

# M58/M68/K Tough Resin Instruction

## 1. The Product Description

M68, M58, and K are pure white (non-yellowing), light gray, and black tough resins respectively. They have both rigidity and toughness, and have excellent impact strength and elongation at break. Prints can be drilled and tapped, repeatedly assembled and machined.

## 2. Material Properties Data

	METHOD	M68	M58	K
Viscosity (25°C)	ASTM:D4212-10	307mpa.s	307mpa.s	307mpa.s
Shore Hardness	ASTM:D2240-05	86D	87D	82D
Tensile Strength	ASTM: D638-14	54.3MPa	52.3MPa	48.5MPa
Flexural Strength	ASTM: D790-10	63.8MPa	68.2MPa	60.8MPa
Elongation at Break	ASTM: D638-14	13.90%	12.30%	16.80%
Notched IZOD	ASTM:D256-10	58.1J/m	51.4J/m	58.4J/m
HDT(0.455Mpa)	ASTM:D648-18	65°C	65°C	60°C

## 3. Printing

**Printing Settings:** Use the standard resin settings of the printer brand you successfully printed as the "Standard Settings" (25-30°C), otherwise, use the default standard resin settings of the printer (or slicer) as the "Standard Settings". Then follow the following method to set the settings of RESIONE resin according to the "Standard Settings".

	Standard Settings	M68 Settings	M58 Settings	K Settings
Layer Height(mm)	50	50	50	50
Bottom Exposure Time(s)	A	1.2*A	1.4*A	1.5*A
Exposure Time(s)	B	0.7*B	0.8*B	1.2*B
Light-off Delay (s)	D	D	D+1	D+1
Bottom Lift Distance(mm)	E	E	E+1	E+1
Lifting Distance(mm)	F	F	F	F
Bottom Lift Speed (mm/min)	G	G	G	G
Lifting Speed (mm/min)	H	H	H	H

Retract Speed (mm/min)	I	I	I	I
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Note:

a. When the room temperature during printing is **18°C-24°C**, change the settings as follows:

Bottom exposure time: (RESIONE settings) +15%

Normal exposure time: (RESIONE settings) +15%

Light-off Delay time: (RESIONE settings) +1s

It is recommended to heat the resin if the printing is still not successful.(The heating temperature is 60-80°C, heating time is 10mins). And it is not recommended for printing at room temperature lower than 18°C

b. The lifting of some printers can be divided into two stages. All the above settings for lifting only for to the first stage. The lifting speed of the first stage is generally very slow, no need to change

\*The calculation of the above printing parameters is based on the experimental results of the RESIONE laboratory and is for reference only

## 4. Cleaning and Post-curing

**Cleaning:** You can use ultrasonic or 3D printing special cleaning machine with the ethanol(concentration  $\geq 95\%$ ), or IPA to clean for less than 2min. Please use compressed air to dry the prints after cleaning it.

**Post-curing:** Take the 40W post-curing box power as an example, the post-curing time is as follows.

	M68	M58	K
Post-curing Time (40W )	10min	20min	30min

(Adjust the post-curing time according to the power of the post-curing box, the greater the power, the shorter the time)



### Attentions:

a. If you want the toughness of the prints to be better, reduce the post-curing time; If you need higher hardness of the prints, you need to increase the post-curing time, but this will also reduce the toughness of the prints.

b. The resin prints will be fragile after post-curing. It is not recommended to apply force to the prints immediately. Just need to wait for a while until the internal stress of the prints is completely released.

c. If the post-curing time is too long, the resin prints will turn yellow and irreversible. The slight yellowing caused by normal post-curing can automatically fade away after a period of time. Putting the prints in continuous boiling water can make it quickly fade away.

## **5. Application**

### **M58 resin**

- Movable figures/GK
- Functional parts
- Assembled parts
- Miniatures
- Dental models

### **M68 resin**

- Figures/GK
- Building models
- Artworks
- Shell
- Functional parts
- Movie props

### **K resin**

- Figures/GK
- Shell
- Functional parts
- Precision parts

## **6. Storage of Prints**

a. Resin prints, like traditional plastics, become hard and brittle when the ambient temperature is low. The prints can maintain normal mechanical properties at 25-35°C.

b. If you need to keep the resin prints with good toughness for a long time, it is recommended to store them in an airtight bag or apply a layer of waterproof paint.

c. The prints should not be placed in a humid environment for a long time, otherwise they will absorb water and soften. Use an airtight bag or waterproof paint to protect your prints effectively.