

SDI | STELA



» The combination of Stela Primer and the self-curing Stela restorative generates **low polymerisation stress**, which enables this bulk-fill composite system to create a **gap-free** bonding interface. «

PROF DR SALVATORE SAURO

Professor of Dental Biomaterials and Minimally Invasive Dentistry - University CEU Cardenal Herrera - Valencia - Spain
Editorial board member - Dental Materials Journal - Elsevier



THE FUTURE OF COMPOSITES

- UNLIMITED DEPTH OF CURE
- GAP FREE INTERFACE
- LOW POLYMERISATION STRESS
- 2 SIMPLE STEPS

WHAT IS STELA?

Stela is an **innovative high-performance self-cure composite**. Stela offers an **unlimited depth of cure** and **low-stress** polymerisation with a **gap-free interface**. There is no need to acid etch or light cure.

Stela achieves its ground-breaking properties through a tailored **combination of BPA-free resin monomers**, optimised **ionglass™** fillers (SDI's bioactive proprietary hybrid glass), and specially surface-modified **nanoparticles of amorphous silica**. Stela's outstanding mechanical properties come from a **rapid curing reaction**. The Stela monomers form polymeric chains and, simultaneously, these chains are rapidly and densely cross-linked to each other, forming a complex web that strongly binds the ionglass™ filler and the amorphous silica, resulting in a strong and resilient restorative material.

The Stela snap set fast cure is due to an **innovative hydroperoxide-based initiation system that is free of tertiary amine**. This ensures fast-setting characteristics, good colour stability and an excellent conversion rate.

Once cured, Stela's matrix delivers consistent and reliable **strength and durability for all restorations**. The simple two step process minimises operator errors and patient sensitivity with **no etch or curing lights required**. Stela is the solution for all your clinical needs.

Stela is available in two delivery systems:
Stela Capsule and Stela Automix syringe.



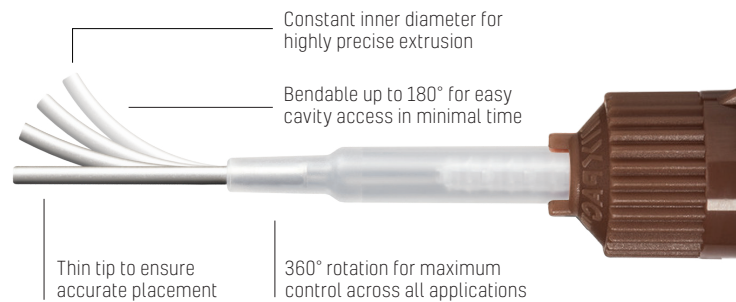
» In challenging scenarios, such as distal carious lesions, the Automix bendable metallic tip becomes an extremely advantageous asset. «

PROF. DR. ERALDO PESARELLI
PhD in Medical Science
Research associate at the University of San Martín de Porres - Lima - Peru

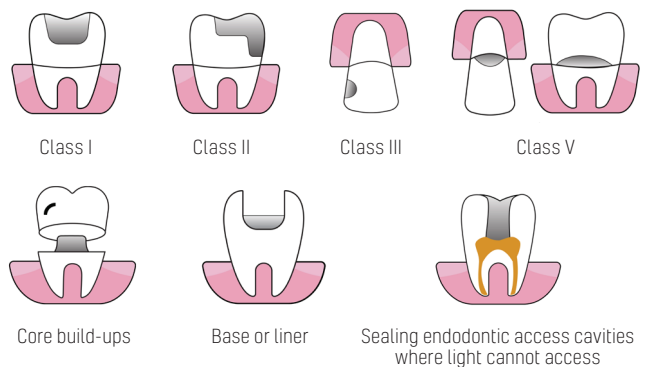
SUPERIOR HANDLING

Stela offers **two handling options**, both of which have been formulated to give you outstanding control compared to other leading restoratives.

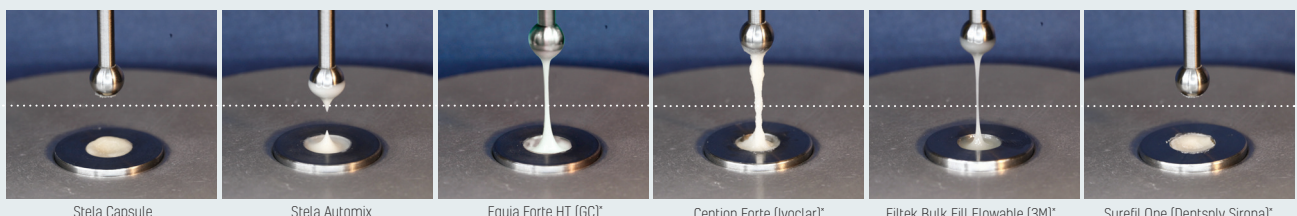
Stela Automix syringe includes rotating and bendable metal tips. This allows **precise extrusion in the most hard-to-access places**.



INDICATIONS



VISCOSITY TEST

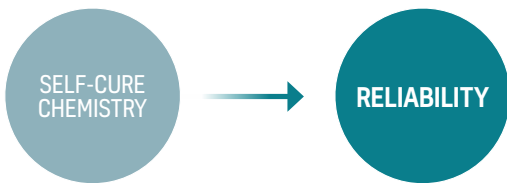


*Not a registered trademark of SDI.

FASTER, SIMPLER RESTORATIONS

UNLIMITED BULK FILL WITH CERTAINTY

Composite restorations fail for a variety of reasons, including uncured material in deep areas, which may cause sensitivity. Stela will self-cure at all depths, thereby eliminating any curing uncertainty.



» Stela offers excellent working time and is very easy to manipulate. «



PROF DR ALESSANDRO LOGUERCIO
DDS, Ms, PhD, Professor at the State University of Ponta Grossa, Brazil

FEWER STEPS, FEWER FAILURES

Stela Primer revolutionises the etch, prime and bond system, while delivering a better bond strength.

While other etch, prime and bond systems require up to 7 steps and 90-120 seconds to complete, the Stela Primer system is complete in only two steps and 15 seconds. Fewer steps means fewer opportunities for errors and longer lasting restorations.

Reduce your in-chair time and eliminate potential technique sensitivity with the simplified Stela technique.

STELA PRIMER

Steps	Time
2	15 sec

Stela: straight to placement in 15 seconds

STANDARD ETCH, PRIME, BOND

Steps	Time
7	90-120 sec

GAP-FREE INTERFACE

STELA CURES FROM THE MARGINS, NOT FROM THE LED CURING LIGHT

Light cure composite polymerisation begins in the area closest to the light source, before progressing deeper into the restoration.¹

³ The resulting **polymerisation shrinkage** pulls the restorative from the cavity walls and **creates micro gaps**.²

These gaps can frequently cause post-operative sensitivity, marginal leakage with staining, and recurrent caries^{1,2,3}

Stela's self-cure polymerisation begins from the applied Stela Primer on the cavity walls, as the primer contains a catalyst. This polymerisation **sequence microscopically pulls the restorative towards the cavity** - and not away from it, providing you **with gap-free restorations** every time **reducing the risk of sensitivity and premature failure**.

1. Hamdi Hosni Hamama. Recent advances in posterior resin composite restorations in Applications of Nanocomposite Materials in Dentistry, 2019.
2. S.R. Schricker. Composite resin polymerization and relevant parameters in Orthodontic Applications of Biomaterials, 2017.
3. Gary S. Berkowitz et al. Postoperative Hypersensitivity and Its Relationship to Preparation Variables in Class I Resin-Based Composite Restorations: Findings from the Practitioners Engaged in Applied Research and Learning (PEARL) Network. Part 1. Compend Contin Educ Dent. 2013 Mar; 34(3): e44-e52.

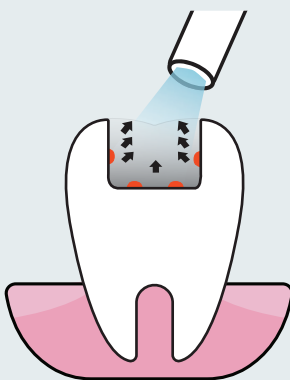
LIGHT CURE POLYMERISATION

VS

STELA POLYMERISATION

✗ MARGINAL GAPS:

LED polymerisation results in pull-stress along the deepest margins, leading to micro gaps.



✗ UNCURED COMPOSITE:

Composites cannot self cure. If a restoration is angled or difficult to access, the uncured composite may prematurely fail.



✗ SENSITIVITY:

Uncured composite, micro gaps, multi-step techniques, and prolonged in-chair time put patients at a greater risk of postoperative sensitivity.

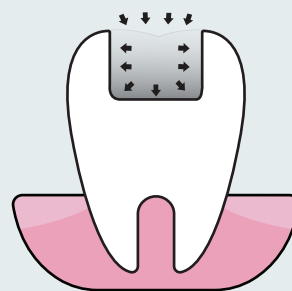
✗ DEPTH LIMIT:

Most composites are limited to 2mm depth of cure. Deeper restorations require additional time.



✓ LOW STRESS CURING:

Stela paste polymerises faster along the walls when contacting with Stela Primer. This polymerisation sequence provides a gap-free restoration.



✓ ZERO LED CURING COMPLICATIONS:

Without a collimated beam, many curing lights are limited in their ability to fully cure composite in deep cavities and large restorations. Stela eliminates the need for LED curing and the potential for uncured resin, sensitivity, and premature failure.

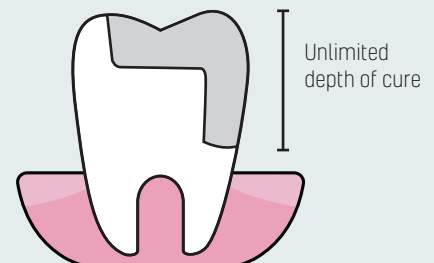


✓ REDUCED TECHNIQUE ERRORS:

With fewer steps, there is less chance of contamination and operator errors, providing you more clinical certainty.

✓ UNLIMITED DEPTH OF CURE:

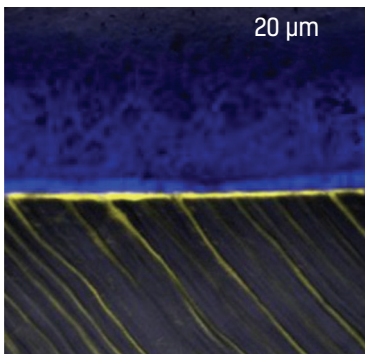
Stela is a new generation of composites that will self cure to an unlimited depth. This gives you full cure certainty for all restorations.



A STRONGER BOND WITHOUT GAPS

STUDY: NO INTERFACE GAPS

An external study demonstrated Stela's high bond strength to dentine. Micrograph imagery showed interfaces without defects or gaps. The study noted that **"Filtek One Bulk-Fill presented the lowest results, with resin dentine interfaces characterised by gaps and porosities."** In contrast, **Stela "...exhibited better interfacial adaptation and greater bonding performance compared to universal and bulk-fill composites."**

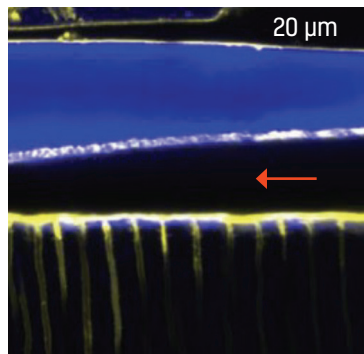


STELA BONDING INTERFACE (SELF ETCH)

A confocal micrograph of a **gap-free Stela-dentine interface**, using the self etch Stela Primer.

Note the penetration depth of Stela Primer (yellow) within the dentine tubules.

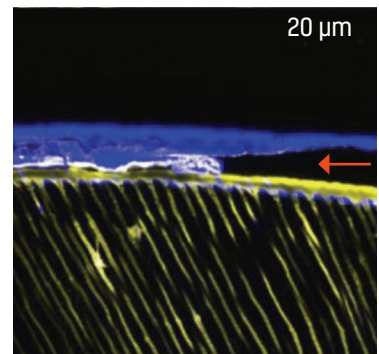
Pre-test failure rate: 0%



FILTEK ONE BULK FILL (SELF ETCH)

A confocal micrograph showing the dentine interface of **Filtek One Bulk-Fill (3M ESPE), in self etch mode**. The red arrow shows the **presence of gaps**.

Pre-test failure rate: 75%



FILTEK ONE BULK FILL (ETCH & RINSE)

A confocal micrograph showing the dentine interface of **Filtek One Bulk-Fill (3M ESPE), in etch & rinse mode**. The red arrow shows the **presence of gaps**.

Pre-test failure rate: 10%

SOURCE: SAURO, Salvatore et al. 2022. Microtensile bond strength and interfacial adaptation of two bulk-fill composites compared to a conventional composite restorative system



» [Stela] performs as well as market-leading universal and bulk-fill composites bonded to dentine with universal adhesives. Moreover, in this study, [Stela] exhibited better interfacial adaptation and greater bonding performance compared to universal and bulk-fill composites. «



PAULA MACIEL PIRES & ALINE DE ALMEIDA NEVES (Federal University of Rio de Janeiro)
FILIPPO SEMENZA & SALVATORE SAURO (Cardenal Herrera CEU University)
IRINA MAKEEVA (Sechenov University)
 International Association for Dental Research, Asia, 2022.

Standard etch-prime-bond-cure combinations are time-consuming and technique sensitive, introducing the potential for contamination and errors, leading to sensitivity and premature failure.

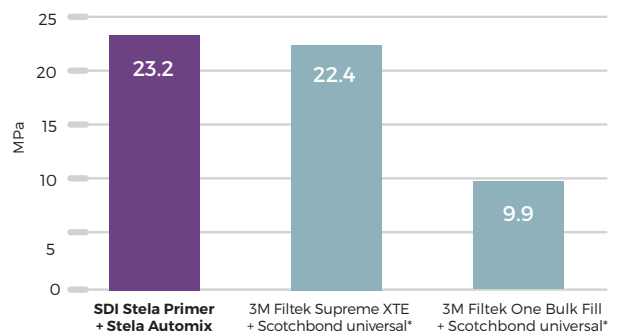
The Stela Primer was developed in tandem with Stela Capsule and Stela Automix syringe. Together, the formulations combine to deliver an **increased bond strength** compared to standard etch-prime-bond products*.

Both Stela Primer and Stela composite have the **MDP monomer**, ensuring a strong chemical bond, free of gaps, with better sealing **for durability and no sensitivity**. Stela is also BPA and HEMA free.

Stela Primer **tags** into the dentinal tubules, forming **micromechanical retentions (secondary bond)**.

Stela Primer then chemically bonds to Stela paste (primary bond), forming a true adhesion between atoms or molecules of Primer and composite.

MICROTENSILE BOND STRENGTH RESULTS (MPa)



*SAURO, Salvatore et al. 2022. Microtensile bond strength and interfacial adaptation of two bulk-fill composites compared to a conventional composite restorative system.
 * Not SDI trademarks

TRULY AN AMALGAM ALTERNATIVE

AN "AMALGAM ALTERNATIVE" IS A BOLD CLAIM. IS IT TRUE?

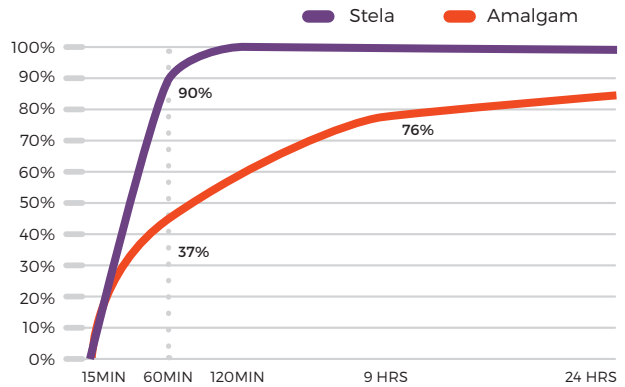
Many products claim to be an amalgam alternative, but fail comparisons based on strength, marginal sealing and depth of cure. Stela has been formulated specifically as a restorative that can be used as an **amalgam alternative**, with the advantage of **having a lifelike aesthetic result in a cavity without mechanical retentions**. Stela is available **in a universal shade** that blends to surrounding tooth areas **with a chameleon effect**.

SNAPSET STRENGTH IN MINUTES

Restoratives harden over time until they reach their final strength. Stela is formulated to reach a high strength as quickly as possible, allowing finishing and polishing in just 4 minutes. After this initial set, Stela becomes a strong composite that easily exceeds the properties of alternatives.

While **amalgam achieves only 37%** of its final strength in 60 minutes, **Stela achieves 90% strength** in the same 60 minute period.

TIME VS FINAL RESTORATION STRENGTH



Source: SDI Research & Development Department

Stela's snapset strength reduces premature failures during the critical first 24 hour period, decreasing patient returns and re-work.

Stela also offers great value. **One capsule of Stela has more volume than a 3-spill amalgam capsule**, which is enough for large restorations.

» SDI founder Jeff Cheetham has manufactured more amalgam products than almost anyone else in the world. According to Jeff "Amalgam is so strong and easy to place. No etching, no layering, no light cure. That is the basis of Stela. The world is rapidly moving away from amalgam and that is why we mobilised our 50 years of amalgam knowledge behind developing Stela. Stela truly is the new amalgam alternative." «



JEFFERY CHEETHAM, SDI CHAIRMAN AND FOUNDER

Receiver of the Medal of the Order of Australia (OAM), awarded for service worthy of particular recognition



COMPARISON TO AMALGAM



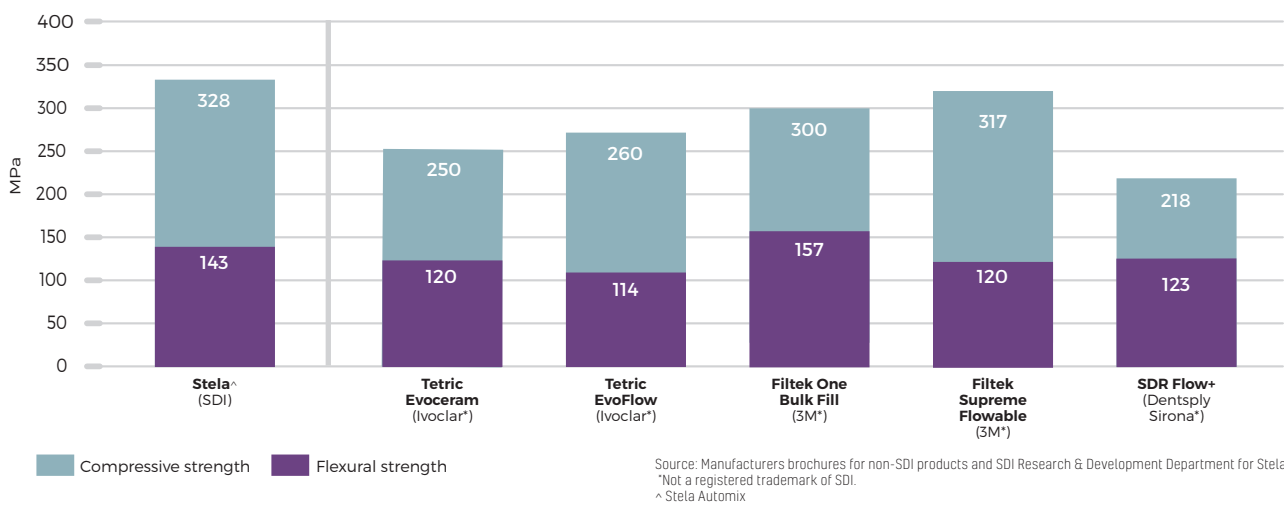
	AMALGAM	STELA
Mercury	Contains mercury	Mercury free
Technique sensitivity	Higher	Lower
Tooth preparation	Retentive cavity	Cavity without mechanical retentions
Depth of cure	Unlimited	Unlimited
Aesthetics	Poor	Very good
Radiopacity	Very high	Very high
Dispensing system	Capsule	Capsule or Automix syringe
Working time	Up to 10 min 15 sec (condensing and carving)	1 min 30 sec (inserting into the cavity)
Snapset strength	~90% strength after 24 hours	~90% strength after 60 minutes
Finishing and polishing	Requires a second appointment	Within same appointment

THE STRONGER RESTORATIVE

STRONGER THAN COMPOSITES

The strength of a restorative should always be judged on its combination of **compressive and flexural properties**, to resist occlusal forces and to **prevent fractures** during function.

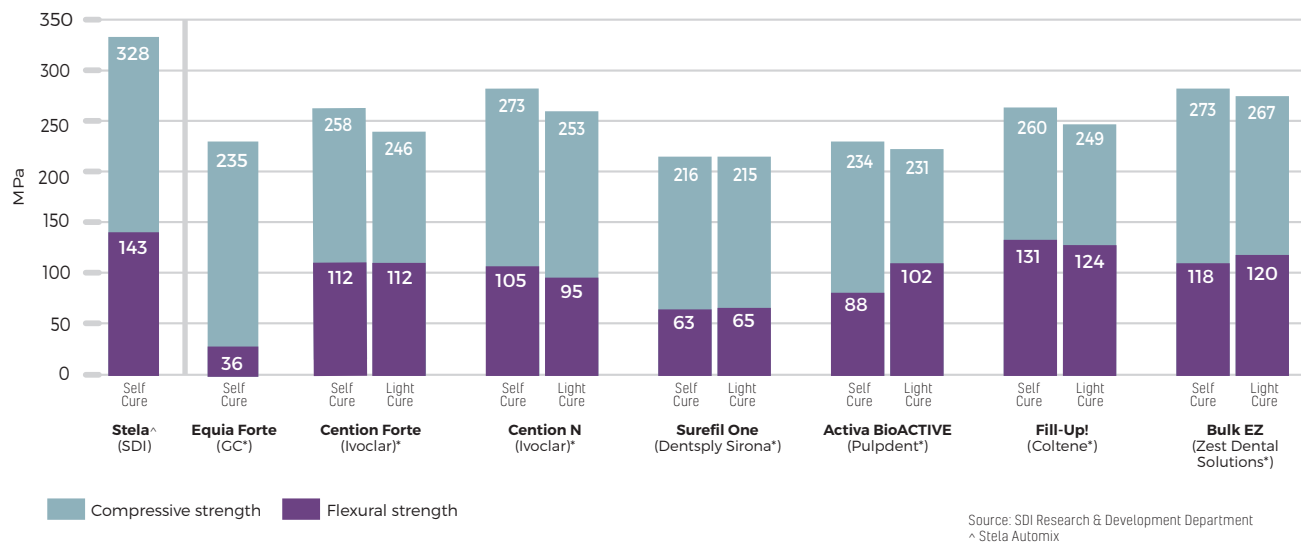
Stela has the perfect balance of two strengths, outperforming most other composite products. Stela **requires fewer steps than traditional composites**. This simplicity and strength **deliver long term integrity** for your restorations.



BEST IN CLASS

Stela is **the strongest self cure composite** available.

There are several posterior restoratives. However, when comparing their strength, many have weaker properties that are closer to glass ionomers than composites.

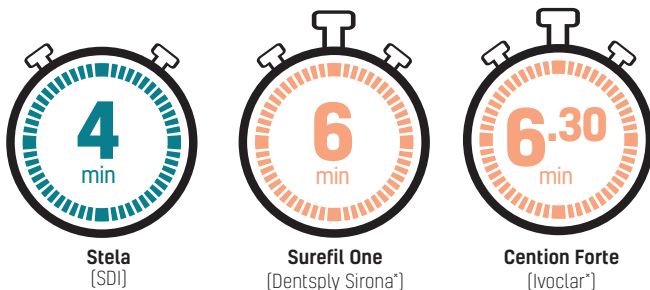


FASTER WITH CHAMELEON AESTHETICS

A 50% FASTER SELF CURE

Stela has a **faster self cure setting time** than two other leading restoratives. Stela Capsule and Stela Automix syringe both offer a comfortable working time of 1 minute and 30 seconds. Restorations are ready for finishing and polishing in 4 minutes from the start of the mixing time.

This 50% time saving **increases your treatment efficiency**. Such efficiency is multiplied when restoring multiple cavities consecutively.



Source: Manufacturers brochures for non-SDI products and SDI Research & Development Department for Stela.
*Not a registered trademark of SDI.

TRANSLUCENCY AND OPACITY

A bulk fill composite generally has opacity limitations to allow light to penetrate more deeply.

Stela does not need a curing light and offers a **balance between translucency and opacity** for most posterior teeth. Its universal shade with chameleon effect blends in with surrounding structures, **blocking stains** like a dentine replacement and sealing edges for a flawless finish that mimics enamel.

Stela offers an **unlimited depth of cure without compromising aesthetics**.



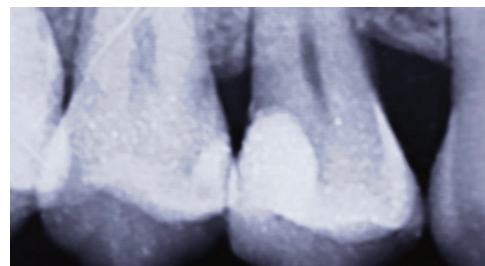
Step 1: Cavities prepared



Step 2: First cavity restored and matrix band removed



Step 3: Both restorations completed



Step 4: Radiographic aspect, showing very high radiopacity to aid diagnosis



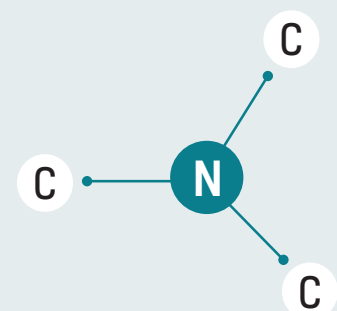
 **PHOTOS COURTESY OF
PROF DR GONZALO ARANA GORDILO**

Professor in multiple Colombian universities
International Lecturer in Biomaterials and Dental Aesthetics

NO TERTIARY AMINE FOR IMPROVED COLOUR STABILITY

Most self cure composites contain tertiary amine. This additive can contribute to long term shade darkening and the yellowing of restorations.^{1,2} Tertiary amine can also reduce the longevity of adhesion to dentine as the composite restoration ages.²

Stela has been formulated without tertiary amine. This provides you improved long term aesthetic stability while maintaining bond strength.



¹ Andrea Kowalska et al. The Photoinitiators Used in Resin Based Dental Composite - A Review and Future Perspectives, 2021.

² Andrea Kowalska et al. Can TPD as Photoinitiator Replace "Golden Mean" Camphorquinone and Tertiary Amines in Dental Composites?, 2022.

CLINICAL PHOTOS



» Moving away from incremental techniques using a chemically cured bulk composite allows us to work **faster** and with a highly reproducible and safer process. «



PROF DR ERALDO PESARESSI

PhD in Medical Science
Research associate at the University of San Martin de Porres - Lima - Peru



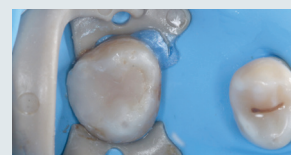
Step 1: Molar with decay



Step 2: After caries removal and isolation with rubber dam



Step 3: Application of Stela Primer



Step 4: Restoration completed



» I used Stela with different protocols, including directly, without pulp protection and it **did not cause sensitivity**. Thank you, SDI, for sharing these wonderful developments in our profession! «



PROF DR GONZALO ARANA GORDILO

Professor in multiple Colombian universities
International Lecturer in Biomaterials and Dental Aesthetics



Cavity prepared and ready to be isolated with rubber dam



Final aspect after finishing and polishing



» The application of Stela is **very easy** and after 4 minutes the restoration had the same shade as the tooth. **Great polishability! Perfect product!** «



PROF DR ROCIO LAZO

Professor of the Specialization Program in Paediatric Dentistry at the Scientific University of the South - Lima - Peru
Co-author of three books on Paediatric Dentistry and several research papers



Cavity prepared and ready to be isolated with rubber dam

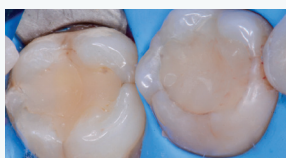


Final aspect after finishing and polishing



DR. JOSÉ CEDILLO

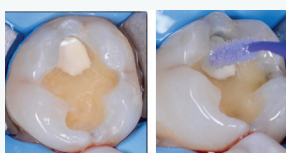
Fellow and Diplomat Of The World Congress of Minimally Invasive Dentistry - Valencia



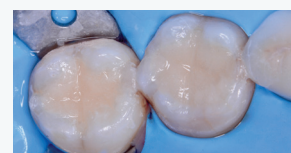
First and second lower molars with defective composite restorations



Caries removed and large Class I cavities prepared



Application of calcium hydroxide to protect the deepest area of one cavity, followed by application of Stela Primer



Restoration complete

CELEBRATING THE 50TH ANNIVERSARY OF SDI

Drawing on 50 years of dental research experience, SDI's **ionglass™** filler is manufactured in Australia by our glass experts.

The **ionglass™** technology mimics the natural tooth structure, guaranteeing restorations will withstand long term mastication forces and patients will be satisfied with the treatment.

Stela contains **ionglass™** filler, a **bioactive proprietary hybrid glass** made of a unique blend of different sizes of ultrafine highly reactive particles.



FLUORIDE, CALCIUM AND STRONTIUM

Stela contains fluoride, calcium and strontium for enhanced **biomimetic and bioactive properties**, adding an extra layer of protection during acid challenge.

PARTICLE SIZE & DISTRIBUTION

Composite fillers can be very different from each other. **High strength, low abrasion and excellent polishability** depend not only on the size of the glass filler particles, but also on the **concentration of each size** in the formulation.

In a constant search for innovation, SDI scientists improved the distribution of different sizes of Stela fillers, combined with nanoparticles of amorphous silica, resulting in **first-class mechanical properties** and **fast and long lasting polishability**, associated with **very low wear**.

PHYSICAL PROPERTY	STELA CAPSULE*	STELA AUTOMIX*
Compressive strength [MPa] [24hrs, Dark Cure]	333.0	328.4
Compressive modulus [GPa] [24hrs, Dark Cure]	5.5	4.3
Flexural strength [MPa] [24hrs, Dark Cure]	134.4	143.6
Flexural modulus [GPa] [24hrs, Dark Cure]	15.7	9.0
Surface hardness [VHN] [24hrs, Dark Cure]	71.0	45.4
Filler particle size distribution (µm)	Fluoro-alumino-silicate glass: median particle size 4.0 µm [distribution range approx. 2 to 8 µm]	Fluoro-alumino-silicate glass: mean particle size 4.0 µm [distribution range approx. 2 to 8 µm] Barium-alumino-borosilicate glass: mean particle size 2.8 µm [distribution range approx. 2 to 5 µm]
Filler loading	76.8 wt% [55.4 vol%]	61.2 wt% [36.4 vol%]

*Average
Source: SDI Research & Development Department

MULTI-YEAR RESEARCH PARTNERSHIP

Stela technology is the outstanding result of a **partnership between SDI scientists** - with half a century of experience developing dental materials - **and engineers from the University of New South Wales (UNSW), the University of Sydney, and the University of Wollongong**. These three world leading Australian universities have over 170 years of combined experience researching high-performance industrial composites, among other materials. This collaboration created Stela, a high-performance dental composite.

The SDI and UNSW partnership that led to the Stela breakthrough technology also produced multiple scientific journal and conference papers.[^]



» The scientific collaboration between interdisciplinary composites researchers at UNSW and SDI scientists became the commercialisation vehicle for the development of advanced biomaterials and technologies. «



PROF GANGADHARA PRUSTY

Director, ARC Training Centre for Automated Manufacture of Advanced Composites, School of Mechanical & Manufacturing Engineering, UNSW SYDNEY, Australia



» The SDI team, working closely with our multifunctional composites team at UNSW, has set the stage for launching a new frontier of restorative composites. «



DR RAJU

Centre Manager, ARC Training Centre for Automated Manufacture of Advanced Composites, School of Mechanical & Manufacturing Engineering, UNSW SYDNEY, Australia



» It was a lifetime opportunity for me to work on UNSW-SDI collaborative research on dental composites, enabling ground-breaking science at UNSW to be translated to product manufacturing at SDI. «



MR JERRIN THADATHIL VARGHESE

School of Mechanical & Manufacturing Engineering, UNSW SYDNEY, Australia

The last 10 years of restorative development has delivered only minor improvements.

This is because new restoratives focus only on the material and neglect the surrounding steps in the restorative process.

Stela is the **complete end-to-end composite system** that delivers **easier and stronger gap-free restorations**. This provides you with clinical certainty every time.

STELA AT A GLANCE



SELF CURE FLOWABLE COMPOSITE

All desired characteristics for easy placement and excellent adaptation



MITIGATES POLYMERISATION STRESS FOR A GAP-FREE INTERFACE

Cures from the walls and not from the free surface, for a stable gap-free bonding interface



SELF CURE FOR UNLIMITED DEPTH OF CURE

with high degree of conversion for optimised mechanical properties



STUDY: HIGHER BOND STRENGTH THAN A LEADING UNIVERSAL ADHESIVE. SCRUBBING NOT REQUIRED

SOURCE: SAURO, Salvatore. Microtensile bond strength and interfacial adaptation of two bulk-fill composites compared to a conventional composite restorative system. 2022



CHOICE OF CAPSULE OR AUTOMIX SYRINGE

to cover every clinical application with the best handling



HIGH FLEXURAL STRENGTH

to resist bending forces and protect cusps



HIGH COMPRESSIVE STRENGTH & HIGH SURFACE HARDNESS

to protect teeth against strong occlusal forces



CONTAINS MDP MONOMER AND IS BPA & HEMA FREE

for trustworthy high bond strength to dentine and enamel, and long-lasting restorations



CONTAINS FLUORIDE, CALCIUM AND STRONTIUM

for enhanced bioactive properties during acid challenge



OUTSTANDING RADIOPACITY OF 308% AI*

to aid diagnosis



VERY LOW WEAR

Only 0.052mm after 200,000 cycles for long lasting polishability**



BALANCED OPACITY

High contrast ratio to block dental stains



UNIVERSAL SHADE WITH CHAMELEON EFFECT

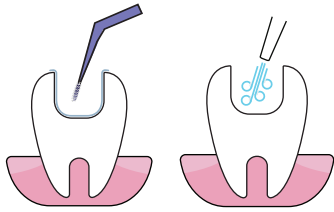
to mimic enamel, for good aesthetic results, while reducing inventory

* Source: SDI Research & Development Department

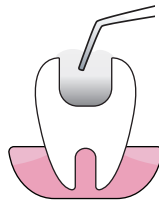
** Source: SDI Research & Development Department
ACTA test 200,000 cycles are equivalent to one year in function

[^] This project received grant funding from the Australian Government through the CRC Program

INSTRUCTIONS



1 Using a micro applicator (Points, SDI Limited), apply Stela Primer onto prepared cavity surfaces and margins, leaving for 5 seconds, before gently blowing with air for 2-3 seconds.



2 Using either the capsule (activated for 10 seconds in a mixer e.g. Ultramat, SDI Limited) or the Automix syringe, extrude Stela into the cavity, filling the entire cavity in a single step. Slightly overfill to ensure good contact with the Stela Primer at margins.



3 Stela sets 4 minutes after extrusion (or capsule mixing). Wipe inhibition layer and finish with burs and water spray. Optional: polish with Polishing Paste (SDI Limited).

Note: Stela capsule may discharge some residual powder during the initial applicator click. This powder is inert, safe and does not affect clinical performance.

ORDER DETAILS



STELA AUTOMIX INTRO KIT

Stela Automix Intro Kit SD-8640002
 1 Stela Automix 8g syringe
 1 Stela Primer 5mL bottle
 15 mixing tips
 15 Superfine Points micro applicators



STELA CAPSULE INTRO KIT

Stela Capsule Intro Kit SD-8640004
 10 Stela Capsules
 1 Stela Primer 5mL bottle
 15 Superfine Points micro applicators



STELA PRIMER REFILL

Stela Primer Refill SD-8640006
 1 Stela Primer 5mL bottle



STELA AUTOMIX REFILL

Stela Syringe Refill SD-8640001
 1 Stela Automix 8g syringe
 15 mixing tips



STELA CAPSULE REFILL

Stela Capsule Refill SD-8640003
 50 Stela Capsules



MIXING TIPS BULK REFILL

Stela Mixing Tips SD-8640005
 50 mixing tips

VIEW THE STELA PROCESS



Stela's two step process makes restorations easier than ever. View a step by step video for both automix and capsule systems.

CLINICAL TIPS



Would you like to whiten 150% faster? Scan QR code to see Pola Rapid.



Do you prefer layering technique with Logical Shade Matching technology? Scan QR code to see Luna 2.



Looking for a traditional bulk fill resin that is packable and non-sticky to optimise handling? Scan QR code to see Aura Bulk Fill.



Are you looking for a reliable universal adhesive with MDP monomer and fluoride release that is HEMA free and BPA free? Scan QR code to see Zipbond.



YOUR SMILE. OUR VISION.



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www.sdi.com.au

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BRAZIL 0800 770 1735
FRANCE 00800 0225 5734
GERMANY 0800 100 5759

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