

Por-A-Kast

MARK 1

Applications

Por-A-Kast Mark 1 is used to make castings from rigid and flexible molds. Some of the most common uses of Mark 1 are point-of-purchase displays, rapid prototypes, special effects, and sculpture reproductions. However, Por-A-Kast Mark 1 can be used for any application that requires a lightweight, hard plastic.

Characteristics

Por-A-Kast Mark 1 is a two-part polyurethane casting system. Por-A-Kast Mark 1 is mixed one-to-one by volume and cures at room temperature. Mark 1 produces a higher exothermic temperature than our other Por-A-Kast products, begins to gel in 1.5 minutes, and cures to an off-white color.

Instructions for Use

Prepare Mold

Before you begin to cast a polyurethane mold, you must prepare the mold by applying the appropriate release agent (we recommend Synlube 531). Apply the release agent sparingly, while coating all internal surfaces of the mold. Too much release agent may cover the details of the mold. You should allow the release agent to dry approximately 10 minutes before you pour the casting. Please note that silicone molds do not require a release agent. If you want to use an in-mold paint, like CilCoat, you should apply it after the release agent dries.

Measure Curative and Prepolymer

Note: Por-A-Kast Mark 1 provides approximately 1.5 minutes for you to mix and pour the casting before it begins to gel.

Using two clean, dry, plastic containers of equal size, measure equal amounts of the curative (part A) and the prepolymer (part B). If you want to use a filler or powder, use another clean, dry, plastic container to measure the filler or powder.

Do not measure more Por-A-Kast than you can pour within its 1.5 minutes pot life. If you have a large mold that requires more Mark 1 than you can pour in 1.5 minutes, you may use a rotational casting method or pour Mark 1 more than once (if you pour Mark 1 more than once, you should do so immediately).

Mix Filler or Powder into Curative and Prepolymer

If you want to use a filler or powder, mix half of the filler or powder into the curative and the remaining half of the filler or powder into the prepolymer *before* you mix the curative and prepolymer together.

Mix Curative and Prepolymer

Note: Once you mix the curative and prepolymer, you have approximately 1.5 minutes to pour the casting.

After you prepare the mold, measure the curative and prepolymer, mix the filler or powder into the curative and prepolymer (optional), you are ready to pour the curative and prepolymer into another clean, dry, plastic container. Combine the two ingredients for approximately 30 seconds, being careful to prevent air bubbles from forming. Use a plastic or metal spatula to mix Por-A-Kast.

Pour Casting

Note: Once you mix the curative and prepolymer, you have approximately 1.5 minutes to pour the casting.

Although Por-A-Kast Mark 1 gels quickly, you should take your time to carefully pour it into the mold. The best way to pour a casting with Por-A-Kast Mark 1 is to tilt your mold slightly and pour into one spot of the mold. Pour slowly so that any air bubbles that may have formed during mixing can break over the lip of the container as it pours out.

Demold and Cure Casting

Once you have poured your casting, do not disturb the mold or demold the casting for 8–15 minutes. Although you may work with your cast in as little as 15 minutes after demolding, we recommend that you allow your cast to cure for 30 minutes for best results. You may post cure your cast for 6 hours at 160° F (72° C). After Mark 1 has cured, you may turn, drill, grind, sand, and paint it.

Properties

Curative (Part A) and Prepolymer (Part B)

The following table lists the properties of the curative and prepolymer before they have been mixed.

Property	Curative (Part A)	Prepolymer (Part B)
Color	Yellow	Brown
Flash Point	305° F (152° C)	325° F (163° C)
Mix Ratio by Weight	1	1.12
Mix Ratio by Volume	1	1
Shelf Life	12 Months	12 Months
Specific Gravity @ 75° F (24° C)	0.99	1.10
Viscosity @ 75° F (24° C), CPS	80	30

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

The following is a summary of the properties of Por-A-Kast Mark 1 after the curative and prepolymer have been mixed.

Property	Time	Temperature
Mix Time	30 Seconds	75° F (24° C)
Pot Life	2 Minutes	75° F (24° C)
Gel Time	2 Minutes	75° F (24° C)
Cure Time	30 Minutes	75° F (24° C)
Demold Time	8 to 15 Minutes	75° F (24° C)

*Pot life, gel time, cure time, and demold time vary depending on mass, mold temperature, and component temperature.

Cured Por-A-Kast Mark 1

The following table lists the properties of Por-A-Kast Mark 1 after it has cured.

Property	Cured Product
Color	Off-white
Compressive Yield Strength, ASTM D695-96, psi	4994.1
Elongation, ASTM D412-80, %	<10
Heat Distortion Temperature, ASTM D648, °F (°C)	145° F (63° C)
Izod Impact – Notched, One Specimen, ASTM D256-93a, ft lb/in	0.28
Izod Impact, - Notched, Four Specimens, ASTM D256-93a, ft lb/in	0.31
Izod Impact – Unnotched, ASTM D256-93a, ft lb/in	6.2
Linear Shrinkage, ASTM D2566, in/in	0.0065

Property	Cured Product
Modulus of Elasticity, ASTM D790-97, MPA	1085.8
Rebound, Bashore, ASTM D2632-74, %	30
Reversion Temperature	270° F (132° C)
Shore Hardness, ASTM D2240-75	D73±2
Specific Gravity, ASTM D792-66	0.99
Stress @ 5% Strain, ASTM D790-97, MPA	40.6
Ultimate Tensile, ASTM D412-80, psi	4700

Storage and Handling

Keep the Por-A-Kast Mark 1 containers tightly closed when not in use and store at temperatures between 50–77° F (10–25° C). Do not expose the curative or prepolymer to moisture! If moisture contaminates Por-A-Kast Mark 1, it will not cure. If these storage requirements are met, Por-A-Kast Mark 1 carries a shelf life warranty of six months.

Be sure to read the *Material Safety Data Sheet* that comes with Por-A-Kast Mark 1. When working with Por-A-Kast Mark 1, please observe the following safety precautions.

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

Por-A-Kast Mark 1 Product Bulletin

The conditions for your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. PUMA Polymers has not necessarily done such testing. All information is given without warranty or guarantee. It is expressly understood and agreed that customer assumes and hereby expressly releases PUMA Polymers from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind PUMA Polymers. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent. March 9, 2009