【Phrozen Resin User Guide】

# Phrozen Aqua-Vanilla 8K

## 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.

## Table of Contents

# Section 1

# TDS

| Mechanical Properties* | Unit | Results | Method |
|---|---|---|---|
| Tensile Stress at Break | MPa | 43 | ASTM D638 |
| Tensile Modulus | MPa | 1730 | ASTM D638 |
| Elongation at Break | % | 8 | ASTM D638 |
| Izod Impact Strength (Notched) | J/m | 10 | ASTM D256 |
| Shore D Hardness | - | 82 | ASTM 2240 |
| **Liquid Properties** | | | |
| Viscosity at 25°C (77°F) | cP | 280 – 380 | ASTM D1475 |
| Liquid Density | g/cm³ | 1.1 | ASTM D7867 |

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

## Section 2

# Printing

## Printing Parameters

| | |
|---|---|
| **Printer** | Sonic Mini / Sonic Mini 4K |
| **Layer Height** | 50 μm |
| **Exposure Time** | 2–2.5 s |
| **Bottom Exposure Time** | 25–35 s |
| **Light-off Delay** | 11 s |
| **Lift Distance** | 6 mm |
| **Lifting Speed** | 60 mm/min |

| | |
|---|---|
| **Printer** | Sonic Mini 8K |
| **Layer Height** | 50 μm |
| **Exposure Time** | 1.8–2.5 s |
| **Bottom Exposure Time** | 25–30 s |
| **Rest Time After Retract** | 2 s |
| **Lift Distance** | 6 mm |
| **Lifting Speed** | 60 mm/min |

| | |
|---|---|
| **Printer** | Sonic Mighty 4K |
| **Layer Height** | 50 μm |
| **Exposure Time** | 2–2.5 s |
| **Bottom Exposure Time** | 30–35 s |
| **Light-off Delay** | 11 s |
| **Lift Distance** | 8 mm |
| **Lifting Speed** | 60 mm/min |

| | |
|---|---|
| **Printer** | Sonic Mighty 8K |
| **Layer Height** | 50 μm |
| **Exposure Time** | 1.8–2.5 s |
| **Bottom Exposure Time** | 30–35 s |
| **Rest Time After Retract** | 2 s |
| **Lift Distance** | 8 mm |
| **Lifting Speed** | 60 mm/min |

| | |
|---|---|
| **Printer** | Sonic Mega 8K |
| **Layer Height** | 50 μm |
| **Exposure Time** | 2–2.5 s |
| **Bottom ExposureTime** | 30–35 s |
| **Rest Time After Retract** | 2 s |
| **Lift Distance** | 8 mm |
| **Lifting Speed** | 45 mm/min |

## Cleaning

1. After removing the printed object from the building stage, use an ultrasonic cleaner and 95% alcohol for 60 seconds to remove uncured resin from the surface.
2. Make sure that the object has been thoroughly cleaned, then leave it in a cool, well-ventilated place for at least 30 minutes without exposure to light. Alternatively, you may gently apply compressed air to dry the printed object.
3. For hollowed models, make sure that you have cleaned every detail and inner parts thoroughly.

# Post-Curing

For best precision and mechanical properties, use Phrozen Post-Curing Lamps (Cure V2, Cure Luna or Cure Mega) to cure the parts for at least 30 minutes.

## Section 3

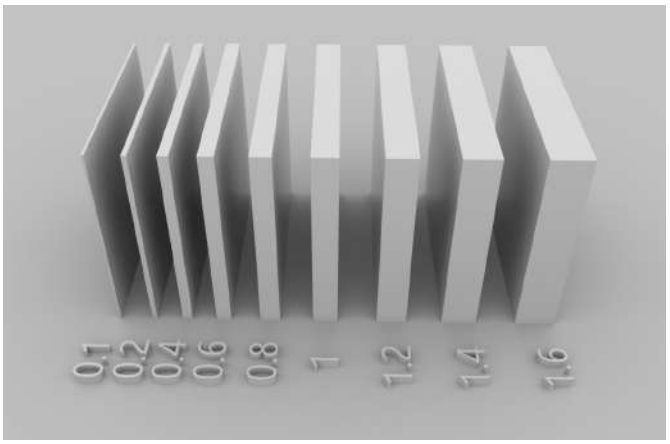
# Design Specifications

**※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.

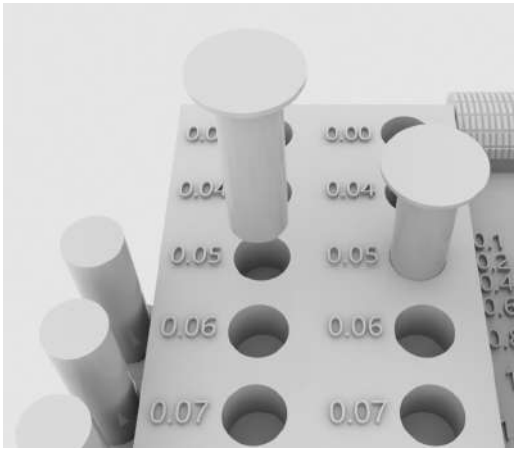
*Recommended thickness*：≥ 0.6 mm




### Size Tolerance, X-Y plane

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

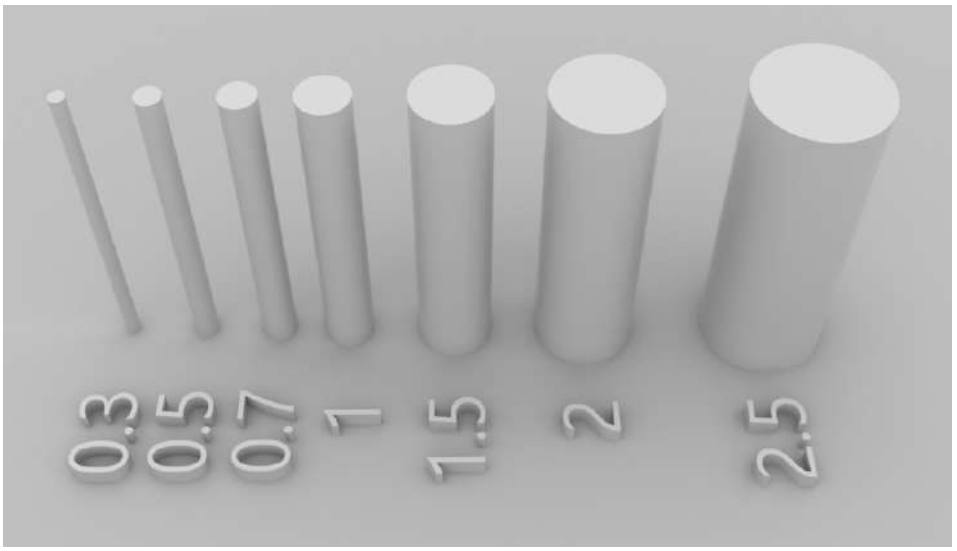
*Recommended tolerance*：≥ 0.1 mm



## Minimum Pin Diameter

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

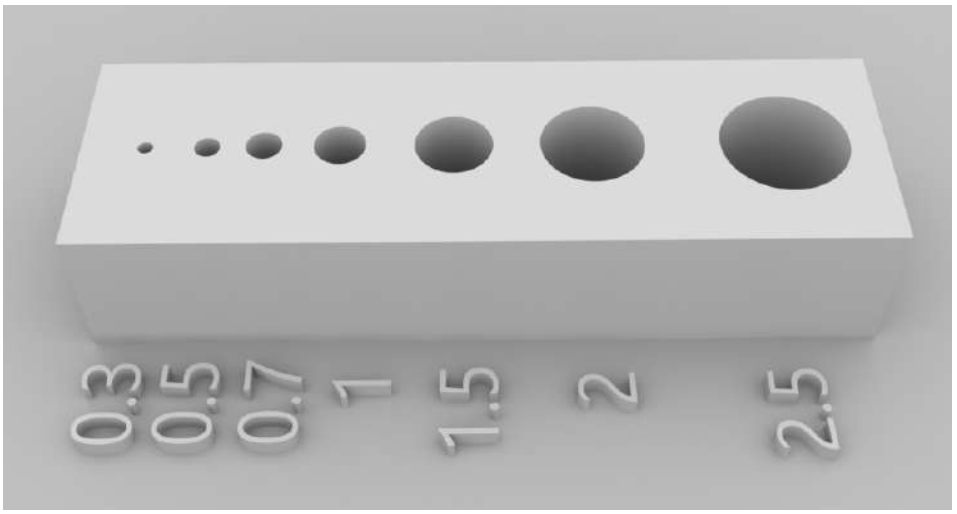
*Recommended diameter*: ≥ 0.3 mm




## Minimum Hole Diameter, X-Y plane

This indicator shows the minimum hole diameter that can be successfully printed parallel to the XY plane.

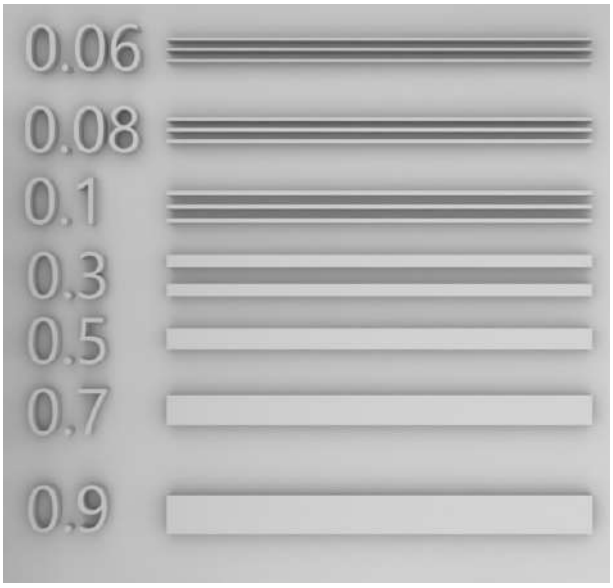
*Recommended diameter*: ≥ 0.7 mm



## Minimum Embossed Detail Width, X-Y plane

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

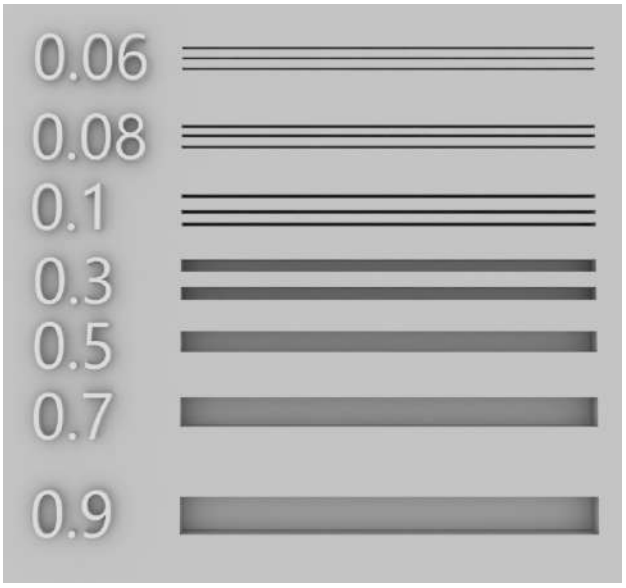
*Recommended width*： ≥ 0.06 mm




## Minimum Engraved Detail Width, X-Y plane

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

*Recommended width*： ≥ 0.3 mm



## Maximum Horizontal Bridge Span

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

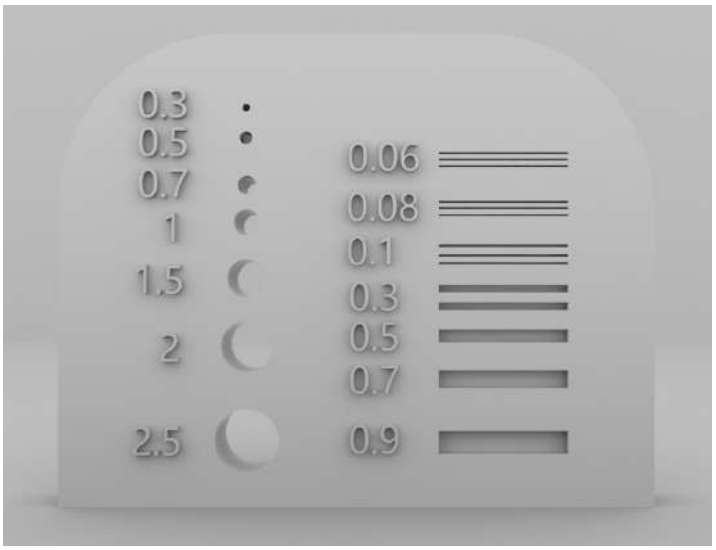
*Recommended width*: ≤ 6 mm


## Minimum Hole Diameter and Engraved Detail Width, Z-axis, at 0.05mm 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 0.05 mm.

*Recommended diameter*: ≥ 0.3 mm

*Recommended width*: ≥ 0.06 mm



## Section 4

# Applications

【Phrozen Resin User Guide】
【Phrozen樹脂 使用者指南】

# 8K湖水樹脂 - 香草色

## 大綱

在列印一個理想的物件前，我們可以先了解材料在各條件下能完整列印出物件的極限在哪；因此**Phrozen**提供以下設計建議，幫助您列印物件時大幅提升成功率，並印製出更符合您心目中的物件。

## 目錄

## Section 1

# TDS

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| Liquid Density | g/cm³ | 1.1 | ASTM D7867 |

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

## Section 2

# 列印

### 列印參數

| 測試機台 | Sonic mini / Sonic mini 4K |
|---|---|
| **Layer Height** | 50 μm |
| **Exposure Time** | 2.0~2.5 s |
| **Bottom Exposure Time** | 25~35 s |
| **Light-off Delay** | 11 s |
| **Lift Distance** | 6 mm |
| **Lifting Speed** | 60 mm/min |

| 測試機台 | Sonic Mini 8K |
|---|---|
| **Layer Height** | 50 μm |
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| **Layer Height** | 50 μm |
| **Exposure Time** | 2.0~2.5 s |
| **Bottom Exposure Time** | 30~35 s |
| **Light-off Delay** | 11 s |
| **Lift Distance** | 8 mm |
| **Lifting Speed** | 60 mm/min |

| 測試機台 | Sonic Mighty 8K |
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| **Layer Height** | 50 μm |
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| 測試機台 | Sonic Mega 8K |
|---|---|
| **Layer Height** | 50 μm |
| **Exposure Time** | 2.0~2.5 s |
| **Bottom Exposure Time** | 30~35 s |
| **Rest Time After Retract** | 2 s |
| **Lift Distance** | 8 mm |
| **Lifting Speed** | 45 mm/min |

## 清洗步驟

1. 超音波機+95%酒精清洗60秒
2. 清洗後靜置30分鐘
3. 空心薄件請務必洗淨內部

## 二固

至少30分鐘。

## Section 3

# 設計規格

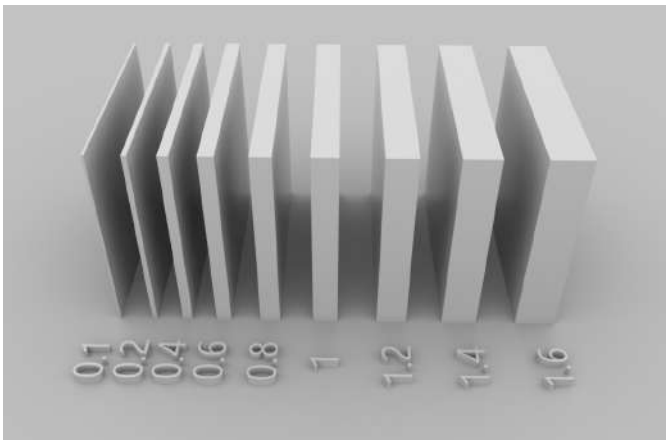
※註:所有指標均為樹脂之極限值，會依照使用機台不同有所差距※

### Minimum Unsupported Wall Thickness

## 最小無支撐壁厚

此項指標為在無支撐前提下能獨立印出且無彎曲、斷裂現象之最薄厚度。

建議厚度:≥ 0.6 mm

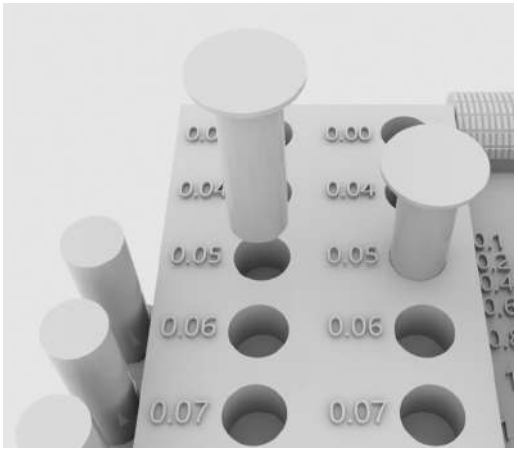



### Size Tolerance, X-Y plane

## 最小尺寸公差

此項指標為平行於XY平面上的孔洞與立柱接合之最小尺寸公差。

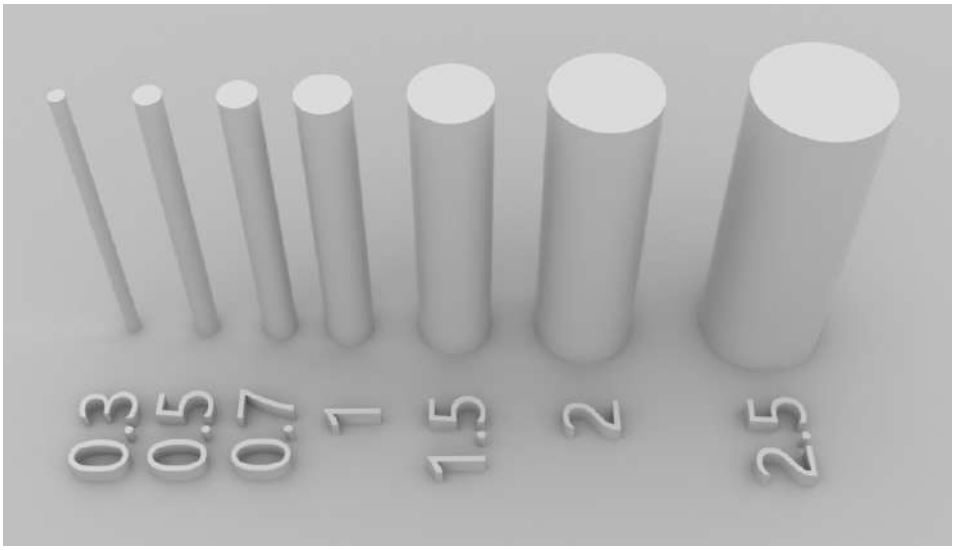
建議公差:≥ 0.1 mm



Minimum Pin Diameter

## 最小立柱直徑

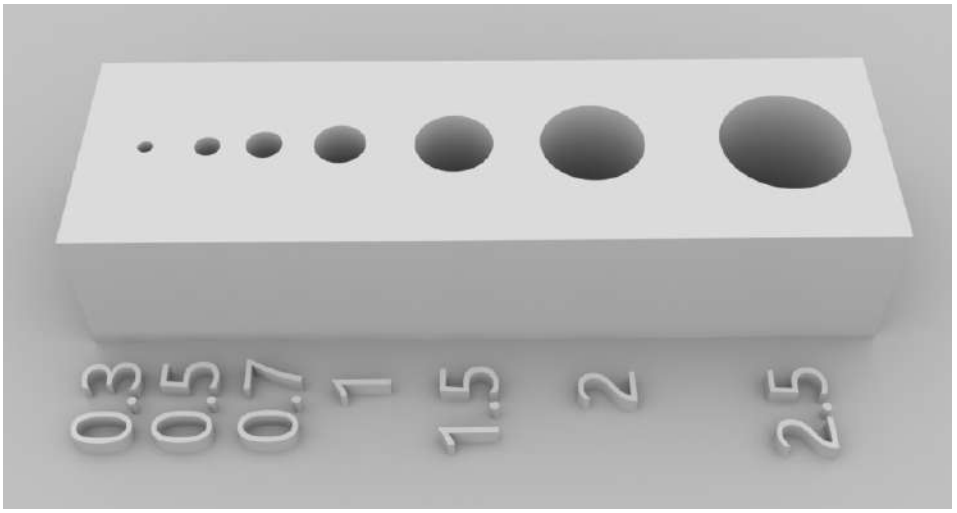
此項指標為細根及支撐能獨立印出且無彎曲、斷裂現象之最小立柱直徑。
建議直徑：≥ 0.3 mm




Minimum Hole Diameter, X-Y plane

## 最小孔洞直徑

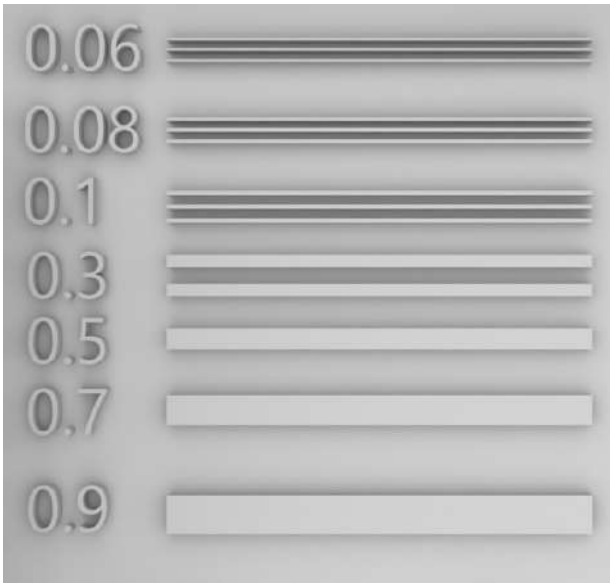
此項指標為平行於XY平面列印前提下能完整印出之最小孔洞直徑。
建議直徑：≥ 0.7 mm



Minimum Embossed Detail Width, X-Y plane

## 最小浮雕細節寬度

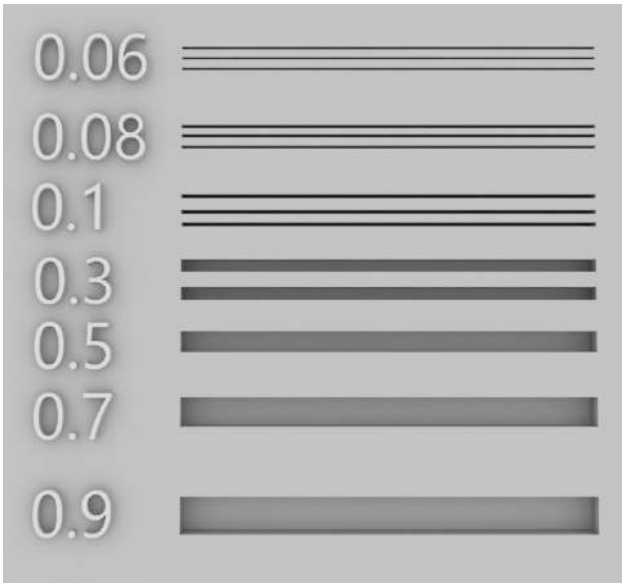
此項指標為可完整列印浮雕細節之最低線條寬度
建議寬度： ≥ 0.06 mm




Minimum Engraved Detail Width, X-Y plane

## 最小雕刻細節寬度

此項指標為可完整列印雕刻細節之最低線條寬度
建議寬度： ≥ 0.3 mm



Maximum Horizontal Bridge Span

## 最大水平跨橋寬度

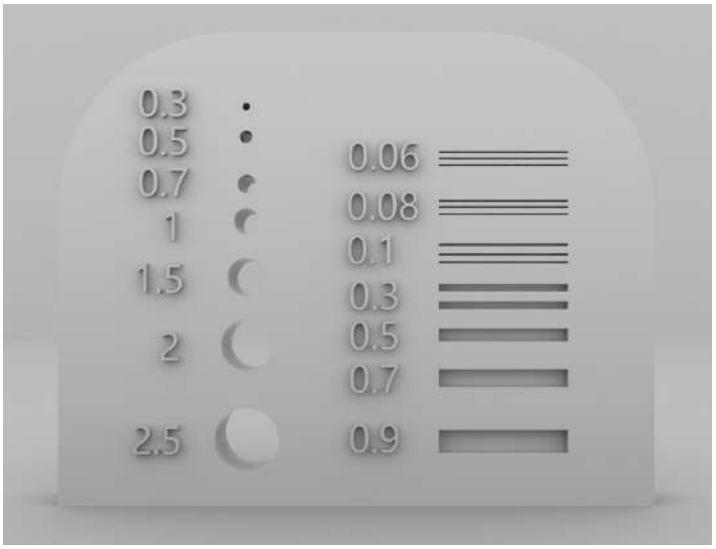
此項指標為在兩側有支撐壁前提下能印出不變形懸空模型之支撐壁間最大寬度。
建議寬度: ≤ 6 mm


Minimum Hole Diameter and Engraved Detail Width, Z-axis, at 0.05 mm layer height

## Z軸最小孔洞直徑及最小雕刻凹槽寬度 (0.05 mm層高)

此項指標為再層厚為0.05 mm時Z軸上可完整印出之最小孔洞直徑及最小雕刻凹槽寬度

建議直徑:≥ 0.3 mm
建議寬度:≥ 0.06 mm



## Section 4

# 應用範例