



# ALH Systems Limited

1 Kingdom Avenue, Northacre Industrial Park, Westbury, Wiltshire BA13 4WE England  
Telephone: (+44) 01373 858234 Email: sales@alh-systems.co.uk



## ALH LED Resins

In response to the rapidly developing market using Light Emitting Diodes (LEDs), ALH Systems Limited have defined and expanded the product range to meet the ever increasing requirements of manufacturers. The LED epoxy and polyurethane potting compounds are used in applications from specialised lighting to LED indicators that are incorporated into other products. From very high thermally conductive epoxy potting compounds to flexible polyurethanes that seal out moisture and contaminants over a large temperature range, ALH Systems can help to select the proper material for your LED encapsulation application.

The ALH Systems NP1400 Range provides unfilled, transparent resin systems for potting, encapsulation and coating applications.

The NP1480 polyurethane system is the workhorse of the range, and is available in 1:1 cartridges, Twinpacks and bulk. The low mix viscosity (10 poise) and convenient gel time (15 minutes) make the NP1480 System easy to use. The UV stable NP 1480 resin has a Shore A hardness of 85 with an elongation of 150% providing a toughness and abrasion resistance suitable for most applications.

The NP1482 PU system is a development from NP1480 offering a greater green strength for situations where areas of stress concentration from components might disrupt curing.

The NP1483 PU system has been developed for doming applications. A higher viscosity with a lower surface tension creates a proud dome over substrates, with the 40 minute gel reducing the possibility of surface blemishes. The NP1483 PU system has improved adhesion to a wide range of substrates and the crystal clear finish is shown to not be affected in our weathering tests.

For many potting applications the lowest viscosity is required and the NP1484 PU system has a mix viscosity of just 4 poise, and cures with a little more flexibility. This very clear, bubble free material is an excellent choice for LED potting.

The NP1400 series also includes several epoxy systems for applications where polyurethanes fall short.

The NP1433 decoupage epoxy resin provides a high gloss, chemically resistant, clear coating for a large range of applications.

The NP1434 epoxy system is slightly flexible (Shore D = 52) and cures with a relatively low exothermic temperature rise for an epoxy with a 30 minute gel time. The slight colour does not significantly yellow with weathering. The very low water uptake (0.3%/30 days) has meant that the NP1434 system is the choice for LED indicators in marine applications and chemical environments.

The NP1435 system has a low viscosity (3 Poise), low colour, and its enhanced adhesion makes this epoxy resin very suitable for LED encapsulation for use in chemical environments. Although the initial colour is light straw, our ongoing weathering tests have shown no degradation.



Certificate No. GB14/92020

Directors: A.J. Cousins, M.F. Davies, C.H.H. Hjalmarson, J.O. Jillestam, A.J. Lucas, P.I. Rowlands,  
Registered in England No. 1255492 Registered Office: 1 Kingdom Avenue, Northacre Industrial Park, Westbury,  
Wiltshire, BA13 4WE England



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The electronics and the power supplies behind the LED's require advanced resins for protection and to dissipate generated heat. ALH Systems have developed two products specifically to provide these qualities. The UL 94 V-0 approved NP1003 epoxy system offers an internationally recognized solution to many power supply problems. The water uptake is minimal and the slight flexibility makes NP1003 useful in most outdoor applications. The excellent thermal conductivity and low expansion coefficient provide the necessary performance for LED power supplies.

Many LED displays on metering systems have employed the NP1004 polyurethane system for the encapsulation of the electronics. This easily machine dispensed resin has excellent high voltage properties (20 kV/mm electric strength) and the low mix viscosity (14 poise) prevents any air entrapment during potting. The flexibility of the cured resin allows its use in most environments.

The NP1025 epoxy system provides state of the art thermal conductivity of over 1.3 W/m/OK from a liquid mixed resin that has a viscosity of just 20 poise. The long pot life allows users to further reduce this initial viscosity prior to use, by warming the resin. The penetration and wetting of substrates with this high thermally conductive mix has allowed component manufacturers worldwide to push on the performance boundaries of their design.

The NP1025 epoxy resin system has outstanding electrical properties and it is flame retardant with low cure shrinkage and a low thermal expansion coefficient.

TWO new additions to the comprehensive range of adhesives supplied by ALH Systems are specifically for LED applications.

The NP2001 water clear rapid adhesive is cartridge dispensed and has performance characteristics comparable to most 5 minute epoxies but offers the additional property of being very clear.

The NP2004 clear instant adhesive employs radical new technology to obtain an almost instant adhesive bond with a high build resin. This cartridge dispensed system is UV stable and non-yellowing for outdoor use. The focus of ALH Systems on the LED market is not limited to the products described. Current developments are likely to dramatically increase the areas of application and performance in the near future. Please join us and help formulate tomorrows solutions today by contacting us at [sales@alh-systems.co.uk](mailto:sales@alh-systems.co.uk)

**STOP PRESS :** The new NP1485 polyurethane system cures to a tough scratch resistant opalescent material that will diffuse transmitted light. This resin is designed to encapsulate electronic devices containing LEDs where the electronics require environmental and visual protection.



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