

# Checkerspot® Cast PU Systems

Checkerspot's cast polyurethane systems are designed with both performance and sustainability in mind. Made from renewable algae oil, Checkerspot® Cast PU enables customers to replace petroleum-based incumbent materials with a high-quality, biobased alternative.

## HIGHLY TUNABLE

- Hardness, flexural strength, impact resistance, and other performance metrics can be tuned to meet needs of the end-use application.
- Can be pigmented in an array of colors.

## DESIGN FREEDOM

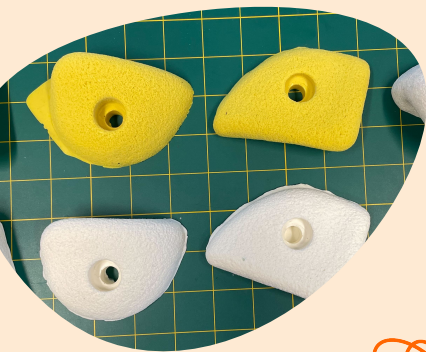
- Two-part casting system uses the same tooling, molding materials, and processes used for petroleum-based cast polyurethanes.
- Offers excellent machinability.

## SAFETY AND SUSTAINABILITY

- High biobased content – current formulations can reach up to 70% (ASTM D6866), with higher biobased content formulations in development.
- In a study of ski sidewalls, using Checkerspot® Cast PU resulted in an almost 25% lower GHG impact compared to petroleum-based ABS (ISO 14040/44).\*
- Low VOCs, and no mercury, tin, MOCA, or TDI.

## EXAMPLE APPLICATIONS

- Winter and water sport hard goods, climbing holds
- Automotive and other RIM components
- Electrical encapsulation



The WING® Platform is how we bring products to life to show that performance versus sustainability is a false choice. The WING Platform enables our biology and design labs to develop, test, and commercialize award-winning products that aim to reduce global dependence on fossil fuels and other unsustainable sources of oil.

## For questions or quotes

Please send inquiries to [materials@checkerspot.com](mailto:materials@checkerspot.com)

Certified



This company meets high standards of social and environmental impact.

Corporation

\* Based on a Life Cycle Assessment comparing cradle-to-gate GHG emissions with acrylonitrile-butadiene-styrene (ABS) copolymer and extrusion of plastic sheets and thermoforming, inline

Checkerspot is a biotechnology company that designs high performance ingredients and materials for a better planet. We seek to accelerate the adoption of renewable, biobased products that engage directly with consumers and show what is possible in industrial materials, outdoor recreation, personal care, and food and nutrition.

NOVEMBER 2023

1250 Marina Village Parkway, Alameda, CA 94501

[checkerspot.com](https://checkerspot.com)



SCAN TO VIEW  
DIGITAL VERSION

# Checkerspot® Cast PU 1003

Semi-Rigid High Impact Cast Urethane (Shore 50 D)

CPU-1070-003  
November 2023



## KEY PROPERTIES

- Balanced impact resistance and tensile strength
- Designed for use in low temperatures
- 66% biobased content (ASTM D6866)



## APPLICATIONS

- Ski and snowboard sidewalls
- Kite and wakeboard rails
- Other composite applications requiring high impact resistance

### Resin System Processing Properties

		Side A (Isocyanate)	Side B (Polyol)
Mix Ratio	pbw	42.28	100.00
	pbv	34.47	100.00
Density	g/cm <sup>3</sup>	1.189	0.969
Viscosity at 77°F (25°C)	cP	1,917	1,873

### Physical and Mechanical Properties

Biobased Content*	%	66	
Appearance	Visual	Tan	
Shore Hardness*	D	50	
Gel Time	Min	35	
Demold Time (72°F)	Hr	12	
		<b>72°F</b>	<b>32°F</b>
Tensile*	MPa	3.45	14.70
Elongation*	%	107.2	94.8
Flexural Strength*	MPa	4.89	32.31

\*Measurements are for pigment dispersion loading 2% by total weight

### TEMPERATURE

Processing and material temperatures should be between 65–80°F (18–27°C).

### COLORING

While the base material is tan in color, it is exceptionally well suited for pigmentation. Add pigment to Side B prior to mixing with Side A.

### MIXING

Agitate Side B thoroughly before combining as phase separation of components can occur. Mix well after compounding.

### CASTING

The mold or substrate into which compounded Side A/Side B are poured should be free of dirt, oil, and grease. Standard mold release agents can be used when casting parts. When casting in wood, particular care should be given to the moisture content of the wood as excessive moisture can cause bubble formation resulting in imperfections in the final product.

### SURFACE FINISH

The finish on cast parts is influenced by the mold or the substrate materials of construction. The top surface on open face molds will have a glossy finish, while a machined material can have a buffed appearance. This can be enhanced by wiping with steel wool/acetone or polishes containing silicones. Contact us for further details.



## STORAGE

Material should be stored in original, tightly sealed containers between 65–90°F (18–32°C). Avoid moisture and high humidity. Partially used containers should be tightly resealed and used as soon as possible. Dispose of used containers appropriately.



## HANDLING PRECAUTIONS

Ensure that the workspace is well ventilated during processing of material and follow best industrial hygiene practices including wearing of safety goggles, gloves, and laboratory coat.

### Packaging

Container Size	1 Quart	1 Gallon	5 Gallon	55 Gallon	275 Gallon
Total Weight	3.9 kg	15.5 kg	77.6 kg	853.1 kg	4,265.3 kg
Approx. Volume	1 Gallon	4 Gallons	20 Gallons	220 Gallons	1,100 Gallons

AlgalCast 003



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materials@checkerspot.com

checkerspot.com



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