

Graphy

3D Print the World with Graphy's Solutions

Graphy

ENG

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

HISTORY

ABOUT GRAPHY INC

2017

- 01. 'Graphy Inc.' founded.
- 06. Established the Graphy Corporate Research Institute.
- 09. Obtained Venture Business Certification.
- 11. Completed factory registration.

2018

- 01. Patent registered for a Digital Cast.
- 04. Received 'T-5 Excellent Technology Evaluation Company Certification' for cast and splint manufacturing using 3D data.
- 09. Received 'T-5 Excellent Technology Capability Certification' for 3D cast production solution technology.
Awarded the 'Grand Prize at the K-Startup Challenge Innovation Startup League Preliminary Round'.

2019

- 02. **Signed a joint development agreement with JW Holdings for healthcare advanced materials.**
- 04. Awarded 'T-4 Excellent Technology Capability Certification' for development of Tera Harz 3D printing materials.
- 05. Awarded 'T-4 Excellent Technology Evaluation Company Certification' for cast and splint manufacturing technology using 3D data.
- 12. **UV post-curing unit selected as an Outstanding Invention by the Korea Invention Promotion Association.**
Received the Minister of SMEs and Startups Award and a commendation from the National IT Industry Promotion Agency (NIPA). Achieved ISO 13485 Quality Management System Certification.

2020

- 01. Patent registered for a photocurable polymer composition for 3D printers.
- 02. Developed the world's first dental resin for crowns designed for 3D printing.
- 04. Orthodontic resin obtained CE Class II and FDA certification.
- 05. Selected as a First Penguin Startup by the Korea Credit Guarantee Fund.
- 07. Established proprietary distributors in more than 10 countries.
- 11. Selected as one of the Top 100 Materials, Parts & Equipment Startups. Established the Graphy Ulsan Corporate Research Institute.
- 12. THD received MFDS Class II Medical Device Manufacturing Certification.

2021

- 02. Established subsidiary 'Digital Graphy'.
- 06. Certified as an INNO-BIZ (Innovative SME). Selected as a Promising Export SME.
- 07. TC-80DP crown resin received FDA 510(k) clearance.
- 09. Signed a supply agreement with Henry Schein, the world's leading dental distributor.
- 11. Received the Excellence Award at the 3D Printing Competition, presented by the President of NIPA.
- 12. **Orthodontic 3D printing resin containing UV-curable polyurethane acrylate received 'NEP (New Excellent Product) Certification'.**

2022

- 02. **TFDH (Flexible Denture) received MFDS Medical Device Certification.**
U.S. patent granted for "Photocurable Composition for 3D Printing for Manufacturing Clear Orthodontic Appliances."
- 08. TFDH (Flexible Denture) received FDA 510(k) clearance.

- 11. **Tera Harz Clear orthodontic resin received FDA 510(k) clearance. Orthodontic resin selected as a Next Generation World-Class Product 2022.**
Received the Minister of Science and ICT Award.

2023

- 03. Hosted the Graphy Shape Memory Aligner Symposium.
- 04. Participated in AAO and signed multiple global supply agreements. Selected for a government R&D project valued at KRW 5.5 billion.
- 06. **Received 'TI-2 Excellent Technology Growth Company Certification' from Korea Ratings Data for Shape Memory Aligner development and manufacturing technology using UV-curable 3D printing resin.**
- 11. BR-23 resin for permanent and temporary restorations (crowns and bridges) received FDA 510(k) Class II clearance.
Awarded the USD 3 Million Export Tower at Korea Trade Day
- 12. Received the Seoul Mayor's Award for Export Excellence at the Hi Seoul Enterprise Festival.
Received the Prime Minister's Commendation for commercialization of new industrial technologies.
Received the Minister of Trade, Industry and Energy Award for contributions to the additive manufacturing industry.
Received the Future Creative Enterprise Management Award and the Minister of Employment and Labor Award.
Named No. 1 Outstanding Brand of the Year

2024

- 01. Tera Harz Clear (TC-85DAC) received PMDA approval in Japan.
- 02. **Dental 3D printing resin for orthodontic appliances received the IR52 Jang Young-sil Award.**
- 03. Selected for the 2024 Export Voucher Program by the Ministry of Trade, Industry and Energy.
Tera Harz Clear (TA-28, TR-07) received FDA 510(k) clearance.
- 04. **Designated as a Global Hidden Champion 1000+ Company.**
- 05. Selected for the 2024 AI Voucher Support Program.
Tera Harz Clear (TA-28, TR-07) received MFDS Manufacturing Certification.
- 07. Tera Harz Clear (TC-85DAC) and Tera Harz (TC-80DP, BR-23) received TGA approval in Australia.
- 08. Tera Harz Clear (TC-85DAC) and Tera Harz (TC-80DP, BR-23) received TFDA approval in Taiwan.
Selected as a Seoul Hidden Champion Company 2024.
Achieved Grade A Technology Evaluation from both Korea Exchange-designated evaluation agencies.
- 09. Tera Harz Clear (TA-28, TR-07) received PMDA approval in Japan.
- 12. Tera Harz Denture (TFDH) received TFDA approval in Taiwan.
CEO Un-Seop Sim received a commendation from the Korea Technology Finance Corporation (KOTEC).
Awarded the USD 5 Million Export Tower.

2025

- 01. Tera Harz Clear received Health Canada approval.
- 03. Tera Harz Clear (TA-28) received TFDA approval in Taiwan.
- 05. Tera Harz Denture (TFDH) received Health Canada approval.
CEO Un-Seop Sim received the Industrial Service Medal.
- 08. **Listed on the KOSDAQ.**
- 09. Established Graphy USA, the company's U.S. subsidiary.
- 10. Received the Minister's Award from the Ministry of Science and ICT for Contributions to the Development of the 3D Printing Industry in 2025
- 11. **Received the Minister of Science and ICT Commendation at the 2025 3D Printing Industry Development Awards**
- 12. **Awarded the USD 7 Million Export Tower.**

2026

- 04. Selected as a Global Hidden Champion 1000+ "Champion+" Company, the program's highest designation.

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The World's First and Only 3D-Printed
Shape Memory Aligner®

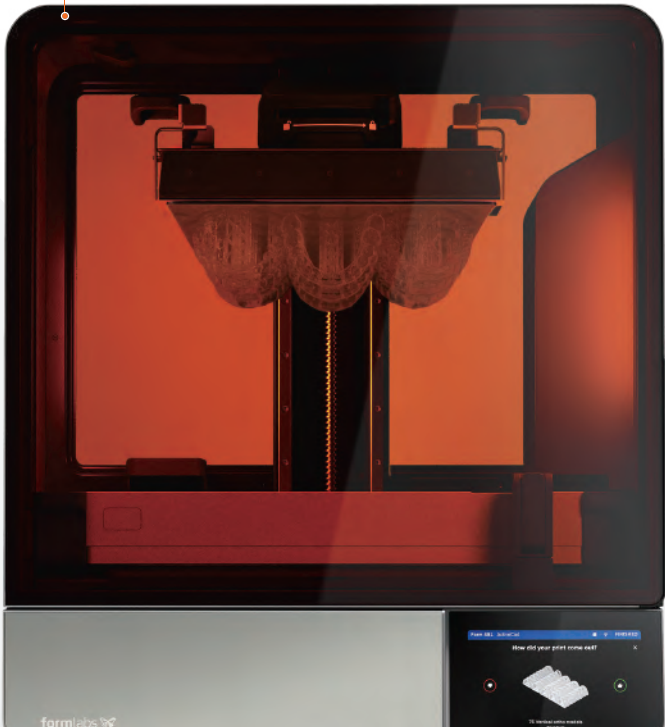
Graphy Inc. is a leading developer and manufacturer of advanced photopolymer resins and innovative materials for 3D printing, backed by a broad portfolio of domestic and international patents. The company supplies specialized materials for a wide range of industries world-wide. In the dental sector, Graphy has earned global recognition through clinically validated, high-performance materials that have demonstrated outstanding reliability and effectiveness.

Graphy pioneered the world's first Shape Memory Aligner® material, enabling the direct fabrication of clear aligners using 3D printing technology. The company has also independently developed industry-leading permanent restorative resins for crowns and bridges, including TC-80DP and BR-23, further demonstrating its technological leadership.

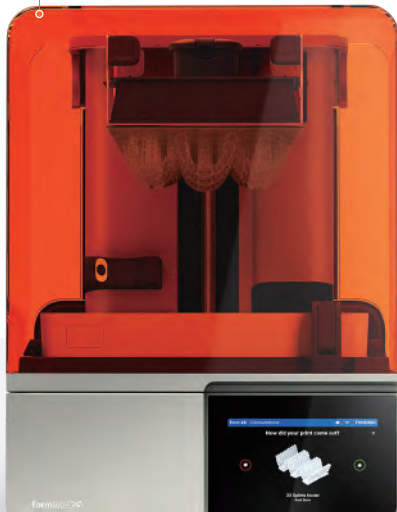
Graphy's advanced materials are biocompatible, non-toxic, low-irritation, and designed to deliver exceptional strength, heat resistance, and precision, ensuring both safety and superior clinical performance. This expertise streamlines and shortens dental manufacturing workflows by overcoming complex preparation and post-processing challenges.

As the world's first company to develop a 3D-printable Shape Memory Aligner material, Graphy offers a comprehensive portfolio of dental photopolymer resins, including materials for flexible dentures, permanent restorations, denture bases, dental models, and surgical guides. Beyond materials, Graphy provides a complete digital dentistry ecosystem through an integrated portfolio of software and hardware solutions, delivering a true end-to-end workflow.

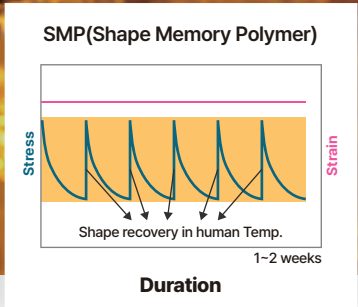
| **Formlabs Form 4BL**



| **Formlabs Form 4B**



Shape Memory Aligner®
(Tera Harz Clear)

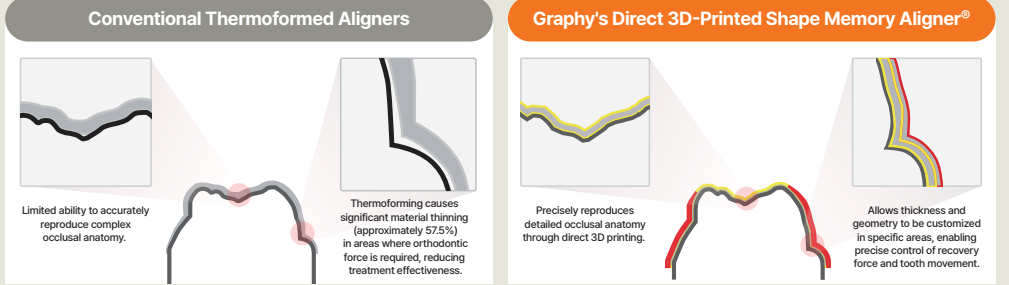


This innovative Graphy's world-first directly 3D printable material for aligners breaks the preexisting concept of clear aligners and offers a significant advancement in digital dentistry.

Proven clinical effectiveness in the thesis

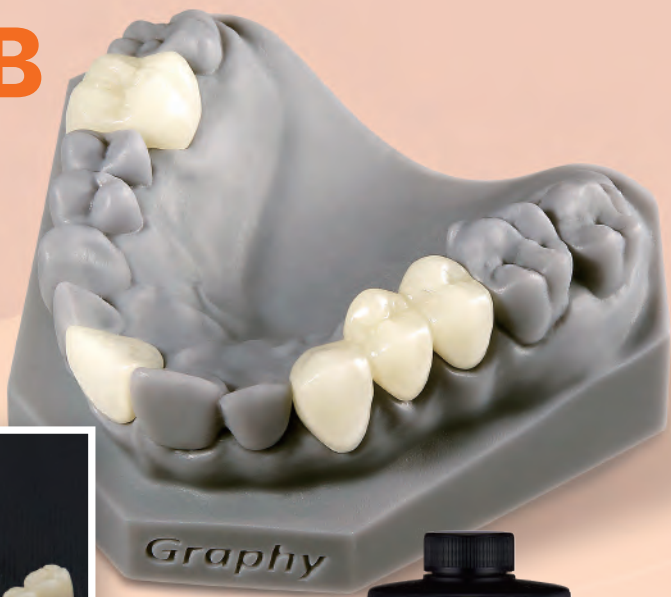
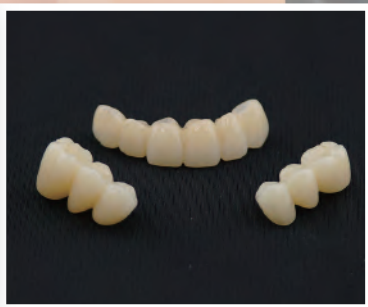
The study demonstrated that the mechanical properties of Shape Memory Aligner® fabricated using Tera Harz Clear remained stable, with no significant changes observed even after one week of intraoral wear.

Reference: Panayi IN, et al. European Journal of Orthodontics, 2021, 1-5. / DOI: 10.1093/ejo/cjab022 / University of Zurich



Properties	Unit	TC-85	TA-28	TR-07	Remark
Color	-	Clear	Clear	Clear	
Density	g/cm ³ @ 25°C	1.061 ± 0.02	1.091 ± 0.02	1.064 ± 0.02	
Viscosity	cps @ 25°C	800 ± 200	700 ± 200	800 ± 200	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	≥ 98	≥ 98	
Shore Hardness (D)	-	≥ 85	≥ 85	≥ 85	
Flexural Strength	MPa	≥ 50	≥ 70	≥ 60	ISO 20795-2
Flexural Modulus	MPa	≥ 1500	≥ 2000	≥ 1600	ISO 20795-2
Water Solubility	µg/mm ³	2.0	≤ 0.5	1.0	ISO 20795-2

Permanent C&B (TC-80DP)



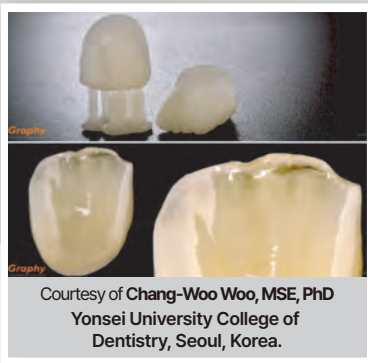
Key Benefits

- World-class flexural strength (ISO 10477)
- Certified by MFDS Class II and CE Class IIa
- Suitable for both temporary and permanent restorations
- Ideal for single crowns, bridges, inlays, onlays, and veneers
- One versatile material for multiple restorative applications
- Excellent mechanical properties, precision, and esthetics

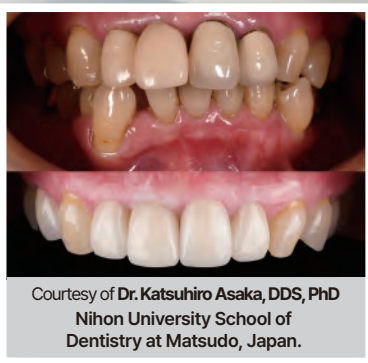
Properties	Unit	TC-80DP	Remark
Color	-	A1, A2, A3, B1, OM1	
Density	g/cm ³ @ 25°C	1.076 ± 0.02	
Viscosity	cps @ 25°C	2000 ± 300	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 90	
Bi-axial Flexural Strength	MPa	≥ 350	ISO 6872
Flexural Strength	MPa	≥ 160 (ISO Standard), 220 (Graphy Standard)	ISO 10477
Flexural Modulus	MPa	≥ 3500 (ISO Standard), 4500 (Graphy Standard)	ISO 10477
Elongation	%	≤ 5	
Water Sorption	µg/mm ³	18.9	ISO 10477
Water Solubility	µg/mm ³	0.5	ISO 10477

Permanent C&B (BR-23)

Opaque, A/B/C/D shade



Courtesy of Chang-Woo Woo, MSE, PhD
Yonsei University College of Dentistry, Seoul, Korea.



Courtesy of Dr. Katsuhiko Asaka, DDS, PhD
Nihon University School of Dentistry at Matsudo, Japan.



Key Benefits

- Optimized for implant and natural tooth restorations
- Suitable for both temporary and permanent restorations
- Excellent flexural strength and wear resistance
- Low water absorption and low solubility for long-term stability
- Biocompatible and non-toxic
- High flexural and tensile strength
- Available in opaque shades A, B, C, and D
- One material for multiple restorative indications

Properties	Unit	BR-23	Remark
Color	-	A, B, C, D, OM	
Density	g/cm ³ @ 25°C	1.015 ± 0.02	
Viscosity	cps @ 25°C	1300 ± 300	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 85	
Flexural Strength	MPa	≥ 100	ISO 10477
Flexural Modulus	MPa	≥ 2500	ISO 10477
Elongation	%	≤ 15	
Water Sorption	µg/mm ³	10	ISO 10477
Water Solubility	µg/mm ³	0.2	ISO 10477

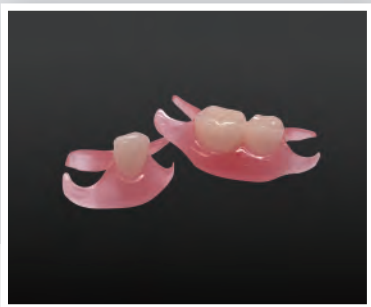
Denture Base (THD)



- Key Benefits**
- Designed for use with Graphy permanent restorative materials
 - Excellent strength and long-term stability
 - Natural-looking gingival aesthetics
 - Low water absorption for lasting performance
 - High patient satisfaction and clinical efficiency

Properties	Unit	THD	Remark
Color	-	Magenta / Clear	
Density	g/cm ³ @ 25°C	1.063 ± 0.02	
Viscosity	cps @ 25°C	1500 ± 300	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 85	
Flexural Strength	MPa	≥ 140 (ISO Standard), 190 (Graphy Standard)	ISO 20795-1
Flexural Modulus	MPa	≥ 3000 (ISO Standard), 3900 (Graphy Standard)	ISO 20795-1
Water Sorption	µg/mm ³	15.9	ISO 20795-1
Water Solubility	µg/mm ³	0.6	ISO 20795-1

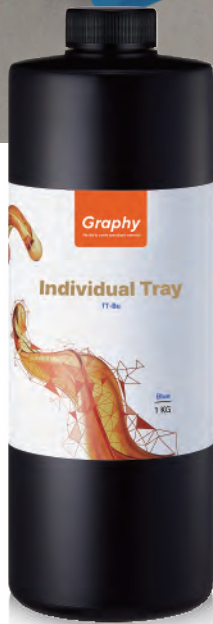
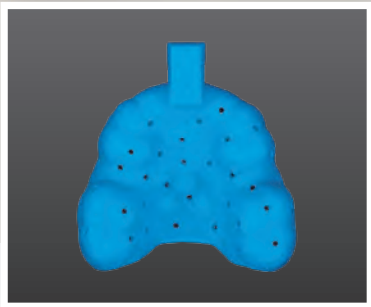
Flexible Denture (TFDH)



- Key Benefits**
- Optimized for removable partial dentures
 - Ideal elasticity for flexible denture clasps
 - Excellent retention with easy insertion and removal
 - Helps reinforce edentulous spaces and reduce tooth movement
 - Outstanding strength and stability when combined with Graphy permanent materials
 - Excellent aesthetics for enhanced patient satisfaction

Properties	Unit	TFDH	Remark
Color	-	Magenta	
Density	g/cm ³ @ 25°C	0.998 ± 0.02	
Viscosity	cps @ 25°C	700 ± 200	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 80	
Flexural Strength	MPa	≥ 110	ISO 20795-1
Flexural Modulus	MPa	≥ 2800	ISO 20795-1
Water Sorption	µg/mm ³	10.8	ISO 20795-1
Water Solubility	µg/mm ³	1.4	ISO 20795-1

Individual Tray (TT-Bu)



- Key Benefits**
- Optimized for custom impression trays
 - Suitable for implant, complete denture, and removable partial denture workflows
 - Precise patient-specific design using CAD software
 - Fast and accurate fabrication through 3D printing
 - Improved impression accuracy
 - Easy reproduction and modification
 - Reduced material waste and improved cost efficiency
 - Consistent quality compared with conventional manual fabrication
 - Enhanced clinical efficiency and patient satisfaction

Properties	Unit	TT-Bu	Remark
Color	-	Blue	
Density	g/cm ³ @ 25°C	1.04 ± 0.02	
Viscosity	cps @ 25°C	600 ± 100	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 80	
Flexural Strength	MPa	≥ 80	ISO 20795-1
Flexural Modulus	MPa	≥ 2000	ISO 20795-1
Water Sorption	µg/mm ³	13.7	ISO 20795-1
Water Solubility	µg/mm ³	1.6	ISO 20795-1

Surgical Guide (SG-100)



- Key Benefits**
- Designed for patient-specific surgical guides
 - CAD-based customized design for single-unit, bridge, and bar-supported implant cases
 - Precise drilling with accurate angulation and depth
 - Excellent drill stability without metal drill sleeves
 - Fully curable using a nitrogen-curing process
 - Heat Distortion Temperature (HDT) above 120°C (248°F)
 - Compatible with steam sterilization (autoclaving)
 - Adjustable transparency through post-processing

Properties	Unit	SG-100	Remark
Color	-	Clear	
Density	g/cm ³ @ 25°C	1.110 ± 0.02	
Viscosity	cps @ 25°C	600 ± 200	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (A)	-	≥ 90	
Flexural Strength	MPa	≥ 110	ISO-20795-1
Flexural Modulus	MPa	≥ 2500	ISO-20795-1
Tensile Strength	MPa	≥ 60	ASTM D638
Tensile Modulus	MPa	≥ 2500	ASTM D638
Elongation	%	≤ 10	ASTM D638
Impact Strength	J/m ²	≥ 3000	ASTM D256
Water Sorption	µg/mm ³	16.2	ISO-20795-1
Water Solubility	µg/mm ³	0.6	ISO-20795-1

Model (S-100M/S-200M)



Key Benefits

- Ideal for restorative and orthodontic master models
- Low-odor, skin-friendly formulation
- Excellent dimensional stability
- Low polymerization shrinkage for high dimensional accuracy
- Outstanding mechanical strength with reduced risk of fracture
- Rapid curing for faster printing and higher productivity
- Reliable, consistent results for digital dental workflows

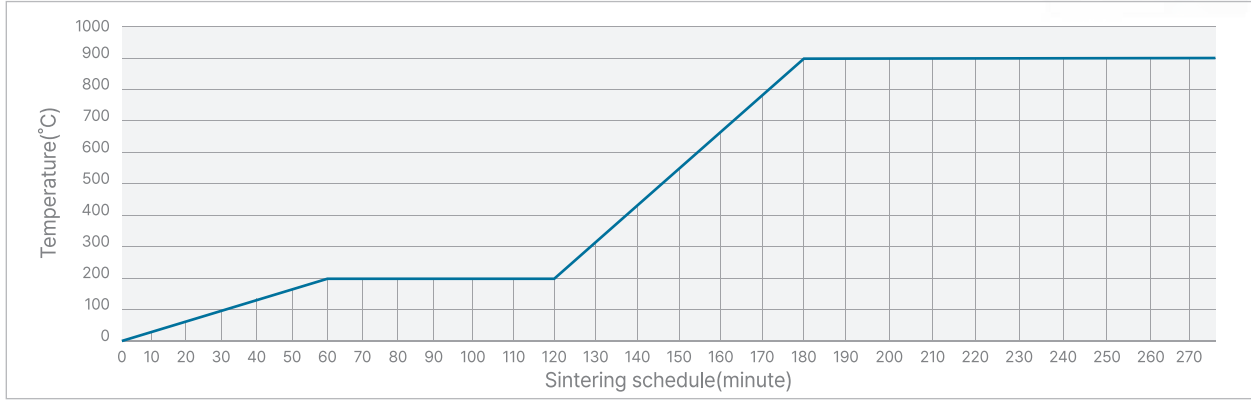
Properties	Unit	S-100M	S-200M	Remark
Color	-	Grey, Beige	Grey, Beige, Light Grey	
Density	g/cm ³ @ 25°C	1.120 ± 0.02	1.116 ± 0.02	
Viscosity	cps @ 25°C	600 ± 100	950 ± 100	BrookField
Solid Content	%@ 80°C x 1h	≥ 98	≥ 98	
Flexural Strength	MPa	≥ 110	≥ 130	ASTM D790
Flexural Modulus	MPa	≥ 2500	≥ 3500	ASTM D790
Elongation	%	≤ 10	≤ 10	ASTM D638

Castable (SC-130)



Key Benefits

- Low Shrinkage – Excellent dimensional accuracy and stability after post-processing
- Broad Investment Compatibility – Compatible with a wide variety of investment materials
- Crack-Free Investment – Minimizes investment cracking and expansion during burnout
- Clean Burnout – Burns out cleanly with virtually no ash or residue, producing precise castings with an excellent surface finish
- Low Viscosity – Supports fast printing and high-throughput production



Properties	Unit	SC-130	Remark
Color	-	Green	
Density	g/cm ³ @ 25°C	1.110 ± 0.02	
Viscosity	cps @ 25°C	100 ± 50	BrookField
Combustion Residue		≤ 0.1%	

Mouth Guard

(TeraFlex)



- Key Benefits**
- Dedicated resin for custom 3D-printed mouthguards
 - Outstanding mechanical properties and excellent biocompatibility
 - Superior fit and patient comfort through patient-specific design
 - Ideal for soft mouthguards and other flexible oral appliances
 - Reduced production time and manufacturing costs
 - Efficient digital workflow Mouthguard

Properties	Unit	TeraFlex (Medium)	Remark
Color	-	Clear, White, Red Blue, Black	
Density	g/cm ³ @ 25°C	1.039 ± 0.02	
Viscosity	cps @ 25°C	300 ± 200	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (A)	-	≥ 81	
Tensile Strength	MPa	≥ 13.9	ASTM D638
Elongation	%	≤ 113.5	ASTM D638

Sports Guard

(TeraFlex)

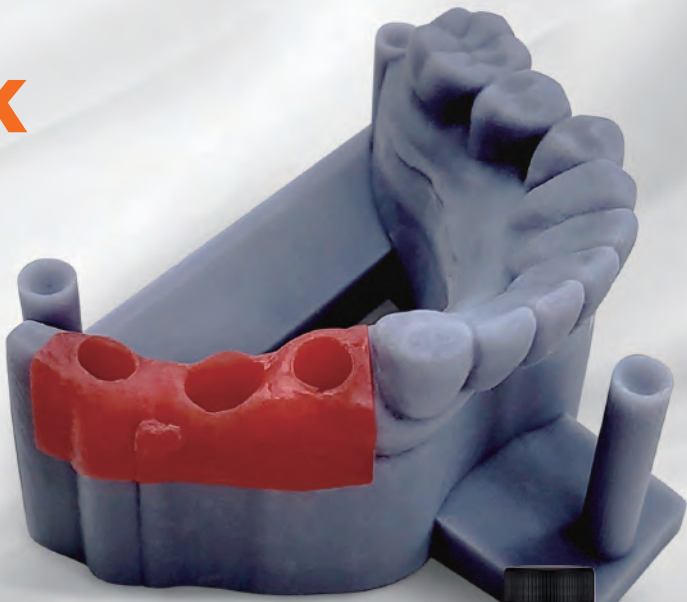
Properties
Soft | Medium | Rigid



- Key Benefits**
- Available in soft, medium, and rigid formulations
 - Region-specific thickness control for enhanced comfort and performance
 - Reduced bulk for improved breathing and speech
 - Fast reproduction through a fully digital workflow
 - Exceptional impact absorption and tear resistance
 - Helps protect teeth, soft tissues, and facial structures during sports
 - Excellent durability and biocompatibility

Properties	Unit	TeraFlex (Rigid)	Remark
Color	-	Clear, White, Red Blue, Black	
Density	g/cm ³ @ 25°C	1.038 ± 0.02	
Viscosity	cps @ 25°C	500 ± 200	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (D)	-	≥ 88	
Tensile Strength	MPa	≥ 16.6	ASTM D638
Elongation	%	≤ 118.8	ASTM D638
Impact Absorption	%	78	KS M ISO4662:2017
Tear Strength	N/cm	340	ASTM D624

Gingiva Mask (TE-600)



- Key Benefits**
- Soft gingival simulation resin for dental laboratories
 - Realistic appearance and resilience of natural gingival tissue
 - Excellent elasticity and tear resistance
 - High printing accuracy with a precise fit on dental models
 - Smooth, aesthetic surface finish
 - Ideal for implant models and restorative workflows

Properties	Unit	TE-600	Remark
Color	-	Red	
Viscosity	cps @ 25°C	400 ± 100	BrookField
Solid Content	% @ 80°C × 1h	≥ 98	
Shore Hardness (A)	-	≥ 50	
Tensile Strength	MPa	≥ 1.5	ASTM D638
Tear Strength	kN/m	≥ 6	ASTM D638
Elongation	%	≤ 150	ASTM D638

Tera Harz Spinner Centrifugal Resin Cleaner

- Fast and Efficient Resin Removal
- Powerful, Low-Noise Spinning Performance
- Robust and Practical Design

Description	Specification
Size	390 × 450 × 430(Wdh) (mm)
Weight	6.5kg
Capacity	Max. 16 aligners
Time	Spinning time adjustable (5 minutes for aligners)
Functions	Digital display Internal heating during operation Safety Stops Simple and efficient maintenance



Tera Harz Care Ultrasonic Cleaner & Warmer

- Maintains the Hygiene of Shape Memory Aligner®
- Warms Aligners for Easier and More Comfortable Insertion
- Simple One-Touch Operation
- Compact and Portable Design

Description	Specification
Size	Ø115 × 103H (mm)
Weight	325g
Capacity	200ml
Maximum Temperature	50°C (122°F)
Time	5minutes (Auto power off)
Functions	Ultrasonic Warmer + Ultrasonic Auto power off



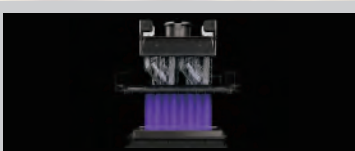
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Core Features



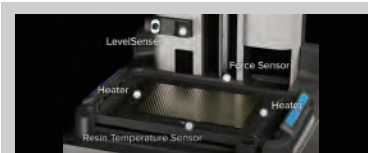
Low Force Display™

Minimizes peel forces for faster print cycles, better surface quality, and extended tank life-ideal for precise, high-volume dental production



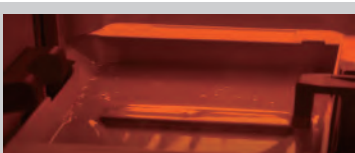
Backlight Unit

60 high-power LEDs with collimating lenses deliver uniform, high-intensity light for consistent layer curing-ensuring accuracy, detail, and repeatability across the entire build area



Smart Sensor System

Six sensors-including Z-axis force and ultrasonic resin sensing-automatically optimize print conditions for consistent, high-quality results



Advanced Resin Handling

Infrared heating and continuous mixing maintain resin between 25-45°C, ensuring optimal flow, easier handling, and excellent accuracy and print quality



Description	Specification
Printing Speed	Avg.40mm/h Max.100mm/h
Printing Technology	Low Force Display™ (LFD)
Build Volume	200×125×210mm (W×D×H)
XY Resolution	50µm
Layer Thickness (Z Resolution)	25-200µm
Support	Auto-generated / Light-touch removal
Dimension / Weight (incl. pkg.)	398×367×554mm / 18.3kg
Working Temperature	Auto-heats resin to 25-45°C (77-113 °F), Depending on material
Power Requirement	100-240VAC, 4.8A 50/60Hz, 480W
Z-Axis Leveling Method	Auto-calibrated platform
Connectivity	Wi-Fi (2.4 and 5 GHz);IEEE 802.11 b/g/n/ac, WPA/WPA2) Ethernet (1000 Mbit), USB-C 2.0
Optical System	60uniform-wavelength LEDs, 405nm, 16mW/cm ²
Control Panel	7" touchscreen, PreForm software
Product Features	Fast, Versatile, Biocompatible materials, Intuitive use

Formlabs Form 4BL

Core Features



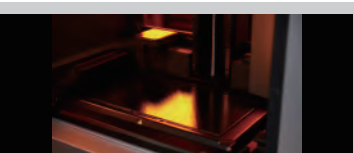
Low Force Display™

Minimizes peel forces for faster print cycles, better surface quality, and extended tank life-ideal for precise, high-volume dental production



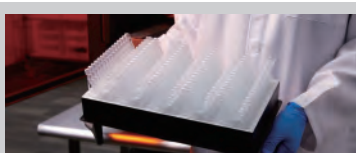
Advanced Backlight Unit

Features 145 high-intensity LEDs and collimating lenses, delivering uniform, ultra-high-power light for rapid and precise resin curing across the entire build platform



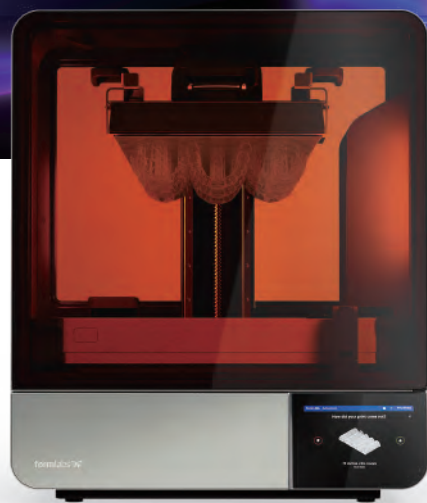
Smart Sensor & Resin Control System

Six sensors, including Z-axis force and resin level detection, work with IR heating and continuous mixing to maintain ideal print conditions-ensuring stable flow, easy handling, and high-quality results



Large-Format Performance

Infrared heating and continuous mixing maintain resin between 25-45°C, ensuring optimal flow, easier handling, and excellent accuracy and print quality



Description	Specification
Printing Speed	Avg.24mm/h Max.80mm/h
Printing Technology	Low Force Display™ (LFD), Masked Stereolithography (MSLA)
Build Volume	353×196×350mm (W×D×H)
XY Resolution	46µm with anti-aliasing
Layer Thickness (Z Resolution)	25-200µm
Support	Auto-generated / Light-touch removal
Dimension / Weight (incl. pkg.)	66.4×52.8×79.4cm / 58.5kg
Working Temperature	Auto-heats resin to 25-45 °C (77-113 °F), Depending on material
Power Requirement	100-240VAC, 9A 50/60Hz, 900W
Z-Axis Leveling Method	Printer leveling sensor (auto)
Connectivity	Wi-Fi (2.4&5 GHz), Ethernet (1000 Mbit), USB-C 2.0
Optical System	145LEDs, 405nm, 16mW/cm ²
Control Panel	7" touchscreen, PreForm software
Product Features	Fast, Accurate, Wide material compatibility via open material mode

Tera Harz Cure

Nitrogen Curing System (Integrated Nitrogen Generator for Long-Term Operation)

World's first UV curing system designed to achieve 100% polymerization conversion

- 280,000 mJ/cm², 1,000 mW/cm² (based on 5-minute curing) delivering maximum intensity and shade consistency with high-energy UV
- Stores up to 5 curing conditions per material
- Adjustable light levels for each printed material (Level 1–5)
- 360° UV irradiation with optimal LED arrangement for uniform curing
- Safety cooling system based on LED temperature control
- Maximum curing size: Ø180 mm with 360° turntable



Benefits of Nitrogen Curing

01 Enhanced Mechanical Properties and Color Consistency

Nitrogen curing prevents oxygen inhibition, ensuring mechanical strength and color uniformity.

03 Greater Operational Efficiency

Integrated nitrogen generation enables automatic operation without external setup, offering greater cost efficiency.

05 Enhanced Biocompatibility and Long-Term Durability

Blocking oxygen curing reduces moisture absorption and residual leachables, enhancing biocompatibility and long-term durability.

02 Superior Surface Quality

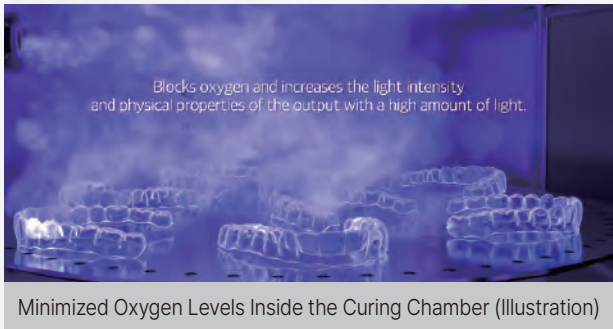
Produces smoother surfaces, improved surface finish, and greater dimensional accuracy.

04 Complete Polymerization

Achieves complete polymerization to enhance biocompatibility, surface stability, and the overall performance and longevity of printed parts.

Description	Specification
Display	7.9" TFT Touch LCD
LED Wavelength	405nm
LED Power	200W
Curing Chamber	Ø180×650mm
Dimension (Weight)	275×310×310mm (8.5kg)
UV Energy Density Irradiance of UV (5minute-curing based)	280,000 mJ/cm ² 1,000 mW/cm ²

UV Energy density Irradiance of UV Light (UV Meter LS128 / 5 minutes)	180,000 mJ/cm ² 600 mW/cm ² (Lv.1)	205,000 mJ/cm ² 700 mW/cm ² (Lv.2)	230,000 mJ/cm ² 800 mW/cm ² (Lv.3)	255,000 mJ/cm ² 900 mW/cm ² (Lv.4)	280,000 mJ/cm ² 1,000 mW/cm ² (Lv.5)
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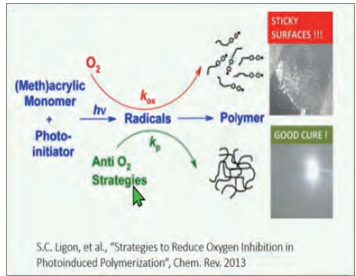


Minimizing Oxygen Inhibition at the Surface

Prevents Surface Tackiness Caused by Oxygen Inhibition

During UV curing, free radicals initiate the polymerization of the resin. When oxygen is present, it reacts with these free radicals before polymerization can be completed, leaving residual oligomers and monomers on the surface and causing an undesirable tacky (sticky) finish. By minimizing oxygen inhibition, Tera Harz Cure produces a fully cured, smooth, and stable surface.

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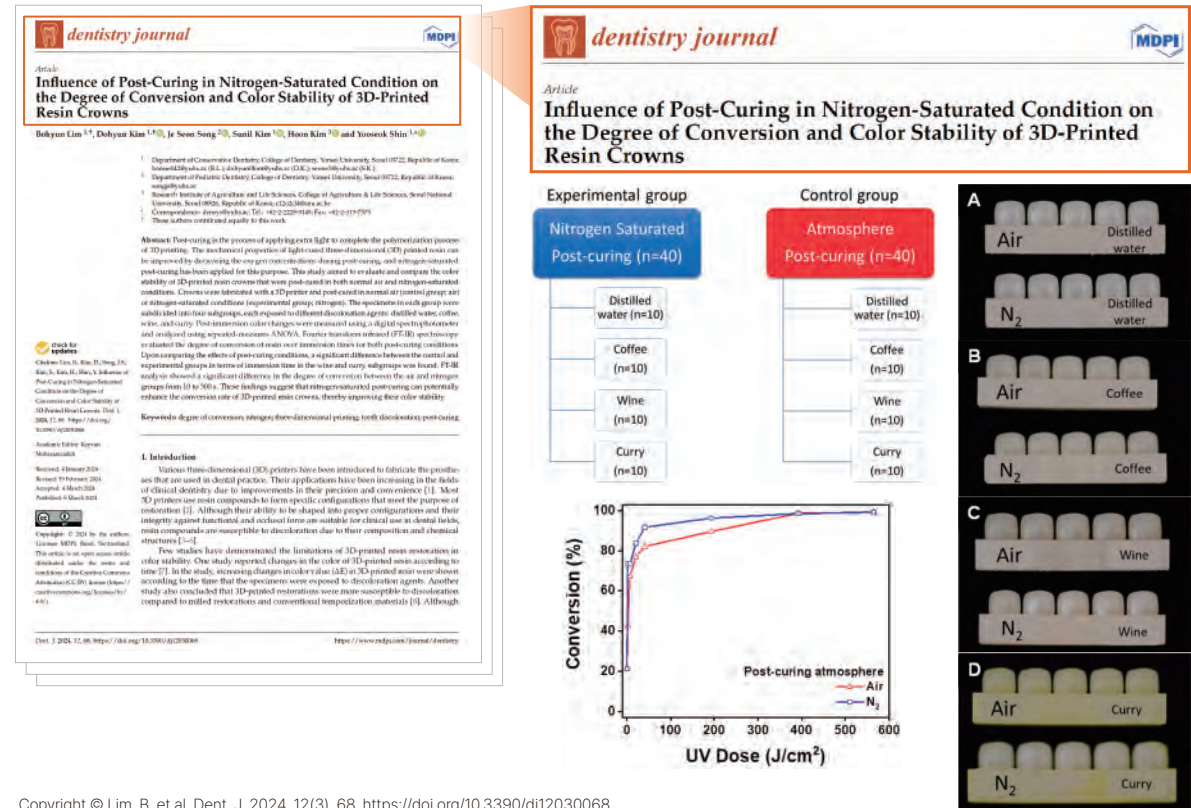


Higher Degree of Conversion in an Oxygen-Reduced Environment

UV curing of photopolymer resins relies on free-radical polymerization. By minimizing oxygen exposure in the curing chamber using CO₂ or N₂, the curing process achieves a higher degree of conversion, tack-free surfaces, improved mechanical strength, and more stable curing quality.

Suppresses Oxygen Inhibition of Free-Radical Polymerization

Study on the Degree of Conversion and Color Stability of 3D-Printed Resin Crowns Under Nitrogen Curing Conditions



Tera Harz Smart Robot

The most advanced all-in-one device for Shape Memory Aligner® manufacturing.



A New Era of Automated Aligner Production

The Tera Harz Smart Robot (THSR) is more than an automation system—it's a complete manufacturing solution for the world's first Shape Memory Aligner®. Designed to streamline every stage of production, THSR delivers greater efficiency, higher productivity, and consistent product quality through advanced robotic automation. By integrating intelligent process control with precision robotics, it maximizes accuracy, reliability, and ease of operation.

01 Consistent Quality

Ensures consistent product quality through precise automation, 24/7 operation, and optimized process control.

02 Increased Productivity

Enhances production efficiency through highly precise and automated operation.

03 Cost Efficiency

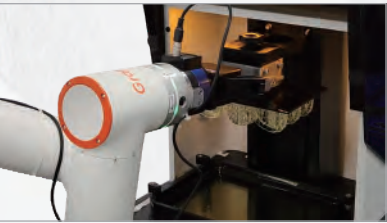
Reduces material waste, increases processing speed, and lowers production costs.

04 Faster Turnaround

Supports same-day production workflows, improving clinical efficiency and patient convenience.

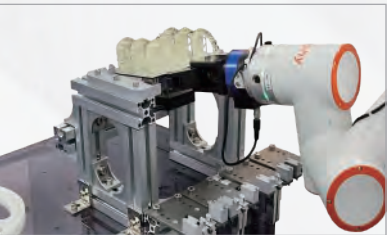
Description	Specification
Product Name	Tera Harz Smart Robot (THSR)
Model Name	R2K2U
Weight(Kg)	20Kg
Application	In-house aligner manufacturing (lab/clinic)
Voltage	220V (110V Compatible Module Provided)
Usage	Production line
After Warranty Service	Video technical support
Type	6-axis Vertical multi-joint
Machine Type	Aligner manufacturing robot arm 6 axis
Aligner Material	Tera Harz Clear
Warranty	1 Year

Tera Harz Smart Robot Workflow



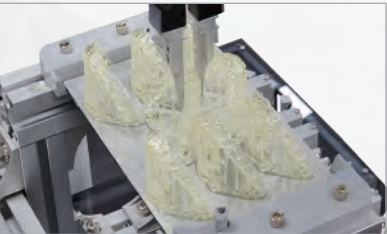
01 Aligner 3D Printing

The Tera Harz Smart Robot (THSR) initiates the print job by interacting with the printer's touchscreen. Once printing is complete, the printer door opens automatically.



02 Build Platform Removal

THSR releases the build platform locking mechanism and removes the build platform from the 3D printer. The platform is then inverted and mounted onto the aligner removal jig for the next step.



03 Aligner Removal

The robot automatically changes tools and removes the printed aligners from the build platform. The separated aligners are automatically arranged and sequentially loaded into the spinner basket.



04 Resin Removal

The aligners, secured in the basket, are loaded into the Tera Harz Spinner for resin removal. After the desired processing time is set using the digital control dial, the resin removal cycle begins. Once completed, the spinner basket is removed and transferred to the post-curing process.



05 Post-Curing

The aligners are transferred from the spinner basket onto curing plates, accommodating up to eight aligners per plate. The curing plate is then placed inside the curing unit, and the post-curing cycle begins after the chamber door is closed and the touchscreen is activated.

Graphy



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