

Safety Data Sheet (SDS)

Prepared in accordance with OSHA Hazard Communication Standard, 29 CFR 1910.1200, Hazardous Products Regulations (HPR) and WHMIS 2015, Regulation (EC) No 1907/2006 (REACH) and Regulation (EC) No 1272/2008 (CLP), and GHS Rev. 11

RODIN Surgical Guide Resin

Section 1. Product and Company Identification

Product Identifier: Photopolymer Resin

Trade Name: Rodin Surgical Guide Resin

Recommended Use: 3D printing of dental surgical guides used during dental implant procedures.

Restrictions on Use: For use by licensed dental professionals only.

Manufacturer:

Manufacturer name: The Belpoint Company Inc. dba Gingi-Pak

Address: 4825 Calle Alto, Camarillo, CA 93012

Telephone: (805)814-0335

Email: mo.islam@gingi-pak.com

Emergency telephone number: (U.S.) +1 800 424 9300

Emergency telephone number: (INT) +1 703 527 3887

Section 2. Hazard(s) Identification

GHS Hazard Classification of the Substance or Mixture:

Based on the individual components, this mixture is classified as hazardous

Skin Corrosion/Irritation: Category 2

Serious Eye Damage/Irritation: Category 2A

Skin Sensitisation: Category 1

Reproductive Toxicity: Category 2

Hazardous to the Aquatic Environment (Long-term/Chronic): Category 2

Specific Target Organ Toxicity – Single Exposure (STOT SE): Category 3 (Respiratory Irritation)

Signal Word: WARNING

Pictograms:



GHS08



GHS07



GHS09

Hazard Statements:

H315 Causes skin irritation

H317 May cause an allergic skin reaction

H319: Causes serious eye irritation

H335 May cause respiratory irritation

H411: Toxic to aquatic life with long-lasting effects

H361: Suspected of damaging fertility or the unborn child

Precautionary Statements:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood

P261 Avoid breathing vapors

P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:

P302+P352 IF ON SKIN: Wash with plenty of soap and water

P333+P313 If skin irritation or rash occurs: Get medical advice

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes

P337+P313 If eye irritation persists: Get medical advice

Disposal

P501 Dispose of contents/container in accordance with local, regional and national regulations.

Other Hazards

Polymerization Hazard: This product contains photopolymers. Exposure to light (especially UV/sunlight) or excessive heat may cause rapid, exothermic polymerization, potentially releasing heat and irritating fumes.

Dental Professional Restriction: For use by licensed dental professionals only.

Hazards Not Otherwise Classified: None known.

Percentage of Ingredients with Unknown Acute Toxicity: Approximately 2% of the mixture consists of ingredient(s) of unknown acute toxicity.

Section 3. Composition/Information on Ingredients

RODIN Surgical Guide Resin

Product Type: Mixture

Chemical Name, Common Name and Synonyms:	CAS Number	Concentration (% w/w)
7,7,9(or 7,9,9)-trimethyl-4,13-dioxo-3,14-dioxo-5,12-diazahexadecane-1,16-diyl bismethacrylate	72869-86-4	80 – 100%
2-Hydroxy Ethyl Methacrylate	868-77-9	10 – 30%
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	< 2%
Proprietary Pigments and Inhibitors	N/A	<1%

The specific chemical identity and/or exact concentration has been withheld as confidential business information in accordance with the Work Health and Safety Regulations. Disclosure will be provided to medical professionals, regulators, or emergency responders upon request as required by law.

Section 4. First-Aid Measures

General Advice

- If medical advice is needed, have product container or label at hand.
- For advice, contact a Poisons Information Centre.
- Seek medical attention immediately if symptoms persist.

After Inhalation

- Remove person from exposure to fresh air and keep at rest.
- If respiratory irritation or symptoms persist, seek medical attention.

After Skin Contact

- Immediately remove contaminated clothing.
- Wash affected area thoroughly with soap and water.
- If irritation or sensitisation develops, seek medical advice.
- Launder contaminated clothing before reuse.

After Eye Contact

- Immediately flush eyes with clean running water for at least 15 minutes, holding eyelids open.
- Remove contact lenses if present and easy to do. Continue rinsing.
- Seek medical attention if irritation persists.

After Swallowing

- Rinse mouth with water.
- Do NOT induce vomiting.
- Seek immediate medical advice or contact the Poisons Information Centre.

Most Important Symptoms and Effects

- Acute: Causes serious eye irritation and skin irritation. Vapors may cause respiratory tract irritation.
- Delayed: Allergic skin reactions (sensitisation) may occur in susceptible individuals after a single or repeated exposure to UDMA. Contains TPO, which is suspected of damaging fertility with prolonged or repeated systemic exposure.

Advice to Doctor

- Treat symptomatically. No specific antidote is available.
- Sensitisation: Consider the risk of severe sensitisation from the high concentration of methacrylate (UDMA) components.

Reproductive Risk: Note the presence of TPO (CAS 75980-60-8) if significant chronic exposure is suspected.

Section 5. Fire-Fighting Measures

Suitable Extinguishing Agents: Alcohol-resistant foam, dry chemical powder, carbon dioxide (CO₂).

Unsuitable Extinguishing Media: Direct water jet.

Special Hazards:

- Combustibility: Not classified as flammable, but is a combustible liquid. The material may burn if pre-heated or involved in a fire.
- Explosion Hazard: Sealed containers may rupture violently if exposed to extreme heat. This is due to rapid, uncontrolled exothermic polymerization, which generates significant internal pressure and heat.

Hazardous Combustion Products: Thermal decomposition or combustion may produce irritating and potentially toxic fumes, including:

- Carbon oxides (CO, CO₂).
- Methacrylate monomers and other irritating organic vapors.
- Other irritating organic vapors and low-molecular-weight hydrocarbons.

Explosion Hazard: Sealed containers may rupture explosively if exposed to extreme heat due to rapid, uncontrolled polymerization (exothermic reaction)

Advice for firefighters:

- Protective Equipment: Wear full protective clothing and a pressure-demand self-contained breathing apparatus (SCBA).
- Containment: Cool fire-exposed containers with water spray from a protected location to prevent pressure build-up and rupture.
- Environmental Protection: Prevent fire-extinguishing water and runoff from entering drains, sewers, or waterways, as the uncured resin is toxic to aquatic life.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

- Avoid contact with skin and eyes.
- Wear appropriate personal protective equipment, including safety glasses with side shields, protective gloves, and laboratory coat, as described in Section 8.
- Ensure adequate ventilation.
- Evacuate unnecessary personnel from the immediate spill area.

Environmental precautions:

- Avoid releases to the environment.
- Prevent material from entering drains, sewers, or waterways.
- Report releases as required by local and national authorities.

Methods and material for containment and cleaning up:

- Containment: Stop the leak if it is safe to do so. Contain the spill with inert absorbent material (e.g., sand, silica gel, or universal binder).
- Polymerization (Light Curing): Exposure to sunlight or intense artificial UV light will cause the liquid resin to polymerize (harden). Small spills can be spread thin to maximize surface area and exposed to UV light. Once the material is fully hardened, it can be picked up and placed into a container for disposal as non-hazardous solid waste.
- Chemical Cleanup: For large spills or spills in dark areas, use an absorbent and place into a sealed, labeled container. Clean the contaminated surface with a suitable solvent (like IPA) while ensuring adequate ventilation and fire safety precautions.

Reference to other sections: Refer to Section 8 for information on personal protective equipment and Section 13 for disposal considerations.

Section 7. Handling and Storage

Precautions for safe handling: This product is classified as a hazardous chemical under GHS.

- Avoid contact with eyes, skin and clothing. Use with adequate ventilation.
- Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.
- Keep containers closed when not in use. Do not reuse containers.
- Empty containers retain product residues and can be hazardous. Follow all SDS precautions.

Conditions for Safe Storage, Including Any Incompatibilities:

- Store in a tightly closed container in a cool, well-ventilated location
- Recommended storage temperature: 18–25°C.
- Do not allow to freeze.
- Do not store in an oxygen-free environment.
- Avoid conditions that may result in inhibitor depletion.
- Protect from direct sunlight, UV radiation, and other sources of intense light.
- Protect from heat and ignition sources.
- Keep away from strong oxidising agents, strong acids, and strong bases.
- Ensure appropriate segregation from incompatible substances in accordance with hazardous chemical storage guidance.

Specific End Use(s)

For professional dental use only.

Use only as directed for 3D printing dental surgical guides of dental restorative materials.

Section 8. Exposure Controls / Personal Protection

Control parameters: No occupational exposure limits have been established for the components of this mixture.

Exposure controls: Use in a well-ventilated area. Enclosed processing is recommended where feasible to minimize exposure.

Personal protective equipment:

Eye / face protection: Use safety goggles with side shields or chemical splash goggles when there is a risk of splashing or eye contact.

Skin protection: Wear protective gloves when handling uncured material. Depending on conditions of use, protective clothing such as a lab coat or apron may be used to prevent skin contact.

Hand protection: Protective gloves are recommended.

Material of gloves / breakthrough time: Not determined.

Respiratory protection: Respiratory protection is not normally required. If the material is handled at elevated temperatures or under mist-forming conditions, use approved respiratory protection in accordance with applicable regulations and good industrial hygiene practice.

General hygiene measures: Wash hands thoroughly after handling and before eating, drinking, or smoking. Avoid contact with skin and eyes. See Section 7 for handling and storage precautions.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

General Information

Appearance

Form: Liquid

Color: Pigmented (varies by product variant)

Odor: Fruity, ester-like odor.

Odor Threshold: Not available

pH value at 20°C (68°F): Not applicable (non-aqueous)**Melting point/Melting range:** Not available**Boiling point/Boiling range:** Not available**Flash point:** 93 °C (>200 °F) (PMCC)**Evaporation rate:** Not available**Flammability (solid, gaseous):** Not available**Auto-ignition Temperature:** Not available**Decomposition temperature:** Not available

Explosion limits

Lower: Not available**Upper:** Not available**Vapor Pressure:** Not available**Density:** Not available**Relative density:** Not available**Solubility:** Nearly insoluble in water**Vapor Density:** Not available**Evaporation rate:** Not available**Partition coefficient (n-octanol/water):** Not available**Viscosity:** 220–250 cP at 25 °C (77 °F) (Brookfield)**Solvent content:** Not available**Organic solvents:** Not available**Water:** Not available**Solids content:** Not available**Specific Gravity:** 1.10–1.125 at 25 °C (77 °F)

Section 10. Stability and Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical Stability

- Stable under recommended storage conditions (see Section 7)
- Contains inhibitors to prevent premature polymerization.

Possibility of Hazardous Reactions

- Hazardous Polymerization: May occur.
- Note: Exposure to light, UV radiation, or excessive heat may cause a rapid, exothermic (heat-releasing) polymerization reaction. This can lead to the buildup of pressure in sealed containers.

Conditions to Avoid

- Direct sunlight and intense artificial light.
- Temperatures above 32°C
- Oxygen-free environments (inhibitors require dissolved oxygen to function).
- Ignition sources and sparks.

Incompatible Materials

- Strong oxidizing agents
- Strong acids and bases
- Peroxides and copper/copper alloys

Hazardous Decomposition Products

No hazardous decomposition products known under normal conditions of storage and use. In the event of fire, see Section 5.

Section 11. Toxicological Information

GHS Rev.11

Toxicological classification is based on available data for individual components, including information from peer-reviewed literature and internationally recognized chemical assessments.

Information on Toxicological Effects

Acute toxicity: Based on available data, the mixture is not classified for acute toxicity.

Component information:

- UDMA (CAS 72869-86-4): Oral LD50 (rat): > 5,000 mg/kg.
- HEMA (CAS 868-77-9): Oral LD50 (rat): 5,564 mg/kg.
- TPO (CAS 75980-60-8): Oral LD50 (rat): > 5,000 mg/kg

Classified and Non-Classified Hazards

Skin Corrosion / Irritation: Classified as Category 2; causes skin irritation. Prolonged or repeated exposure may result in redness or dermatitis.**Serious Eye Damage / Irritation:** Classified as Category 2A; causes serious eye irritation. Symptoms may include redness, tearing, and discomfort.**Skin Sensitisation:** Classified as Category 1. Contains UDMA, HEMA, and TPO, which may cause an allergic skin reaction. Sensitisation may occur after a single or repeated exposure to the uncured resin.**Respiratory sensitisation:** Not classified.**Specific Target Organ Toxicity – Single Exposure (STOT SE):** Classified as Category 3 (Respiratory Irritation). Vapors may cause respiratory irritation.**Reproductive Toxicity:** Classified as Category 2 (Suspected of damaging fertility). Contains Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide (TPO), which is classified as suspected of damaging fertility under GHS criteria**Specific Target Organ Toxicity – Repeated Exposure:** Not classified based on available data.**Carcinogenicity / Mutagenicity / Reproductive Toxicity:** Not classified.**Aspiration Hazard:** Not classified.**Germ Cell Mutagenicity:** Not classified based on available data.

Section 12: Ecological Information

Ecotoxicity

No specific aquatic toxicity data are available for the mixture.

Component information indicates:

- UDMA (CAS 72869-86-4): Exhibits moderate toxicity to aquatic life; LC50 (48h) for Daphnia magna is 1.2 mg/L.
- HEMA (CAS 868-77-9): Exhibits low acute toxicity to fish and aquatic invertebrates (LC₅₀/EC₅₀ > 100 mg/L).
- TPO (CAS 75980-60-8): Toxic to aquatic life with long-lasting effects; LC50 (48h) for Oryzias latipes is 6.53 mg/L

Persistence and Degradability

Component information:

- UDMA: Not readily biodegradable; biodegradation reached 22% in 28 days
- HEMA: Readily biodegradable.
- TPO: Not readily biodegradable; expected to persist in the environment

Overall mixture: No specific biodegradation data available

Bioaccumulative Potential

- UDMA: Low potential for bioaccumulation due to high molecular weight and limited bioavailability
- HEMA: Low bioaccumulation potential (log K_{ow} < 3).
- TPO: Moderate potential for bioaccumulation (log K_{ow} 3.1)

Mobility in Soil

- UDMA & TPO: Low mobility in soil due to low water solubility and high partition coefficients; both are expected to adsorb to soil and sediment.
- HEMA: High mobility in soil due to water solubility; however, it is expected to biodegrade rapidly.

Prevent product from entering soil, drains, or waterways.

Other Adverse Effects

No known significant environmental effects when used as intended.

Environmental management should comply with applicable local, regional, national, and international regulations.

Section 13. Disposal Considerations

Waste Treatment Methods**Product Disposal**

Uncured product contains methacrylate monomers (UDMA, HEMA, and TPO) and must be treated as hazardous waste due to its skin-sensitizing properties and aquatic toxicity.

Cure material completely before disposal where practical.

Fully cured material is generally considered non-hazardous solid waste and is safe for disposal as general dental laboratory waste.

Dispose of waste in accordance with:

- Applicable local, regional, national, and international regulations

Waste classification must be determined in accordance with applicable local, regional, national, and international regulations.

Do not dispose of uncured product into drains, waterways, or soil.

Contaminated Packaging

- Empty containers may contain residual product and should be handled with care.
- Do not reuse empty containers.
- Dispose of packaging in accordance with local waste authority requirements.
- Containers that are not completely empty may require disposal as hazardous waste.

Cleaning Agents

Alcohol (IPA) or other suitable solvent may be used for cleaning equipment prior to curing.

Cleaning solvents and residues may be flammable and should be:

- Collected in appropriate containers
- Managed as hazardous waste
- Disposed of in accordance with applicable regulations

Do not discharge cleaning residues into drains or waterways.

Section 14. Transport Information

Transport Information**Department of Transportation (DOT)**

- UN Number: Not regulated
- UN Proper Shipping Name: Not regulated
- Transport Hazard Class(es): Not regulated
- Packing Group: Not applicable
- Environmental Hazards: None known

Special Precautions for User: Transport in tightly closed original containers. Prevent leakage and avoid exposure to excessive heat or direct sunlight.

ADR/RID (Road/Rail Transport)

- UN Number: Not regulated
- UN Proper Shipping Name: Not regulated
- Transport Hazard Class(es): Not regulated
- Packing Group: Not applicable
- Environmental Hazards: None known

IMDG Code (Sea Transport)

- UN Number: Not regulated
- UN Proper Shipping Name: Not regulated

Section 14. Transport Information

- Transport Hazard Class(es): Not regulated
- Packing Group: Not applicable
- Marine Pollutant: No
- EmS: Not applicable
- Special Precautions for User: None required under normal transport conditions.

ICAO/IATA Dangerous Goods Regulations (Air Transport)

- UN Number: Not regulated
- UN Proper Shipping Name: Not regulated
- Transport Hazard Class(es): Not regulated
- Packing Group: Not applicable
- Passenger and Cargo Aircraft: as dangerous goods.

Special Precautions for User: Transport in tightly closed containers to prevent leakage. Avoid exposure to direct sunlight and temperatures exceeding 32°C to prevent premature polymerization. Ensure containers are securely stowed in an upright position.

Section 15. Regulatory Information

Safety, health and environmental regulations / legislation specific for the substance or mixture.

U.S. Regulations

OSHA (Occupational Safety & Health Administration): None of the components are listed.

SARA (Superfund Amendments and Reauthorization Act):

Acute Health Hazard: Yes

Chronic Health Hazard: Yes

Fire Hazard: No

Pressure Hazard: No

Reactivity Hazard: No

SARA Section 355 (Extremely hazardous substances): None.

SARA Section 313 (Toxic Release Inventory): None.

TSCA (Toxic Substances Control Act): None of the components are listed.

California Proposition 65:

Chemicals known to the state of California to cause cancer and/or reproductive toxicity: None.

Chemicals known to cause developmental toxicity: None known.

EPA (Environmental Protection Agency) None of the components are listed.

NIOSH-OSHA (National Institute for Occupational Safety and Health): None of the components are listed.

TLV (Threshold Limit Value established by ACGIH): None of the components are listed.

EU Regulations

REACH Regulation (EC) No 1907/2006: This mixture does not contain substances subject to authorization (Annex XIV) or restriction (Annex XVII) at concentrations requiring declaration.

CLP Regulation (EC) No 1272/2008: This mixture is classified and labeled according to CLP, aligned with GHS Rev. 4.

CMR Status (CLP): Based on available data, the mixture is not classified as carcinogenic, mutagenic, or toxic for reproduction (CMR) under Regulation (EC) No 1272/2008.

SVHC (Substances of Very High Concern): This product does not contain SVHCs above 0.1% (w/w) according to the current ECHA Candidate List.

Chemical Safety Assessment: A Chemical Safety Assessment has not been carried out. Under REACH, a CSA is not required for mixtures supplied for professional use as medical device materials.

Canada

WHMIS 2015 / Hazardous Products Regulations (HPR): This product is classified as hazardous in accordance with the Hazardous Products Regulations and WHMIS 2015, aligned with GHS Rev. 4.

Domestic Substances List (DSL): All components are listed on or exempt from the Canadian Domestic Substances List.

Occupational Exposure Limits: No occupational exposure limits have been established for the components of this mixture.

GHS Label elements: This product is classified and labeled according to the Globally Harmonized System (GHS)

Hazard-determining components of labeling: See Section 2.

Hazard statements: See Section 2.

Precautionary statements: See Section 2.

Section 16. Other Information

Abbreviations and Acronyms

- GHS – Globally Harmonized System of Classification and Labelling of Chemicals
- CLP – Classification, Labelling and Packaging Regulation (EC) No 1272/2008
- REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals
- PBT – Persistent, Bioaccumulative and Toxic
- vPvB – Very Persistent and Very Bioaccumulative
- STOT – Specific Target Organ Toxicity
- SCBA – Self-Contained Breathing Apparatus

Key Literature References and Sources for Data

- Supplier Safety Data Sheets for raw materials
- European Chemicals Agency (ECHA) database
- OSHA Hazard Communication Standard (29 CFR 1910.1200)
- Regulation (EC) No 1907/2006 (REACH)
- Regulation (EC) No 1272/2008 (CLP)

Section 16. Other Information

Classification Procedure

The classification of this mixture is based on:

- Available data on individual components
- Application of CLP/GHS classification criteria
- Bridging principles and expert judgment

Relevant Hazard Statements (Full Text)

- H317 May cause an allergic skin reaction
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation
- H412 Harmful to aquatic life with long lasting effects

Training Advice

Users should be trained in:

- Safe handling of light-curable resin materials
- Use of appropriate personal protective equipment
- Prevention of skin contact and inhalation exposure
- Proper waste handling and disposal practices

Use only as directed for professional dental or laboratory applications.

Disclaimer

The information provided in this Safety Data Sheet is based on current knowledge and is intended to describe the product for the purposes of health, safety, and environmental requirements only.

It should not be construed as guaranteeing any specific property of the product.

The user is responsible for ensuring compliance with all applicable laws and regulations.