HUGE

Workflow & Operation Guide

This guide covers three light-curing photopolymer resins formulated for professional dental applications.

Dental Model Resin M3.0 and M3.0 Pro are designed for the precise fabrication of restorative and implant models. They serve as modern alternatives to traditional dental model materials, offering high accuracy and dimensional stability.

Try-in Resin is specifically intended for printing temporary try-in restorations. It enables clinical evaluation of fit, aesthetics, and occlusion before final prosthetic fabrication.

Contraindications

Do not use under the following conditions:

- ※ Known allergy to any component of the resin
- ※ Intraoral contact with uncured resin
- ※ Use beyond the intended indications

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Storage

Store between 5°C and 30°C, away from direct sunlight.

Do not use expired resin, as its performance and printing stability may be compromised.

Printing Instructions

The resin must be used according to the recommended workflow. Any deviation may result in safety hazards or suboptimal performance. Non-compliance can negatively affect the physical or chemical properties of the final product.

【Design】

STL files are designed by dental professionals using patient scan data and delivered to clinicians or technicians for production.

【Printing】

1. Launch the printer software.

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2. Select the appropriate layer thickness.
3. Import STL files, orient manually or automatically, and add supports if needed.
4. Send sliced files to the printer or transfer via USB.
5. Shake the resin bottle up and down thoroughly for at least 1 minute.
6. Pour resin into the vat to at least the minimum fill line.
7. Start the print job.

【Model & Support Removal】

Remove printed models from the build platform using a suitable scraper.

Use flush cutters or a saw blade to remove all supports, cutting as close to the model as possible to reduce polishing time.

Take care not to damage the model during support removal.

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【Cleaning & Drying】

Perform the first ultrasonic cleaning with 95%+ ethanol for 2 minutes, ensuring the model is fully submerged.

Repeat with fresh 95%+ ethanol for another 2 minutes.

Dry the model using compressed air, focusing on narrow areas.

【Post-Curing】

Cure the model using a compatible post-curing unit with rotation at 280,000–300,000 μW/cm² for 15 minutes.

Wash the post-cured model with soapy water if necessary.

Warnings & Precautions

Non-toxic when fully cured. However, uncured resin may cause allergic reactions in sensitive individuals.

Always operate in well-ventilated areas when cleaning or grinding, and wear protective gloves, clothing, goggles, and face shield.

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Skin Contact

May cause irritation. Wash thoroughly with soap and water.

Discontinue use if allergic reactions occur. Seek medical attention for persistent symptoms.

Inhalation

High concentrations of vapor may cause headaches or irritation to the eyes and respiratory system.

If exposed to high levels of vapor or mist, move to fresh air immediately. Use oxygen or artificial respiration if needed.

Eye Contact

Rinse thoroughly with water.

Ingestion

Contact local poison control center immediately.

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Component Compatibility

Do not substitute system components such as light-curing materials, bonding agents, scanners, printers, post-curing units, CAD/CAM software, templates, or accessories with incompatible alternatives, as this may cause unexpected results.

Compatibility of components may be updated over time. Please consult the manufacturer for the latest list of compatible components, and follow the manufacturer's instructions for maintenance and calibration.

Color Variations

Color variation may occur if the resin bottle is not thoroughly shaken before use.

Adequate mixing of the resin in the vat or incomplete post-curing may also lead to color differences.

Resin Reuse

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Unused resin in the vat can be reused after filtering out cured particles.

Return filtered resin to the bottle. Repeatable until the bottle is empty.

Always recap the bottle after each use.

Waste Disposal

Follow local regulations for hazardous waste disposal.

Uncured liquid resin must be fully cured before standard disposal.

Expose in a clear container to sunlight or place in a post-curing unit until fully hardened.

Fully cured resin is non-hazardous and can be discarded as household waste.

Common Issues & Troubleshooting

【Design】

Is there a recommended resolution or minimum thickness standard for

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STL files to ensure the accuracy of the model margins?

For STL files, a recommended resolution is generally 0.01–0.05 mm to ensure surface detail accuracy. The minimum thickness of the model should be at least 0.5 mm. If it is below this value, it may lead to printing failure, fragile models, or loss of details.

What are the recommended design considerations for try-in resin printing to ensure sufficient strength during clinical try-in?

To ensure mechanical strength during clinical try-in, maintain a tooth wall thickness of 1.5–2.0 mm, especially in stress-bearing areas. Designs that are too thin may fracture during try-in or trimming. When creating grooves or connectors, avoid sharp corners; instead, use rounded fillets to help distribute stress and improve overall durability.

Should different layer thickness parameters be used for different print types (e.g., restorative models vs try-in models)? What are the recommended ranges?

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Currently, different layer thicknesses are not recommended.

- Restorative models: High accuracy required; recommended layer thickness 50 μm for finer surface details and precise occlusion.
- Try-in models: Need accuracy for both tissue-contact and occlusal surfaces; recommended layer thickness 50 μm for optimal surface detail and occlusal accuracy.

What are the recommended support parameters to optimize printing success and removal?

Recommended support parameters:

- Model Lift Height: ≥5.00 mm
- Contact Point Spacing: 3–5 mm
- Angle: 45°

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Top	· Contact Shape: Spherical · Contact Diameter: 0.80 mm · Contact Depth: 0.40 mm · Connector Shape: Conical · Top Contact Diameter: 0.40 mm · Bottom Contact Diameter: 1.20 mm · Connector Length: 2.00 mm
Middle	· Contact Shape: Cylindrical · Contact Diameter: 1.20 mm · Maximum Angle with Top: 70° · Maximum Cross Structure Spacing: 30.00 mm · Cross Start Height: 3.00 mm
Bottom	· Contact Shape: Conical · Contact Diameter: 10.00 mm · Thickness: 1.00 mm
Raft	· Raft Shape: Cross Grid

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	· Raft Area Ratio: 110% · Raft Thickness: 1.00 mm · Grid Length & Width: 3 mm

What is the recommended spacing between models for multi-model batch printing?

To ensure resin flows freely and avoid sticking, maintain minimum spacing of 5–10 mm.

How long does it take to print a half-arch model, and how many models can be printed with 1 kg of resin?

The following are approximate estimates for a layer thickness of 50 μm and a model height of 13.53 mm.

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Printer	Model Type	Print Time	1kg Resin Yield
HUGE Edge E2	Solid half-arch	~45 min	40-50 units
	Hollow half-arch (2 mm wall)	~45 min	80-100 units
Asiga Max2	Solid half-arch	~57 min	40-50 units
	Hollow half-arch (2 mm wall)	~57 min	80-100 units

Tips:

- For the same resin, printing time mainly depends on the model height.
- Hollow designs are more material-efficient than solid models.
- Print time and resin consumption can differ based on model design, infill density, and resin type.

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【Printing】

Why is it difficult to remove a printed model from the build platform, and how can it be resolved?

Possible Causes:

· Excessive bottom-layer exposure time: The bottom-layer resin overcures, causing the model to adhere too strongly to the build platform.

· Uneven build platform: The build platform is uncalibrated or its surface is uneven, resulting in localized pressure and excessive model adhesion.

· Low build platform temperature: Low temperature increases resin viscosity, making it harder to separate the model.

Solutions:

· Adjust bottom-layer exposure settings: Shorten the bottom-layer

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exposure time according to the resin and printer model, typically by 2–5 seconds per adjustment, until the optimal balance is achieved.

- Recalibrate the build platform: Ensure the build platform is parallel to the LCD screen.
- Preheat resin and printer: Place the resin and printer in an environment above 20 °C before starting the print.
- Use proper scraper technique: When removing the model, insert the scraper at a small angle under the base and apply even force using leverage.

Why is a printed model easily damaged when scraping it off the build platform, and how can it be resolved?

Possible Causes:

- Thin model walls: Insufficient strength makes the model prone to fracture under stress.

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· Incomplete curing: Improper cleaning or post-curing leaves resin uncured internally, reducing strength.

· Improper scraper use: Excessive force or incorrect angle causes uneven stress.

Solutions:

· Optimize model design: Increase wall thickness during design, especially in high-stress areas; minimum 2 mm recommended.

· Ensure complete post-curing: Use recommended curing devices and parameters to achieve uniform curing and optimal strength.

· Use tools correctly: Use a dedicated 3D printing scraper with gentle, even force. For fragile models, soften slightly with a heat gun before removal.

Why are plug-and-play models too tight or too loose, and how can it be resolved?

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Possible Causes:

· Dimensional deviation: Insufficient print accuracy causes mismatch between model and design, resulting in overly tight or loose fit.

· Incorrect slicer settings: Improper “shrinkage compensation” or “tolerance compensation” settings.

Solutions:

· Calibrate the printer: Perform regular calibration and print test models to verify accuracy.

· Adjust slicer parameters: Use tolerance compensation. For tight fits, increase groove size slightly; for loose fits, reduce groove size.

Why do printed models show severe layer separation (delamination), and how can it be resolved?

Possible Causes:

· High resin viscosity or low temperature: Poor resin flow prevents full

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layer bonding.

· Unstable Z-axis: Irregular Z-axis movement causes uneven layer gaps.

· Excessive bottom exposure: Over-curing restricts Z-axis movement.

· Insufficient support: Unsupported overhangs lead to delamination.

· Loose or damaged release film: Reduces separation efficiency and causes delamination.

Solutions:

· Preheat resin and printer: Print in environments above 20 °C.

· Check Z-axis: Regularly inspect for stability, debris, or looseness.

· Add supports: Provide sufficient and strong supports for overhangs.

· Inspect release film: Ensure proper tension and check for scratches or damage.

Why do printed model surfaces show severe wavy patterns, and how

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can it be resolved?

Possible Causes:

· Z-axis wobble: Instability during lifting creates horizontal surface bands.

· Excessive print speed: Rapid Z-axis movement causes resin oscillation.

· Resin viscosity issues: Low room temperature increases viscosity, hindering smooth layer transitions.

Solutions:

· Check Z-axis: Ensure screw rods and guides are stable and secure.

· Reduce print speed: Lower Z-axis lift speed to allow resin leveling.

· Preheat resin: Maintain suitable printing temperature.

Should the Build Platform Be Regularly Replaced or Protected with Disposable Films?

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Yes.

· Cleaning: Wipe with IPA or ethanol after each print.

· Surface treatment: Lightly sand if adhesion decreases.

· Disposable films: Recommended for protecting the platform, reducing cleaning, and facilitating model removal.

【Resin Use and Management】

After opening a resin bottle, how long can it be safely stored?

Resin should not be stored for more than 12 months after opening. Shake or mix thoroughly before use. Over time, photoinitiators, pigments, and fillers settle, leading to failed prints, uneven color, or degraded mechanical properties if not remixed.

Is it acceptable to mix different batches of the same resin model?

Yes, different batches of the same resin model can be mixed and used together.

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How should slight discoloration caused by improper resin mixing or storage be handled? Will it affect clinical use?

Mild discoloration is usually caused by sedimentation if resin was not mixed before use.

- If structural integrity and accuracy are unaffected, the model can still be used.
- If discoloration is severe, likely affecting accuracy and strength, remix resin thoroughly and reprint.

【Cleaning and Drying】

If the laboratory does not have ultrasonic equipment, are there any recommended manual cleaning alternatives or suggestions for extending the cleaning time?

If ultrasonic equipment is unavailable, use a two-step soaking method:

- Prepare two containers with IPA or ethanol.

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- Place the model in the first container and gently scrub with a soft brush for 2-3 minutes to remove most uncured resin.
- Transfer to the second clean container and repeat brushing for 2-3 minutes.
- Dry with compressed air or let air-dry naturally.

When using IPA and ethanol, are there any material compatibility considerations? Are both suitable for model and try-in resin?

Both IPA (isopropanol) and ethanol are suitable for Huge Dental Model and Try-in resin cleaning. Requirements: purity ≥ 98%.

- IPA: Stronger solvent power, slower evaporation, better cleaning.
- Ethanol: Slightly weaker solvent power, faster evaporation.
- Both may cause slight swelling or whitening, which typically resolves after drying. Ensure complete drying before post-curing to avoid performance issues.

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Are there any recommended methods for transporting or temporarily storing printed models (before cleaning) to prevent surface sticking or warping?

Before cleaning, models still contain uncured resin. Recommendations:

- Temporary storage: Keep in light-proof containers, away from sunlight.
- Transport: Use sealed containers with sufficient spacing between models.
- Prevent warping: Clean and cure promptly. If storage is necessary, keep stable in a cool, shaded place.

What could cause unclear model surfaces and blurred margin lines after printing, and how can this issue be resolved?

Possible Causes:

- Overexposure during printing causes light scattering.

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· Incomplete cleaning leaves uncured resin on the surface.

· Limited DLP/LCD resolution.

Solutions:

· Shorten exposure time (adjust in 0.5–1.0 s increments).

· Improve cleaning with ultrasonic or two-step soaking.

· Check DLP/LCD for dust or damage.

【Post-curing】

Is rotation curing mandatory? Will non-rotational curing affect the color or mechanical properties?

Rotation is recommended to ensure uniform exposure. Without rotation:

· Uneven color: Under-cured areas appear lighter.

· Reduced strength: Incomplete curing lowers hardness and durability.

· Biocompatibility risk: Residual uncured resin may remain on the

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surface.

Should shadowed areas be avoided during post-curing?

Yes. Avoid shaded regions during curing. If no rotation device is available, manually flip the model multiple times to ensure uniform exposure, especially in grooves, cavities, or support areas.

What could be the possible causes of severe color darkening after curing, and how can it be resolved?

Possible Causes:

· Over-curing due to excessive time or power.

· Incomplete cleaning, leaving uncured resin to overreact.

· Resin exposure to UV or strong light before printing.

Solutions:

· Precisely control curing time and power per resin specifications.

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· Thoroughly clean and dry before curing.

· Store resin in a light-proof environment.

【Try-in Guidelines】

Can Try-in Models Be Worn Multiple Times in the Mouth? Maximum Recommended Duration?

Not recommended for multiple uses. Try-in resin is for short-term fitting tests only. Risks of prolonged or repeated use include:

· Wear or deformation, reducing accuracy.

· Bacterial growth, compromising hygiene.

· Biocompatibility concerns if resin is exposed too long intraorally.

· Recommendation: Maximum single wear time ≤ 15 minutes.

Can Try-in Models Be Polished or Adjusted? Impact on Biocompatibility?

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Yes, polishing and adjustments are possible. However:

· Surface scratches and roughness occur after grinding.

· Post-cure again after adjustments to fully cure newly exposed resin, then clean thoroughly.

Can Try-in Models Be Re-cured or Reworked?

Yes. After adjustments, a second post-curing can be performed. Note:

· Mechanical properties plateau after sufficient curing.

· Excessive re-curing may increase brittleness without improving strength.

Can Adhesives or Fitting Materials Be Applied on Try-in Models?

Not recommended. Try-in models are for evaluation only. Coatings may affect structural stability and compromise fitting accuracy.