

## TECHNICAL DATA SHEET

# SikaBiresin® PX 224

## POLYURETHANE CASTING SYSTEM HIGH IMPACT STRENGTH

### DESCRIPTION

SikaBiresin® PX 224 is a polyurethane casting system for vacuum or hand casting used to make high impact strength prototype parts. Several reactivity/cure rate and application options based on hardener (polyol) choice. Extremely tough and impact resistant with exceptional hardness and a base that readily accepts color for a range of pigments and thus cured colors.

### APPLICATIONS

- High Impact Strength
- High Hardness
- Easy Processing
- Variable gel time/cure speeds (4 curative choices)
- Pigmentable
- TG in excess of 200°F
- Mercury Free
- Variable application areas of use

### PHYSICAL PROPERTIES

Physical Properties						
	Test Method	SikaBiresin® PX224	SikaBiresin® PX 224UF	SikaBiresin® PX 224F	SikaBiresin® PX224	SikaBiresin® PX224L
Composition		Part A Iso	Part B Polyol	Part B Polyol	Part B Polyol	Part B Polyol
Mix Ratio, by weight		100	50	50	50	50
Appearance		Liquid	Liquid	Liquid	Liquid	Liquid
Color		Light Amber	Colorless	Colorless	Colorless	Colorless
Viscosity @ 77°F (25°C) Cps. and mPa.s	Brookfield LVT	150-300	600-800	600-800	600-800	600-800
Density @ 77°F (25°C) lbs./gal. (g/cc)	ASTM D 1480	9.9-10.3 (1.18-1.23)	9.1-9.5 (1.09-1.14)	9.1-9.5 (1.09-1.14)	9.1-9.5 (1.09-1.14)	9.1-9.5 (1.09-1.14)
Viscosity, mixed @ 77°F (25°C) Cps. and mPa.s	Brookfield LVT		200-500*	200-500*	200-500*	200-500*
Gel time, 150 g at 77°F (25°C)	Minutes		<b>70-110 (Seconds)</b>	<b>3-4</b>	<b>6-9</b>	<b>12-16</b>

\*Calculated value

## PROCESSING CONDITIONS

SikaBiresin® PX 224 systems can be used in a vacuum casting machine, meter mix machine, or manually: Mixing is not instantly miscible. Mix mixture for 1-2 minutes prior to pouring into mold (if possible). PX 224F and PX 224UF systems are faster reactive systems and do not allow much time for hand mixing (see gel times). Note that at room temperature the part will mix to and cure translucent instead of an opaque white. A minimum processing temperature is recommended. Cast in preheated molds at 110°F - 140°F and allow a dwell for 1 hour, then increase to 150-160°F and dwell for 2.5 hours. The ability to post cure unsupported is a function of thickness and geometric complexity as well as pre-cure temperature and duration. It is considered best practice to evaluate the option for an unsupported post cure on an actual piece processed in the anticipated cast program. **NOTE** – The cured color of these systems is white.

Neat Cured Properties Tested at 74°F (23°C)						
*Cure #1 and **Cure #2						
	Test Method	Unit(s)	SikaBiresin® PX 224UF	SikaBiresin® PX 224F	SikaBiresin® PX224	SikaBiresin® PX224L
Glass Transition Temperature (Tg) * Cure #1 **Cure #2	ASTM E1545	°F (°C)	217 (103) 208 (98)	223 (106) 216 (102)	174 (79) 201 (94)	181 (83) 213 (100)
Hardness * Cure #1 **Cure #2	ASTM D2240	Shore D	83 83	83 83	83 83	85 85
Flexural Strength * Cure #1 **Cure #2	ASTM D790	psi (MPa)	10,800 (75) 14,500 (100)	10,800 (75) 14,500 (100)	10,800 (75) 14,500 (100)	16,700 (115) 16,000 (110)
Flexural Modulus * Cure #1 **Cure #2	ASTM D790	psi (MPa)	265,100 (1,829) 333,300 (2,300)	265,100 (1,829) 333,300 (2,300)	265,100 (1,829) 333,300 (2,300)	402,000 (2,774) 386,000 (2,663)
Tensile Strength * Cure #1 **Cure #2	ASTM D638	psi (MPa)	8,400 (58) 11,100 (77)	8,400 (58) 11,100 (77)	8,400 (58) 11,100 (77)	11,600 (80) 12,500 (86)
Tensile Modulus * Cure #1 **Cure #2	ASTM D638	psi (MPa)	182,200 (1,257) 193,800 (1,337)	182,200 (1,257) 193,800 (1,337)	182,200 (1,257) 193,800 (1,337)	252,000 (1,739) 219,000 (1,511)
Tensile Elongation * Cure #1 **Cure #2	ASTM D638	%	7.5 8.8	7.5 8.8	7.5 8.8	6.8 9.1
Compressive strength *Cure #1 **Cure #2	ASTM D-695	psi (MPa)	13,700 (95) 15,200 (105)	13,700 (95) 15,200 (105)	13,700 (95) 15,200 (105)	15,200 (105) 15,200 (105)
Compressive modulus * Cure #1 **Cure #2	ASTM D-695	psi (MPa)	306,500 (2,115) 303,800 (2,096)	306,500 (2,115) 303,800 (2,096)	306,500 (2,115) 303,800 (2,096)	315,000 (2,174) 296,000 (2,042)
Impact strength notched * Cure #1 **Cure #2	ASTM D 256-05	Ft.- lb/in <sup>2</sup>	4.0 4.1	4.0 4.1	4.0 4.1	1.8 2.8
CTE (+10°C – 60°C range) * Cure #1 **Cure #2	ASTM E 1545	ppm °F (°C)	37 (66) 37 (66)	35 (64) 34 (61)	35 (64) 34 (61)	34 (61) 35 (63)
Shrinkage – Linear (1/2" x 1" x 10") steel shrinkage mold * Cure #1 **Cure #2	ASTM D-2566	in/in / %	0.008 / 0.8	0.008 / 0.8	0.006 / 0.6	0.004 / 0.4

\*Cure #1 – Cast in Preheated mold - one hour dwell in a 110°F-140°F (44°C-60°C) + 2.5 hrs/150°F-160°F (65-71°C)

\*\*Cure #2 - Cure#1 + 16hrs/180°F (82°C). Ramp rate 86°F/hr.

\*\*\*NOTE: Samples were conditioned 7 days @ R.T. after these cures for testing.

## HANDLING PRECAUTIONS

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Normal health and safety precautions should be observed when handling these products:

- Ensure good ventilation.
- Wear gloves, glasses and protective clothes.

For further information, please consult the Safety Data Sheets.

## STORAGE CONDITIONS

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- This product has a shelf life of 12 months for the resin and hardener as indicated by the expiration date on the container when stored in original unopened containers. Store closed containers at 65°F-85°F (18°C-29°). Partially used containers must be flushed with dry nitrogen and resealed. Materials are sensitive to moisture contamination.

## PACKAGING

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Packaging information on request, please contact your local sales representative or find your local contact on [www.sikaadvancedresins.us](http://www.sikaadvancedresins.us)

## LEGAL NOTICE

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The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

## CONTACT

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### UNITED STATES

#### Sika Corporation

30800 Stephenson Highway  
Madison Heights, Michigan 48071 – USA  
Tel.: (+1) 248 588-2270  
Fax: (+1) 248 577-0810  
E-mail: [advanced.resins@us.sika.com](mailto:advanced.resins@us.sika.com)  
Website: [www.sikaadvancedresins.us](http://www.sikaadvancedresins.us)

### TECHNICAL DATA SHEET

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