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› [Keystone Industries](#) /

› Keystone KeySplint Soft 1KG 3D Printing Resin Instruction Manual

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Keystone KeySplint Soft 1KG 3D Printing Resin Instruction Manual

Model: KeySplint Soft 1KG

1. INTRODUCTION

Keystone KeySplint Soft is a specialized 3D printing resin designed for the fabrication of flexible dental splints and nightguards. This material is formulated to provide a balance of strength and flexibility, offering patient comfort while protecting against conditions such as bruxism. It is fully biocompatible and complies with international medical device regulations and standards.

KeySplint Soft is color stable, has a three-year shelf life, and is validated for use with multiple open-source 3D printers.



Image 1.1: Keystone KeySplint Soft 1KG resin bottle, a clear 3D printed dental splint, and a jar containing the liquid resin.

2. SAFETY INFORMATION

Always handle KeySplint Soft resin in a well-ventilated area. Wear appropriate personal protective equipment (PPE), including gloves and safety glasses, to prevent skin and eye contact. In case of contact, refer to the Safety Data Sheet (SDS) for detailed instructions. Keep the resin away from direct sunlight and heat sources.

- Wear gloves and eye protection.
- Ensure adequate ventilation.
- Avoid ingestion and prolonged skin contact.
- Store in a cool, dark place, away from children and pets.

3. SETUP AND PREPARATION

3.1 Resin Preparation

1. Before each use, gently shake the KeySplint Soft resin bottle for at least 30 seconds to ensure proper mixing of components.
2. Pour the desired amount of resin into the 3D printer's resin vat. Avoid overfilling.
3. Ensure the resin is at room temperature (20-25°C / 68-77°F) for optimal printing performance.

3.2 Printer Compatibility

KeySplint Soft is validated for use with multiple open-source DLP 3D printers. Consult your printer's manufacturer guidelines for specific settings recommendations for dental resins. Ensure your printer firmware is up to date.



Image 3.1: KeySplint Soft dental splints being printed on a 3D printer build plate.

4. OPERATING INSTRUCTIONS

4.1 Printing Parameters

Optimal printing parameters vary depending on the specific 3D printer model and desired layer thickness. General recommendations include:

- **Layer Thickness:** Typically 50-100 microns.
- **Exposure Time:** Adjust according to your printer's light source and layer thickness. Start with manufacturer-recommended settings for dental resins and fine-tune as needed.
- **Bottom Layer Exposure:** Longer exposure for initial layers to ensure strong adhesion to the build plate.

4.2 Post-Processing

1. **Removal:** Carefully remove the printed parts from the build plate using a plastic or metal scraper.
2. **Washing:** Wash the printed parts thoroughly in isopropyl alcohol (IPA) for 2-5 minutes to remove uncured resin. Use an ultrasonic cleaner for best results. Ensure all excess resin is removed.
3. **Drying:** Allow the parts to air dry completely or use compressed air. Ensure no IPA residue remains.
4. **Post-Curing:** Place the dried parts in a UV curing unit. Follow the curing unit manufacturer's recommendations for dental resins. Proper post-curing is crucial for achieving full mechanical properties and biocompatibility.
5. **Support Removal:** Carefully remove any support structures after post-curing.
6. **Finishing and Polishing:** Smooth any rough edges and polish the surface for patient comfort and aesthetics. KeySplint Soft is polishable and stain-resistant.



Image 4.1: Key features of a KeySplint Soft dental appliance, highlighting its biocompatibility and durability.



Image 4.2: Comparison of an unpolished KeySplint Soft appliance versus a polished one, demonstrating improved clarity and smoothness after finishing.

5. MAINTENANCE AND STORAGE

5.1 Resin Storage

- Store KeySplint Soft resin in its original opaque bottle, tightly sealed, to prevent exposure to light.
- Keep in a cool, dry place between 10-25°C (50-77°F).
- Avoid direct sunlight and extreme temperatures.
- The resin has a guaranteed shelf life of three years when stored correctly.

5.2 Cleaning Printed Appliances

KeySplint Soft appliances are designed to be easily cleaned by the patient. Recommend cleaning with a soft brush and mild soap or a denture cleaning solution. Avoid abrasive cleaners.

6. TROUBLESHOOTING

Problem	Possible Cause	Solution
Parts not adhering to build plate	Insufficient bottom layer exposure; build plate not level; resin too cold.	Increase bottom layer exposure time; re-level build plate; ensure resin is at room temperature.
Printed parts are brittle or soft	Insufficient post-curing; incorrect exposure time during printing.	Increase post-curing time/intensity; adjust print exposure settings.
Surface imperfections or uncured resin	Inadequate washing; resin contamination; incorrect exposure.	Ensure thorough washing in fresh IPA; filter resin; adjust print exposure.
Distorted or inaccurate prints	Incorrect print settings; insufficient support structures; printer calibration issues.	Verify print settings; add more supports; calibrate your 3D printer.

7. SPECIFICATIONS

- **Product Name:** KeySplint Soft
- **Manufacturer:** Keystone Industries
- **Net Weight:** 1 KG (35.3 oz)
- **Material Type:** DLP-optimized 3D printing resin
- **Application:** Flexible dental splints and nightguards
- **Biocompatibility:** Fully biocompatible, compliant with international medical device regulations.
- **Shelf Life:** 3 years (when stored correctly)
- **Color:** Transparent
- **Key Properties:** Strong, flexible, polishable, stain-resistant, abrasion and fracture resistant.

UNIQUE MOUTHGUARDS, NIGHTGUARDS & SPLINTS
WHAT MAKES KEYSPLINT SOFT® SO SPECIAL?

KeySplint Soft® is a unique, safe and effective solution that offers durable protection against bruxism with a comfortable wear.

 STRONG

 FLEXIBLE

 EASILY CLEANED

 Bio
BIOCOMPATIBLE

 ACCURATE

CHECK OUT OUR INDEPENDENT WEAR STUDY





Ⓞ **STRONG YET FLEXIBLE; NOT BRITTLE**
Combines strength needed to protect teeth with added flexibility for better patient comfort.



Ⓞ **EASILY CLEANED AND MAINTAINED**
Easily cleaned by the patient



Ⓞ **HIGHLY PRECISE DEVICES**
Precise, strong and smooth finished parts. Limited remakes and repairs can be done quickly if needed, saving time for doctors!



Ⓞ **ELASTIC MEMORY FOR EASY PLACEMENT**
KeySplint Soft can be warmed in water for easy placement and minimal chairside adjustments, saving time for doctors!

Image 7.1: Infographic highlighting the unique benefits and properties of KeySplint Soft for dental applications.

8. WARRANTY AND SUPPORT

8.1 Product Warranty

Keystone Industries guarantees the quality and performance of KeySplint Soft resin for a period of three years from the date of manufacture, provided the product is stored and used according to the instructions provided in this manual and the Safety Data Sheet (SDS). This warranty covers manufacturing defects. For specific warranty claims, please contact Keystone Industries directly.

8.2 Technical Support

For technical assistance, questions regarding product usage, or to report issues, please contact Keystone Industries customer support. Refer to the official Keystone Industries website for the most current contact information.

Manufacturer: Keystone Industries

Website: www.keystoneindustries.com (Example link, please verify official website)

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This manual is subject to change without notice.