phrozen

【Phrozen Resin User Guide】

AnyCast,Green

Outline

Before printing the perfect object, it is important to first understand the material limitations we are handling and how it can be successfully printed under various conditions. With this in mind, Phrozen provides the following design suggestions to help you better understand the properties of each material and how you can best utilize them to bring your wildest creation to life.

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Section 1

TDS

General Properties	Norm	Typical values
Appearance	-	Green
Viscosity, 30	BROOKFIELD Viscometer(LV)	150-250 cps
Density (liquid resin)	ASTM D4052-18a	1.05-1.25 g/cm³
Impact Properties	**Norm**	**Typical values (UV post-cured)**
Notched Izod (Machined), 23 °C	ASTM D256	26.7 J/m
Hardness	**Norm**	**Typical values (UV post-cured)**
Shore D	ASTM D2240	70-73D
Ash content	**Norm**	**Typical values (UV post-cured)**
TGA	ASTM E1131	0-0.01%

** All testing specimens are printed using Phrozen Sonic Mighty 8K or Sonic Mini 8K, and post-cured using Phrozen Wash & Cure Kit.*

Specimens are printed unless stated otherwise. The information in this TDS, including product recommendations, is based on our current knowledge and experience. Descriptions, drawings, photographs, data, proportions, weights, etc. provided may change without notice and do not establish the product's contractual quality. Request the relevant MSDS from your supplier or contact Phrozen Tech Co., Ltd at sales@phrozen3d.com

Section 2

Printing

Printing Parameters

Printer	Sonic mini / Sonic mini 4K
Layer Height	30 μm
Exposure Time	5 ± 1 s
Bottom Exposure Time	47.5 ± 2.5 s
Light-off Delay	15 s
Lift Distance	6 mm
Lifting Speed	60 mm/min

Printer	Sonic Mini 8K
Layer Height	30 μm
Exposure Time	7 ± 1 s
Bottom Exposure Time	57.5 ± 2.5 s
Rest Time After Retract	5 s
Lift Distance	6 mm
Lifting Speed	60 mm/min

Printer	Sonic Mini 8K S
Layer Height	30 μm
Exposure Time	8 ± 1 s
Bottom Exposure Time	65 ± 2.5 s
Rest Time After Retract	5 s
Lift Distance	6 mm
Lifting Speed	60 mm/min

Printer	Sonic Mighty 4K
Layer Height	30 μm
Exposure Time	5 ± 1 s
Bottom Exposure Time	47.5 ± 2.5 s
Light-off Delay	15 s
Lift Distance	8 mm
Lifting Speed	60 mm/min

Printer	Sonic Mighty 8K
Layer Height	30 μm
Exposure Time	7 ± 1 s
Bottom Exposure Time	65 ± 2.5 s
Rest Time After Retract	6 s
Lift Distance	8 mm
Lifting Speed	60 mm/min

Printer	Sonic Mighty 12K
Layer Height	30 μm
Exposure Time	7 ± 1 s
Bottom Exposure Time	47.5 ± 2.5 s
Rest Time After Retract	6 s
Lift Distance	8 mm
Lifting Speed	60 mm/min

Printer	Sonic Mighty Revo 14K
Layer Height	30 μm
Exposure Time	6 ± 1 s
Bottom Exposure Time	47.5 ± 2.5 s
Rest Time After Retract	6 s
Lift Distance	8 mm
Lifting Speed	60 mm/min

Printer	Sonic Mighty Revo 16K
Layer Height	30 μm
Exposure Time	6 ± 1 s
Bottom Exposure Time	52.5 ± 2.5 s
Rest Time After Retract	6 s
Lift Distance	8 mm
Lifting Speed	60 mm/min

- Be sure to cover the hood when printing to maintain the best printing condition of the resin.
- Increasing rest time can slow down resin accumulation, leading to improved resolution.

Cleaning

1. After removing the printed object from the building plate, use the Phrozen Wash and Cure Kit for post-processing.
2. Soak the object in the Washing Station filled with 95% ethanol for 45–60 seconds to remove uncured resin from the surface. Do not soak models in solvent for more than 60 seconds as it may damage model surfaces.
3. Make sure to clean the inner parts of hollow objects completely.
4. After thoroughly cleaning the object, leave it in a cool, well-ventilated place for at least 30 minutes. Alternatively, you may gently use a compressed air gun to dry the printed object.

*When printing flat on the building plate, remove the printed objects carefully to avoid deformation on the objects.

Post-Curing

1. Use Phrozen post-curing stations (Phrozen Wash & Cure Kit / Phrozen Cure Mega S) or other post-curing lamps with the same wavelength to cure printed objects.
2. Soak the models in glycerin and post-cure for about 30 minutes. Once completed, remove from glycerin immediately and clean up the models with water. Leave models in a cool, well-ventilated place without exposure to light to dry.

Notice

1. It is recommended to shake well before each use. You may use the Phrozen Heat & Mix or other equipment capable of heating and stirring.
2. Before and after curing, there may be a color difference in the model, which will not affect casting use.

Section 3

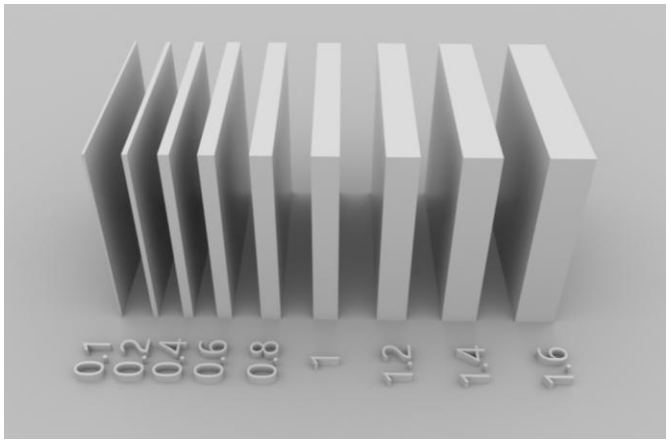
Design Specifications

※Note: All indicators are limited to each resin; the value will vary with different machines and environmental conditions.

Minimum Unsupported Wall Thickness

This indicator shows the minimum wall thickness that can be printed independently with no support without causing any bending or breaking.

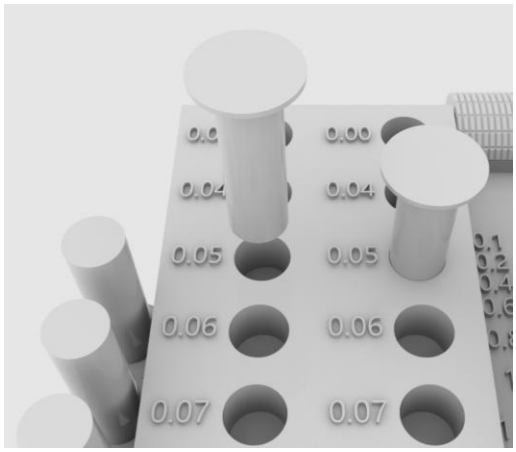
Recommended thickness：≥ 0.2 mm



Size Tolerance, X-Y plane

This indicator shows the minimum dimensional tolerance between the hole and the column parallel to the XY plane.

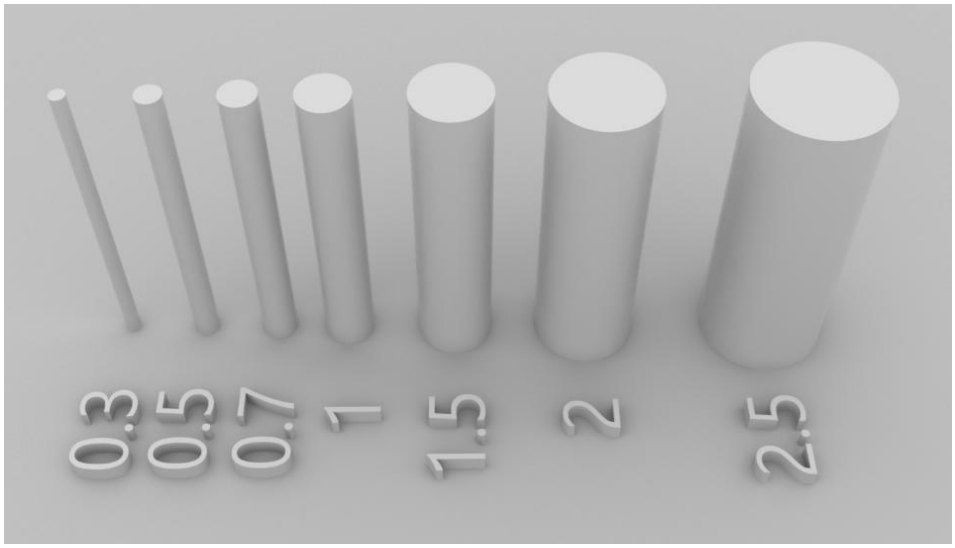
Recommended tolerance：≥ 0.1 mm



Minimum Pin Diameter

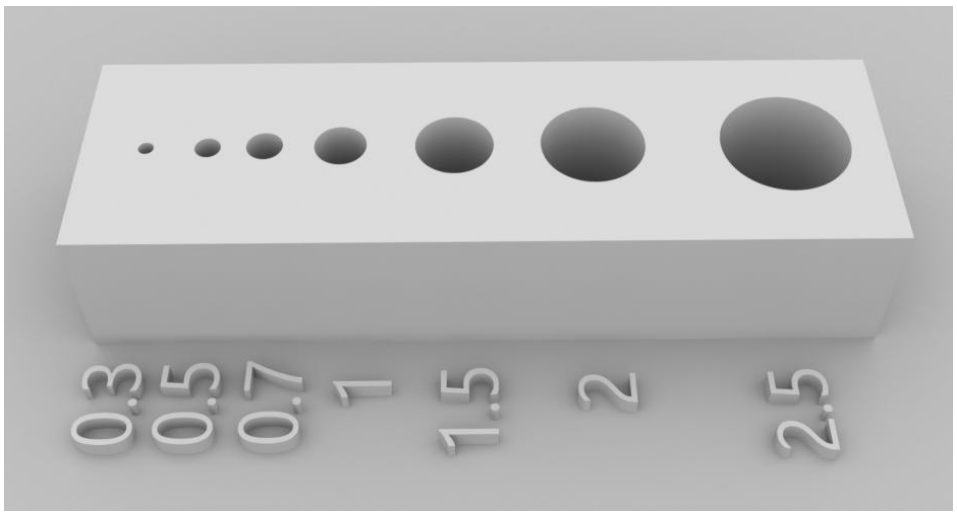
This indicator shows the minimum column diameter of pillars and supports that can be printed independently without bending or breaking.

Recommended diameter：≥ 0.3 mm



Minimum Hole Diameter, X-Y plane

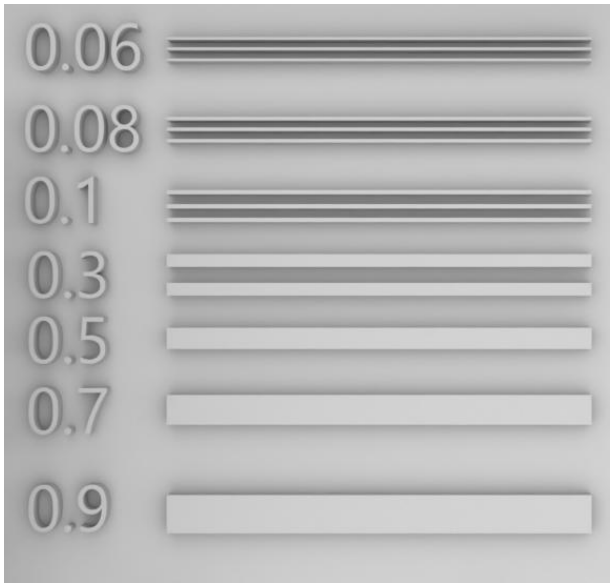
This indicator shows the minimum hole diameter that can be successfully printed parallel to the XY plane. Recommended diameter：≥ 0.7 mm



Minimum Embossed Detail Width, X-Y plane

This indicator shows the minimum line width that can successfully be printed with embossed details.

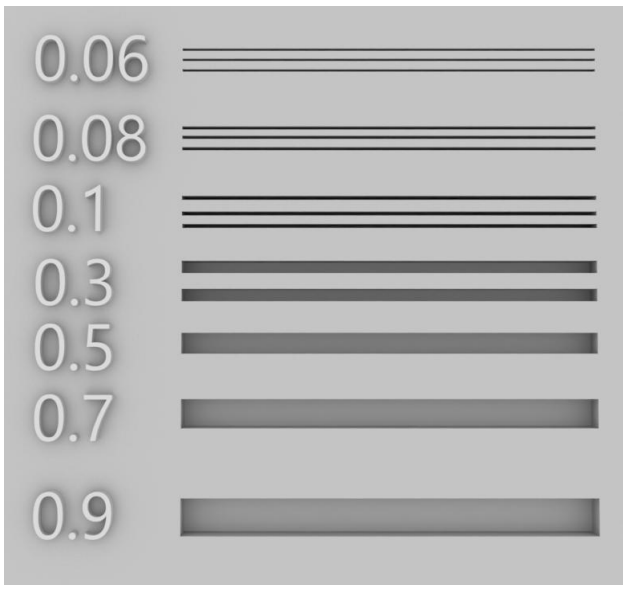
Recommended width: ≥ 0.08 mm



Minimum Engraved Detail Width, X-Y plane

This indicator shows the minimum line width that can successfully be printed with engraved details.

Recommended width: ≥ 0.06 mm



Maximum Horizontal Bridge Span

This indicator shows the maximum width between the supporting walls that can be printed without deforming the bridge.

Recommended width： ≤ 4 mm

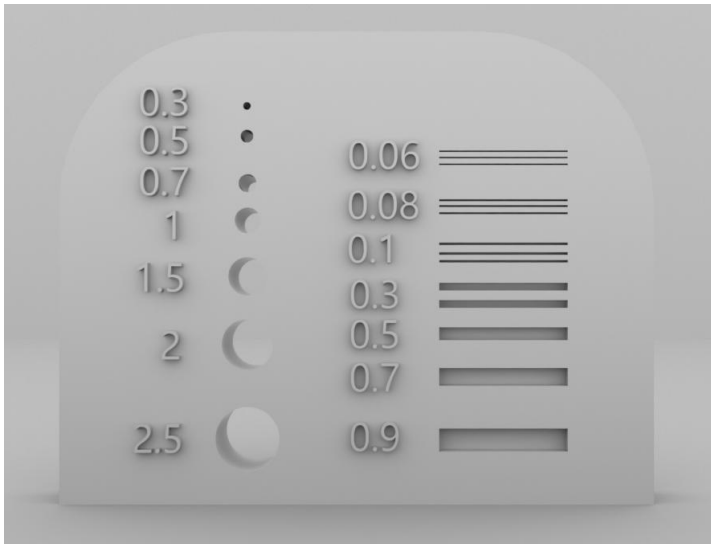


Minimum Hole Diameter and Engraved Detail Width, Z-axis, at 0.03 mm layer height

This indicator shows the minimum hole diameter and engraving groove width that can be successfully printed on the Z-axis with a layer thickness of 0.03 mm.

Recommended diameter：≥ 0.7 mm

Recommended width：≥ 0.08 mm



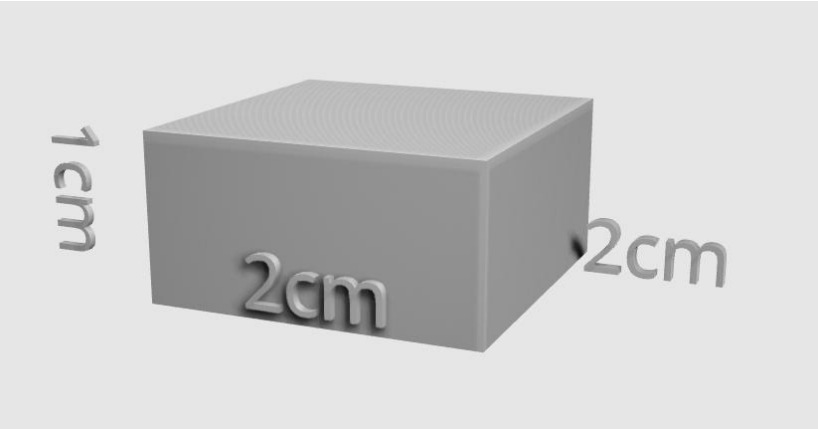
Block shrinkage test, at 0.03mm layer height

This indicator shows the possible deformation for a 2x2x1 cm cuboid printed parallel to the XY plane. A Vernier caliper is used to measure the cuboid after post-curing to calculate the shrinkage rate. (This test result is only for reference purposes. Different machines and models may affect results.)

Calculation method: [(Cured size-Original size) / Original size] x 100%

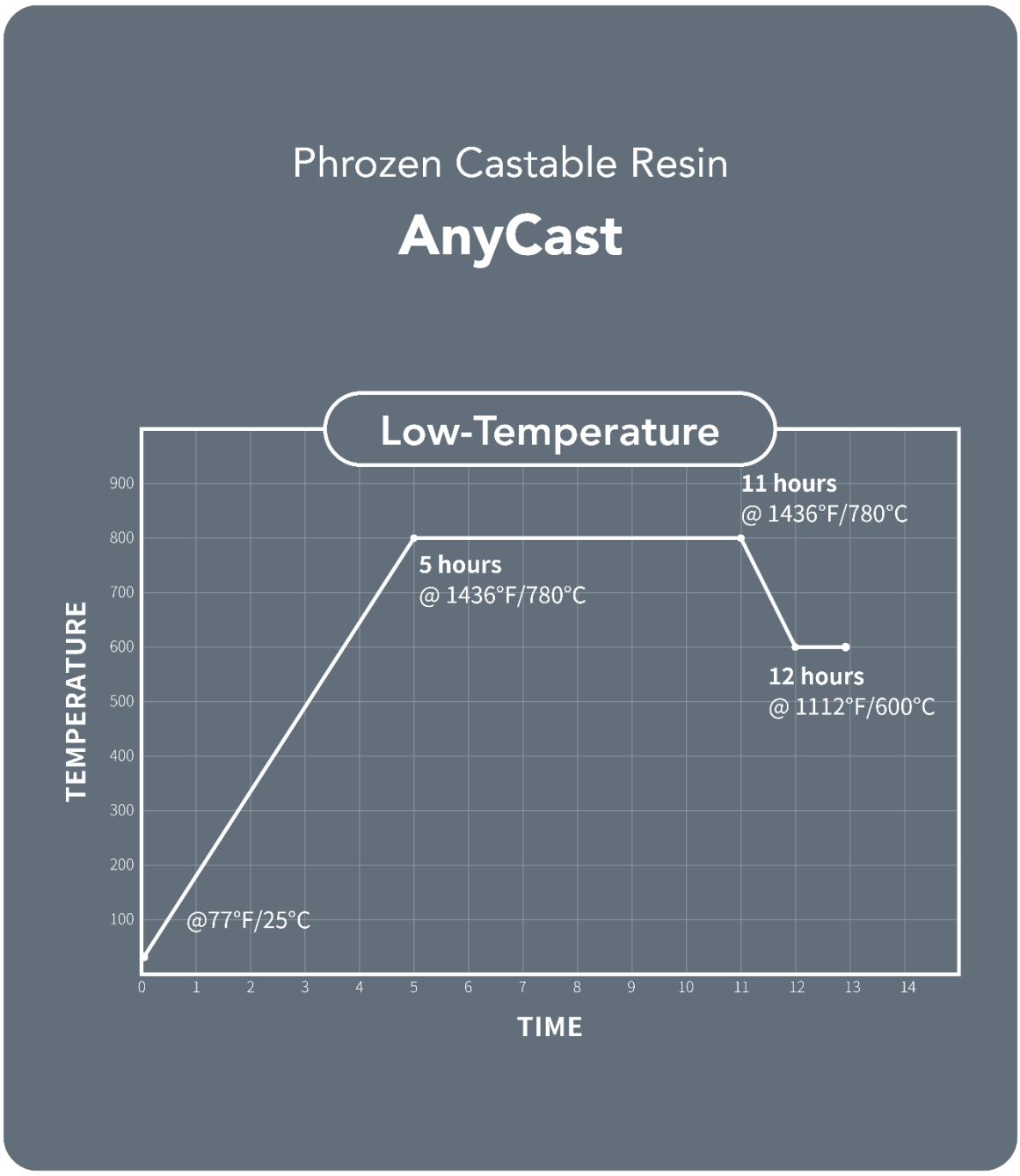
X-Axis Recommended Shrinkage Rate: 0.4%

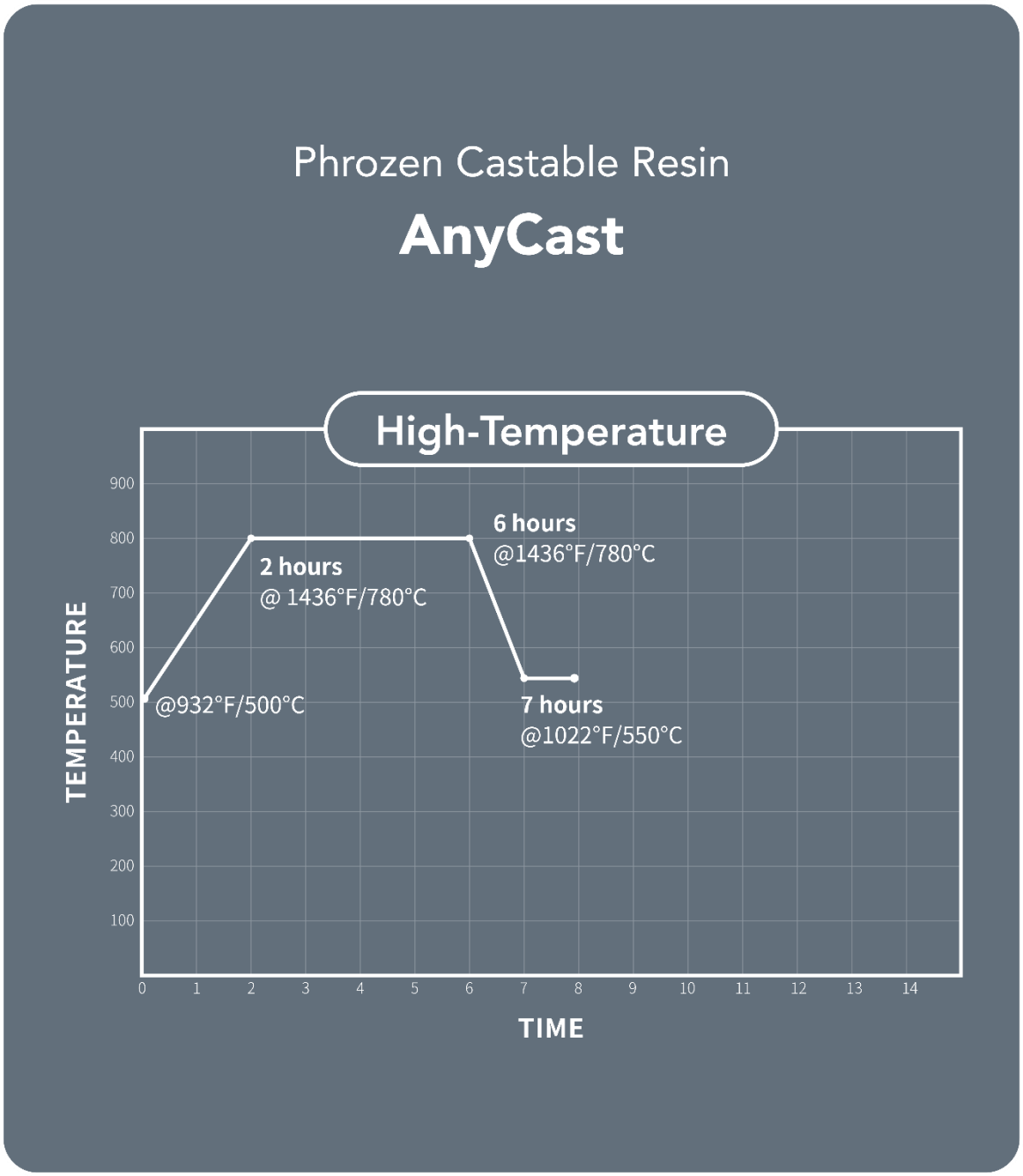
Y-Axis Recommended Shrinkage Rate: 0%



Section 4

Recommended Burnout Schedules




Phrozen Castable Resin
AnyCast
High-Temperature
TEMPERATURE
TIME
900
800
700
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
@932°F/500°C
2 hours
@ 1436°F/780°C
6 hours
@1436°F/780°C
7 hours
@1022°F/550°C

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