# KX Flex™ Series

## *Fast Setting Urethane Casting Elastomers*

SMOOTH-ON SINCE 1895

www.smooth-on.com

## *PRODUCT OVERVIEW*

**KX Flex™ Series** urethanes are fast setting flexible urethane casting elastomers that cure quickly and offer exceptional physical and performance properties including high impact resistance. **KX Flex™ Series** urethanes are easy to color using SO-Strong™, UVO™ or IGNITE™ colorants. **KX Flex™** urethanes are phthalate free, mercury free and MOCA free.

**KX Flex™ Series** urethanes have a pot life of 2.5 minutes and handling time of 30 minutes (depending on mass). With Shore hardness values of 40A, 60A and 90A, this material is used for a variety of applications including fast mold making, fast model duplication, prototyping, durable miniatures, props and special effects, or making parts that are impact resistant. Fully cured castings are flexible, tough and durable.

Cured **KX Flex™ 40** will have a slight tack which will subside over time depending on mass and ambient temperature.

## *TECHNICAL OVERVIEW*

| | **A:B Mix Ratio by Weight** | **Mixed Viscosity** (ASTM D-2393) | **Specific Gravity** (g/cc) (ASTM D-1475) | **Specific Volume:** cu in/lb (ASTM D-1475) | **Shore Hardness** (ASTM D-2240)* | **Tensile Strength** (ASTM D-638)* | **Elongation at Break** (ASTM D-638)* | **Shrinkage** in./in. (ASTM D-2566)* | **Color** |
|---|---|---|---|---|---|---|---|---|---|
| **KX Flex™ 40** | 1A:1B | 800 cps | 1.07 | 25.9 | 40A | 457 psi | 400 % | 0.002 | Translucent White |
| **KX Flex™ 60** | 1A:1B | 800 cps | 1.15 | 24.1 | 60A | 1,800 psi | 125 % | 0.005 | Off-White |
| **KX Flex™ 90** | 100A:120B | 800 cps | 1.15 | 24.1 | 90A | 1,800 psi | 125 % | 0.005 | Off-White |

***Pot Life:*** 2.5 minutes (73°F/23°C)** ***Handling Time:*** 30 minutes (73°F/23°C)** ***Full Cure:*** 24 hours (73°F/23°C)**

* All values measured after 7 days at 73°F/23°C

** Depending on Mass

## *PROCESSING RECOMMENDATIONS*

### *PREPARATION...*

Materials should be stored and used in a warm environment (73°F/23°C). These products have a limited shelf life and should be used as soon as possible. All liquid urethanes are moisture sensitive and will absorb atmospheric moisture. Use in a low humidity environment (below 50% RH). Mixing containers should have straight sides and a flat bottom. Mixing sticks should be flat and stiff with defined edges for scraping the sides and bottom of your mixing container. Mixing tools and containers should be clean and made of metal, glass or plastic. Mixing should be done in a well-ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk.

***Applying A Release Agent -*** If you are unsure about surface compatibility, a trial casting on a surface finish similar to the final mold or model should be made to avoid damage to the working surface. Polyurethane, latex or metal molds should be dry and require a coat of suitable release agent. Universal™ Mold Release (available from Smooth-On) is ideal for this purpose. A liberal coat of release agent should be applied onto all surfaces that will contact the rubber. To ensure thorough coverage, lightly brush the release agent with a soft brush over all surfaces. Follow with a light mist coating and let the release agent dry for 30 minutes.

### *MEASURING & MIXING...*

***Before Dispensing -*** **IMPORTANT:** Pre mix the Part B before using every time.

***Measuring -*** You must use an accurate digital gram scale to weigh Parts A and B properly. Do not use an analog scale or attempt to measure components by volume. Dispense the required amount of Part A and Part B into a mixing container.

***Hand Mixing -*** After dispensing the required amounts of Parts A and B into mixing container, mix thoroughly for at least 60 seconds making sure that you scrape the sides and bottom of the mixing container several times.

***Mechanical Mixing -*** drill mix using a Turbine mixer or equal for 30 seconds followed by careful hand mixing for 30 seconds as directed above.

**Be Aware** - material pot life is 2.5 minutes at 73°F/23°C. Pot life at elevated temperatures will be less. Do not delay between mixing and pouring.

***IMPORTANT:*** Shelf life of product is reduced after opening. Remaining product should be used as soon as possible. Immediately replacing the lids on both containers after dispensing product will help prolong the shelf life of the unused product. **XTEND-IT™ Dry Gas Blanket** (available from Smooth-On) will significantly prolong the shelf life of unused liquid urethane products.

## Safety First!

The material safety data sheet (SDS) for this or any Smooth-On product should be read before using and is available on request. All Smooth-On products are safe to use if directions are read and followed carefully. **Keep Out of Reach Of Children.**

**Be Careful. Part A** (Yellow Label) contains methylene diphenyldiisocyante. Vapors, which can be significant if heated or sprayed, may cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water.

**Part B** (Blue Label) is irritating to the eyes and skin. Avoid prolonged or repeated skin contact. If contaminated, flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water.

When mixing with Part A, follow precautions for handling isocyanates. If machining cured castings, wear dust mask or other apparatus to prevent inhalation of residual particles.

**IMPORTANT -** The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe a copyright or patent. User shall determine suitability of the product for the intended application and assume all associated risks and liability.

## POURING, CURING & PERFORMANCE...

***Pouring -*** If casting KX Flex™ into a rubber mold, pour mixture in a single spot at the lowest point of the mold. If encapsulating an object, do not pour the mixture directly over the object. Let the mixture seek its level. A uniform flow will help minimize entrapped air.

***Curing -*** Handling time can be as soon as 30 minutes. However, like many urethane elastomers, KX Flex™ is mass sensitive and low mass castings with thin walls can take longer to reach handling strength/full cure. Uniform mild heat will accelerate the cure time. These materials will reach full cure in 24 hours at 73°F/23°C. Castings will reach ultimate physical properties at room temperature in 7 days.

***Post Curing Option -*** Castings will reach "full cure" faster and achieve maximum physical properties / heat resistance if KX Flex™ is heat post cured in a dedicated shop oven. Post curing is recommended if castings are thin or of low mass concentration. Castings should be post cured in a mold or support structure. Allow the material to cure fully at room temperature followed by 4 hours at 150°F/65°C. Casting should be allowed to cool to room temperature before handling.

***Handling / Demold Time -*** Demold time of the finished casting depends on mass and mold configuration. Make sure casting has reached handling strength before demolding. If casting has a flat back, it can be removed from mold and allowed to cure outside the mold on a flat, level surface to attain full working properties. Allow material to cure for 24 hours at room temperature before putting into service.

**Because no two applications are quite the same, a small test application to determine suitability is recommended if performance of this material is in question.**


***Call Us Anytime With Questions About Your Application.***

Toll-free: **(800) 381-1733** Fax: **(610) 252-6200**

**www.smooth-on.com** is loaded with information about mold making, casting and more.