Norland Optical Adhesive 61

SEND INFO

Norland Optical Adhesive 61 ("NOA 61") is a clear, colorless, liquid photopolymer that will cure when exposed to ultraviolet light. Since it is a one part system and 100% solids, it offers many advantages in bonding where the adhesive can be exposed to UV light. The use of NOA 61 eliminates premixing, drying or heat curing operations common to other adhesive systems. Curing time is remarkably fast, and is dependent upon the thickness applied and the amount of ultraviolet light energy available.

NOA 61 meets Federal Specification MIL-A-3920 for optical adhesives and is approved for use on all government contracts specifying such adhesives. The adhesive is designed to give the best possible optical bond to glass surfaces, metals, fiberglass and glass filled plastics. NOA61 is recommended for bonding lenses, prisms and mirrors for military, aerospace and commercial optics as well as for terminating and splicing optical fibers.

NOA 61 also has excellent clarity, low shrinkage and as light flexibility that make it superior to other materials for optical bonding. These characteristics are important in order for the user to produce high quality optics and achieve long term performance under changing environments.

NOA 61 is cured by ultraviolet light with maximum absorption within the range of 320-380 nanometers with peak sensitivity around 365nm. The recommended energy required for full cure is 3 Joules/sq. cm in these wavelengths. The cure is not inhibited by oxygen, hence any areas in contact with air will cure to a non-tacky state when exposed to ultraviolet light.

Recommended Light Sources

HAND HELD	MANUFACTURER	CURE AREA	APPROX. CURE TIME
Opticure LED 200	Norland Products Cranbury, NJ	1/2 inch	5-10 seconds at 1/2 inch
DESK TOP	**MANUFACTURER**	**CURE AREA**	**APPROX. CURE TIME**
Bench Mount Lamp	Spectronics Westbury, NY	4 x 15 inches	25 minutes at 6 inches

In most optical applications, curing is done in two steps. A short, uniform exposure, or precure, is used first. The precure

time is of sufficient duration to set the bond and allow it to be moved without disturbing alignment. This is followed by a longer cure under UV light to obtain full cross linking and solvent resistance of the adhesive. The precure can be obtained in 10 seconds using a 100 watt mercury lamp at 6".Where longer time is required for alignment, it can be extended to a few minutes using a very low intensity light source. The final cure can be accomplished in 5 to 10 minutes using the 100 watt mercury lamp.

The precure allows the user to align and set the precision parts quickly and minimizes the number of holding fixtures required. After the precure, excess adhesive can be wiped up with an alcohol or acetone moistened cloth. Assemblies should be inspected at this time and rejects separated in methylene chloride. The bonded area must be soaked in the solvent and normally will separate overnight. The time required to break the bond depends upon the extent of the cure and the size of the bond area.

When fully cured, NOA 61 has very good adhesion and solvent resistance, but it has not reached its optimum adhesion to glass. This will come with aging over a period of about 1 week in which a chemical bond will form between the glass and adhesive. This optimum adhesion can also be obtained by aging at 50° C for 12 hours.

NOA 61 can withstand temperatures before aging from -15°C to 60° C when used for glass bonding. After aging, it will withstand temperatures from -150° C to 125° C. As a coating on the surface of a substrate the NOA 61 can withstand 260° C for three hours and during reflow soldering.

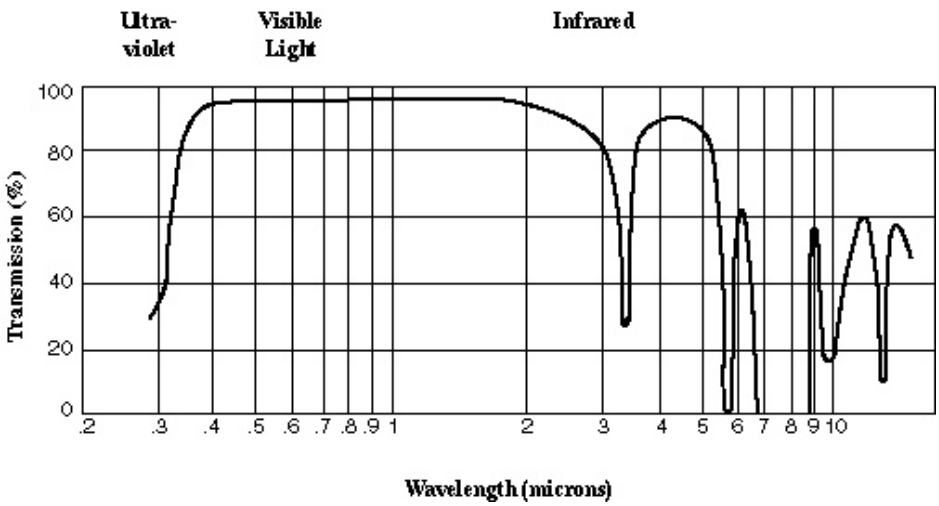
Typical Properties of NOA 61

Solids	100%
Viscosity at 25° C	300 cps
Refractive Index of Cured Polymer	1.56
Elongation at Failure	38%
Modulus of Elasticity (psi)	150,000
Tensile Strength (psi)	3,000
Hardness - Shore D	85

Shelf life of the liquid is a minimum of 4 months from the date of shipment, refer to the package label for the actual expiration date, if stored in a cool (5-22° C), dark place in the original container. If refrigerated, allow the adhesive to come to room temperature prior to use.

Care should be taken in handling this material. The Material Safety Data Sheet (MSDS) should be read for this product as well as for any associated products such as alcohol, acetone or methylene chloride. Prolonged contact with skin should be avoided and affected areas should be thoroughly washed with copious amounts of soap and water. If the adhesive gets into eyes, flush with water for 15 minutes as seek medical attention. Use the material in a well ventilated area, otherwise a NIOSH approved organic vapor mask is recommended.

Spectral Transmission of NOA 61



[For more technical information on NOA 61 click here to go to page 2.]

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