



PlastiLynx

Instructions for Use

PlastiLynx is a ground-breaking polymer crosslinker that can act either as a **primer** or used directly as an **adhesive**, offering solutions for a wide range of adhesion and material strengthening applications involving low-surface-energy, hard-to-bond polymers.

What's Included:

- Amber glass vial containing PlastiLynx sample

At room temperature, PlastiLynx is a colourless viscous liquid. For long term stability, keep sample refrigerated or stored in a cool dark location



What You'll Need:

- Solvent (Acetone, Ethanol, Methanol, or other low-boiling point solvent recommended)
- A small vial or container for mixing solvent with PlastiLynx (amber glass recommended)
- Liquid dispenser (pipette, mister, dropper, etc.)
- High-intensity UV light or curing oven

Prior to Use: Prepare PlastiLynx Solution:

Whether using PlastiLynx as a **primer** or an **adhesive**, only a thin application is required to create covalent crosslinking bonds between polymers. This can be achieved by dissolving PlastiLynx in solvent which, when applied, will be allowed to evaporate, leaving behind a thin layer of PlastiLynx on the surface.

Immediately prior to use, prepare an application solution by mixing a small amount of PlastiLynx with solvent as follows:

- Combine using a 10:1 ratio of desired solvent to PlastiLynx.
- Mix thoroughly to ensure PlastiLynx completely dissolves.
- Acetone-based solutions should be used within an hour of preparation; Methanol/Ethanol-based solutions are more stable but should still be used within a few hours of preparation.
- Once prepared, limit the solution's exposure to light as much as possible.





Application #1: Using PlastiLynx as a Primer

Hard-to-bond polymers can now be bonded using commercial adhesives when primed with PlastiLynx. Polymer materials and textiles may also be treated in this manner to functionalize surfaces or accept dyes and coatings.

IMPORTANT: Before proceeding, ensure you have prepared a PlastiLynx solution (outlined on Page 1)

Step 1: Apply PlastiLynx Solution

- For best results, ensure surfaces to be treated are clean of dust and debris, and are as smooth as possible.
- Apply a small amount of the prepared PlastiLynx solution to the surface(s) of the material(s) you wish to prime or functionalize, spreading evenly. This can be achieved by using a pipette, dropper or spray mister.
- For reference, ~100 μl of solution (containing approx. 10 mg of PlastiLynx) is sufficient for priming a 1" x 1" area.

Step 2: Allow Solvent to Completely Evaporate

- Evaporation times vary according to the solvent used. Acetone-based solutions can evaporate within 15-20 minutes at room temperature or 3 minutes in a ventilated fume hood, while Methanol/Ethanol-based solutions may require longer.
- Ensure solvent has completely evaporated before proceeding to avoid crosslinking PlastiLynx with solvent.
- To confirm how much PlastiLynx remains on the surface, you may wish to weigh the material before solution application and then again after evaporation.

Step 3: Cure Treated Materials

- Once solvent has evaporated, PlastiLynx must be cured by either UV light (photocuring) or heat (thermal curing). To avoid potential discolouration or degradation, photocuring is strongly recommended where possible.
- In XlynX trials, photocuring was achieved with a high-intensity UV light operating as follows:

Wavelength:	365 nm
Intensity:	13 W/cm ²
Duration:	30 seconds
Distance:	Approximately 2.5 cm above treated material

- The amount of energy delivered using the high-intensity UV light according to these parameters is 390 J/cm².
- When using lower intensity UV lamps or UV LED light strips, longer exposure duration will be required to achieve a similar result. Depending on intensity, duration can take anywhere from an hour to overnight exposure.
- If unable to cure by UV light, PlastiLynx can also be thermally cured using an oven. Place treated materials in an oven heated to between 110°C to 120°C for approximately 2 hours. Note, this method may result in some discolouration or material degradation.

Next Steps:

- Once cured, the treated surfaces are now receptive for bonding with traditional commercial adhesives such as cyanoacrylates or epoxies, or for purposes such as photo-patterning or treatment with dyes and other coatings.
- When bonding with commercial adhesives, spread a thin layer of the adhesive evenly across the primed areas of the materials. Press or clamp the two materials together tightly, ensuring materials are aligned and pressure is evenly applied. Allow to cure according to the directions prescribed by the commercial adhesive manufacturer.



Application #2: Using PlastiLynx as an Adhesive

PlastiLynx can also be used directly as an adhesive without the additional use of commercial bonding agents, creating rigid chemical bonds between polymer materials and/or textiles.

IMPORTANT: Before proceeding, ensure you have prepared a PlastiLynx solution (outlined on Page 1)

Step 1: Apply PlastiLynx Solution

- For best results, materials should be cleaned of dust/debris and smoothed to reduce gaps that may occur between surfaces involved in the bond.
- Apply a small amount of the prepared PlastiLynx solution to one of the surfaces you wish to bond, spreading evenly across any section that will make contact with the other untreated bonding surface. This can be achieved by using a pipette, dropper or spray mister.

Step 2: Allow Solvent to Completely Evaporate

- Evaporation times will vary according to the solvent used. Acetone-based solutions will evaporate within approximately 15 minutes at room temperature or 3 minutes in a ventilated fume hood, while Methanol/Ethanol-based solutions may require longer.
- Ensure solvent has completely evaporated before proceeding to avoid crosslinking PlastiLynx with solvent.

Step 3: Secure Bonding Materials Together

- Press or clamp treated surfaces together to avoid movement and maintain a tight connection while curing, ensuring materials are aligned and pressure is evenly applied.

Step 4: Cure the Bond

- When bonding UV transparent materials or polymer fabrics, photocuring may be possible with UV light. If so, follow the instructions provided in Step 3 of the “Using PlastiLynx as a Primer” section (found on Page 2).
- Where photocuring is not possible, thermal curing will be required as follows:
 - Place clamped / secured bonding “sandwich” in an oven heated to 110°C to 120°C and allow to cure for approximately 2 - 4 hours. Ensure materials are aligned and pressure is evenly applied for best results.
 - Polymers with higher melting temperatures may be cured at higher temperatures for shorter durations.

We thank you for your interest in **PlastiLynx!**

We at XlynX believe we're on to something big with the suite of diazirine-based chemicals we are developing, opening the door to exciting new applications involving notoriously hard-to-bond materials. We look forward to hearing about your experience with **PlastiLynx** and welcome any feedback you're able to provide.

Contact us at info@xlynxmaterials.com