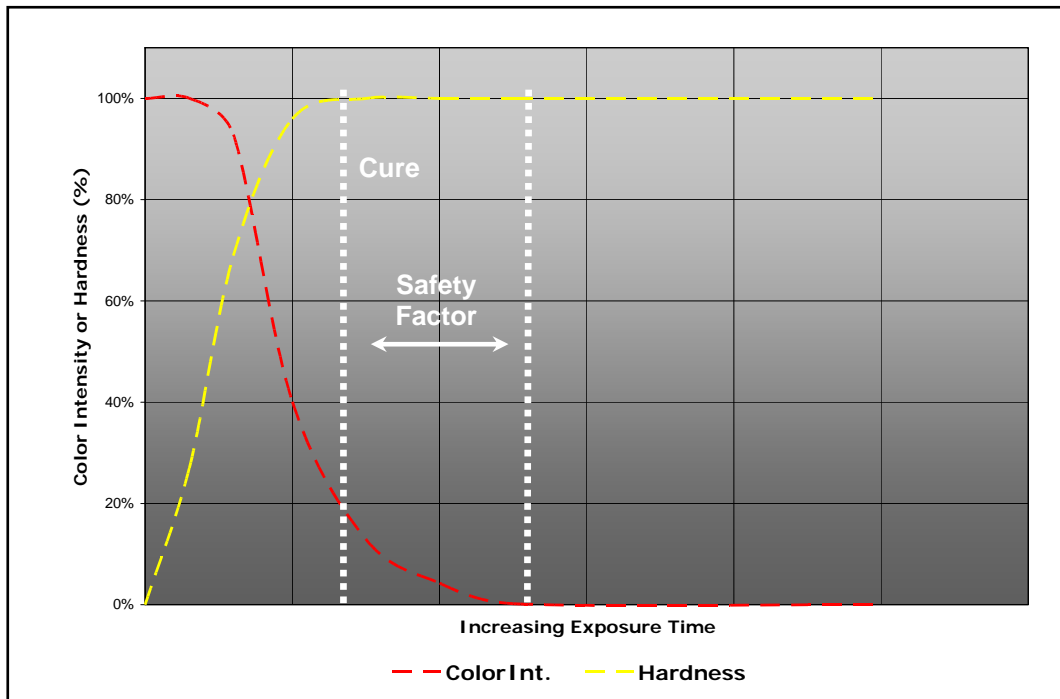
Then, when the adhesive is cured, the blue turns clear!

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 affect 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.

See the Solution!



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