

# Product Assessment Report

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## **Product: Cub3d Water Washable Resin (gray)**

Batch No: N/A

Expiry: N/A

Reported Issue: None – Calibration testing

## **General:**

Printer Used: Creality® Halot-One, standard, no light source modifications.

Print surface: WhamBam® Flexible build plate (sanded to provide additional adhesion per manufacturer guidelines)

Product compared to Cub3d Standard Resin (Gray)

Settings attempted/utilized (adapted from settings database for Cub3d Standard Resin Gray & Creality® Standard Gray Resin).

Water washable resin requires higher exposure time settings compared to standard resin.

Tests 1-5 show print results for tests with highest rates of success – layer cure times lower than 2.4s result in under curing on entry level devices – results may differ with 8K and 12K resolution printers.

Turn-off delay of 1s did not result in bleed/blur of prints at most successful setting range.

Rising height and turn-off delay set to minimum possible and motor speed set to maximum possible on printer used – rationale: minimise print times per print.

## **Print Setting Comments:**

Layer exposure time typically appears to be optimal at 9-10% of bottom layer exposure time.

Layer exposure time over 15% of bottom layer exposure time results in print failures; likely overcuring between layers weakening overall print strength.

Plate/print bed adhesion was acceptable throughout the range of settings used; however, increases in rigidity improves ease of removal from print bed (using a flexible build plate/print bed). However, benefit tapers off and adhesion becomes more difficult beyond 36s for both standard and water washable resins.

## **General Properties:**

### **Pigment & Polymer content:**

Standard resin: transparent polymer, blend of black, white, and sky-blue pigments.

Water Washable: transparent polymer, blend of black and white pigments.

### **Viscosity**

Standard resin: good flow at room temperature; required <1 minute of agitation for adequate mixing/homogeneity.

Water washable: flow is slower, relatively more viscous; 2-3 minutes of agitation for adequate mixing/homogeneity.

### **Tank Settling Test (resin left in print tank and allowed to separate)**

Standard resin: complete sedimentation/separation of pigment from polymer after 5-days; resin may be remixed gently in the tank using a silicone spatula.

Water Washable: complete sedimentation/separation of pigment from polymer after 5-days; remixing in the tank is ineffective as pigment separation appears more extensive – requires resin removal and tank/vat cleaning.

### **Cleaning**

Standard resin: standard requiring 60-80% IPA; 2-3 washes sufficient to remove residual resin.

Water washable: standard tap water or purified water sufficient; each requiring 4-5 washes required for sufficient removal of residual resin (Ultrasonic bathing and/or warm water improve effectiveness per wash – insignificant/does not warrant purchase of additional equipment for hobby users.)

### **Calibration tests used:**

Cones of Calibration	3DRS Starship
AMERALABS Town	3DRS Chip
Make:ROOK	Siraya Tech Test Model V5
3D miniature: LOOT STUDIOS model (Arcanademon)	

### **Standard settings used:**

Motor speed:	3 mm/s
Light source turn off-delay:	1 s
Build plate rising height:	5 mm

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### **Setting recommendations:**

Exposure/Layer: 2.6-3.0s  
Bottom Layer Exposure: 28-32s  
Bottom Layer Count: 4 layers




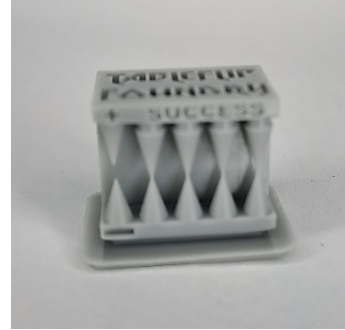


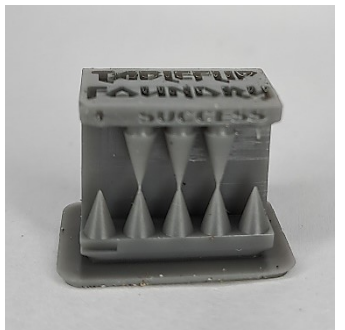


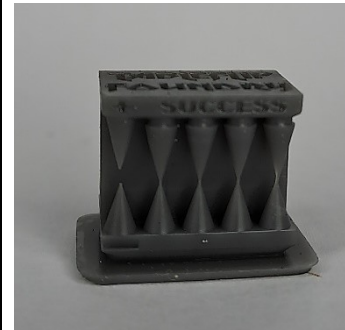
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Date of test completion: 12 February 2024

Date of reporting: 16 February 2024

*Note: Comments provide alongside photographs and print settings describe print outcomes for Cub3d Water Washable Resin. Images for Cub3d Standard Resin provided for reference – prints completed simultaneously, under same temperature, humidity, and ambient light conditions.*

# CONES OF CALIBRATION

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										











<sup>1</sup> Bottom layer exposure time (BtET)

<sup>2</sup> Individual layer exposure time (LrET)











## COMMENTS

Printing for miniature models (tabletop games, etc.) possible with Test 2 & Test 3 settings; Test 5 shows highest successful print chance.  
Consider slower motor speed if wishing to reduce cure time in case of blooming or detail loss – consider time trade off depending on print size.

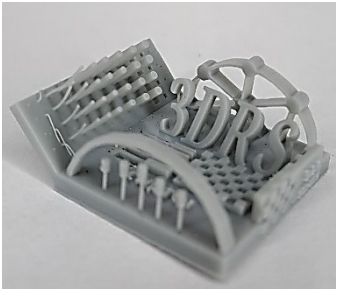


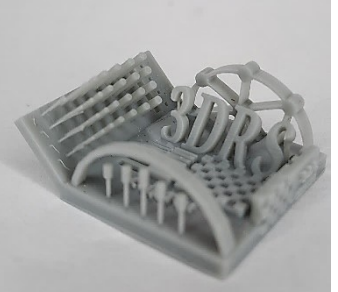


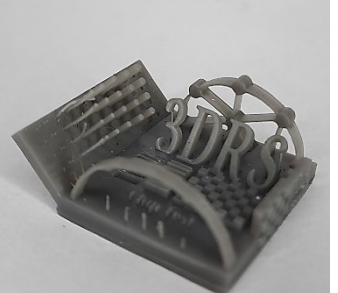
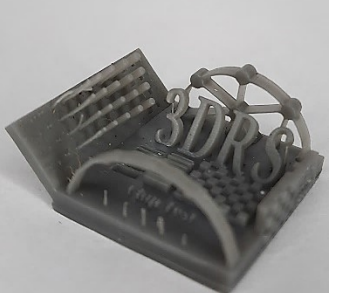

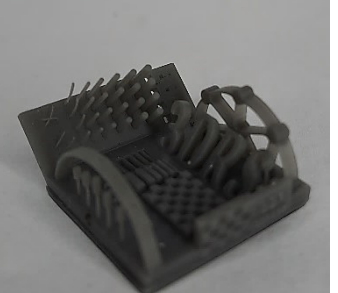
# AMERALABS® TOWN

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p>COMMENTS</p> <p>Tests 1 &amp; 2 display the problems with superfine details and object accuracy at lower cure time range.            Test 5 showed most clear printing of superfine details; with some bloom/blur in superfine text.</p>										

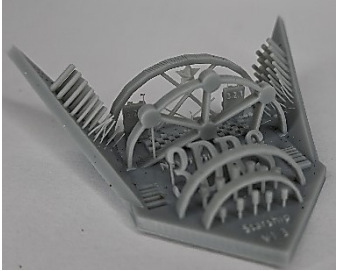
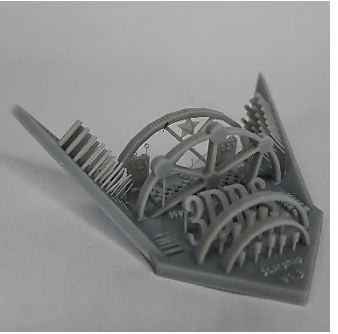
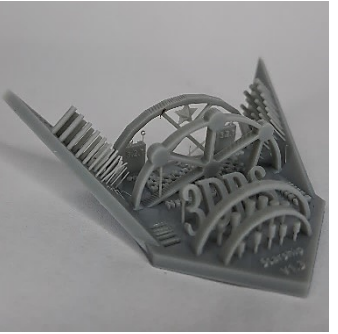
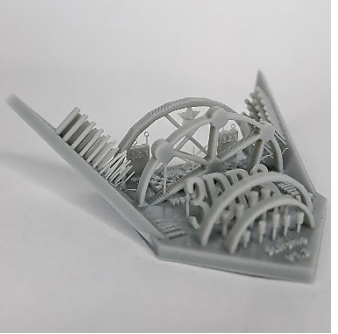
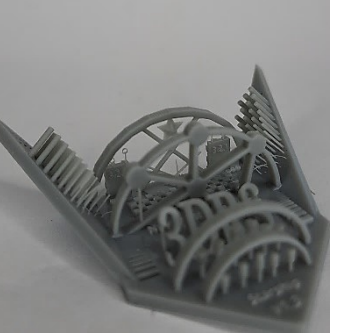
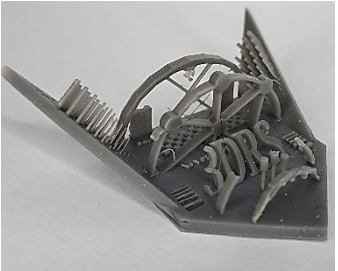

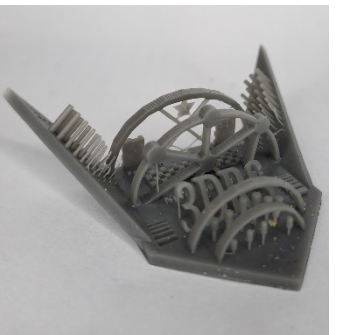

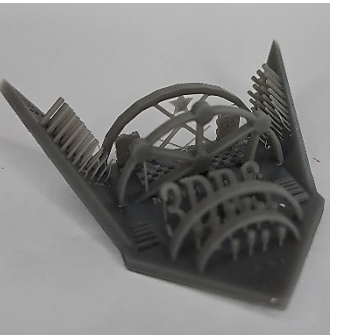
# MAKE:ROOK

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p>COMMENTS</p> <p>Printing of superfine, isolated structures possible from settings at test 2 (see presence of internal spirals).            Tests 3 &amp; 4 showed highest visual quality without blurring of details.</p>										





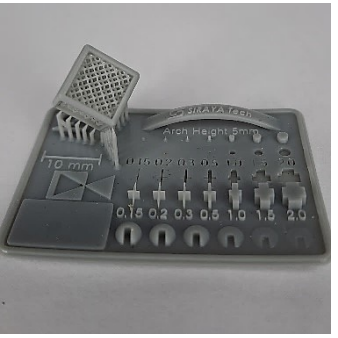
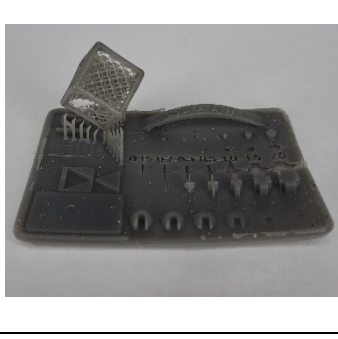


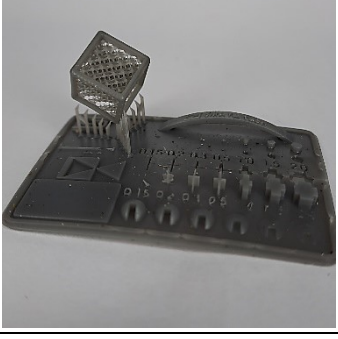

# 3DRS CHIP

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p><b>COMMENTS</b></p> <p>Chip test useful for angular print assessment.            Test 4 showed highest quality and detail printing; however, curing times exceeding 3.2s/layer appear to be required for superfine, angled details without support structures.            Consider trade off in time and print orientation as overall print quality deteriorates at cure times above 3.2s/layer.</p>										

# 3DRS STARSHIP










	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p>COMMENTS</p> <p>Same as for chip test in terms of detail assessment – Test 4 &amp; 5 displayed highest level of quality.            Test 4 displaying minor print failures of superfine details.            Test 5 displaying minor loss of resolution/quality.</p>										

# SIRAYATECH® TECH TEST V5

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>										
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p><b>COMMENTS</b>            Support structures become strongest from Test 3 to 5; internal details show under-curing in Tests 1 &amp; 2.            Test 4 displayed highest level of text quality and dimensional accuracy.</p>										



# LOOT STUDIOS® - ARCANADEMON MODEL: 3D MINIATURE PRINT

	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5	
	BtET <sup>1</sup> (s)	26	BtET (s)	28	BtET (s)	30	BtET (s)	32	BtET (s)	34
	LrET <sup>2</sup> (s)	2.4	LrET (s)	2.6	LrET (s)	2.8	LrET (s)	3.0	LrET (s)	3.2
<b>CUB3D STANDARD RESIN</b>										
<b>CUB3D WATER WASHABLE RESIN</b>	N/A – PRINT FAILURE									
<p><sup>1</sup> Bottom layer exposure time (BtET)  <sup>2</sup> Individual layer exposure time (LrET)</p> <p><b>COMMENTS</b></p> <p>Tests 1 &amp; 2 displayed print failures, where Test 1 was complete failure with bed adhesion and Test 2 was partial failure where support material collapsed due to undercuring. Test 4 &amp; 5 showed highest level of detail with negligible detail loss in Test 5.</p>										