



# BondLynx Gen-I and Gen-III

## Instructions for Use

*BondLynx<sup>®</sup> is a revolutionary new type of bonding agent that takes advantage of chemical crosslinking to form strong covalent bonds between a wide range of low-surface-energy polymers. This makes it an effective adhesive and textile strengthener for “impossible-to-bond” polymeric materials.*

*BondLynx Gen-I, the original BondLynx molecule, is an electron-neutral aryl bis-diazirine crosslinker with a peak activation temperature of 137°C.*

*BondLynx Gen-III is an electron-rich aryl bis-diazirine crosslinker with a lower peak activation temperature (106°C) that is a significantly more efficient crosslinker for many polymer substrates.*

### What's Included:

- Amber glass vial containing **BondLynx** sample
- At room temperature, BondLynx Gen-I (m.p. 34°C) and Gen-III (m.p. 49°C) are off-white crystalline solids
- For long term stability, keep refrigerated or stored in a cool dark location



### What You'll Need:

- Solvent (pentane or diethyl ether recommended)
- A small vial or container for mixing solvent to make BondLynx solution (amber glass recommended)
- Liquid dispenser (pipette, mister, dropper, etc.)
- High-intensity UV light or curing oven

### Prior to Use: Prepare BondLynx Solution

When using BondLynx, only a thin application is required to create covalent crosslinking bonds with polymers. This can be achieved by dissolving BondLynx in solvent which, when applied, will be allowed to evaporate, leaving behind a thin layer of BondLynx on the surface.

Prior to use, prepare an application solution by mixing the BondLynx sample with the solvent (pentane, diethyl ether, etc.) as follows:

- Dissolve 1 wt% to 10 wt% BondLynx in solvent at room temperature (20-25°C).
- Mix thoroughly to ensure BondLynx completely dissolves
- Once prepared, refrigerate if solution is not going to be immediately used and limit exposure to light



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### BondLynx Instructions:

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

#### Step 1: Apply BondLynx Solution

- For best results, ensure the surface you wish to treat is clean of dust/debris/residue. The surfaces of any materials that will be bonded to one another should be as smooth as possible to avoid gaps in the bond. BondLynx is a molecular surface bonder, so any residue/imperfections on surfaces will reduce overall bond strength.
- There are several ways in which the BondLynx solution can be applied, depending on its intended use:

Mister / Spray Bottle	Dropper	Textile Infusion
<i>For broad distribution across the surface of a solid polymer or polymer textile</i>	<i>For more precise application to specific areas of a solid polymer or for even distribution on textiles</i>	<i>For thorough infusion of polymer textiles</i>
<ul style="list-style-type: none"> <li>• Using a fine-misting spray bottle, apply a thin coat of the BondLynx solution as evenly as possible across the surface of the material(s) to be treated.</li> <li>• When using BondLynx as an adhesive between two polymer materials, application of the BondLynx solution is generally only required on one of the two surfaces to be bonded.</li> </ul>	<ul style="list-style-type: none"> <li>• Using a pipette, dropper or other liquid dispenser, evenly apply a small amount of the BondLynx solution to the surface of the material(s) you wish to treat. A small brush or the tip of the pipette may be used to spread the solution across the bonding area.</li> <li>• When using BondLynx as an adhesive between two polymer materials, application of the BondLynx solution is generally only required on one of the two surfaces to be bonded.</li> </ul>	<ul style="list-style-type: none"> <li>• To infuse a textile with BondLynx, place the fabric in a close-fitting tray or pan and add enough BondLynx solution to completely soak the material.</li> <li>• Cover with aluminum foil and allow to soak for 20-30 minutes.</li> <li>• Drain excess BondLynx solution.</li> </ul>

#### Step 2: Allow Solvent to Completely Evaporate

- Regardless of how the BondLynx solution is applied, the solvent must be allowed to evaporate **completely** before proceeding. This is necessary to avoid crosslinking BondLynx with the solvent during the curing process.
- Evaporation times vary according to the solvent used, typically 20 to 30 minutes at 20 to 40°C for low boiling point solvents. Polymer fabrics that have been soaked in the BondLynx solution may require 60 minutes or more for complete evaporation.
- Evaporation times can be accelerated by placing materials in a ventilated fume hood.



# BondLynx Gen-I and Gen-III

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### Step 3: Clamp or Press Materials Together *(Only if using BondLynx for bonding purposes)*

- *Skip this step if BondLynx is being used for material strengthening or functionality-adding purposes.*
- Once the solvent has completely evaporated, the treated materials can now be clamped together. Ensure the surfaces of the bonding materials are aligned and pressed tightly together, with pressure evenly distributed.

### Step 4: Activate BondLynx by Curing

- BondLynx can be activated by either UV light (photocuring) or heat (thermal curing), depending on the intended use and/or materials being bonded.

UV Light (Photocuring)	Heat (Thermal Curing)									
<b><i>STRONGLY RECOMMENDED WHERE POSSIBLE</i></b> <i>Suitable for UV transparent solid polymers and most polymer fabrics</i>	<i>Suitable for non-UV transparent polymers or where the photocuring option is not available</i>									
<p>In XlynX trials, rapid photocuring was achieved using a high-intensity UV light under the following conditions:</p> <p>Wavelength: 365 nm            Intensity: 13 W/cm<sup>2</sup> (manufacturer's LED bulb combined w/ focus adapter)            65 W/cm<sup>2</sup> (measure at the surface)            Duration: 10 mins per treated side            Distance: ~5" or 13 cm above treated material</p> <p>Lower intensity UV lamps or UV LED light strips will require longer exposure duration. Depending on intensity, duration may take anywhere from an hour to overnight exposure.</p>	<p>To cure BondLynx with heat, consider the following:</p> <ul style="list-style-type: none"> <li>• The <b>onset</b> temperature of your BondLynx sample (minimum temperature for reaction)</li> <li>• The <b>maximum</b> temperature (fastest possible cure)</li> <li>• The melting point of the treated polymer material</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>T<sub>ONSET</sub></th> <th>T<sub>MAX</sub></th> </tr> </thead> <tbody> <tr> <td>BONDLYNX GEN-I</td> <td>113°C</td> <td>137°C</td> </tr> <tr> <td>BONDLYNX GEN-III</td> <td>83°C</td> <td>109°C</td> </tr> </tbody> </table> <p>For fast curing, use a temperature closest to T<sub>max</sub> without exceeding the melting point of your polymer. Duration ranges from <b>2 – 4 hours</b> depending on the temperature of your oven and materials being bonded. Infused textiles can be wrapped in aluminum foil for greater heat protection. Note: Thermal curing may cause some discolouration or degradation of materials.</p>		T <sub>ONSET</sub>	T <sub>MAX</sub>	BONDLYNX GEN-I	113°C	137°C	BONDLYNX GEN-III	83°C	109°C
	T <sub>ONSET</sub>	T <sub>MAX</sub>								
BONDLYNX GEN-I	113°C	137°C								
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We thank you for your interest in **BondLynx!**

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 **BondLynx** and welcome any feedback you're able to provide.

Contact us at [info@xlynxmaterials.com](mailto:info@xlynxmaterials.com)