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Norland Optical Adhesive 73

Norland Optical Adhesive 73 ("NOA73") is an optically clear, liquid adhesive that quickly cures when exposed to long wavelength ultraviolet light. Since it is a one part system and 100% solids, it offers many advantages for bonding optical elements when the bonding surface can be activated with light energy. The use of NOA 73 eliminates premixing, drying or heat curing operations common to other optical adhesive systems.

NOA 73 has more flexibility than any of our other adhesives and is recommended for bonding delicate parts or parts where stress may be encountered. Its low viscosity gives it excellent flow characteristics which will allow it to give the thinnest possible bond line.

NOA 73 is cured by ultraviolet light, with maximum absorption between 350-380 nanometers. The recommended energy required for full cure is 4 Joules/sq. cm of long wavelength UV light. The cure is not inhibited by oxygen, and hence any areas in contact with air will cure to a non-tacky state.

In most optical applications, curing is done in two steps. First a short exposure, or precure, is used. This cures the adhesive enough to allow it to be handled without disturbing the alignment and keeps the number of alignment fixtures to a minimum. At this time, parts can be inspected and excess adhesive can be cleaned up with an acetone or alcohol moistened cloth. Any rejected pieces are most easily separated at this stage. Cure is completed by exposure for the remainder of the cure time. A general rule is that full cure will take 20 times the precure time using the same intensity light source.

The NOA bonds can be separated in chlorinated solvent such as methylene chloride. The bonded area must be soaked in the solvent and normally will separate overnight if only precured. Longer times may be necessary depending upon the extent of the cure and the size of the bond area.

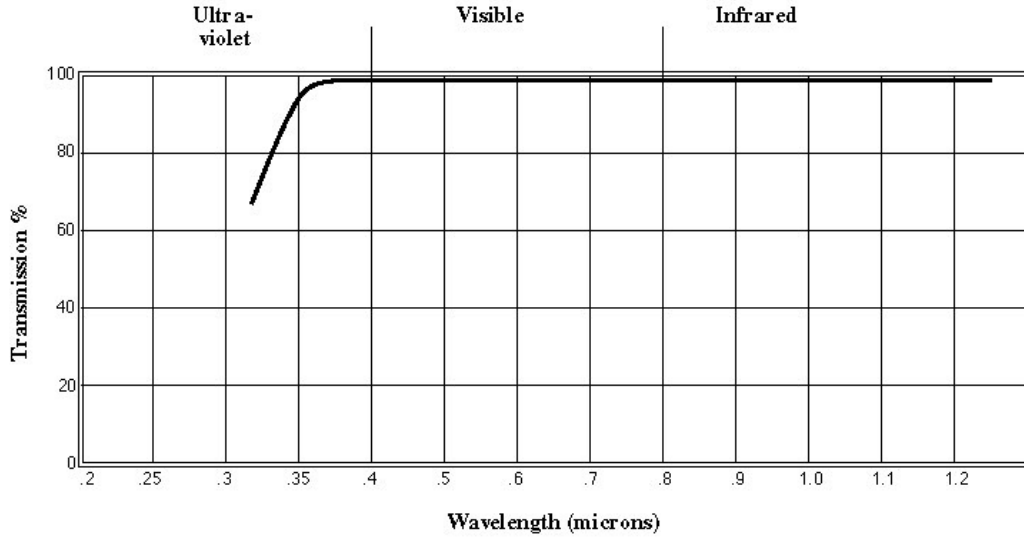
NOA 73 has an adhesion promoter in it that provides maximum adhesion and moisture resistance when used in glass, glass-filled or ceramic bonding applications. The adhesion promoter begins working after the cure and will provide the extra strength after 1 week at room temperature. This can be accomplished more quickly by warming the optics to 50° C for 12 hours. NOA 73 bonds will initially withstand -15° C to 60° C and -60° C to 90° C after aging.

| Typical Properties of NOA 73 | |
|-------------------------------------|---------|
| Viscosity at 25° C | 130 cps |
| Refractive Index of Cured Polymer | 1.56 |
| Elongation at Failure | 16% |
| Modulus of Elasticity (psi) | 1,600 |
| Tensile Strength (psi) | 200 |
| Hardness - Shore D | 60 |

The shelf life of the liquid material is at least 4 months from the date of shipment. Material should be 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 should be read for this product as well as for any associated products such as alcohol, acetone or methylene chloride. Prolonged contact with the skin should be avoided and affected areas should be washed thoroughly with copious amounts of soap and water. If the adhesive gets into eyes, flush with water for 15 minutes and seek medical attention. Use the material in a well ventilated area, otherwise a NIOSH approved organic vapor mask is recommended.

Spectral Transmission of NOA 73



The data contained in this technical data sheet is of a general nature and is based on laboratory test conditions. Norland Products does not warrant the data contained in this data sheet. Norland does not assume responsibility for test or performance results obtained by users. It is the users responsibility to determine the suitability for their product application, purposes and the suitability for use in the user's intended manufacturing apparatus and methods. The user should adopt such precautions and use guidelines as may be reasonably advisable or necessary for the protection of property and persons. Nothing in this technical data sheet shall act as a representation that the product use or application will not infringe a patent owned by someone other than Norland Products or act as a grant of a license under any Norland Products Inc patent. Norland Products recommends that each user test its proposed use and application before putting into production.