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【Phrozen Resin User Guide】

Phrozen Gingiva Mask Resin

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

Mechanical Properties*	Unit	Results	Method
Elongation at Break	%	42 - 46	ASTM D638
Shore A Hardness	-	35A	ASTM 2240
Liquid Properties			
Viscosity at 25°C (77°F)	cP	1900-2000	ASTM D1475
Liquid Density	g/cm³	1.18	ASTM D7867

** All testing specimens are printed using Phrozen Sonic 4K 2022 or Sonic XL 4K 2022, and post-cured using Phrozen Cure V2 or Phrozen Cure Mega.*

Section 2

Printing

Printing Parameters

Printer	Sonic 4K 2022
Layer Height	50 μm
Exposure Time	5~7 s
Bottom Exposure time	25~35 s
Rest Time	5~15 s
Lift Distance	7 mm
Lifting Speed	50 mm/min

Printer	Sonic 4K XL 2022
Layer Height	50 μm
Exposure Time	4–6 s
Bottom Exposure time	25–35 s
Rest Time	5–15 s
Lift Distance	7 mm
Lifting Speed	50 mm/min

Printing Suggestions

Printing

Mix the resin well before pouring it into the vat.

Cleaning

After removing the printed object from the building stage, use an ultrasonic cleaner and isopropyl alcohol (IPA) for 10 minutes to remove uncured resin from the surface.

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.

Post-Curing

Put the printed object inside a glass container and pour glycerol until the object is fully immersed. Use Phrozen post-curing lamps (Cure V2, Cure Luna, Cure Mega) or other post-curing lamps with the same wavelength to cure printed objects for 30 minutes.

After curing, remove the object and rinse it with water to eliminate any slimy feeling from the glycerol. Then, wipe it clean with paper towels.

Section 3

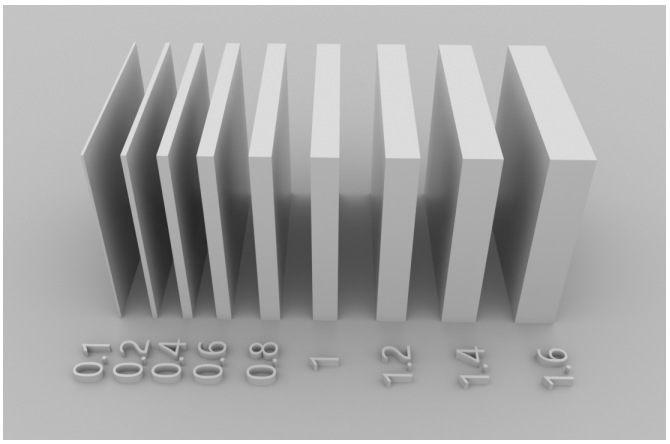
Design Specifications

※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.

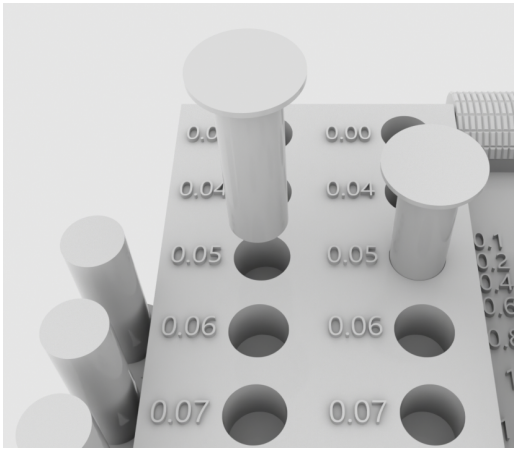
Recommended thickness：≥ 0.6 mm



Size Tolerance, X-Y plane

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

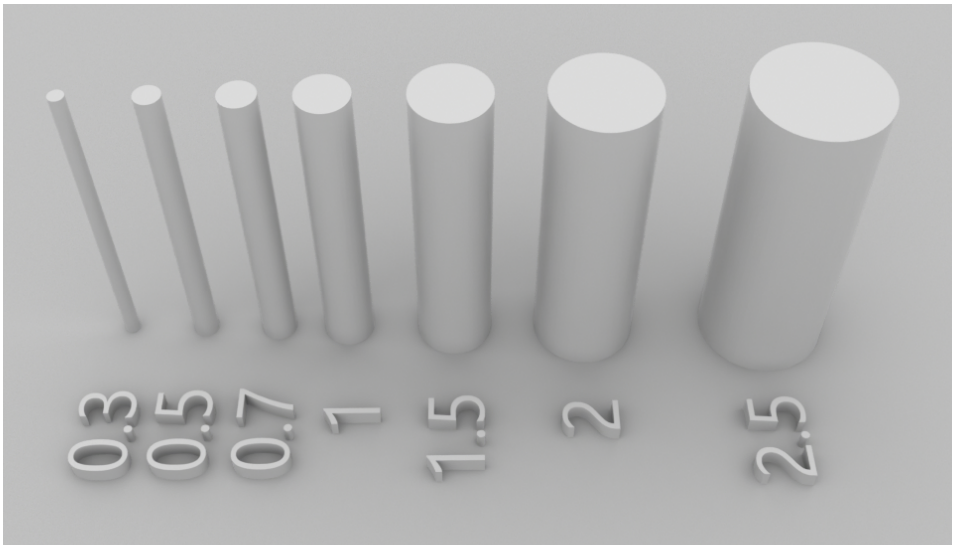
Recommended tolerance：≥ 0.08 mm



Minimum Pin Diameter

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

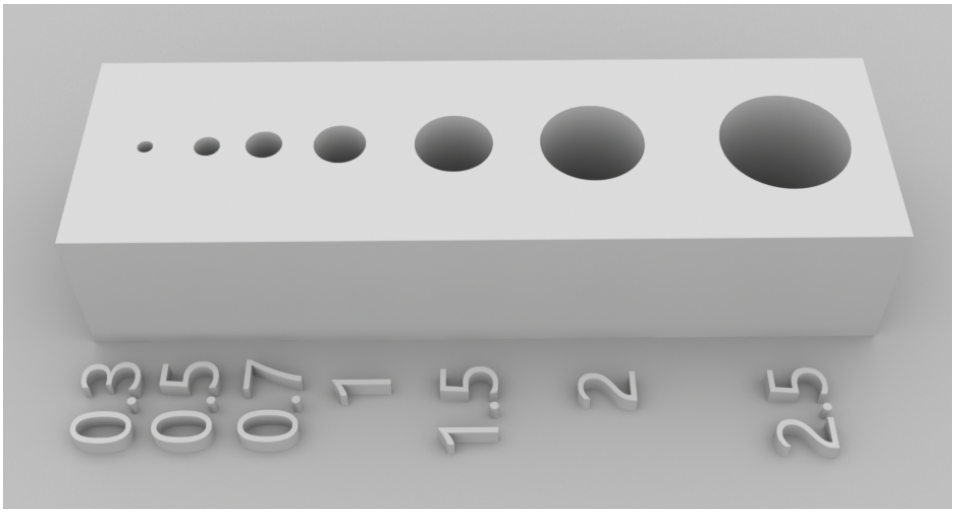
Recommended diameter: ≥ 0.5 mm



Minimum Hole Diameter, X-Y plane

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

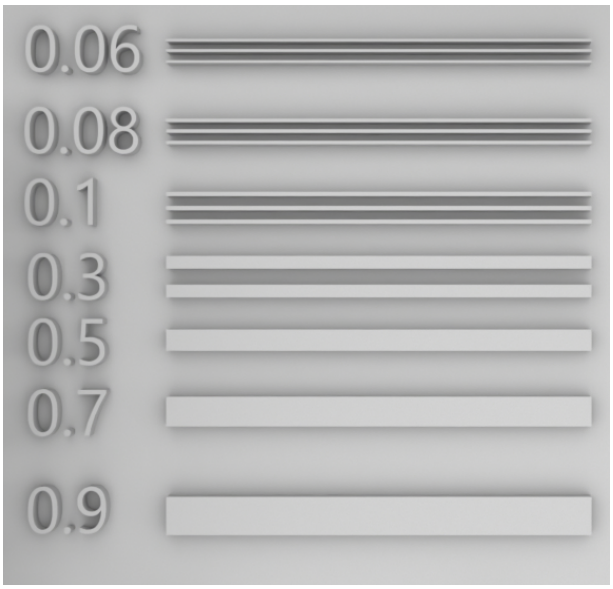
Recommended diameter: ≥ 1.5 mm



Minimum Embossed Detail Width, X-Y plane

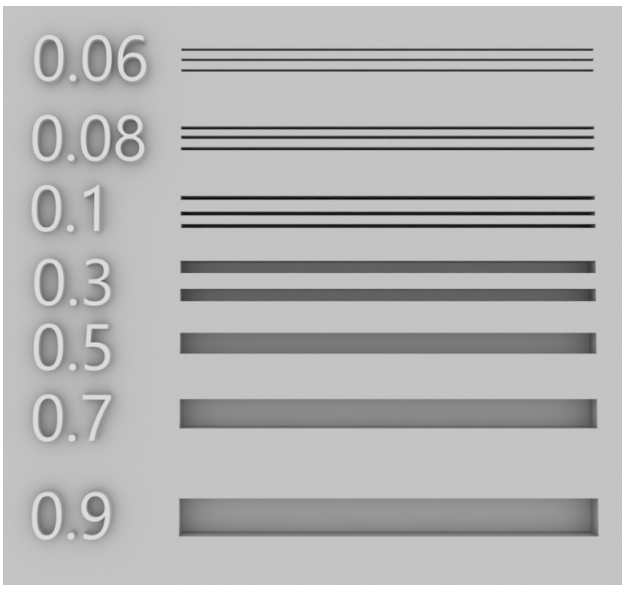
This indicator shows the minimum line width that can successfully be printed with embossed details.

Recommended width： ≥ 0.08 mm



Minimum Engraved Detail Width, X-Y plane

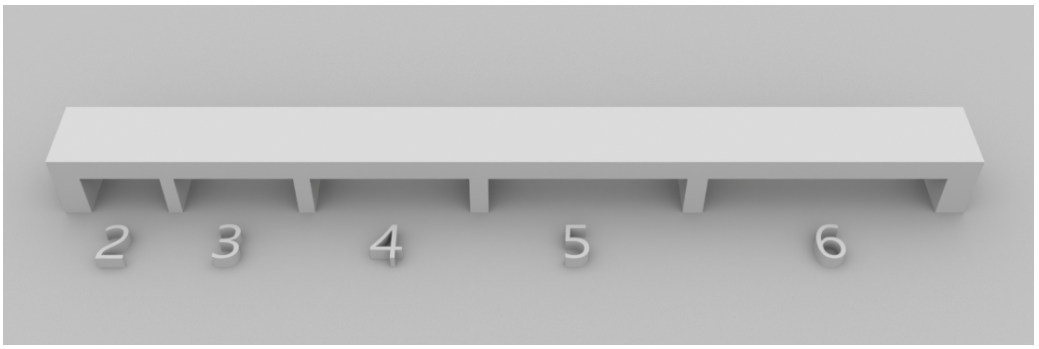
This indicator shows the minimum line width that can successfully be printed with engraved details. *Recommended width*： ≥ 0.06 mm



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

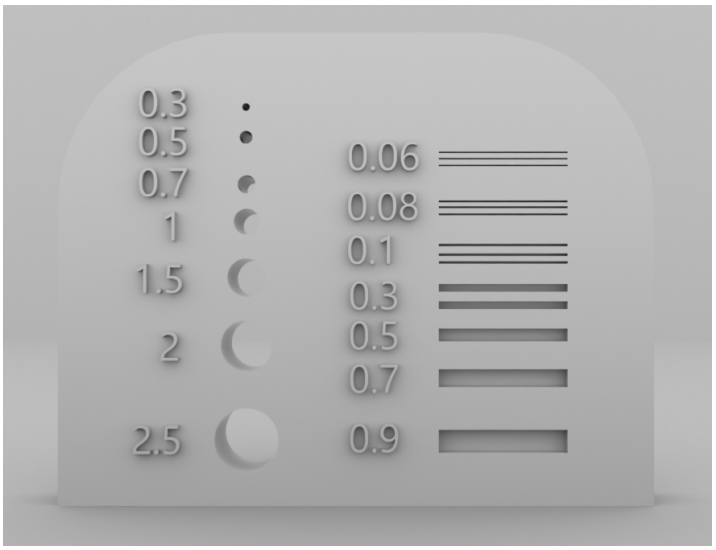


Minimum Hole Diameter and Engraved Detail Width, Z-Axis, at 0.05mm Layer Height

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 0.05mm.

Recommended diameter: ≥ 1.5 mm

Recommended width: ≥ 0.08 mm



Section 4

Applications

Dental Work Model

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

Phrozen Gingiva Mask Resin

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。

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Section 2

列印

列印參數

測試機台	Sonic 4K 2022
Layer Height	50um
Exposure Time	5~7 s
Bottom Exposure time	25~35 s
Rest Time	5~15s
Lift Distance	7 mm
Lifting Speed	50 mm/min

測試機台	Sonic 4K XL 2022
Layer Height	50um
Exposure Time	4~6 s
Bottom Exposure time	25~35 s
Rest Time	5~15 s
Lift Distance	7 mm
Lifting Speed	50 mm/min

列印建議

列印

列印前務必確實將樹脂攪拌均勻

清洗步驟

從列印載台取下列印完成的物件，使用超音波清洗機注入異丙醇 (IPA) 後，清洗10分鐘洗去殘留於物件表面的樹脂，確認列印物件上並未殘留尚未固化的樹脂。將物件靜置於陰暗處30分鐘，或使用空壓氣槍將列印物件吹乾。

二次固化

將列印物件置入玻璃容器裡，並注入甘油 (Glycerol) 沒過物件，使用Phrozen後固化燈系列 (Cure V2、Cure Luna、Cure Mega)，或相同波長的後固化燈，將列印物件固化 30 分鐘，物件從甘油取出後，使用清水沖洗至表面無油膩感，並用紙巾將物件擦拭乾淨，即可使物件達到良好的機械性質與精密度。

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。

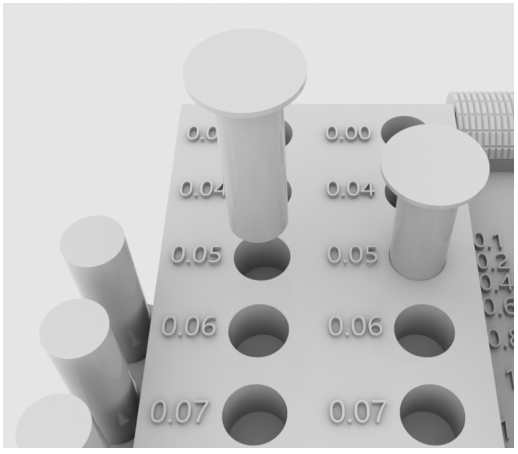
建議厚度:≥ 0.6 mm

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。

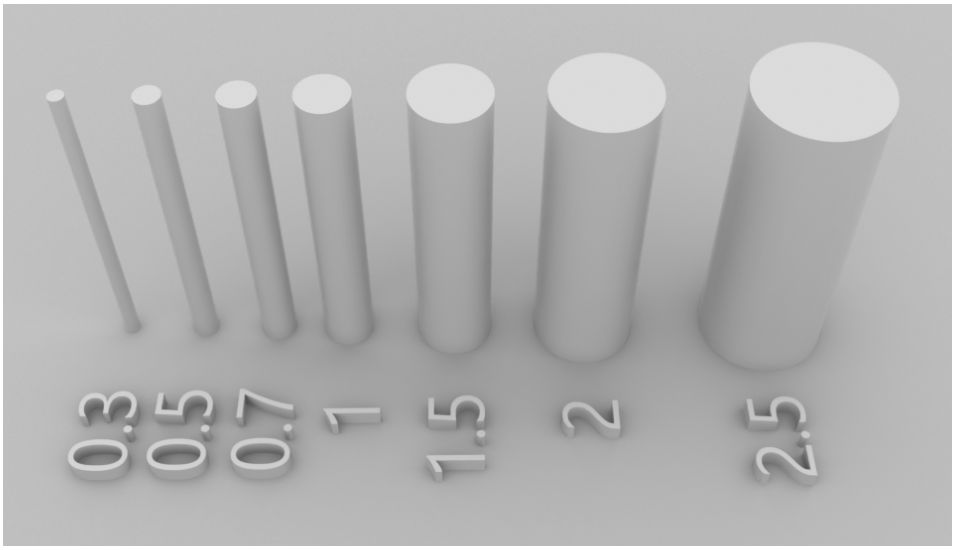
建議公差:≥ 0.08 mm



Minimum Pin Diameter

最小立柱直徑

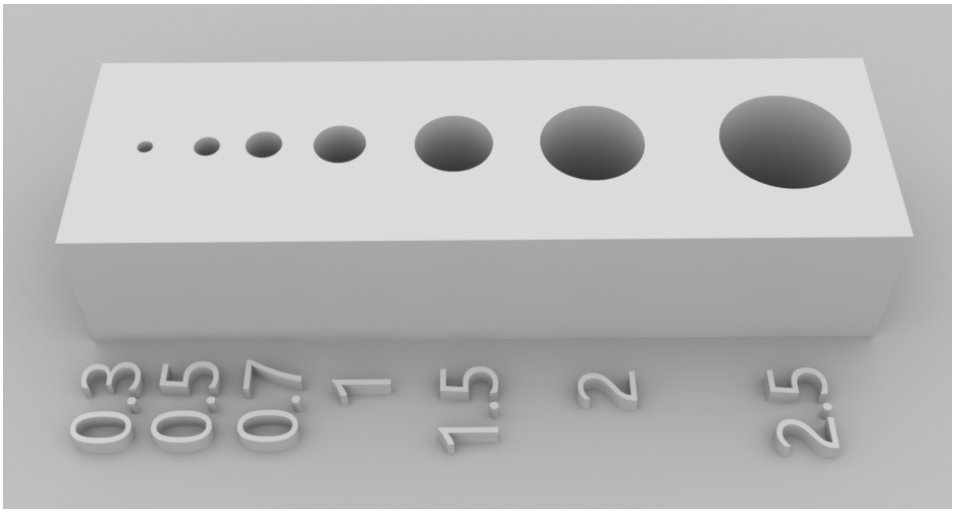
此項指標為細根及支撐能獨立印出且無彎曲、斷裂現象之最小立柱直徑。
建議直徑：≥ 0.5 mm



Minimum Hole Diameter, X-Y plane

最小孔洞直徑

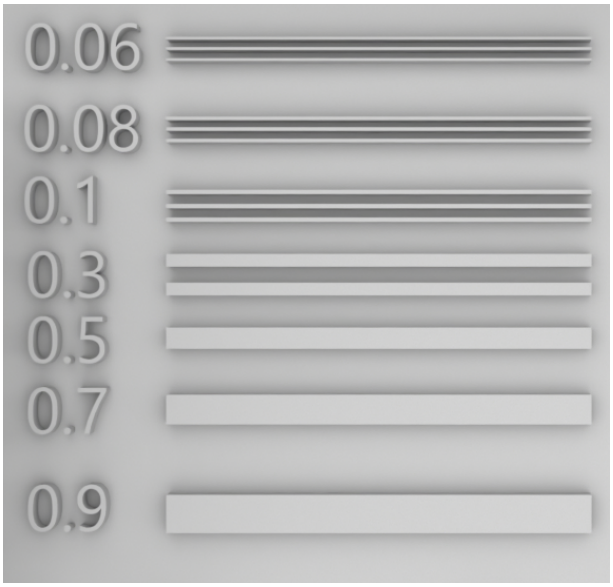
此項指標為平行於XY平面列印前提下能完整印出之最小孔洞直徑。
建議直徑：≥ 1.5 mm



Minimum Embossed Detail Width, X-Y plane

最小浮雕細節寬度

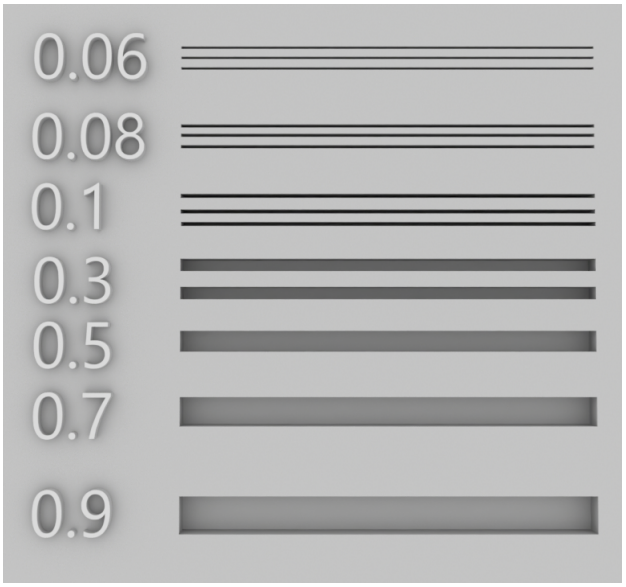
此項指標為可完整列印浮雕細節之最低線條寬度
建議寬度： ≥ 0.08 mm



Minimum Engraved Detail Width, X-Y plane

最小雕刻細節寬度

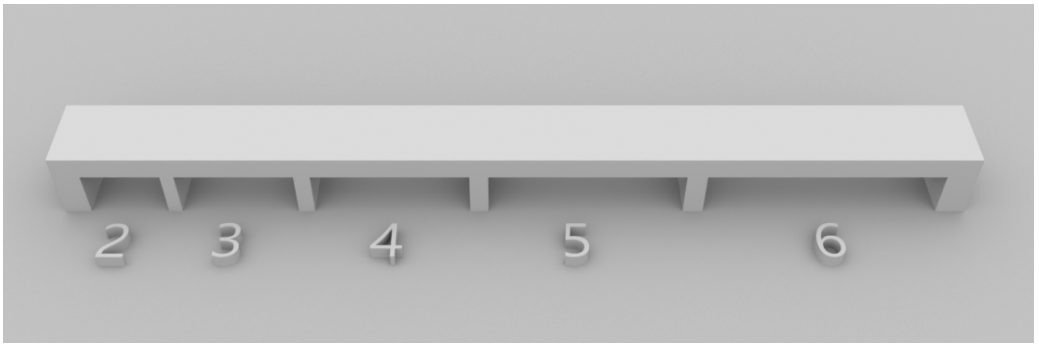
此項指標為可完整列印雕刻細節之最低線條寬度
建議寬度： ≥ 0.06 mm



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：4 mm

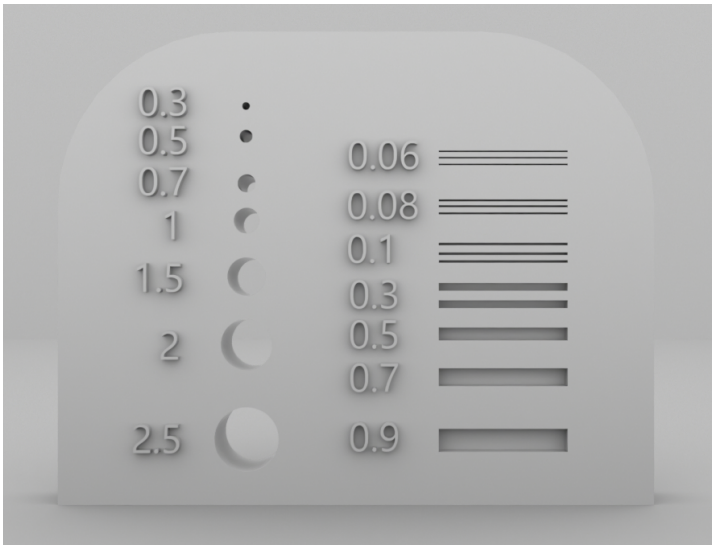


Minimum Hole Diameter and Engraved Detail Width, Z-axis, at 0.05mm layer height

Z軸最小孔洞直徑及最小雕刻凹槽寬度 (0.05mm層高)

此項指標為再層厚為0.05mm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：≥ 1.5 mm
建議寬度：≥ 0.08 mm



※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※

Section 4

應用範例

【牙科工作用模型】