

## Castable Plus Black (S-CST1BK)

### Check:

- Well shaken resin (>60 seconds)
- Clean optical pathways
- Good resin tank condition

### Print Settings:

Printer	Layer Thickness (μm)	Normal Layer Exposure Time (s)	Bottom Layer Exposure Time (s)	Lifting Distance (mm)	Lifting Speed (mm/min)	Retract Speed (mm/min)
Anycubic Photon M3 Premium	50	8	32	7 + 1	1 + 1 (mm/s)	2.5 + 2.5 (mm/s)
Anycubic Photon Mono X 6K	50	5	20	7 + 1	1 + 1 (mm/s)	2.5 + 2.5 (mm/s)
Anycubic Photon Mono 4 Ultra	50	10	40	4 + 1	1 + 1 (mm/s)	2.5 + 2.5 (mm/s)
Elegoo Mars 2 Pro	50	8	32	4 + 1	60 + 60	150 + 150
Elegoo Mars 3 Pro	50	9	36	4 + 1	60 + 60	150 + 150
Elegoo Mars 4	50	5	20	4 + 1	60 + 60	150 + 150
Elegoo Mars 4 DLP	50	5	20	4 + 1	60 + 60	150 + 150
Elegoo Mars 5 Ultra	50	9	60	-	-	-
Elegoo Saturn S	50	8	32	7 + 1	60 + 60	150 + 150
Elegoo Saturn 3 Ultra	50	9	36	7 + 1	60 + 60	150 + 150
Elegoo Saturn 4	50	9	36	7 + 1	60 + 60	150 + 150
Elegoo Saturn 4 Ultra	50	10	40	-	-	-
Phrozen	30	9	36	4 + 1	60 + 60	150 + 150
Sonic mini 8K	50	11	44	4 + 1	60 + 60	150 + 150
Phrozen	30	9	36	4 + 1	60 + 60	150 + 150
Sonic mini 8K S	50	11	44	4 + 1	60 + 60	150 + 150
Phrozen Sonic Mighty12K	50	16	64	7 + 1	60 + 60	150 + 150
Phrozen Sonic Mighty Revo	50	12	48	7 + 1	60 + 60	150 + 150
Download above .cfgx file from <a href="#">support</a> page						
Asiga Max UV385	25	Download .ini file from <a href="#">support</a> page				
	50					
Asiga PRO 4K UV385	25					
	50					
Formlabs Form 4/4B	25	Download .fps file from <a href="#">support</a> page				
	50					
SprintRay Pro2	50	Sprintray Castable 2 (Not endorsed by SprintRay)				
SprintRay Pro95S	50	Sprintray Castable 2 (Not endorsed by SprintRay)				
HeyGears Reflex	30	PAC10				

Each printer is unique, and light intensity can vary even among identical models. Minor adjustments may be necessary, especially true for open-system MSLA printers.

Download printer setting profiles via ApplyLabWork [Support](#) page, or download [Exposure Settings Data Sheet \(Excel\)](#). For size calibration, download the [stl file](#).

### **Washing:**

Rinse with fresh IPA (**95%** purity or higher) or apply sonication for **2 minutes**. Blow dry via compressor air immediately after wash. The surface may turn grayish, especially with ultrasonic washing, no effect on casting result.

**Limit IPA contact time to 2 minutes, prolong contact time could cause deformation.**

### **Drying:**

Let models **sit dry 60 minutes minimum** in a shaded airy place. Printed parts must be free of IPA before casting. Residual IPA (if not dried completely) could cause deformation.

## **No Post-Curing required**

### **Storage:**

Filter out all debris in used-resin before storage. Keep resin in the original bottle, storage temp (15-26°C / 59-79°F) in a dry and dark area.

Note, slight pigment settlement is normal. Gently mix remaining resin in resin tank with soft “resin wiper” for color evenness.

## Casting

### Investment

Castable Plus Black is compatible with most kind of gypsum-bonded investment. For optimal results, please consider investments designed for 3D printed resins. Example: R&R Plasticast, Optima Prestige, Gold Star Resincast or equivalent. Water/powder ratio of 37/100 ~ 38/100.

Let flask set for at least 2 hours prior to the burnout.

### Prints

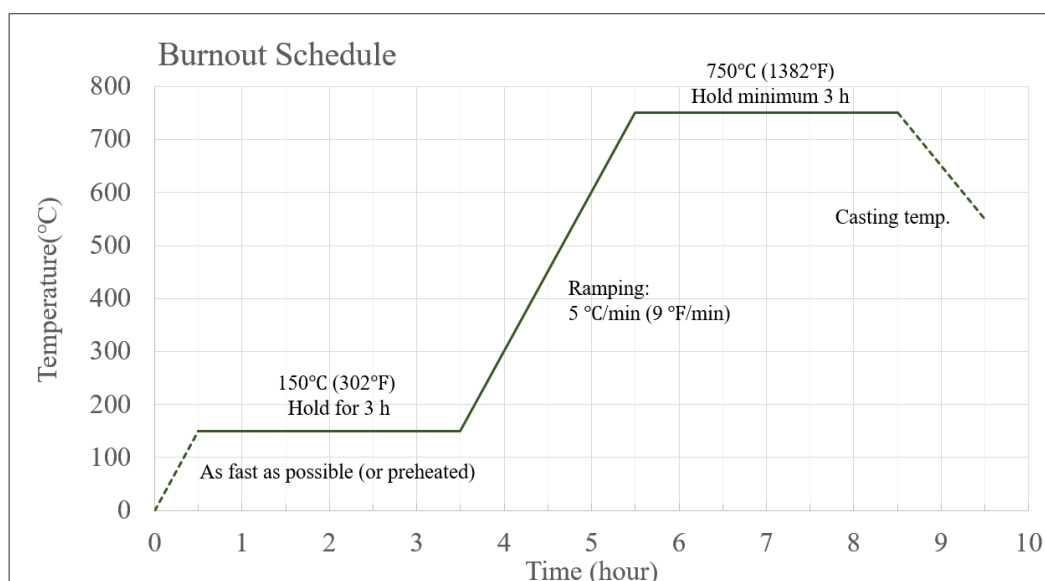
Allow the prints dry for at least 60 mins before assembling the cast tree. Consider using 'Sticky Wax' to ensure strong adhesion between models and wax tree. Include sprues with model design when possible to simplify printing support structure and tree building.

### Burnout Schedule

Example: Burnout schedule for a 3-3/8"x4" vacuum flask.

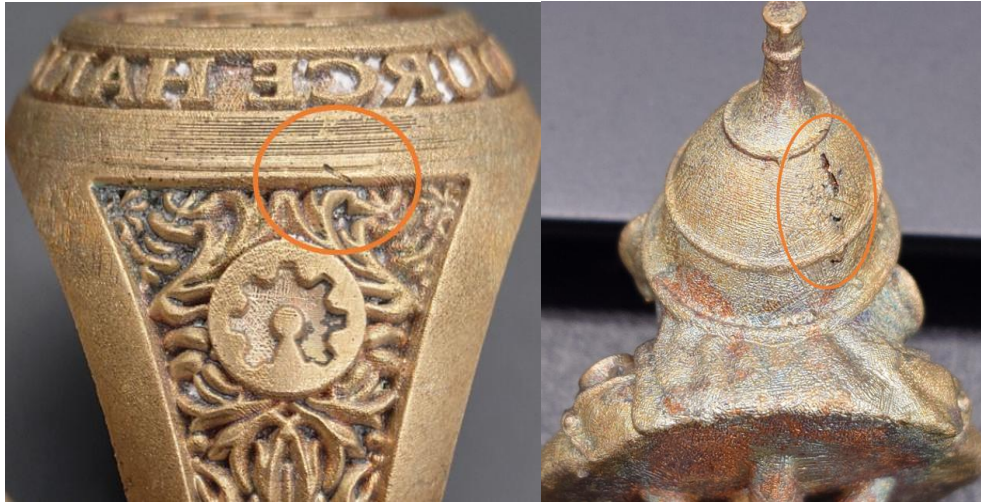
1. Start kiln at room temperature or preheated to 150°C (302°F)
2. Hold 150°C (302°F) for 3 hours
3. Raise temperature to 750°C (1382°F) in 2 hours.
4. Hold 750°C (1382°F) for 3 hours (for large flask, let sit for 1-2 hours longer)
5. Reduce to casting temperature (for example, 430°C (806°F) for sterling silver)
6. Hold Casting Temperature for at least 2 hours

**Note:** Do Not Exceed Maximum Temperature (refer to manufacturer instructions)



## Casting Tips

Geometric shape/sharp edge hole:



1. Feeding system: make sure the joints are well-rounded and fully heated solder joints
2. Models position: leave adequate space between models
3. Water/powder ratio: decrease water/powder ratio to increase investment strength

## Rough surface (texture)



1. Accelerate temperature ramp



2. Investment: follow the instructions of manufacturer, correct amount of water/powder ratio, fully mixed, place flask on stable surface for setting, do not disturb for 2 hours

**Orange peel: (dense texture, mainly on upper part of model)**



1. Temperature: decrease the temperature of metal or flask (check the recommend temperature from supplier and adjust according geometry of model and size of flask)

**Incomplete filling:**



1. Temperature: Increase the temperature of metal or flask (check the recommend temperature from supplier and adjust according geometry of model and size of flask)
2. Feeding system: increase sprue's diameter or amount

### Small porosity / Dark inclusions:



1. Incomplete burnout:
  - i. Extend the maximum temperature hold time for 1 ~ 2 hours
  - ii. Turn the flask upside down (pouring cone up) during the last hour of maximum temperature
  - iii. Open the door couple times during the maximum temperature
  - iv. Accelerate temperature ramp

### Fin (Flashing):



1. Models position: leave adequate space between models, and between models and flask
2. Water/powder ratio: decrease water/powder ratio to increase investment strength
3. Investment: drying out the investment too long may cause cracking, refer to manufacturer instructions
4. Overheat the flask during burnout: refer to manufacturer instructions for the maximum temperature



## ApplyLabWork Castable Investment Friendliness Test

### R&R Ultravest vs. R&R Plasticast

Metal: Brass 1060°C / Flask 650°C

Investment water-powder ratio: 38:100

Flask: 3-3/8"x4" vacuum flask

Flask orientation: Keep sprue facing downward throughout the entire burnout process

Casting Machine: Vacuum Casting Machine

**R&R Ultravest**



**R&R Plasticast**



**R&R Ultravest**



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