






# Materials Formulated for Clear Aligner Models



## High-temp Resistant Dental Model Resin

Odor:	Odourless
Colors:	Milky White
Specification:	5KG/Bottle
Washing Agent :	IPA or ethanol
Machines Compatibility:	3D printers with 405nm Light source

### Advantage

-  Fast forming rate
-  High precision
-  Ultra-high surface hardness
-  High-temperature resistance
-  Superior toughness and force retention

### RF-MI-1101 Product Performance

Parameter	Standard	Unit	Result
Shore	ASTM D2240	Shore D	86
Flexural Strength	ASTM D790	Mpa	69.6
Flexural Modulus	ASTM D790	Mpa	1713
Elongation	ASTM D638	%	17.2
Water Sorption	ASTM D570	%	0.45-0.6



## Water Washable Dental Model Resin

Odor:	Odourless
Colors:	Milky White
Specification:	5KG/Bottle
Washing Agent :	Water
Machines Compatibility:	3D printers with 405nm Light source

### Advantage

-  Fast forming rate
-  High precision
-  Ultra-high surface hardness
-  High-temperature resistance
-  Water washable

### RF-MI-2103 Product Performance

Parameter	Test standards	Unit	Result
Shore	ASTM D2240	Shore D	87
Flexural Strength	ASTM D790	Mpa	106
Flexural Modulus	ASTM D790	Mpa	2964
Elongation	ASTM D638	%	13.2
Water Sorption	ASTM D570	%	0.7

# Model Processing Solution

## Washing Material

### IPA or Ethanol

**Supporting equipment:**  
Ultrasonic cleaning machine or Mechanical mixing and cleaning machine

**Supporting cleaning agent:**  
Ethanol (alcohol) or isopropanol IPA

High-Temp resistant dental model resin is suitable for IPA or ethanal washing



### Water Washable

**Supporting equipment:**  
Ultrasonic cleaning machine or Mechanical mixing and cleaning machine

**Cleaning agent:** Water

Water washable dental model resin is suitable for water washing



## Washing-free material

No need solven to clean, and more environment friendly.

Spinner RFADM-03 is developed for our washing free resin and dental mode cleaning. This superior machine is high-speed in operation and its powerful action gives quick and exceptional results. It is silent in operation and 100% safe for all cleaning applications.

Both High-Temp resistant dental model resin & Water washable dental model resin are suitable for solven-free machine.



RFADM-03

RFADM-03 Specification	
Model:	RFADM-03
Inner Gallbladder Diameter:	770X770mm
Inner Gallbladder Height:	419mm
Motor Model:	YEJ-90L-4-B51.5KW
Electrical Requirements:	200-240VAC, 50/60Hz
Maximum Speed:	1000rpm/min
Machine Weight:	380Kg
External Dimensions:	900x900x1250m

## AUTOMATIC THERMOFORMING

### Advantages

- Equipment size: 2300mmx1050mmx2000mm
- Controllable molding temperature range: 0°C - 700°C, coil material can be uniformly heated
- Heating efficiency: <30s/100°C
- Working efficiency of film pressing(single time to finish pressing film): ≤30s/pcs(two at one time)
- Defective rate of film pressing(rework ratio): <1%
- Good adhesion of pressed film
- Water cooler: Refrigerating capacity 1400W(Environmentally friendly refrigerant is available), temperature control accuracy ±0.3°C

#### Applicable coil specifications:

- Coil outer diameter: 100-480 mm
- Coil aperture: 70 mm
- Coil width: 100-137 mm(Customizable size)



### Molding process



01 Coil loading



02 Mold feeding



03 Heat forming

#### Device Communication Description

- Support external data monitoring interface and communication interface
- Support TCP/IP RS232/485 and other communication modes

## LASER MARKING

### Advantages

- Equipment size: 1350mmx1050mmx2000mm
- Visual recognition rate  $\geq 98\%$
- Recognition time  $\leq 2S$
- Laser marking two-dimensional code recognition rate  $\geq 99\%$
- Laser single marking time  $< 4S$
- laser: Green laser



### Process



01 Visual recognition



02 Laser marking



03 Tilting mechanism

### Reading and marking machine parameters

#### Green laser

- Laser customization:
- Input voltage: 220V
- Cooling mode: Water-cooling
- Laser wavelength: 532nm
- Laser output power: 10w
- maximum speed of Marking line: 7000mm/s
- minimum width of Marking line: 0.01mm
- Mark repetition accuracy: 0.01mm
- The size of the scan and marking area: 180\*180mm

#### Visual recognition

- Brand: Hikvision:
- Camera parameter: MV-CA060
- Lens parameter: MVL-HF0624M
- Illuminant: B100100
- Light source controller: HDP24-2
- Vision software: VisionMaster

### Device Communication Description

- Provide interface and production system integration for monitoring the current process and status of each clear aligner
- Support TCP/IP RS232/485 and other communication modes
- The interface can be integrated with the trimming equipment to provide the required parameter information of the aligner trimming



## AUTOMATIC TRIMMING

### Advantages

- Equipment size:  
1350mmx1050mmx2000mm
- After cutting, the edge of the appliance is consistent with the original cutting line, and the accuracy is <0.3mm
- Cutting individual appliance operation time:  $\leq 25s$
- No interference in the cutting process
- Percentage of raw edge of appliance after cutting <2%
- Cut defect(rework) rate: <1%
- Provide supporting tool software to solve the automatic generation of cutting lines, manual correction functions
- Provide supporting tool software to solve the function of base shape generation for cutting and positioning
- Provide API interface to solve the custom cutting line path, tool Angle setting function



### Process



01 The camera takes pictures and reads the code



02 Automatic cutting



03 Finished product display

### Automatic trimming parameters

#### Six Axis Robot Module

- Brand: ABB IRB1200-7/0.7
- Payload: 7KG
- Armspan: 703mm
- Weight: 54KG
- Repeated positioning accuracy: 0.02mm
- Power: 0.39KW

#### Spindle Module

- Brand: Zhen Yu
- Power: 800W
- Rotational speed:  $\leq 40000r/min$
- Heat dissipation mode: Water-cooling

#### Visual recognition

- Brand: Hikvision
- Camera parameter: MV-CA060
- Lens parameter: MVL-HF0624M
- Illuminant: B100100
- Light source controller: HDP24-2
- Vision software: VisionMaster

#### Description of main consumables

- The cutting tool is durable, the diameter is as small as possible, and the blade can be stressed out
- Average tool life < 800 (appliance cutting times, refer to the cutting effect of TPU diaphragm model)
- Unit appliance cutting tool cost is less than 0.1 yuan
- The water cooler needs to be replaced once every six months with pure water or distilled water. You need to add antifreeze in winter

#### Device Communication Description

- Provide or cooperate with automated production line model recognition systems
- Support TCP/IP RS232/485 and other communication modes
- The cutting line can be automatically obtained and the cutting can be completed based on the unique identification information of the model

## BRACES ALL-IN-ONE MACHINE

### Advantages

- Equipment size: 1650mmx1100mmx1900mm
- Working efficiency:  $\leq 45$ S/ piece (film pressing, marking, cutting)
- Controllable molding temperature range:  $0^{\circ}\text{C} - 700^{\circ}\text{C}$ , sheet can be uniformly heated
- Material specification:  $\phi 125$ mm diaphragm (can also be customized)
- Visual recognition rate  $\geq 98\%$
- Marking content: numbers, letters, bar codes, QR codes, LOGO
- After cutting, the edge of the appliance is consistent with the original cutting line, and the accuracy is  $< 0.3$ mm
- Percentage of raw edge of appliance after cutting  $< 2\%$
- Cut defect(rework) rate:  $< 1\%$
- Provide supporting tool software to solve the automatic conversion function of cutting line
- Provide API interface to solve the custom cutting line path, tool Angle setting function



### Reading and marking machine parameters

#### Green laser

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- Cooling mode: Water-cooling
- Laser wavelength: 532nm
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#### Visual recognition

- Brand: Hikvision:
- Camera parameter: MV-CA060
- Lens parameter: MVL-HF0624M
- Illuminant: B100100
- Light source controller: HDP24-2
- Vision software: VisionMaster

### Molding process



01 Automatic die loading



02 Manual upper tooth mold



03 self heating



04 Automatic forming



05 Identification marking



06 Retainer cutting

### Device Communication Description

- It can support external data monitoring interface and communication interface, which can be integrated with the trimming device to provide parameter information required for the trimming of the invisible corrector
- Support TCP/IP RS232/485 and other communication modes
- Provides an interface and production system integration for monitoring the current process flow and status of each of the invisible aligners, automatically obtaining the cutting line and completing the cutting based on the unique identification information of the model

### Automatic trimming parameters

#### Six Axis Robot Module

- Brand: ABB IRB1200-7/0.7
- Payload: 7KG
- Armspan: 703mm
- Weight: 54KG
- Repeated positioning accuracy: 0.02mm
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- Unit appliance cutting tool cost is less than 0.1 yuan
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