



RODIN®
3D Resin

A Pac-Dent Brand

MODEL



Instruction For Use

Rodin Model**Instructions for Use**

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1. PRODUCT DESCRIPTION

Rodin Model resin is an advanced, filled resin designed specifically for dental applications, playing a crucial role in the fabrication of dental models. It is known for its exceptional properties, particularly tailored for high precision and thermal stability, making it ideal for both clinical and laboratory settings. This resin is fundamental in creating highly detailed study models, working dental models, as well as removable and transfer dies, which are especially suitable for enduring thermoforming applications. Its ability to maintain integrity under various temperature conditions and its versatility in application make it a cornerstone material in the realm of dental modeling.

2. MATERIAL COMPOSITION

Rodin Model resin is comprised of;

- Monomer
- Oligomer
- Photoinitiator
- Photoinhibitor
- Pigment

3. INTENDED APPLICATIONS

Rodin Model resin may be used for the fabrication of:

- Working models
- Study models
- Orthodontic models
- Removable dies
- Transfer dies

4. LIMITATIONS AND USE RESTRICTIONS

The product is exclusively intended for use by trained professional dentists or dental lab technicians. Sales are restricted to:

- Dental supply dealers
- Teaching institutions

- It is labeled for sale to dentists (or properly licensed practitioners) only.

5. SAFETY INFORMATION

Always consult the Safety Data Sheet (SDS) for the most complete information regarding hazards, handling, and disposal.

5.1. General Safety Warning

- Rodin Model Resin contains methacrylate-based compounds. Individuals sensitive to methacrylate-based compounds may experience allergic reactions when exposed to uncured resin.
- Avoid direct skin contact with uncured material
- Ingestion: If swallowed, rinse mouth with water. Do not induce vomiting. Seek medical attention if symptoms occur

5.2. Recommended personal protective equipment (PPE)

When handling uncured resin:

- Protective Gloves
- Eye protection
- Protective clothing (Lab coat or apron)
- Closed-toed shoes
- Respiratory protection may be required in poorly ventilated environments or where local regulations mandate its use.

6. DESIGN CONSIDERATIONS

Proper model design is essential to achieve dimensional accuracy, structural stability, and reliable performance when printing with Rodin® Model Resin. The following design recommendations are provided to support common modeling workflows.

Hollow Working and Study Models

Minimum Thickness: A minimum wall thickness of 3 mm is recommended to ensure structural integrity and to reduce the risk of delamination or deformation

Drainage Holes: Drainage holes should be incorporated into hollow designs to:

- Reduce vacuum forces during the printing process
- Allow uncured resin escape, enabling effective cleaning and post-curing

Models for Thermoforming (e.g., aligner fabrication models or external forming models)

Solid Model Design: Solid model designs are recommended for models intended for thermoforming processes

- Helps prevent flexing or distortion during thermal vacuum forming
- Supports dimensional stability during downstream fabrication steps.
- Printed models are used solely as forming tools and are not intended for patient use or contact.

7. VALIDATED EQUIPMENT

7.1. Validated 3D Printers

For the most current list of validated equipment and their settings, please refer to the provided link:

<https://rodin-3d.com/validated-equipment-settings/>

7.2. Validated Light-Curing Parameters

For the most current list of validated equipment and their settings, please refer to the provided link:

<https://rodin-3d.com/validated-equipment-settings/>

8. ORIENTATION CONSIDERATIONS

Flat Side Down Orientation

Orientation Strategy: Position both upper and lower model designs with their flat sides facing down, directly onto the build plate.

Advantages

- **Improved Dimensional Accuracy:** This orientation helps maintain the true dimensions of the models, crucial for dental applications.
- **Reduced Print Time:** Direct contact with the build plate without the need for supports streamlines the printing process, leading to faster completion times.
- In many cases, this orientation allows printing without support structures

Perpendicular Orientation

Orientation Strategy: Align and support both upper and lower model designs in a perpendicular orientation relative to the build plate.

Advantages

- Increased number of models per print job: This orientation allows for a more efficient use of the build space, enabling the printing of a larger number of models in a single job.

9. RESIN PREPARATION & MIXING

Proper mixing ensures homogeneity of pigments and fillers and supports consistent print quality.

9.1. Mixing Resin in the Vat

- Gently mix with a silicone blade
- Re-suspend settled pigments
- Strain failed-print resin using a 50-micron mesh strainer

9.2. Preparing Resin from the Bottle

- Stir thoroughly with a plastic spatula
- Alternatively, roll on an automated roller
- 15 Minutes (regular use)
- 1 hour if stored for more than one month

9.3. Printing Environment and Temperature

Light Exposure

Protect the resin from direct sunlight, UV light, and strong artificial light during handling and printing. Keep resin vats covered when not in use.

Resin Handling

Keep resin containers tightly closed when not in use. Ensure vats, resin tanks, and handling tools are clean and free of contamination.

Temperature Control

Optimal Printing Temperature: Most photopolymer resins have an optimal printing temperature range, typically around 70°F to 85°F (21°C to 29°C). Maintaining this temperature range ensures consistent viscosity and print performance.

Heated Environments: For printers with temperature regulation, setting the printing environment to around 35°C can optimize performance. This helps maintain the resin's ideal flow characteristics.

Cold Conditions Management: If the resin is stored or used in colder conditions, gently warming the resin to the optimal temperature is necessary. This can be done

using a warm water bath or temperature-controlled heating mats, ensuring the resin is sealed to prevent water contamination.

10. POST-PROCESSING INSTRUCTIONS

10.1. Removal from Printer

Post-Printing Removal: Remove the build platform from the 3D printer.

Model Removal: Using a metal spatula, carefully work around the print base until the printed model detaches from the build plate. Avoid excessive force to minimize the risk of deformation or damage.

10.2. Removing Excess Resin

Resin Removal: Use low-pressure air to remove excess uncured resin from the printed model and build plate.

Aluminum Build Plate Caution: Resin may discolor if it comes into contact with an oxidized aluminum build plate due to potential contamination from metal oxides.

11. CLEANING

11.1. Cleaning Recommendations: Rodin® Universal Resin Cleaner

1. **Remove Excess Resin:** Wipe away or blow off excess residual resin from the printed object using compressed air or a paper towel.
2. **Run Prewash Cycle 3 Minutes:** Place the object in an ultrasonic, vortex, or oscillating bath filled with Rodin® Universal Resin Cleaner. Run the prewash cycle for 3 minutes.
3. **Scrub Surface (Optional):** After the prewash, dip a clean brush into a fresh batch of Rodin® Universal Resin Cleaner and thoroughly scrub the entire surface of the object.
4. **Run Secondary Wash Cycle 3 Minutes:** Transfer the object to an ultrasonic, vortex, or oscillating bath filled with fresh Rodin® Universal Resin Cleaner. Run this secondary cycle for 3 minutes.
5. **Dry the Object:** Blow off any remaining wash solution using compressed air until the object is completely dry.
6. **Inspect for a Matte Finish:** Crucial before post-curing. Examine the object closely for any shiny spots.
 - If shiny areas are present: Residual resin remains. Repeat the secondary wash (Step 4) and drying process (Step 5).

- If the surface is completely matte: The object is clean and ready for post-curing.

11.2. Cleaning Recommendations: 99%+ Isopropyl Alcohol (IPA)

Never submerge printed objects in Isopropyl Alcohol for a combined total of more than 10 minutes. Prolonged exposure to IPA will break down the resin, causing degradation to the mechanical properties and structural integrity of the final printed part.

1. Remove Excess Resin: Wipe away or blow off excess residual resin from the printed object using compressed air or a paper towel.
2. Run Prewash Cycle 3-4 Minutes: Place the object in an ultrasonic, vortex, or oscillating bath filled with IPA. Run the prewash cycle for 3 to 4 minutes.
3. Scrub Surface (Optional): After the prewash, dip a clean brush into fresh IPA and thoroughly scrub the entire surface of the object. Do not leave the part soaking in a bath during this step.
4. Run Secondary Wash Cycle 3-4 Minutes: Transfer the object to an ultrasonic, vortex, or oscillating bath filled with fresh IPA. Run this secondary cycle for 3 to 4 minutes.
5. Dry the Object: Immediately after removing the part from the secondary wash, blow off all remaining solvent using compressed air until the object is completely dry.
6. Inspect for a Matte Finish: Crucial before post-curing. Examine the object closely for any shiny spots.
 - If shiny areas are present: Residual resin remains. Do not run another full wash cycle. Spot-clean the shiny areas manually with a brush dipped in fresh IPA, then dry immediately with compressed air.
 - If the surface is completely matte: The object is clean and ready for post-curing.

12. STORAGE CONDITIONS AND SHELF LIFE

- Store in the original tightly closed container in a cool, dry, and well-ventilated place.
- Recommended storage temperature: 4°C to 25°C (40°F to 75°F).
- Protect from direct sunlight, UV light, curing light sources, excessive heat, moisture, contamination, and ignition sources.

- Do not freeze.
- Keep the container upright and tightly closed when not in use.
- Refer to product labeling for the expiration date.
- Do not use after expiration.

13. DISPOSAL & WASTE MANAGEMENT

13.1. Classification of Waste

Dispose of resin and resin-contaminated materials in accordance with applicable federal, state, and local regulations. Uncured resin should be treated as chemical waste and must not be discharged into drains, sinks, or the environment.

13.2. Disposal of Liquid Resin

Do not dispose of uncured liquid resin directly into the trash or down the drain. Unused or waste resin should be fully cured using an appropriate UV light source before disposal, where permitted by applicable regulations.

13.3. Solid Resin Waste

Ensure printed models, failed prints, supports, and other resin waste are fully cured before disposal. Fully cured resin waste may be disposed of as solid waste in accordance with applicable local regulations.

13.4. Personal Protective Equipment (PPE) and Cleaning Materials

Dispose of gloves and other PPE contaminated with uncured resin in accordance with applicable waste-disposal requirements. Paper towels, cloths, and other cleaning materials contaminated with uncured resin should be fully cured before disposal, where appropriate.

14. LEGAL DISCLAIMER

Pac-Dent Inc. Release of Liability

Pac-Dent Inc. (“the Company”) expressly disclaims any and all liability associated with the improper use of its products, including but not limited to its range of 3D printing resins, tools, and equipment intended for dental applications. The end user (“User”) acknowledges and agrees that strict adherence to the instructional guidance provided by the Company is essential for the correct use, function, and performance of the product (“Product”).

The User understands that deviation from the provided instructional guidance, or the use of invalidated or unauthorized equipment in conjunction with the Product, may result

in alterations to the function and performance of the Product. The Company shall not be held responsible or liable for any such alterations or any consequences thereof.

By using the Product, the User agrees to indemnify, defend, and hold harmless Pac-Dent Inc., its officers, directors, employees, agents, affiliates, successors, and assigns from and against any and all losses, claims, damages, expenses (including reasonable attorneys' fees), or liabilities of any kind arising out of, related to, or in connection with the User's deviation from the provided instructional guidance or use of invalidated equipment.

This release of liability is binding upon the User, and, as applicable, the User's heirs, executors, administrators, legal representatives, and assigns. It is the User's responsibility to ensure comprehension and observance of this disclaimer and all accompanying instructional materials provided by the Company.

THE COMPANY'S LIABILITY UNDER THIS DISCLAIMER, IF ANY, SHALL BE LIMITED TO THE PURCHASE PRICE PAID BY THE USER FOR THE PRODUCT. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR INDIRECT DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE PRODUCT.

The User's acceptance of the Product constitutes acceptance of these terms and an agreement to be bound hereby.

15. MANUFACTURER INFORMATION



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