keyprint®

by keystone industries

Product Catalogue

Entirely formulated and produced in the USA!

What Dental Professionals Think of KeyPrint®

"Keystone's are the highest quality materials we have seen, and we are eagerly integrating them into our digital workflow."

— **JAY COLLINS, OWNER OF CORNERSTONE DENTAL LABS**

"We've been receiving great feedback from dentists that KeySplint Hard® is surviving even the most severe bruxers."

— **CHRIS KABOT, VICE PRESIDENT, RESEARCH AND DEVELOPMENT AT AFFORDABLE CARE**

"KeyGuide® resin is a perfect fit for our laboratory. The material prints quickly and accurately in our 3D printer and polishes to a beautiful high-luster shine. Our doctors are loving it!"

— **KEN KINCAID, CDT, RG, TE**

"KeySplint Soft® has the unique ability to change flexural properties over the temperature range of the indicated uses. These dynamic properties add a unique characteristic that should extend the life of the splint device by preventing the degradation due to brittle fracture."

— **MARK LATTA, DMD, MS**

Table of Contents

Our KeyPrint® Journey

Entirely formulated and produced in the USA!

In an industry that is increasingly defined by the ability to innovate, adapt, and produce consistent results, Keystone Industries introduced KeyPrint in 2018, a line of precision 3D resins specifically formulated for the dental industry. KeyPrint combines Keystone's photopolymer expertise with its history of dental excellence to deliver innovative 3D printing resins to the dental market.

Designed and produced in the USA, the full KeyPrint line is available throughout North America, Europe, and other global territories. KeyPrint resins are compatible with DLP, LCD, and MSLA printers (wavelengths of 385–405 nm). Keystone is validating 3D printers on an ongoing basis to ensure our KeyPrint resins work reliably in multiple open-source printers.

Prioritizing clinical results and patient safety, KeyPrint resins are designed in accordance with globally recognized regulatory standards and are subject to a battery of mechanical tests resulting in biocompatible prints compliant with international standards to ensure efficacy and effectiveness for patients. KeyPrint's robust formulations guarantee a shelf life for the bottle of resin, along with color stability.

110+
Years in dental

+

30+
Years as a manufacturer of photopolymers

=

keyprint®
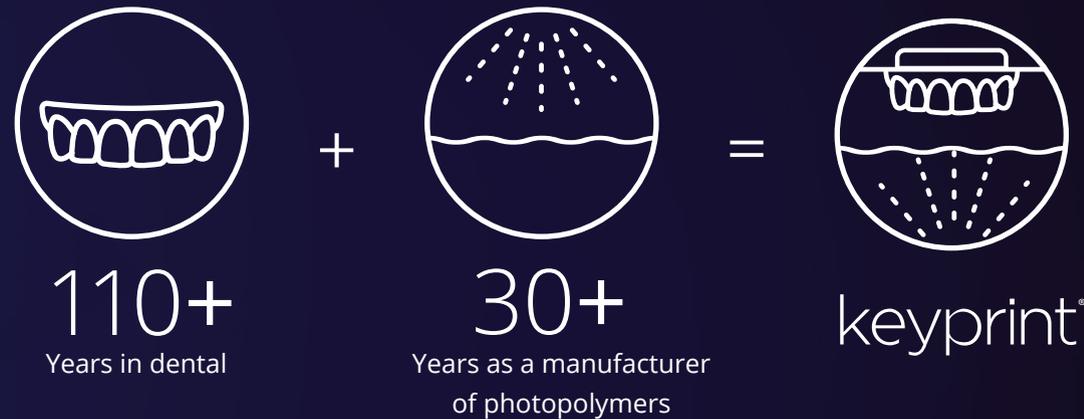
Bio

SAFE AND EFFECTIVE

Biocompatible & Medical Device Resins

Original
#4200430 (0.5kg bottle)
#4220430 (1kg bottle)

Dark Veined
#4200431 (0.5kg bottle)
#4220431 (1kg bottle)

Chroma Essence
#4200432 (0.5kg bottle)
#4220432 (1kg bottle)

Light Reddish Pink
#4200434 (0.5kg bottle)
#4220434 (1kg bottle)

Property	Method	Result*
Strain at Break	ASTM D638-14	>50%
Flexural Modulus	ISO 20795-1	2000-3000 MPa
Maximum Stress Intensity Factor	ISO 20795-1	1.9-2.5 MPa m$^{1/2}$
Total Fracture Work	ISO 20795-1	2500-5000 J/m$^{^2}$
Water Sorption	ISO 20795-1	31.7 ug/mm^3
Water Solubility	ISO 20795-1	0.8 ug/mm^3
Gardner Impact		>10 in-lb
Viscosity @ 25°C		1500-1900 cP
Biocompatibility	ISO 10993-1	Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

KeyDenture® Base

A new standard for digital denture fabrication.

Designed for fast-printing and efficient workflows, KeyDenture Base ensures long-lasting performance and reliability for your patients. Available in four classic Diamond D shades, it provides a natural, aesthetically pleasing appearance that exceeds industry standards.

- **High Impact Durability; Flexible without being brittle**
- **Realistic, life-like recreation of natural gingival tissue**

- **Low viscosity allows labs to print faster**
- **Comfortable for the patient**
- **Excellent retention**

- **Compatible with digital laboratory workflows/popular tooth materials**
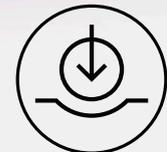- **Available in the USA and certain global territories**

Bio
BIOCOMPATIBLE

TPO Free
TPO FREE

COST EFFECTIVE

DURABLE

KeyGuard®

From the team that brought you Pro-form®!

KeyGuard precision dental resin produces custom-fit mouthguards for unbeatable comfort and protection!

- Biocompatible
- Precise fit for enhanced comfort and performance
- Optimized Cost Efficiency
- Available in the USA, EU, and certain global territories
- Protection only where needed with complete design freedom
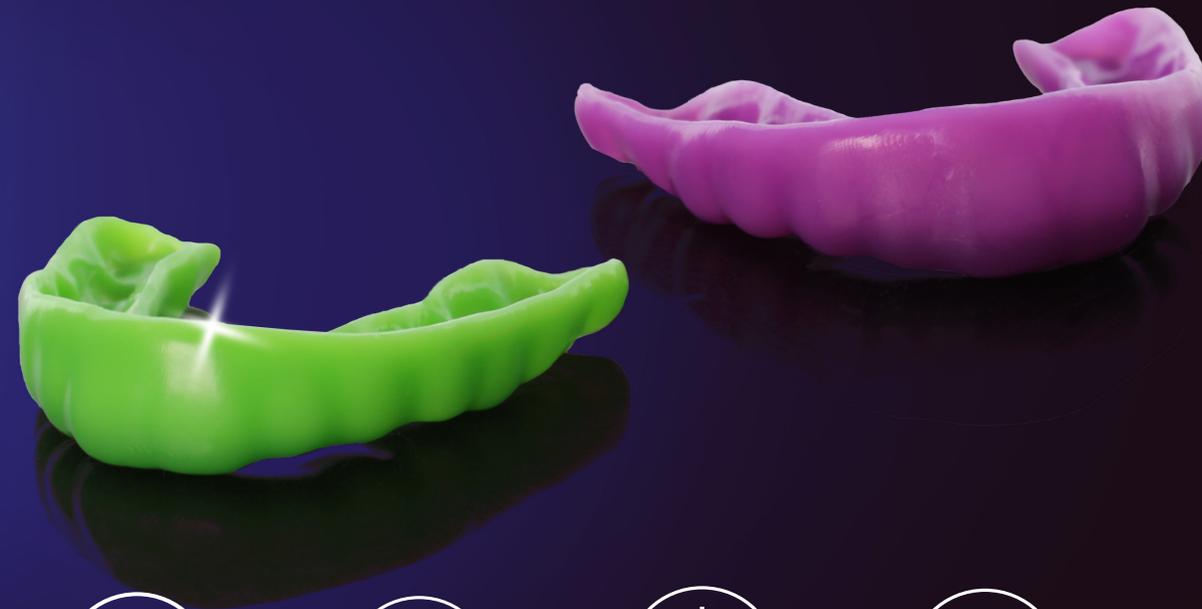
Bio — BIOCOMPATIBLE

STRONG

DURABLE

COMFORTABLE

View KeyGuard finishing & polishing

White
#4220200 (1kg bottle)

Black
#4220201 (1kg bottle)

Purple
#4220202 (1kg bottle)

Green
#4220203 (1kg bottle)

Red
#4220204 (1kg bottle)

keyprint
by keystone industries
KeyGuard™
SPORTSGUARD RESIN
Net Weight 35.3oz (1kg)

Property	Method	Result*
Tear Strength	ASTM D624-00	30 kN/m
Hardness	ASTM D2240-00, 25C @ 0 sec	75-90 A
Impact Strength	ISO 179-1	27.5 kJ/m²
Impact Resistance	ISO 179-1	220 J/m
Water Sorption	ASTM D570 @ 3hr	5.7%
Tensile Cyclic Hysteresis	Energy returned @ 25C Energy lost @ 25C	27% 73%
Elongation at break (strain)	ASTM D638-14	130%
Liquid Viscosity	Internal	900 cP
Biocompatibility	ISO 10993-1	Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

Pink
#4220151 (1kg bottle)

Clear
#4200161 (0.5kg bottle)
#4220161 (1kg bottle)

Tinted
#4200005 (0.5kg bottle)
#4220005 (1kg bottle)

iDT GAME CHANGING PRODUCTS 2020

Property	Method	Result*
Ultimate Flexural Strength	ISO 20795-2	2.6–4.4 MPa
Flexural Modulus	ASTM D790-17	1356 MPa
Tensile Strength	ASTM D638-14	52 MPa
Tensile Young's Modulus	ASTM D638-14	1790 MPa
Water Sorption	ISO 20795-2	< 18 µg/mm^3
Elongation at Break	ASTM D638-14	110%
Biocompatibility	ISO 10993-1	Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

BIOCOMPATIBLE MEDICAL DEVICE

KeySplint® Soft

For printing splints and night guards.

Utilizing state of the art technologies, Keystone Industries developed a one-of-a-kind 3D printing resin for the fabrication of flexible, durable dental splints and night guards.

- **Strong and flexible; not brittle**
- **Translucent**
- **State of the art technology**
- **BPA, MMA & Phthalate free**
- **Available in the USA, Canada, EU, AUS and certain global territories**

Bio
BIOCOMPATIBLE

STRONG

FLEXIBLE

EASY TO POLISH

EASILY CLEANED

Doctors love KeySplint® Soft for their patients & practice!

"KeySplint Soft offers unmatched durability and patient comfort. Combine that with the faster turnaround and easy replacement for night guard/splint fabrication, and you've got a solution that will have doctors wondering how they ever managed to practice without it."
— **DR. BRANDON OWEN, OWEN ORTHODONTICS LLC, LAKEWAY, TX**

"KeySplint Soft's unique thermoplastic features allow me to design guards that are snug but the patient loves the comfortable feel."
— **MICHAEL D SCHERER, DMD, MS, APC & MELISSA D SHOTELL, DMD, MS, SONORA, CA**

Check out our independent wear study!
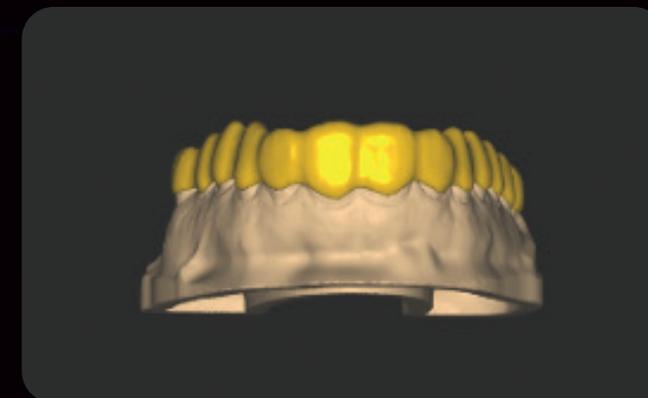
STRONG YET FLEXIBLE; NOT BRITTLE
Combines strength needed to protect teeth with added flexibility for better patient comfort.

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 doctor.

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

KeySplint Hard®

For rigid dental splints and night guards.

KeySplint Hard is designed for rigid dental splints. KeySplint Hard provides therapy for bruxism and cases where tooth immobilization is needed.

- **Biocompatible Medical Device**
- **Hard for rigid splints**
- **BPA, MMA & Phthalate free**
- **Available in the USA, Canada, EU, AUS and certain global territories**

Bio
BIOCOMPATIBLE

DURABLE

EASY TO POLISH

EASILY CLEANED

ABRASION RESISTANT

Clear
#4200011 (0.5kg bottle)
#4220011 (1kg bottle)

Tinted
#4200004 (0.5kg bottle)
#4220004 (1kg bottle)

Property	Method	Result*
Flexural Strength	ISO 20795-2	60-65 MPa
Flexural Modulus	ISO 20795-2	1510-1600 MPa
Water Sorption	ISO 20795-2	18 µg/mm^3
Elongation at Break	ASTM D638-14	9%
Biocompatibility	ISO 10993-1	Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

A1
#4200401 (0.5kg bottle)
#4220401 (1kg bottle)

B1
#4200406 (0.5kg bottle)
#4220406 (1kg bottle)

BL4
#4200420 (0.5kg bottle)
#4220420 (1kg bottle)

Property	Method	Result*
Flexural Strength	ASTM D790-17	56-68 MPa
Flexural Modulus	ASTM D790-17	1500-1750 MPa
Water Sorption	ISO 20795-1	9-13 µg/mm^3
Elongation at Break	ASTM D638-14	30-43%
Biocompatibility	ISO 10993-1	Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

BIOCOMPATIBLE MEDICAL DEVICE

KeyDenture Try-In®

Take the uncertainty out of the denture fitting process.

KeyDenture Try-In takes the uncertainty out of the denture fitting process. Designed for precision and efficiency, KeyDenture Try-In is a photopolymer resin indicated for 3D printing of biocompatible, short-term trial dentures, intended for evaluation of fit, occlusion, aesthetics, and phonetics during try-in appointments.
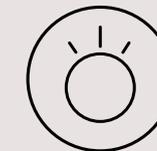
- **Cost effective for try-in dentures**
- **Exceptional surface quality**
- **Easy to characterize**

- **Polishes to high luster**
- **Biocompatible Medical Device**
- **Wide variety of KeyPrint® compatible workflows**

- **BPA, MMA & Phthalate free**
- **Available in the USA, Canada, EU, AUS and certain global territories**

BIOCOMPATIBLE   **COST EFFECTIVE**   **EXCEPTIONAL SURFACE**

KeyGuide®

For manufacturing highly precise surgical guides.

KeyGuide is ideal for fabricating transparent and stable surgical guides, which enable the placement of implants at a precise angle and depth.

- Biocompatible medical device
- Easy to polish

- Autoclavable
- BPA, MMA & Phthalate free

- Strong
- Available in the USA, Canada, EU, AUS and certain global territories

#4200001 (0.5kg bottle)
#4220001 (1kg bottle)

keyprint®
by keystone industries

KeyGuide®

Net Weight: 35.3 oz (1 kg)

Bio — BIOCOMPATIBLE

STRONG

EASY TO POLISH

134 °C — AUTOCLAVABLE

Flexural Modulus (MPa)

									KeyGuide
	Competitor A Competitor B		Competitor C Competitor H			Competitor F	Competitor E Competitor G	Competitor D	
1400	1500	1600	1700	1800	1900	2000	2100	2200	2400

Flexural Strength (MPa)

|											KeyGuide
Competitor A Competitor B					Competitor C Competitor D	Competitor E Competitor F	Competitor G	Competitor H			
50	55	60	65	70	75	80	85	90	95	100	105
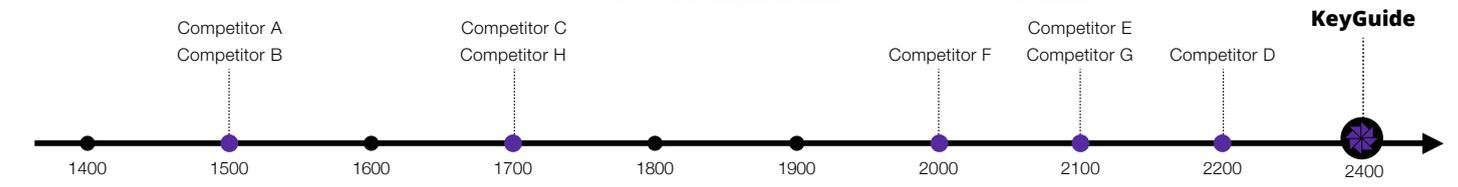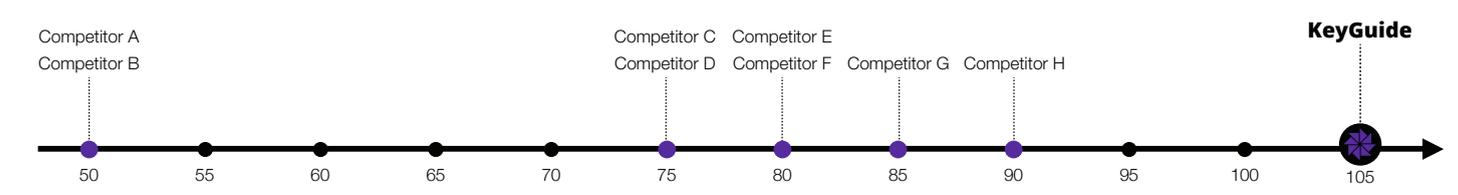
KeyOrtho IBT®

Ideal for orthodontic transfer trays for positioning brackets.

KeyOrtho IBT's translucency allows for precise positioning before and during bracket placement. Its high tensile strength allows for easy application of brackets in a single step, reducing chair time to minutes. KeyOrtho IBT is odorless, tasteless, flexible for easy removal, and compatible with all general bracket systems.
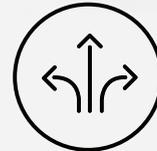
- Biocompatible Medical Device
- Odorless & tasteless
- Adhesives release easily from tray

- Translucent for easy positioning
- Precise
- Flexible

- BPA, MMA & Phthalate free
- Available in the USA, Canada, EU, AUS and certain global territories

View our video!

#4200008 (0.5kg bottle)
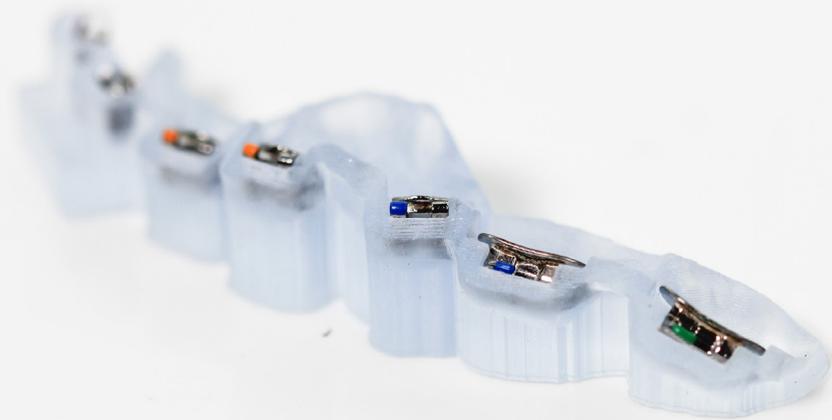
#4220008 (1kg bottle)

BIOCOMPATIBLE **PRECISE** **FLEXIBLE** **ODORLESS** **NON-STICK**

Property	Method	Result*
Tensile Strength	ASTM D638-14	8.0 - 10.5 MPa
Tensile Young's Modulus	ASTM D638-14	15.5 - 31.0 MPa
Elongation at Break	ASTM D638-14	> 130%
Biocompatibility	ISO 10993-1	Pass
Viscosity @ 25°C	ASTM D7867	<1000 cP
Orthodontic Adhesive Release		Pass

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

#4200007 (0.5kg bottle)

#4220007 (1kg bottle)

Property	Method	Result*
Flexural Strength	ASTM D790-17	84.7 MPa
Flexural Modulus	ASTM D790-17	1913 MPa
Tensile Strength	ASTM D638-14	62.1 MPa
Tensile Young's Modulus	ASTM D638-14	2056 MPa
Elongation at Break	ASTM D638-14	26.4%
Shore D Hardness		86.5 D

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

BIOCOMPATIBLE MEDICAL DEVICE

KeyTray®

Create precision custom trays quickly.

This strong, durable material can withstand the forces of taking a patient impression and removing the tray from the oral cavity. It is compatible with all types of impression material.

- **Biocompatible Medical Device**
- **No preliminary cast required**
- **Saves time by eliminating stone models**
- **Improved impression accuracy**
- **Compound waxes and border molding materials will adhere to tray**
- **BPA, MMA & Phthalate free**

Bio

BIOCOMPATIBLE   **IMPRESSION ACCURACY**   **STRONG**

Consumer Confidence in Safety & Efficacy

Open Source Philosophy

We have an unmatched open ecosystem of workflows.

Keystone is always validating new printers to ensure that KeyPrint resins work reliably in as many open-source printers as possible. We work with printer partners to ensure validated KeyPrint settings produce safe, reliable, results. Keystone cannot guarantee the results from using KeyPrint resins with unvalidated settings or printers. Using a non-validated workflow may produce a print that does not meet the mechanical or biocompatible requirements for the product's intended use. KeyPrint resins are designed to produce accurate, detailed parts when used in 385–405 nm DLP, LCD, and MSLA printers.
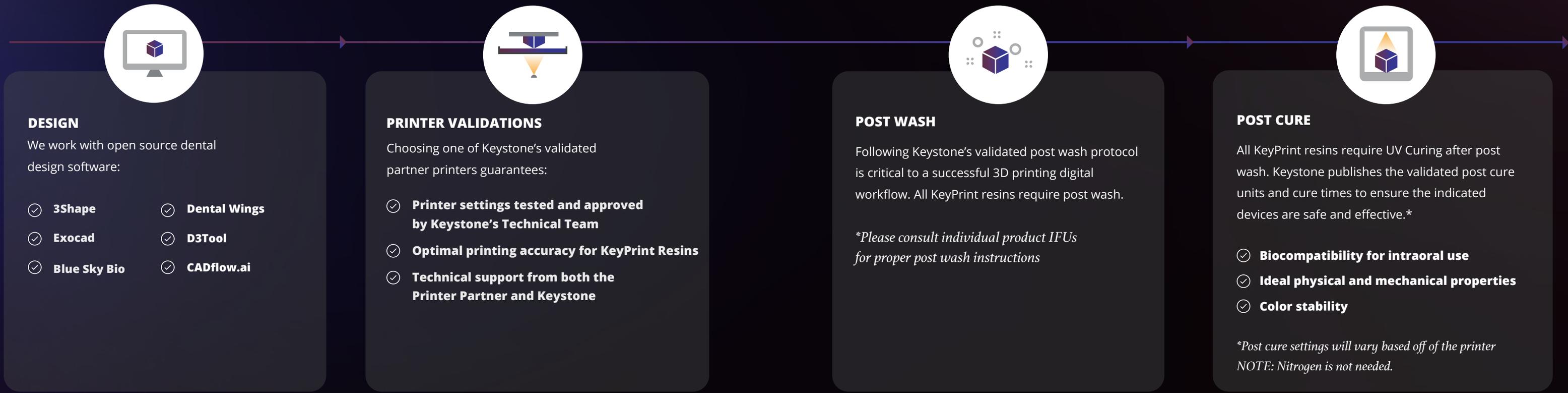
51+
Printers Validated

49+
Validated Curing Units

450+
Passing Biocompatibility Tests

4,000+
Print Workflows Tested

View our latest printer validations

DESIGN

We work with open source dental design software:

- ✓ 3Shape
- ✓ Exocad
- ✓ Blue Sky Bio
- ✓ Dental Wings
- ✓ D3Tool
- ✓ CADflow.ai

PRINTER VALIDATIONS

Choosing one of Keystone's validated partner printers guarantees:

- ✓ **Printer settings tested and approved by Keystone's Technical Team**
- ✓ **Optimal printing accuracy for KeyPrint Resins**
- ✓ **Technical support from both the Printer Partner and Keystone**

POST WASH

Following Keystone's validated post wash protocol is critical to a successful 3D printing digital workflow. All KeyPrint resins require post wash.

Please consult individual product IFUs for proper post wash instructions

POST CURE

All KeyPrint resins require UV Curing after post wash. Keystone publishes the validated post cure units and cure times to ensure the indicated devices are safe and effective.*

- ✓ **Biocompatibility for intraoral use**
- ✓ **Ideal physical and mechanical properties**
- ✓ **Color stability**

*Post cure settings will vary based off of the printer
NOTE: Nitrogen is not needed.*

Lab

ACCURATE, RELIABLE, AND CONSISTENT

Laboratory Resins

Ivory

#4220009 (1kg bottle)
#4240009 (4kg bottle)

Light Grey

#4220010 (1kg bottle)
#4240010 (4kg bottle)

Sand

#4220012 (1kg bottle)
#4240012 (4kg bottle)

Property	Method	Result*
Maximum Tensile Strength	ASTM D638-14	> 50 MPa
Tensile Modulus	ASTM D638-14	> 1700 MPa
Elongation at Break	ASTM D638-14	5%
Maximum Flexural Strength	ASTM D790-17	> 70 MPa
Flexural Modulus	ASTM D790-17	> 1940 MPa
Viscosity @ 25°C	ASTM D7867	500-600 cP

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

LABORATORY

KeyModel Ultra®

Designed for 3D printing of dental and orthodontic models.

This fast-printing formulation delivers sharp detail and a smooth finish with reliable workflow stability. Integrated release technology enables quick thermoform separation.
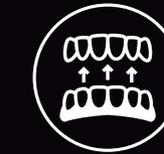
- **High-speed print formulation**
- **Integrated release agent for easy thermoform separation**
- **Three colors optimized for sharp detail**
- **Smooth surface finish**
- **Stability in production workflow**
- **Integrated with a wide range of 3D printers**

FLAWLESS SURFACE DETAIL

ULTRA-FAST TECHNOLOGY

THERMOFORMING RELEASE AGENT
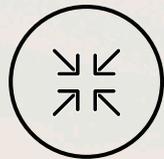
TPO FREE

KeyModel®

Our original model resin.

KeyModel produces highly precise and accurate dental models. Its low shrinkage formulation makes it an ideal resin for crown, bridge, and implant models, orthodontic clear aligner models, and diagnostic modeling.
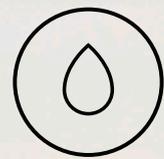
• **Carveable without chipping**

• **Colored for easy visibility of margins & tooth anatomy**
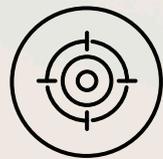
ACCURATE   LOW SHRINKAGE   EASY VISIBILITY

#4200006 (0.5kg bottle)
#4220006 (1kg bottle)

Property	Method	Result*
Flexural Strength	ASTM D790-17	79.6 MPa
Flexural Modulus	ASTM D790-17	2293 MPa
Tensile Strength	ASTM D638-14	51
Tensile Young's Modulus	ASTM D638-14	1850 MPa
Elongation at Break	ASTM D638-14	5.60%
Shore Hardness	Scale D	86

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

#4200003 (0.5kg bottle)
#4220003 (1kg bottle)

Property	Method	Result*
Flexural Strength	ASTM D790-17	79.6 MPa
Flexural Modulus	ASTM D790-17	2293 MPa
Tensile Strength	ASTM D638-14	51
Tensile Young's Modulus	ASTM D638-14	1850 MPa
Elongation at Break	ASTM D638-14	5.60%
Shore Hardness	Scale D	86

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

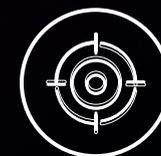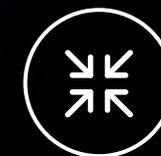## LABORATORY

KeyOrthoModel®

KeyOrthoModel is designed for high-speed and accurate prints.

KeyOrthoModel is suitable for vacuum-forming orthodontic devices, remaining stable while subjected to the elevated temperatures associated with thermoforming.

- Optimized for print @ 100 and 200µm layer thickness for high throughput

- Prints in 1/2 the time of KeyModel at the same layer thickness
- Pairs with Pro-form®

- Perfect for making aligners
- Withstands thermoforming temperatures

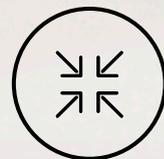ACCURATE   LOW SHRINKAGE   HIGH-SPEED

KeyMask®

Mimics the feel of natural gums for printing gingival masks.

KeyMask is a flexible, yet firm gingival mask that simulates the look and feel of gum tissue.
It is a great addition to your digital restoration planning.

• **Flexible, yet firm**

• **Easily trimmed**

ACCURATE   **LOW SHRINKAGE**   **FLEXIBLE**   **SIMULATES GUM TISSUE**

#4220002 (0.5kg bottle)

Property	Method	Result*
Tensile Strength	ASTM D638-14	2 MPa
Tensile Young's Modulus	ASTM D638-14	4.6 MPa
Elongation at Break	ASTM D638-14	41%

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

#4200000 (0.5kg bottle)
#4220000 (1kg bottle)

Property	Method	Result*
Flexural Strength	ASTM D790-17	15 MPa
Flexural Modulus	ASTM D790-17	340 MPa
Tensile Strength	ASTM D638-14	9.1 MPa
Tensile Young's Modulus	ASTM D638-14	220 MPa
Elongation at Break	ASTM D638-14	16%
CTE 0-150˚C (32-302˚F)	ASTM E831	168 x 10-6 µm/(m·°C)
CTE 150-250˚C (302-482˚F)	ASTM E831	64 x 10-6 µm/(m·°C)
CTE >250˚C (>482˚F)	ASTM E831	<0µm/(m·°C)
Shrinkage	ASTM D792	<2%
Burnout		<0.05%

*These data are typical values and were determined through testing on 3D printers which are validated for use with KeyPrint products.

LABORATORY
KeyCast®

Our low shrinkage formula controls thermal expansion to yield porous-free and accurate castings.

KeyCast is compatible with rapid burnout and gradual temperature ramp workflows, with no residual ash. Designed for use with chrome, cobalt, gold, and silver.

ACCURATE   **LOW SHRINKAGE**   **ASH-FREE BURNOUT**

Accessories

KeyPolish™ Kit	#1009420	
Mini Scotch Brite™	#1670092	
400 Grit Blue Disc	#1670099	
Coarse Grit Pumice*	#1700010	
Muslin Buffs	#1180190 for 5" x 45 #1180170 for 4" x 42	
Tripoli Polishing Compound	#1660030	
Beige Polishing Paste (100g)	#1670175	
High-Shine Cotton Buff	#1670140 or #1670510	
High-Shine Polistar Pink (150g)	#1670546	

*Sold separately from kit

Finishing & Polishing Materials

Everything you need for a high shine finish!

View KeySplint Finishing & Polishing

View KeyGuard finishing & polishing

KeyDenture Base Finishing & Polishing

Before Polishing   **After Polishing**

KeyPrint Compatible Program

Keystone provides high-quality materials, workflow efficiencies, and a commitment to open partnerships. We are committed to expanding our KeyPrint Compatible Portfolio, providing an unmatched selection of printers and curing units. All of our resins are compatible across 385–405nm DLP, LCD, and MSLA printers. Visit Keyprint.com for a list of validated workflows.

View our latest printer validations

ASIGA

rapidshape

ANYCUBIC

phrozen

stratasys

RAYSHAPE®

MIICRAFT

ELEGOO

Photocentric

Structo
Empowering Dental with 3D

zortrax

Carbon®

SprintRay

Desktop Health™

nexa3D

B9Creations

EPAX 3D

FLASHFORGE®
3D PRINTER

PRUSA RESEARCH

Roland®

UNIZ

ZY LO

HeyGears

ACKURETTA

LuxCreo
Digital 3D Production

SHINING 3D®

DEKEMA

MICROLAY
SLA SYSTEMS

ivoclar

PLANMECA

sisma

W2P