



POLYTEK® DEVELOPMENT CORP.
BCC PRODUCTS, INC.

Technical Data Sheet BX-51 Urethane Elastomer

Applications

BX-51 is used to make molds of masters that contain minor undercuts. BX-51's physical properties make it ideal for making concrete patterns and formliners. BX-51 has been formulated to reduce shrinkage.

Characteristics

BX-51 is a two-part polyurethane molding system. BX-51 is mixed 100:97 by weight (or 1 Part-A Iso to 1 Part-B Curative by volume) and cures at room temperature. BX-51 cures to a medium hardness, Shore A 51 ± 2 , gray rubber. Ultimate properties are obtained after 3-4 days of room temperature cure. Cure can be accelerated with heat (130-150°F for 12-16 hours) but a slightly harder polymer (53 +/- 2 Shore A) and slight shrinkage will be obtained.

Instructions for Use

Prepare Master and Mold Housing

First, clean and dry your master thoroughly. If the master has a porous surface (clay, concrete, plaster, etc.) or is made of sulfur-based clay, you must seal it. You can use polyurethane varnish, polyurethane sealant, or paste wax to seal your master. Next, anchor your master and seal the base so that BX-51 does not leak under your master. A hot glue gun works to anchor and seal the base at the same time. Also, you should seal your entire mold housing connections with sulfur-free clay or hot glue. Then, apply an appropriate release agent (we recommend a silicone, but test on a small sample before use) to the master and interior of the mold housing. Apply release agent sparingly, while coating all surfaces of the master. Too much release agent may cover the details of the master. You should allow the release agent to dry approximately 10 minutes before you pour your mold.

Measure Iso and Curative

Note: BX-51 provides approximately 12-14 minutes for you to mix and pour the mold before it begins to gel.

Make sure that Curative and Iso are room temperature before mixing them. Please note that in cold weather it may take up to 24 hours for the Curative and Iso to reach room temperature. Using two clean, dry, plastic containers of equal size, measure weights or volumes of the Iso (Part A) and Curative (Part B).

Mix Curative and Iso

After you prepare the master and mold housing and measure the Curative and Iso, you are ready to pour the Curative and Iso into another clean, dry, plastic container. Scrape the Curative and Iso containers to move all of the material into the mixing container. Combine the two ingredients for

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several minutes until no color striations are visible. Be sure to scrape the sides and bottom of the mixing container while combining the two ingredients. You must mix the Curative and Iso completely so that BX-51 will cure correctly. If air bubbles form during mixing, you should degas the mixture to remove them.

Pour Mold

To ensure that no air bubbles form over the details of your master, you can brush a thin base coat onto the master and then pour the rest of the BX-51. The best way to pour a mold is to tilt your mold slightly and pour into one spot at the corner of the mold, allowing the material to cover your master slowly like the flow of lava. When you have finished pouring the mold, you may lightly spray release agent on the top of BX-51 to break any air bubbles that have risen.

Demold and Cure Mold

Once you have poured your mold, allow the mold to cure 24 hours before demolding. Allow the mold to cure for 3–4 days before putting it into service.

Cure and Thermal Shrinkage

BX-51 is formulated for Room Temperature (RT) Cure. Shrinkage of 0-0.125% may occur if the material is processed above room temperature. Other conditions that may cause mold shrinkage: mold release, prolonged use, prolonged exposure to mold release, storing the room-temperature cured mold at high temperatures, exposure to direct sunlight, or excessive heat generated during use. Do not store BX-51 polymer in direct sunlight as ultraviolet light will degrade the polymer.

Properties

Iso (Part A) and Curative (Part B)

The following table lists the properties of the Iso and Curative of BX-51 before they have been mixed.

Property	Iso (Part A)	Curative (Part B)
Color	Clear light yellow to amber	Opaque gray
Mix Ratio by Weight	100	97
Mix Ratio by Volume	1	1
Shelf Life, unopened container	6 Months	6 Months
Density @ 75° F (24° C)	8.655 lbs/gallon	8.377 lbs/gallon
Viscosity @ 75° F (24° C), CPS	1000	350

Mixed Iso (Part A) and Curative (Part B)

The following is a list of the properties of BX-51 after the Iso and Curative have been mixed.

Property	Time	Temperature
Mix Time*	1 Minutes	75° F (24° C)
Gel Time*	12-14 Minutes	75° F (24° C)
Pot Life*	15-25 Minutes	75° F (24° C)
Demold Time*	24 Hours	75° F (24° C)
Complete Cure Time *	72 Hours	75° F (24° C)

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*Mix time, pot life, gel time, cure time, and demold time vary depending on mass and component temperature.

The following table explains the properties of BX-51 after it has thoroughly cured.

Preliminary Data: Physical test data presented here are representative of typical values but ARE NOT TO BE CONSTRUED AS A MATERIAL SPECIFICATIONS.

BX-51	
	Preliminary Physical Properties
Split tear, pli (ASTM D470)	23
Die C Tear, pli (ASTM D624-C)	110
Tensile, psi (ASTM D412)	700
Elongation, % (ASTM D412)	650
Final Hardness, Shore A	51 +/- 2
Viscosity, Curative Side B, cPs	350
Viscosity, Iso Side A, cPs	1000
Pot Life, minutes	15-20

Storage and Handling

Keep the BX-51 container tightly closed when not in use and store at temperatures between 60–90° F (16–32°C). Do not expose the Curative or Iso to moisture! If moisture contaminates BX-51, it will not cure properly. If these storage requirements are met, BX-51 carries a shelf life warranty of six months.

Be sure to read the *Material Safety Data Sheet* that comes with BX-51. When working with BX-51, please observe the following safety precautions.

- Use only in well-ventilated areas.
- Wear safety glasses, chemical-resistant rubber or plastic gloves, and an apron.
- Avoid prolonged or repeated contact with skin.
- In the case of skin contact, wipe affected area with isopropyl alcohol, followed by soap and water.
- In the case of eye contact, flush eyes with water for 15 minutes and consult a physician.
- If swallowed, drink one to two glasses of water and seek medical attention immediately.

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