# How to apply adhesive to fiber optic array heads

Article Overview

Applying adhesive to fiber optic array heads requires careful selection, precise mixing, controlled dispensing, and proper curing to maintain optical alignment and performance.

Step 1: Select the Appropriate Adhesive

Choose an adhesive specifically designed for fiber optics. Options include UV-curable adhesives for fast curing on small bonding surfaces or two-part epoxies for structural strength and chemical resistance. The adhesive should have low shrinkage, high glass transition temperature (Tg), and minimal outgassing to prevent signal degradation and maintain alignment .

Step 2: Prepare the Adhesive

For two-part epoxies, measure and mix the resin and hardener according to the manufacturer's recommended ratio, typically by weight. Use a precision scale with at least 0.01 g resolution to ensure accuracy. Mix thoroughly to achieve a uniform consistency, avoiding air bubbles that could compromise the bond . Premixed and frozen adhesives can also be used to minimize waste and ensure consistent performance .

Step 3: Prepare the Fiber Optic Array

Clean the fiber ends and array surfaces to remove dust, oils, or contaminants. Proper alignment of fibers is critical, as even micron-level misalignments can degrade optical performance . Secure the array in a fixture or jig to maintain precise positioning during adhesive application.

Step 4: Apply the Adhesive

Use a precision dispensing system, such as a syringe with a fine tip, to apply the adhesive directly to the joint or ferrule interface. For UV-curable adhesives, apply a thin layer to avoid excess spreading, which could interfere with light transmission . Two-part epoxies may require careful injection into the ferrule or array cavity to ensure complete wetting of the fiber surfaces .

Step 5: Cure the Adhesive

o UV-curable adhesives: Expose the adhesive to the recommended UV wavelength (typically 320-390 nm) for the specified duration to achieve rapid curing .
o Two-part epoxies: Allow the adhesive to cure at the recommended temperature and time. Monitor the curing environment to maintain consistent temperature and avoid thermal stress that could misalign fibers .

Step 6: Post-Curing and Inspection

After curing, inspect the bond for uniformity, absence of voids, and proper alignment. If necessary, trim excess adhesive carefully without disturbing the fiber array. Proper curing ensures mechanical stability, chemical resistance, and long-term optical performance .

Additional Tips

o Avoid introducing air bubbles during mixing or dispensing.
o Use minimal adhesive to reduce stress and maintain optical clarity.
o Consider adhesives with low thermal expansion to prevent misalignment under temperature changes.
o Follow manufacturer datasheets for specific handling, curing, and safety instructions . By following these steps, you can achieve a strong, reliable bond on fiber optic array heads while preserving precise optical alignment and performance.

The table below lists a selection of adhesives that are suitable for joining, reinforcing and sealing fibre

Fiber array attach is a cost-effective, competitive and reliable packaging technology that enables input and output

Main service contents Fiber Array Connection Adhesive fixation of the chip and fiber eliminates the need for equipment such as a

The Fiber Optic Center Technical Team provides consultation for selection to ensure compatibility with the epoxy

Epoxy and adhesives are the most critical determining factor affecting the long-term reliability of product. These epoxy and adhesive

Adhesive Applications in Fibre Optics To secure fibre-optic cables, fibre arrays and waveguides, Hoenle

How to Select the Best Fiber Optic Adhesives for Your Project Fiber optic adhesives play a crucial role in the success

The Fibersure anaerobic adhesive system is a two-part system that uses a non-hazmat primer and adhesive. Specially formulated for

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While most optical fiber connectivity vendors promote "quick connect" no epoxy-no polish mechanical connectors, the less expensive

With viscosities that are appropriate for the usage location, the adhesives for fiber array assemblies are easy to use. While the

Optical adhesives are supporting advances in optical assemblies, collections of optical components and mechanical parts that

Optical Adhesives Adhesives for Optical Waveguides If you are seeking PLC and fiber array adhesion with high reliability, try these

Rohit Ramnath discusses adhesive selection for optical assembly applications, including optically clear and opaque bonding

Sealing fibers into ferrules Bonding optical fibers into connectors Potting fiber bundles Bonding fiber optic

To select an appropriate adhesive for an application, a designer should consider how the device will be assembled, and what

Adhesives for Fiber Array Fiber arrays are used for the input and output of As adhesives used for fixing the V-Grooves, AT3727E

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