keyprint®

by keystone industries





1-800-496-9500 www.zahndental.com



What Dental Professionals Think of KeyPrint®

"Keystones 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

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Our KeyPrint Journey

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. Keystone has combined its unique blend of dental and photopolymer expertise to deliver the highest quality 3D printing resins to the dental market.

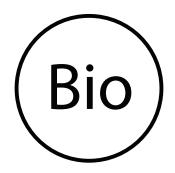
Entirely designed and produced in the USA, the full KeyPrint line is available throughout North America, Europe, and other global territories. KeyPrint resins are compatible with DLP, LED and LCD printers (wavelengths of 385–405 nm). Keystone is profiling 3D printers on an ongoing basis to ensure our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

Prioritizing patient safety, KeyPrint resins are subjected to a battery of biocompatibility tests in accordance with global regulatory standards. Each biocompatible print complies with international standards to ensure efficacy and effectiveness for the patient. KeyPrint's robust formulations guarantee a 3-year shelf life, along with color stability.

Keystone Industries, in collaboration with Henkel Corp., will continue to develop hi-tech 3D solutions for the dental industry.







SAFE AND EFFECTIVE

Biocompatible Medical Device Resins



FDA 510K CLEARED | CE MARKED (CLASS IIa) | HEALTH CANADA LICENSED AVAILABLE IN THE USA, CANADA, EU, AUS AND OTHER GLOBAL TERRITORIES

"I honestly believe this will change printed splints forever. It has unbelievable fracture resistance and mind blowing elastic memory." — JAY PATRICK, DENTAL DEVICES BY JASON



Utilizing unique technologies, Keystone Industries has developed a one-of-a-kind 3D printing resin for the fabrication of flexible, durable dental splints and nightguards. This DLP-optimized resin is an exceptional printing material that combines the strength needed to protect teeth against disorders like bruxism, with added flexibility for better patient comfort.



VIEW OUR KEYSPLINT **SOFT VIDEO!**

(242-1125)... 0.5kg/Bt (137-2758)..... 1kg/Bt

*Currently available from multiple dealers. Please contact us!



BIOCOMPATIBLE





FLEXIBLE





EASY TO POLISH

EASILY CLEANED

KeySplint Soft®



Revolutionizing Night Guard and Splint Technology



FEATURES

- STRONG & FLEXIBLE; NOT BRITTLE
- BIOCOMPATIBLE MEDICAL DEVICE
- TRANSLUCENT
- UNIQUE TECHNOLOGY
- BPA, MMA & PHTHALATE FREE

PROPERTY	PROCEDURE	KEYSPLINT SOFT
Ultimate Flexural Strength	ISO 20795-2	2.6–4.4 MPa
Flexural Modulus	ASTM D790	1356
Tensile Strength	ASTM D638	52
Young's Modulus Tensile	ASTM D638	1790
Water Sorption	ISO 20795-2	< 18 ug/mm3
Elongation at Break	ASTM D638	110%
Biocompatibility	ISO 10993-1 and USP Class VI	Pass



KeySplint Soft[™] Clear for Carbon[®] Synergy in 3D Printing



- Accurate
- Biocompatible
- Flexible yet strong
- Transparent
- Stain-resistant

PROPERTY	PROCEDURE	KEYSPLINT SOFT
Flexural Strength	ASTM D790	47
Flexural Modulus	ASTM D790	1356
Tensile Strength	ASTM D638	52
Young's Modulus Tensile	ASTM D638	1790
Water Sorption	ISO 20795-2	<18 μg/mm ³
Biocompatibility	ISO 10993-1	Pass

and USP Class VI

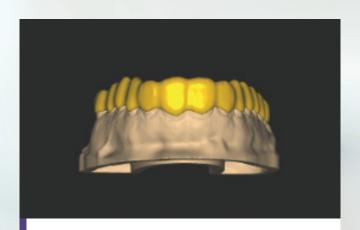


(242-1086)..... 1kg/Bt





Easily Cleaned by the patient.





FDA 510K CLEARED | CE MARKED (CLASS IIa) | HEALTH CANADA LICENSED AVAILABLE IN THE USA, CANADA, EU, AUS AND OTHER GLOBAL TERRITORIES

"The KeySplint Hard material exhibited excellent wear resistance—equal to the lab processed Lucitone 199. Further, the wear pattern suggests excellent wear resistance without tearing or cracking, suggesting excellent resistance to fatigue failure." — DR. MARK A. LATTA, DMD, MS



KeySplint Hard®



The newest member of the KeySplint family, KeySplint Hard is designed for rigid dental splints. KeySplint Hard provides therapy for bruxism and cases where tooth immobilization is needed.



FEATURES

- BIOCOMPATIBLE MEDICAL DEVICE
- UNITED STATES FDA 510(K) CLEARED
- HEALTH CANADA LICENSED
- CE MARKED (CLASS IIA)
- HARD FOR RIGID SPLINTS
- BPA, MMA & PHTHALATE FREE

PROPERTY	PROCEDURE	KEYSPLINT HARD
Flexural Strength (MPa)	ISO 20795-2	60-65 MPa
Flexural Modulus (MPa)	ISO 20795-2	1510-1600 MPa
Water Sorption	ISO 20795-2	18 μg/mm³
Elongation at Break	ASTM D638	9%
Biocompatibility	ISO 10993-1	Pass

Class I





(242-1165)... 0.5kg/Bt (242-1161)..... 1kg/Bt





(242-1166)... 0.5kg/Bt (242-1162)..... 1kg/Bt



(242-1167)... 0.5kg/Bt (242-1163)..... 1kg/Bt





BIOCOMPATIBLE



COST EFFECTIVE



EXCEPTIONAL SURFACE

KeyDenture Try-In™

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, esthetics, and phonetics during try-in appointments.



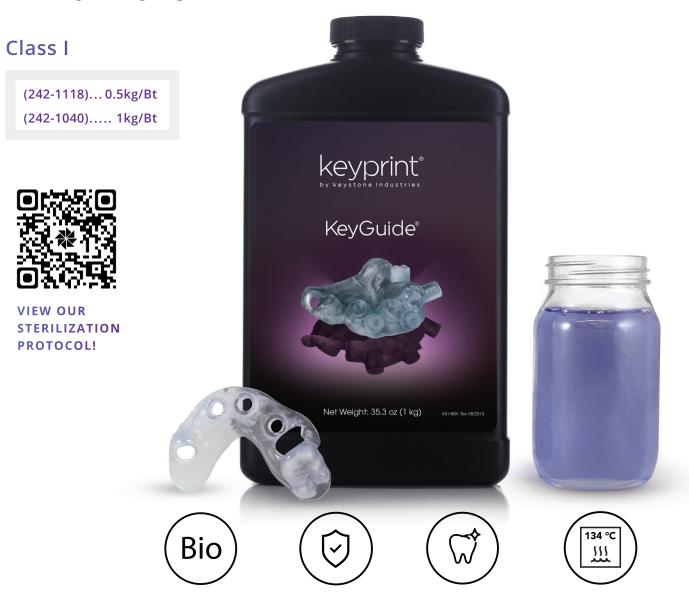
FEATURES

- 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

PROPERTY	PROCEDURE	KEYDENTURE TRY-IN
Flexural Strength (MPa)	ASTM D790	56-68 MPa
Flexural Modulus (MPa)	ASTM D790	1500-1750 MPa
Water Sorption	ISO 20795-1	9-13 μg/mm3
Elongation at Break	ASTM D638	30-43%
Biocompatibility	ISO 10993-10	Pass

AVAILABLE IN THE USA, CANADA, EU, AUS AND OTHER GLOBAL TERRITORIES

"When we tested this material in the beginning, I was surprised. It prints really well and the fit was very precise. It was really easy to use. We are definitely impressed with it. We will no longer be outsourcing our surgical guides." — **JESSICA BIRRELL, CDT**



STRONG

EASY TO POLISH

AUTOCLAVABLE

BIOCOMPATIBLE

KeyGuide®

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

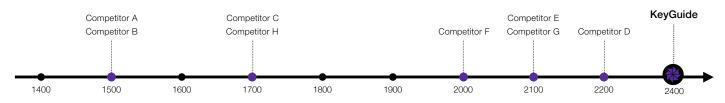


Photos courtesy of August De Oliveria, DDS.

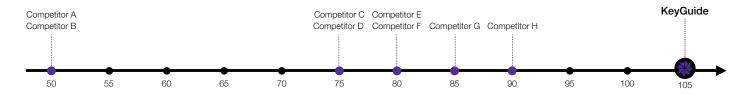
FEATURES

- STRONG
- BIOCOMPATIBLE MEDICAL DEVICE
- EASY TO POLISH
- AUTOCLAVABLE AND COLOR STABLE
- BPA, MMA & PHTHALATE FREE

FLEXURAL MODULUS (MPa)



FLEXURAL STRENGTH (MPa)



AVAILABLE IN THE USA, CANADA, EU, AUS AND OTHER GLOBAL TERRITORIES

Class I



KeyTray™

KeyTray is a strong, biocompatible (Class I) 3D printing resin designed to create customized, individual impression trays quickly and with precision. The material is strong and durable to 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.

FEATURES

- 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

PROPERTY	PROCEDURE	KEYTRAY	
Flexural Strength (MPa)	ASTM D790	84.7	
Flexural Modulus (MPa)	ASTM D790	1913	
Tensile Stength (MPa)	ASTM D638	62.1	
Tensile Young's Modulus (MPa)	ASTM D638	2056	
Elongation at Break (%)	ASTMD638	26.4	
Shore D Hardness		86.5 D	

PAIRS PERFECTLY WITH:







Consistency VPS

Bosworth Rimseal™ Dispensing Gun

Check out our full line of impression materials at dental.keystoneindustries.com.

AVAILABLE IN THE USA, CANADA, EU, AUS AND OTHER GLOBAL TERRITORIES

"You can print these things all day long and not smell anything, the odorless feature is great. This is also the easiest to peel away of any of the different resins that we've ever tried for the indirect bond." — BRANDON OWEN DDS, MS

Class I

(242-1111)... 0.5kg/Bt (242-1105)..... 1kg/Bt





BIOCOMPATIBLE



PRECISE

ODORLESS

zahndental.com/keyprint

KeyOrtho IBT™

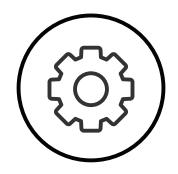
KeyOrtho IBT is ideal for printing orthodontic transfer trays for positioning brackets. KeyOrtho IBT's translucency allows for precise positioning before and during bracket placement. Its high tensile strength allows for easy application of brackets in a single step, reducing chair time to minutes. It is flexible for easy removal, and works with all general bracket systems. It is also odorless and tasteless for patient comfort.



FEATURES

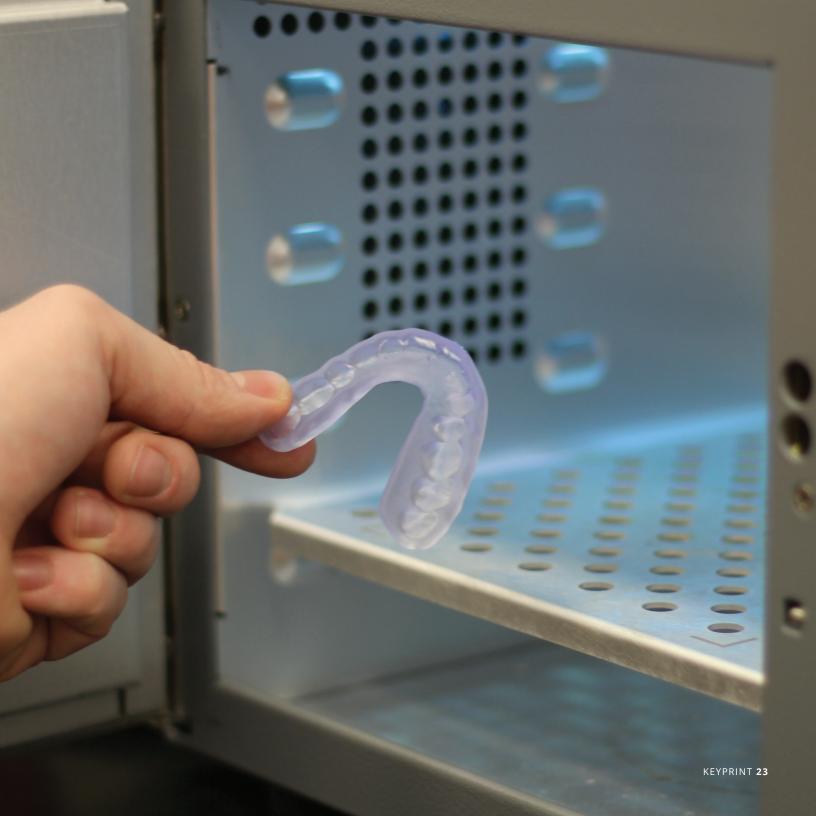
- BIOCOMPATIBLE MEDICAL DEVICE
- ODORLESS & TASTELESS
- ADHESIVES RELEASE EASILY FROM TRAY
- TRANSLUCENT FOR EASY POSITIONING
- PRECISE
- FLEXIBLE
- BPA, MMA & PHTHALATE FREE

PROPERTY	PROCEDURE	KEYORTHO IBT
Tensile Strength (MPa)	ASTM D638	8.0 - 10.5
Tensile Young's Modulus (MPa)	ASTM D638	15.5 - 31.0
Elongation at Break (%)	ASTM D638	> 130%
Biocompatibility	ISO 10993-5	Pass
Viscosity @ 25°C (cP)	ASTM D7867	<1000
Orthodontic Adhesive Release		Pass



KEYPRINT WORKFLOW VALIDATION

Consumer Confidence in Safety & Efficacy







OUR OPEN SOURCE PHILOSOPHY

Keystone is always profiling new printers to ensure that KeyPrint resins work reliably in as many open-source printers as possible. We can work with you to optimize your printer settings to work with KeyPrint, but Keystone does not guarantee high-quality print results from non-validated printers.

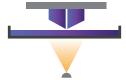
KeyPrint resins are designed to work in 385-405 nm DLP, LED and LCD printers to best yield detailed parts faster and with superior accuracy. For customers looking to purchase resins designed for SLA and other printer technologies, Keystone is willing and able to discuss developing specialized resins for your system.

DESIGN

We work with all open source dental design software:

- **⊘** 3Shape
- **Dental Wings**





PRINTER VALIDATIONS

Choosing one of Keystone's validated partner printers guarantees:

- Printing settings tested and approved by Keystone's Technical Team
- Optimal printing accuracy for all KeyPrint Resins
- Passing biocompatibility checks on medical device resins
- Technical support from both the Printer Partner and Keystone



VIEW KEYSTONE'S PRINTER VALIDATIONS









POST WASH

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

Keystone's Recommended Post wash includes the following:

- Optimize™ IPA 97%+ purity, following the 3-bath protocol listed in the material's Instructions For Use (IFU)
- Submerged agitation is necessary to remove all residual resin. A soft brush is recommended to help with this process
- ⊗ 3D Printed parts should be submerged for no more than 5 minutes total in the solvent
- Allow the KeyPrint parts to dry (covered) for at least 30 minutes before curing

POST CURE

Similar to green-state zirconia, 3D printed parts require additional treatment after printing to ensure they have:

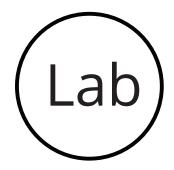
- Biocompabtility for intraoral use
- **⊘** Color stability
- **⊘** Ideal physical properties

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.

NOTE: Nitrogen is not needed



VIEW KEYSTONE'S VALIDATED POST CURE UNITS



ACCURATE, RELIABLE, AND CONSISTENT

Laboratory Resins



IVORY

(242-1116)... 0.5kg/Bt (242-1143)..... 1kg/Bt

LIGHT GREY

(242-1117)... 0.5kg/Bt (242-1144)..... 1kg/Bt



VIEW OUR KEYMODEL ULTRA VIDEO!





FLAWLESS SURFACE DETAIL



keyprint*

KeyModel Ultra™

ULTRA-FAST TECHNOLOGY



THERMOFORMING RELEASE AGENT

KeyModel Ultra™

KeyModel Ultra is a material designed for 3D printing of dental and orthodontic models.



IDEAL FOR THERMOFORMING ALIGNERS

FEATURES

- HIGH-SPEED PRINT FORMULATION
- INTEGRATED RELEASE AGENT FOR EASY THERMOFORM SEPARATION
- TWO COLORS OPTIMIZED FOR SHARP DETAIL
- SMOOTH SURFACE FINISH
- STABILITY IN PRODUCTION WORKFLOW
- INTEGRATED WITH A WIDE RANGE OF 3D PRINTERS

PROPERTY	PROCEDURE	KEYMODEL ULTRA
Maximum Tensile Strength (MPa)	ASTM D638	50
Tensile Modulus (MPa)	ASTM D638	1700
Elongation at Break (%)	ASTM D638	51
Maximum Flexural Strength	ASTM D790	70
Flexural Modulus	ASTM D790	1940
Viscosity @ 25°C (cP)	ASTM D7867	500-600

(242-1178)... 0.5kg/Bt (242-1020)..... 1kg/Bt



LOW SHRINKAGE

EASY VISIBILITY

ACCURATE

zahndental.com/keyprint

KeyModel®

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.

FEATURES

- CARVABLE WITHOUT CHIPPING
- COLORED FOR EASY VISIBILITY OF MARGINS AND TOOTH ANATOMY

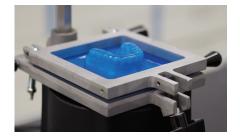


OPTIMAL SCANNING

Models have smooth, hard surfaces for optimal scanning



ACCURATE & PRECISE
Highly accurate detail
in printing



PAIRS WITH: PRO-FORM®
Check out our line of Pro-form
thermoforming materials at
dental.keystoneindustries.com

PROPERTY	PROCEDURE	KEYMODEL
Flexural Strength (MPa)	ASTM D790	79.6
Flexural Modulus (MPa)	ASTM D790	2293
Tensile Strength	ASTM D638	51
Young's Modulus (MPa)	ASTM D638	1850
Elongation at Break (%)	ASTM D638	5.60%
Shore Hardness	Scale D	86

(242-1180)... 0.5kg/Bt (242-1021)..... 1kg/Bt



KeyOrthoModel®

KeyOrthoModel is designed for high-speed and accurate prints. Perfect for thermoforming aligners and orthodontic devices.



FEATURES

- OPTIMIZED TO PRINT

 100 AND 200µm LAYER

 THICKNESS FOR HIGH THROUGHPUT
- PRINTS IN 1/2 THE TIME OF KEYMODEL AT SAME LAYER THICKNESS
- PAIRS WITH PRO-FORM®
- PERFECT FOR MAKING ALIGNERS
- WITHSTANDS
 THERMOFORMING TEMPERATURES

PROPERTY	PROCEDURE	KEYORTHOMODEL
Flexural Strength (MPa)	ASTM D790	79.6
Flexural Modulus (MPa)	ASTM D790	2293
Tensile Strength	ASTM D638	51
Young's Modulus (MPa)	ASTM D638	1850
Elongation at Break (%)	ASTM D638	5.60%
Shore Hardness	Scale D	86

(242-1023)... 0.5kg/Bt



$KeyMask^{\mathbb{R}}$

Flexible yet firm gingival mask that simulates the look and feel of gum tissue. Incorporate KeyMask into your digital restoration planning.



FLEXIBLE YET FIRM
This gingival mask simulates the look and feel of gum tissue



EASILY TRIMMED

Creates a proper emergence profile for pontic shape

PROPERTY	PROCEDURE	KEYMASK
Tensile Strength (MPa)	ASTM D638	2
Young's Modulus (MPa)	ASTM D638	4.6
Elongation at Break (%)	ASTM D638	41%

"KeyCast prints well, with excellent detail needed for RPDs. It burnouts thoroughly and leaves no discernible residual ash. Once properly post-cured, it should slide into your existing equipment workflow for burnout and casting." — BY KEN KINCAID CDT,TE



LOW SHRINKAGE

ASH-FREE BURNOUT

ACCURATE

KeyCast®

KeyCast's 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. It is used with chrome, cobalt, gold, and silver.

PROPERTY	PROCEDURE	KEYCAST
Flexural Strength (MPa)	ASTM D790	15
Flexural Modulus (MPa)	ASTM D790	340
Tensile Strength (MPa)	ASTM D638	9.1
Young's Modulus (MPa)	ASTM D638	220
Elongation at Break (%)	ASTM D638	16%
CTE 0-150°C (32-302°F)	ASTM E831	168 x 10-6m/(m.°C)
CTE 150-250°C (302-482°F)	ASTM E831	64 x 10-6m/(m.°C)
CTE >250°C (>482°F)	ASTM E831	<0m/(m.°C)
Shrinkage	ASTM D792	<2%
Burnout		<0.05%

PAIRS PERFECTLY WITH:











Casting Rings Sprue Wax Microtorch

Check out our full line of dental casting rings, waxes, mixing bowls and other accessories at dental.keystoneindustries.com.

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Accessories











DESCRIPTION	COMPONENTS	ITEM NUMBER
KeyVest Universal Expansion Liquid	1 Liter Bottle	242-1174
KeyVest Universal Expansion CASE	5 x 1 Liter Bottle	242-1175
KeyVest Precision All in One Investment Powder	50 x 100g Bag	242-1176
KeyVest Precision All in One KIT	42 x 100g Bag & 1 Liter Bottle	242-1110
KeyVest Digital Precision All in One Kit	42 x 100g Bag & 1 Liter Bottle with 1Kg KeyCast®	242-1182

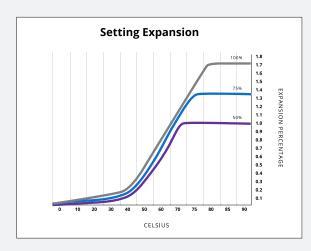
KeyVest™

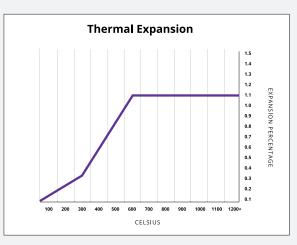
KeyVest is a universal dental investment that is compatible with all dental alloys and pressable ceramic systems. Its fine, phosphate-bonded formula gives you the accuracy and consistency you need for your lab to keep up with modern standards.

KeyVest's smooth consistency and long working time allows for multiple rings to be poured at once, without forming bubbles. You'll never have to worry about time constraints, since rings can be placed in a furnace any time after bench-set without fear of cracking.

FEATURES

- COMPATIBLE WITH ALL PRESSABLE CERAMIC SYSTEMS AND DENTAL ALLOYS
- OPTIMAL FOR 3D PRINTING MATERIALS, LIKE KEYCAST
- EASY INVESTING WITH MINIMAL VIBRATION
- DEVESTS WITH MINIMAL BLASTING
- LONG WORKING TIME





Physical Properties

- Liquid Powder
 Ratio: 22-24ml/100g
- Setting Expansion: 1.7%
- Working Time: ca. 6 minutes
- Thermal Expansion: 1.1%

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Finishing and Polishing Materials

ITEM NAME ITEM NUMBER PHOTO

KeyPolish [™] Kit	272-0978	keyprint KeyPolish Polity Front Ist St moon
Mini Scotch Brite™	242-7272	
400 Grit Blue Disc	242-3774	
Course Grit Pumice*	242-0748	LATERATURE AND A STATE AND A S
Muslin Buffs	242-3737 for 5" X 45 242-0194 for 4" X 42	
Tripoli Polishing Compound	242-0917	
Beige Polishing Paste (100g)	242-1173	L. S. HE
High-Shine Cotton Buff	242-8288 or 242-0081	
High-Shine Polistar Pink (150g)	242-0870	

^{*} sold separately from kit



VIEW KEYSPLINT FINISHING AND POLISHING RECOMMENDATIONS



VIEW OUR POLISHING VIDEO



KeyPrint® Kit Accessories Included



DENTURE 3D BASKETS



MICROFIBER CLOTH



PROFESSIONAL SPRUE CUTTER



1 1/2" STIFF PUTTY KNIFE



1 1/2" PRO CHISEL



WASH BOTTLE 250 ML



SMALL BOWL SCRAPER



TEKTON MALLET 8 OZ.



1 1/2" BRISTLE BRUSH



2 1/2" BRISTLE BRUSH



SCRATCH .016 NYLON BRUSH



6" POINT CURVED TWEEZERS



ALL PURPOSE UTILITY SCISSORS

242-1089 Accessories Kit....Ea.



KEYPRINT COMPATIBLE

Keystone is committed to expanding our KeyPrint Compatible portfolio, providing an unmatched selection of printers and curing units to select from. Here's what it means to be KeyPrint Compatible:

- 11 UNIQUE RESINS
- 40 VALIDATED PRINTERS
- 18 VALIDATED CURING UNITS
- 2,000+ PRINT WORKFLOWS VERIFIED
- 240+ PASSING BIOCOMPATIBILITY TESTS,
 INCLUDING 50 FOR THE KEYSPLINT FAMILY

46 KEYPRINT zahndental.com/keyprint

Keystone has validated the following workflows as KeyPrint Compatible with select resins. All of our resins are compatible across DLP / LCD / LED from 385–405nm.

Carbon®



NeX33D

rapidshape



Desktop Health





























VIEW OUR LATEST
PRINTER VALIDATIONS

zahndental.com/keyprint KEYPRINT 47

PRECISION 3D RESINS

HEADQUARTERS

480 South Democrat Road, Gibbstown, NJ 08027 USA 1.800.333.3131

INTERNATIONAL

Stockholzstr. 11 D-78224 Singen, Germany +49 77 31 91 21 0 sales@keystoneind.com

KEYPRINT.KEYSTONEINDUSTRIES.COM







JOIN OUR
KEYPRINT
COMMUNITY ON
FACEBOOK!

FDA registered and ISO 13485 certified For more information, please call 1.800.333.3131. To view a full list of our validated printers and post-cure units, please visit: keyprint.keystoneindustries.com/printer-validation.



