



**TOP PERFORMANCE IN DENTAL MEDICINE
FOR OVER THREE DECADES**



saremco.ch

SAREMCO DENTAL QUALITY – INNOVATION – RELIABILITY

SAREMCO strives for a healthier and better world. With a consistent focus on biocompatibility and functionality, we develop and produce high-quality dental products for dedicated dentists, dental technicians and well-informed patients.

We concentrate on dental innovations for which we assume a leading market position. In doing so, we collaborate on intensive development activities with renowned universities worldwide. Our classic restoration materials are characterized by unique tolerability properties, and our 3D printed materials are groundbreaking milestones in technology.

As an independent Swiss company, we have been able to assume a pioneering role in light-curing dental plastic materials since our founding over 30 years ago. For example, at SAREMCO restoration materials are manufactured without the use of short-chain monomers such as TEGDMA and HEMA due to the toxicology and allergology described in scientific literature.

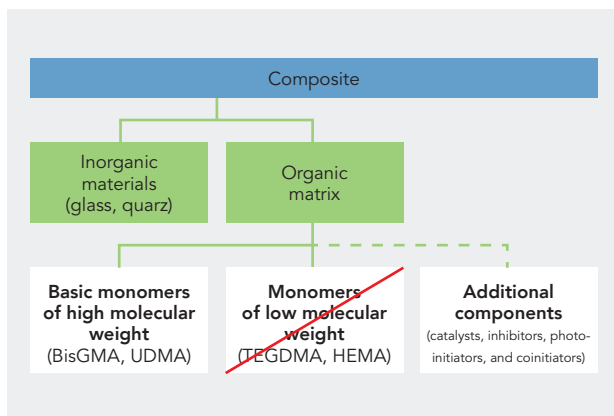


Figure: Simplified representation of a common composite composition.

SAREMCO dental filling materials hence offer excellent prophylactic protection for both patients and dental staff as regards allergies to these substances. The outstanding physical properties and uncompromising esthetics also contribute to the success of the products.

In recent years, we have applied the company's long-standing, profound know-how in light-curing dental plastic materials to the development of 3D printed materials. The result is products that are clearly superior in their physical properties to existing materials available on the market.

SAREMCO is also well-equipped for the future. Franca Schmid, CEO since 2007, is handing over the company's reins to younger hands. Sven Hauser will be taking over the position of CEO on July 1, 2024.

Under Franca Schmid's leadership, SAREMCO was able to significantly expand its niche position as a manufacturer of highly biocompatible restoration materials in the area of 3D printing. Franca Schmid will remain the Owner and Chairman of the Board of Directors of SAREMCO and will continue to support the company with her expertise.

Sven Hauser, a company employee for many years and current Head Brand & Client, will continue SAREMCO's successful strategy with his profound knowledge of both the sector and the company. Consistent customer focus, fostering of long-term partnerships and pioneering innovations in the field of particularly well-tolerated dental materials will remain of the highest relevance. Of course, international growth in new and existing markets will also remain fundamental components of the strategy.



Sven Hauser, designated CEO, SAREMCO Dental AG



Franca Schmid, CEO, SAREMCO Dental AG

TOXICOLOGY AND ALLERGOLOGY OF DENTAL PLASTIC MATERIALS

Dental materials should not only look good and last a long time, they should also be well-tolerated. The growing interest in them has raised questions about the toxicology/biocompatibility of these materials. Monomer and comonomer compounds are used in dental medicine, e.g. in composites and dentin adhesives. These compounds as well as dental nanoparticles can also be released from these materials and end up in the human body through resorption.

One important aspect in the evaluation of toxicology is the determination of the resorption, distribution, metabolism and elimination of a substance in an organism. Only resorbed substances can cause harmful effects. Animal studies have shown that the (co)monomers hydroxyethyl methacrylate (HEMA), triethylene glycol dimethacrylate (TEGDMA) and bisphenol glycidyl methacrylate (BisGMA) released from composites and swallowed are completely resorbed and broken down into carbon dioxide in the body. It has also been shown that intermediates are produced during this metabolism that can have strong toxic effects themselves – leading to “poisoning”. Formation of an epoxy intermediate, 2,3-epoxy methacrylic acid has been seen during the degradation of HEMA and TEGDMA in human liver microsomes. Epoxy compounds are considered carcinogenic and mutagenic.

For a scientifically supported risk analysis, it is important to know how much of a substance will be released by a material, how much is actually absorbed by the organism and when health problems start manifesting in the organism. (Co)monomers at most achieve “only” micromolar concentrations in human saliva after elution from composite fillings. However, toxic effects of these substances only start occurring in the millimolar range. Nanoparticles released from nano-dental materials (e.g. nanohybrid composites) could be detected during polishing, which are primarily inhaled by dentists and dental staff. In addition, after abrasion of this composite, the patient primarily resorbs nanoparticles through the intestines after ingestion. During in-vivo tests, pulverized nano-dental materials were not more toxic than comparative materials. Silver nanoparticles in dental materials do impact the polymerization of (co)monomers,

however. In a cytotoxicity test, nanoparticles were more toxic than traditional titanium. However, a growing number of patients have shown increased manifestations of adverse effects (e.g. lichenoid reaction, asthma, eczema) after dental restoration. The trigger of such reactions has now been conclusively identified as methylacrylate, which is commonly used in dental medicine, e.g. HEMA and TEGDMA.

Selection of the best-tolerated dental materials for dental restoration

In continued research, the release rate of such substances was determined for many of the commercially available composites, adhesives and metal tooth materials. In collaboration with the clinics at LMU Munich, allergy tests (www.dentaltox.com) were developed to prove the presence of any existing allergies to substances in dental materials. Patients with a proven allergy to such substances should not receive dental materials that can release these substances in the body. Today, it is possible after allergy testing to select the best-tolerated dental material for the patient in question before a planned dental restoration.

AT A GLANCE

- Statistics show that every 25th patient exhibits allergic symptoms to dental materials.¹
- Within the group of (methyl-) methacrylate, HEMA and TEGDMA are among those substances with the most frequent sensitization.²
- Dental staff has frequent and direct contact with these substances in some circumstances and can therefore be considered a risk group.²

¹ Prof. Dr. Dr. F.-X. Reichl, Outpatient Clinic for Conservative Dentistry and Parodontology, Munich, Swiss Dental Journal 12-2014

² «Biokompatibilität zahnärztlicher Werkstoffe» (“Biocompatibility of Dental Materials”), G. Schmalz & D. Arenholt-Bindslev, Urban & Fischer 2005.

³ Images: With the kind permission of the Walther Straub Institute for Pharmacology and Toxicology of the University of Munich



Prof. Dr. Dr. Franz-Xaver Reichl, LMU Munich



1. Image: Perioral dermatitis after application of a ceramic inlay with an adhesive³

2. Image: Adverse effects of composite/adhesive applications in patients:

Lingua plicata (fissured tongue) and Lingua geografica (benign migratory glossitis)³

TABLE OF CONTENTS

ADHESIVES	5 - 6
BONDING AGENTS	7 - 9
DUAL-CURING FIXING	10
COMPOSITES	11 - 14
ESTHETICS AND SEALING	15
ACCESSORIES	16
APT ADVANCED POLYMER TECHNOLOGY	17 - 20
SAREMCO PRINT (3D)	21 - 26
CLINICAL CASES RESTORATION	27 - 30
CLINICAL CASES SAREMCO PRINT	31 - 34

ADHESIVES



SAREMCO ELS UNIBOND

1 component

Light-curing, 1-component self-etching adhesive. Used to create a permanent bond free from marginal gaps between the dental hard tissue and light-curing filling/fixing material. Thanks to the rapid and problem-free preparation at the patient's side, **saremco els unbond** is especially suitable for use in children, for whom every minute in the dentist's chair is a small eternity.

AT A GLANCE

- free from TEGDMA, HEMA and BisGMA
- very high bond strength*
- suitable for all etching techniques (non-etch, total-etch, selective-etch, etc.)
- the most frequently used adhesive by SAREMCO Dental AG

	REF
els unbond bottle 5 ml	8013

*els unbond bond measurements

Dr. Uwe Blunck, May 2016 (University Medicine Berlin, Charité Center for Dentistry, Oral Medicine and Orthodontics, Department of Conservative and Preventive Dentistry)

Shear bond strength (mean values in MPa) after 24h

DENTIN	Etch & Rinse	34.15 MPa
	Self-Etch	25.60 MPa
ENAMEL	Etch & Rinse	27.78 MPa
	Self-Etch	15.12 MPa



1

Initial situation:
approximal carious defects,
teeth 25-26



2

Dental hard tissue with
saremco cmf etch gently
conditioned,
saremco els unbond applied and
polymerized



3

Reconstruction of the cavities with
saremco els flow and
saremco els composite



4

Completed restoration and polishing

Treatment | Photos Dr. med. dent. Fabio Saccardin | Heiden AR | Switzerland

ADHESIVES



SAREMCO CMF ADHESIVE SYSTEM

3 components

Three-component adhesive with matching etching gel as well as primer and bond. **saremco cmf etch** is ideal for gentle treatment thanks to the optimal acidity. Low-viscosity primer that provides excellent penetration into the dentinal tubules. Glass-filled, medium-viscosity bonding that can be applied as a "liner bond". Good marginal seal and bond strength on enamel and dentin. Targeted application thanks to thin application needle. Due to the excellent wetting, the risk of desiccation and collapse of the collagen fibers is reduced.

		REF
cmf etch	Syringe 2,5 ml	7551
cmf etch stock package	Syringe 25 ml	7559
cmf prime	2,5 ml	7552
cmf prime stock package	4 x 2,5 ml	7554
cmf bond	3 ml	7553
cmf bond stock package	4 x 3 ml	7555

AT A GLANCE

saremco cmf etch

- gentle treatment thanks to increased pH value
- reduced risk to the collagen fibers
- excellent marginal seal and bond strength
- total etch technique

saremco cmf adhesive

- free from TEGDMA, HEMA and BisGMA
- high bond strength on enamel and dentin*
- reliable seal thanks to good wetting and penetration behavior
- prevention of post-operative sensitivities (gentle to the dental pulp)

* cmf adhesive system/technical data:
Micro-tensile bond strength on dentin: 25.7 ± 5.8 MPa, micro-tensile bond strength on enamel: 30.7 ± 9.1 MPa (Leuven University, published in 2008)

SAFETY AND PERFORMANCE

Maximum safety and impressive performance – supported by solid scientific research.

SAFETY

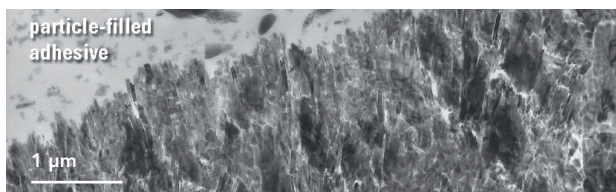
- gentle tolerability: gentle properties for comfortable application

CLINICAL PERFORMANCE

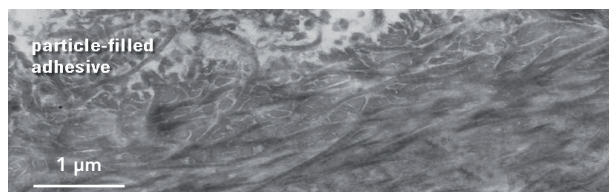
- excellent proven durability¹:
six-year study confirms Class II restorations
- reliable long-lasting effect²:
five-year study supports Class II restorations

¹ Durability of a low shrinkage TEGDMA/HEMA-free resin composite system in Class II restorations. A 6-year follow up: https://www.saremco.ch/wp-content/uploads/2019/12/els_CIII_6yr_Dent_Mat17.pdf

² A randomized controlled 5-year prospective study of two HEMA-free adhesives, a 1-step self-etching and a 3-step etch-and-rinse, in non-carious cervical: https://www.saremco.ch/wp-content/uploads/2019/12/Prof_van_Dijken.pdf



The mild cmf etch results in a very good micro-retentive surface and hence in excellent enamel bond strength (Leuven University, 2007)



A uniform hybrid layer of 3µm forms the basis for excellent dentin bond strength. (Leuven University, 2007)

BONDING AGENTS



SAREMCO ZIRCONIA PRIMER

1 component

Bonding agent for zirconium dioxide frameworks. Ensures strong bonding with methacrylates and zirconia ceramics. Designed for indirect manufacturing of dental prostheses.

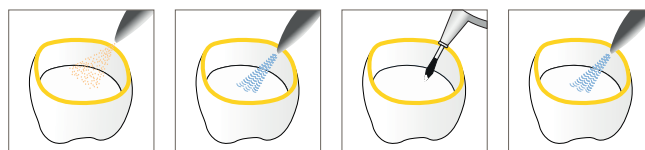
AT A GLANCE

- free from TEGDMA, HEMA and BisGMA
- specially developed for zirconium dioxide surfaces
- excellent bonding to hard zirconia surfaces
- superior quality for reliable application

	REF
zirconia primer bottle 5 ml	8067

CONDITIONING

Roughen zirconium dioxide frameworks using 110 μ aluminum oxide at 2-3 bar, clean with oil-free air pressure, wet surface with **saremco zirconia primer**, then apply fixing material or veneering material.



Roughen
with 110 μ
aluminum oxide
at 2-3 bar

Dry
with oil-free air
pressure

Apply
using a brush

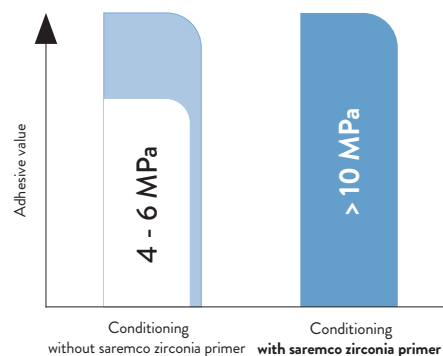
Dry
with oil-free air
pressure

GOOD TO KNOW

Developed and tested in close cooperation with renowned experts in the field, **saremco zirconia primer** demonstrates excellent results. The achieved improved performance now enables the bonding of zirconia restorations on a new level.

Bond strength of zirconia primer (internal measurement)
on roughened surface

Conditioning without zirconia primer	4 - 6 MPa
Conditioning with zirconia primer	> 10 MPa



BONDING AGENTS



SYSTEM SUITABILITY
SAREMCO PRINT (3D)

SAREMCO PEEK PRIMER

1 component

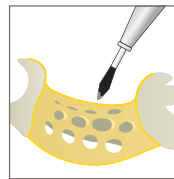
Light-curing, low-viscosity bonding agent for artificial teeth and veneers. For a firm bond between methacrylate-based polymers like PMMA, PAEK, PEEK or composites. Ideal for bonding frameworks, denture bases and various crown and bridge materials, as well as for repairing plastic crowns and bridges. Designed for indirect manufacturing of dental prostheses.

CONDITIONING

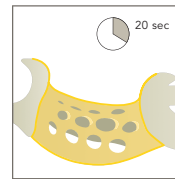
Roughen veneers, artificial teeth or materials to be primed using 110 μ aluminum oxide at 2-3 bar, wet surface with **saremco peek primer**, then cure.

AT A GLANCE

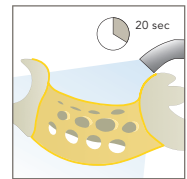
- optimal adhesion to PMMA, PAEK, PEEK, composite surfaces and 3D-printed materials
- free from TEGDMA and HEMA
- essential for numerous dental substructures
- superior quality for first-class results



Apply
Keep surface dry



Absorb
let it absorb for 20 seconds



Light-cure
polymerize for 20 seconds

	REF
peek primer bottle 5 ml	8016

Bond strength of peek primer (internal measurement)

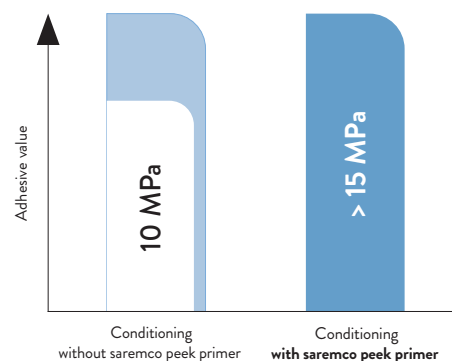
Conditioning without peek primer	bis 10 MPa
Conditioning with peek primer	> 15 MPa

CUSTOMER FEEDBACK

"The **saremco peek primer** is an essential tool in my dental laboratory. It ensures excellent bonding and reliability, especially in conjunction with **saremco print CROWNTEC** and **DENTURETEC**, for manufacturing high-quality printed prostheses as well as replacement prostheses. This product significantly improves the quality of my work and I can recommend it without reservation."



Gregor Scheidegger,
Owner & CEO
zahn and more gmbh



BONDING AGENTS



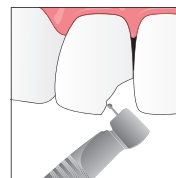
SAREMCO CSP CERAMIC SILANE PRIMER

2 components

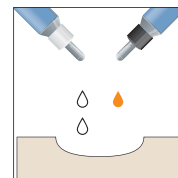
Mixable 2-component primer in a set for the silanization of silicate and aluminum oxide ceramics for improving the adhesive bond with resin-based materials or between composite cement and glass fiber-reinforced composite posts.

AT A GLANCE

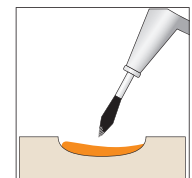
- safe repair of ceramic bridges
- much longer shelf life than pre-activated mixtures
- simple and fast mixing of both components
- improves the adhesive bond between ceramics and resin-based materials
- improves the bond strength between composite cement and glass fiber-reinforced composite posts
- System suitability **saremco cmf bond**



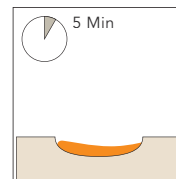
Roughen
the surface,
keep dry



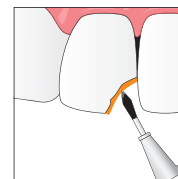
Dose
2 drops base,
1 drop activator



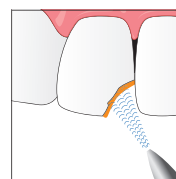
Mix
the liquids



Wait
until liquid appears
homogenous and
transparent



Apply
and rub in until a
shiny film appears



Dry
with oil-free air,
keep dry

... immediately continue with
bonding and restoration.

	REF
csp ceramic silane base 3 ml	7481
csp ceramic silane activator 1,5 ml	7482

	REF
csp ceramic silane primer set 1 x silane base 3 ml, 1 x silane activator 1,5 ml, accessoires	7480

DUAL-CURING BONDING



SAREMCO ELS DUOBOND

Dual-curing, 2-component self-etch bond for creating a permanent bond between the dental hard tissue and the filling/fixing material. Suitable for various composite restorations and core build-ups. Ideal in combination with **saremco els cem**.

AT A GLANCE

- free from TEGDMA, HEMA and BisGMA
- optimal bond strength
- time-saving as no separate etching necessary luting cement
- safety due to chemical post-curing

	REF
els duobond bottles 2x5 ml (base und catalyst)	8012



SYSTEM SUITABILITY
SAREMCO PRINT (3D)

SAREMCO ELS CEM

Light- and self-curing, radiopaque composite luting cement free from TEGDMA, HEMA and BisGMA. For the definitive cementation of inlays/onlays, crowns, bridges and endodontic posts. Comes in a practical 10g double-mix syringe for an optimal mixing ratio and precise application. Can be used for indirect restorations made from composite, metal and ceramics/zirconia oxide.

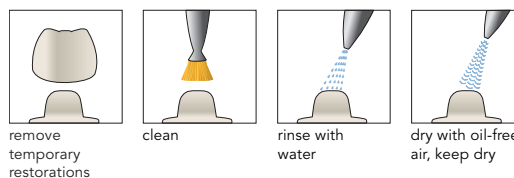
AT A GLANCE

- free from TEGDMA, HEMA and BisGMA
- excellent physical properties
- suitable for use with the **saremco els duobond** adhesive system
- excellent processing time: > 1:30 min
- also suitable for 3D-printed restorations with **saremco print (3D)**

	REF
els cem syringe 10g, universal color	7463

1

Prepare

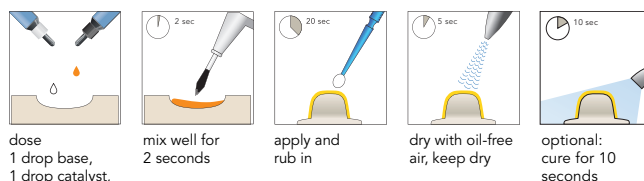


2

Bond



saremco els duobond

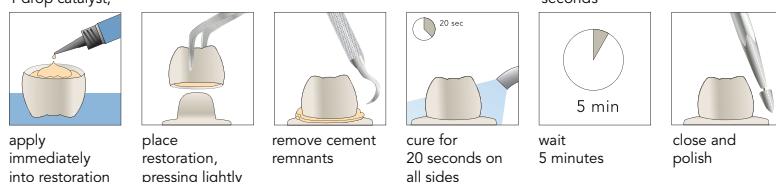


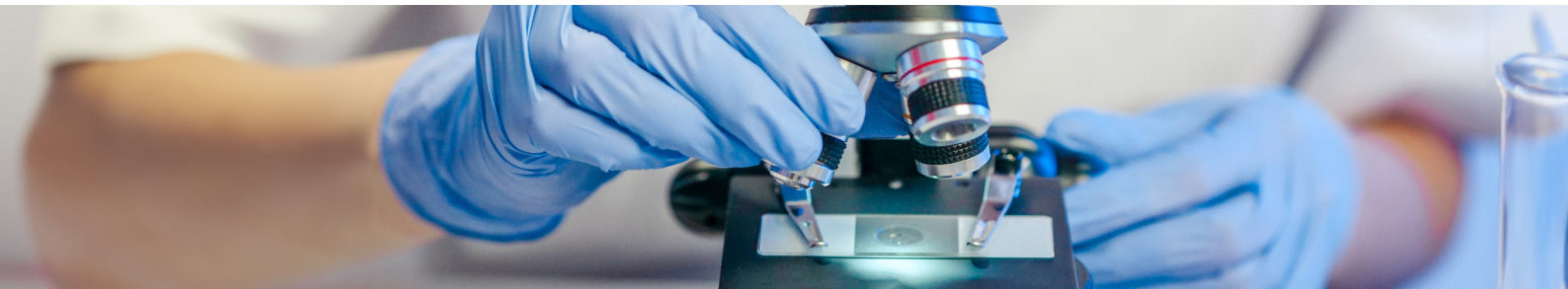
3

Cement



saremco els cem





SAREMCO ELS EXTRA LOW SHRINKAGE® HIGH TOLERANCE TO HUMAN GINGIVAL FIBROBLASTS

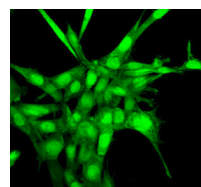
In cooperation with the University of Lyon, confocal laser scanning microscopy (CLSM) and time-lapse image recordings have shown that **els extra low shrinkage®** composite demonstrates significantly better biocompatibility than the compared competitor composite*.¹

The images show the beginning and end of the time-lapse period (15 minutes and 5 hours respectively). The green areas represent living cells and the red areas damaged cells.

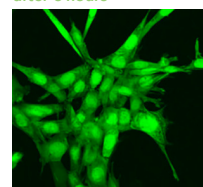
Contact time (in hours)	Cell viability (in %)				
	1	2	3	4	5
Controlled cells	100	100	100	100	100
els extra low shrinkage®	93.9 ± 7	91.3 ± 5*	89.5 ± 3*	87.6 ± 2*	87.7 ± 3*
Competitor composite*	83.2 ± 5*	88.3 ± 8*	71.5 ± 2	54.7 ± 1*	37.9 ± 1*

Table: Survival rate of developed cells with contact to composite contracts after 1, 2, 3, 4 and 5 hours. Data show the mean values ± standard deviation of 9 image stack analyses. Values with significant differences compared to controlled cells at p<0.05.

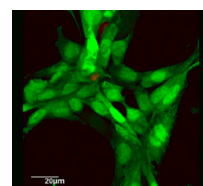
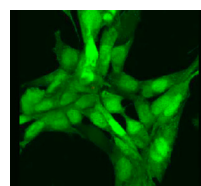
after 15 minutes



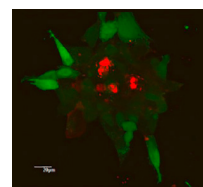
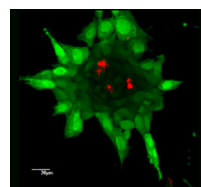
after 5 hours



Cell populations of controlled chambers:
no observed significant changes in green or red signal



Cell populations of chambers with els composite:
slight decrease in green signal, minimal increase in red signal



Cell populations of chambers with competitor composite:
moderate decrease in green signal, high increase in red signal

GOOD TO KNOW

«This scientific study impressively proves the excellent biocompatible characteristic of the **els extra low shrinkage®** composite both in terms of quality and quantity.»¹

¹ Attik N. et al. Mesoporous silica fillers and resin composition effect on dental composites cytocompatibility. <http://dx.doi.org/10.1016/j.dental.2016.11.009> 0109-5641/© 2016 Dental Materials.

* The comparative composite can be referenced in the original study.

COMPOSITES



SAREMCO ELS EXTRA LOW SHRINKAGE® COMPOSITE

Light-curing, microhybrid composite free from TEGDMA and HEMA and with extremely low shrinkage stress and good marginal seal. saremco els composite features very low water absorption and water solubility and is both easily sculpted and stable, even at 50 °C. At 7 minutes at 11,000 lux, the saremco els composite exhibits long operating light resistance. For treatments in the front and posterior tooth area of all classes from I to V. May also be used for indirect techniques.

AT A GLANCE

- free from TEGDMA and HEMA
- low shrinkage stress and good marginal seal
- radiopaque
- excellent and easy polishability to a high gloss
- total shelf life of 5 years

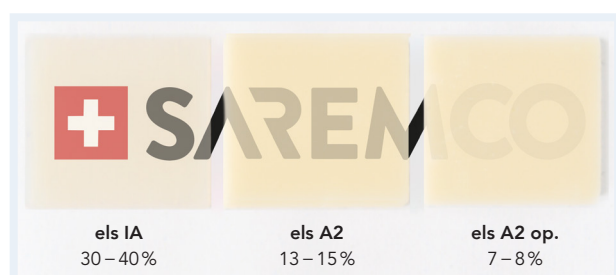
Analytical assessment «Elution behavior of newly developed ELS dental materials»

Prof. Dr. Dr. Franz-Xaver Reichl, Walther Straub Institute for Pharmacology and Toxicology at LMU Munich; 05/2014.

Composite	Distilled water		Methanol	
	HEMA	TEGDMA	HEMA	TEGDMA
els extra low shrinkage	n.d*	n.d*	n.d*	n.d*

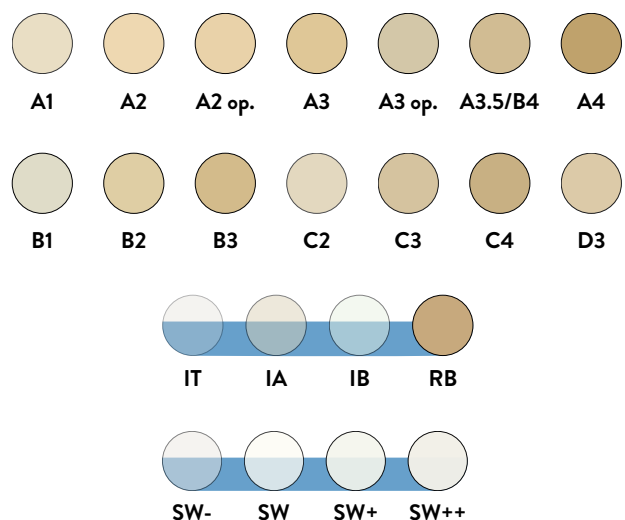
* n.d. = not detected

OPACITY OF VARIOUS ELS COMPOSITE COLORS



Syringe 4 g, Tips 20x0,37 g	REF		Syringe 4 g, Tips 20x0,37 g	REF	
	Syringe	Tips		Syringe	Tips
A1	7103	7123	C3	7059	7079
A2	7104	7124	C4	7050	7070
A2 op.	7056	7076	D3	7110	7130
A3	7101	7121	RB	7051	7071
A3 op.	7105	7125	IA	7064	
A3.5/B4	7106	7126	IB	7052	
A4	7057	7077	IT	7058	7078
A4 op.		7061	SW-	7066	7067
B1	7108	7128	SW	7055	7075
B2	7107	7127	SW+	7068	7069
B3	7102	7122	SW++	8032	
C2	7109	7129			

	REF
els intro kit tips 6x10 els Tips 0,37 g (A1, A2, A3, A3 op. A3.5/B4, B2)	7160



IT incisal transparent | IA incisal amber | IB incisal blue | RB reddish brown
SW snow white - bleach shade

List is a reference/selection guide. May deviate from the actual color.

COMPOSITES



SAREMCO ELs FLOW

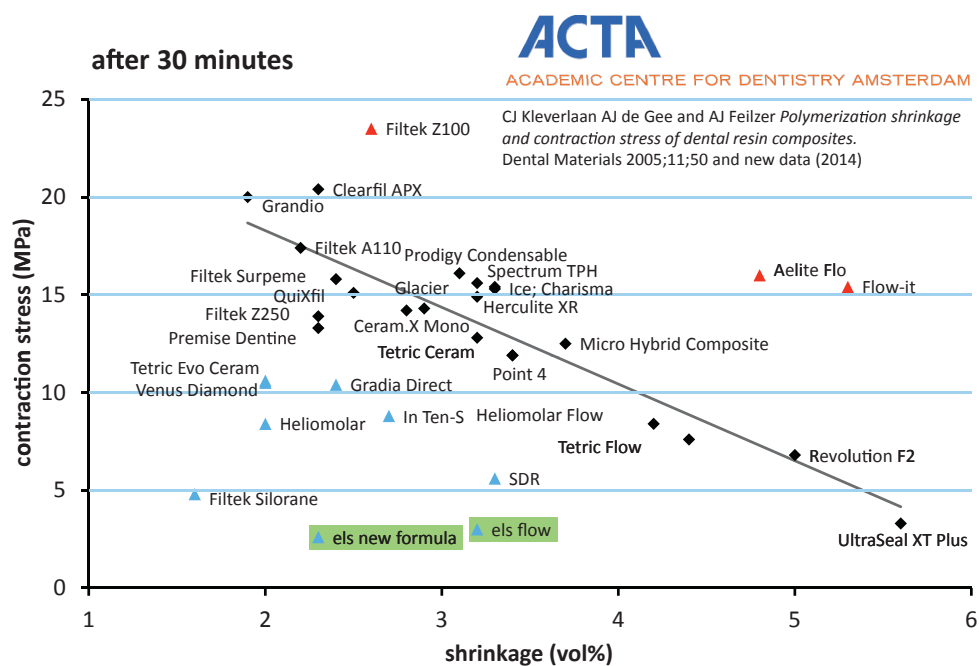
Flowable microhybrid composite for small cavities and extended fissure sealing free from TEGDMA and HEMA. Low shrinkage stress, light-curing, with very low water absorption and very low water solubility. Ideal for minimally invasive procedures.

AT A GLANCE

- free from TEGDMA and HEMA
- low shrinkage stress and good marginal seal
- radiopaque
- fine flow
- excellent and easy polishability to a high gloss
- excellent color stability

Syringe 2 g, Tips 16x0,3 g	REF		Syringe 2 g, Tips 16x0,3 g	REF	
	Syringe	Tips		Syringe	Tips
A1	7113	7013	A4	7117	
A2	7114	7014	B1	7118	
A3	8060		C2	7119	
A3 op.	7115	7015	SW	7111	
A3.5/B4	7116	7016	W op. / SW++	8041	

	REF
els flow economy kit syringe 6 x els flow syringe 2 g (A1, A2, A3 op., A3.5/B4, B1, C2)	7135



COMPOSITES



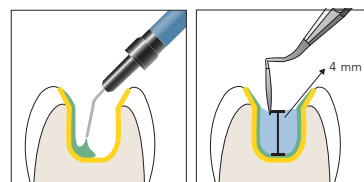
SAREMCO ELS BULKFILL

Flowable, light-curing, radiopaque microhybrid composite for underfilling (filling basis) and lining Class I and II cavities. Enables precise application thanks to the thin cannula. Must be coated occlusally with an at least 2 mm thick layer of a methacrylate-based universal or posterior tooth composite.

	REF
els bulkfill syringe 2x2 g, universal colors (transparent)	7864

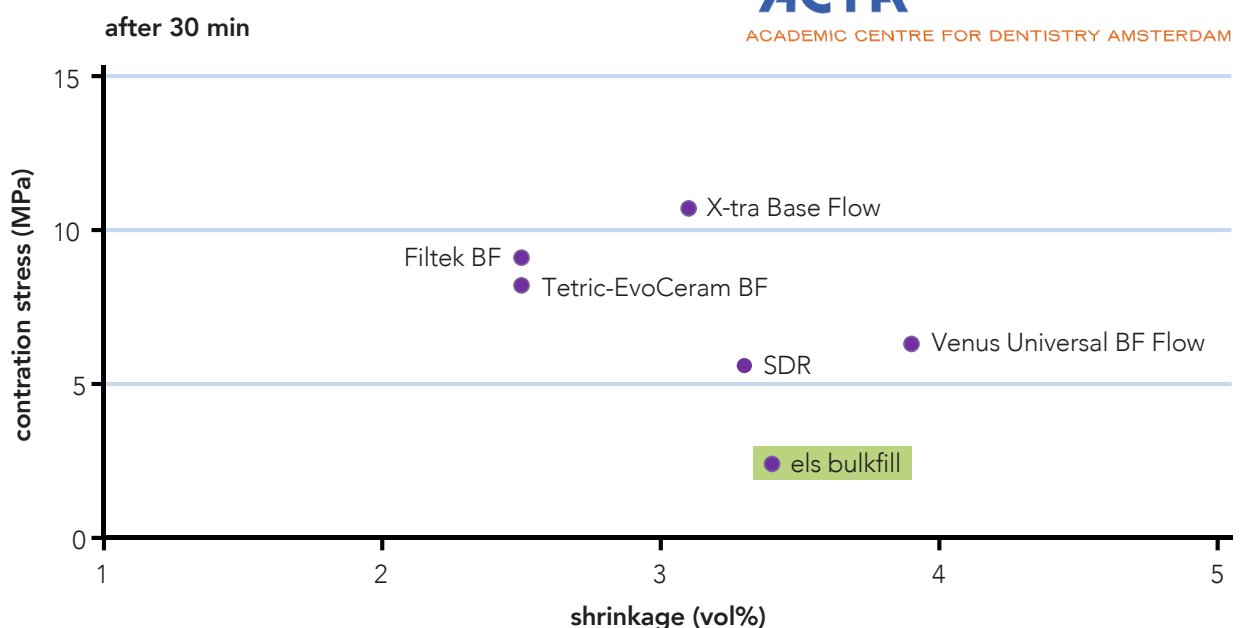
AT A GLANCE

- free from TEGDMA and HEMA
- low shrinkage stress
- flowable
- precise application
- increased curing depth for increment strength: 4 mm



Prepare
the required
quantity

Adjust and cure
gradually in 4 mm
layers



ESTHETICS AND SEALING



SYSTEM SUITABILITY
SAREMCO PRINT (3D)

SAREMCO ELs PAINTART

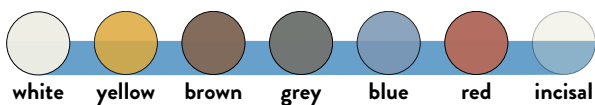
Light-curing intense colors for excellent esthetics and a natural effect. Ideal for characterizing composite and 3D-printed restorations.

AT A GLANCE

- free from TEGDMA and HEMA
- natural effect
- for excellent esthetics
- also suitable for 3D-printed restorations

Syringe, 1 ml	REF	Syringe, 1 ml	REF
white	7751	blue	7755
yellow	7752	red	7756
brown	7753	incisal	7757
grey	7754		

	REF
els paintart economy kit 6xels paintart syringe 1 ml (white, yellow, brown, grey, blue, incisal)	7750



SAREMCO ELs SEAL

Light-curing, flowable plastic materials free from TEGDMA, HEMA and BisGMA. Preventive sealing of untreated or extended fissures or pitting on baby teeth and permanent teeth.

AT A GLANCE

- free from TEGDMA, HEMA and BisGMA
- flowable
- for fissure sealing

	REF
els seal syringe 1 ml, transparent	7745
els seal stock package syringe 3x1 ml, transparent	7867
	REF
els seal syringe 1 ml, white opak	7863
els seal stock package syringe 3x1 ml, white opak	7868



3D-printed veneers with saremco print CROWNTEC, customized with saremco els paintart. Image provided by Dr. Ricardo Omi, Columbia.

ACCESSORIES



DENTAL GEMS BY SWAROVSKI

saremco dental gems are of the highest quality and utmost esthetic appearance. The finely honed Swarovski stones imbue every smile with a special radiance. saremco dental gems are available in five stylish colors. They are applied painlessly and quickly while being gentle on the teeth and can be removed equally quickly and unnoticeably.

AT A GLANCE

- Swarovski quality
- high-quality cut (Ø 1.8 mm)
- easy attachment and removal

	REF
 diamond crystal, 10 pieces	7815
 shimmershell, 5 pieces	7816
 ruby, 5 pieces	7817
 aqua marine, 5 pieces	7818
 sapphire, 5 pieces	7819



SAREMCO APPLICATOR

The robust and ergonomic applicator is suitable for dosing all commercially available composite tips. The extended mount enables comfortable handling even in the molar area. The applicator is easy to clean and long-lasting.

AT A GLANCE

- robust and long-lasting
- ergonomic
- easy to clean

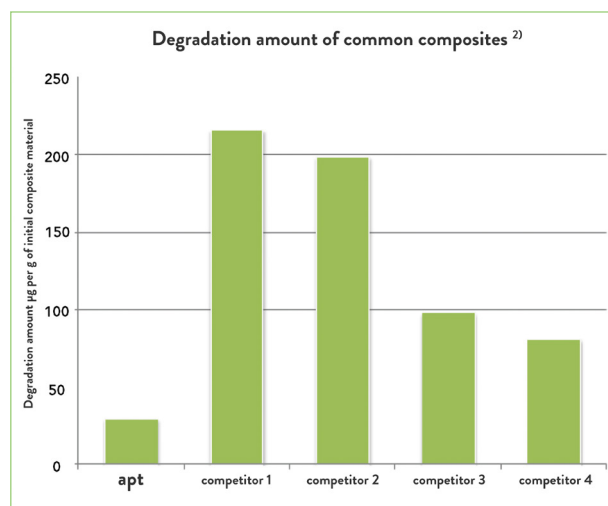
	REF
SAREMCO applicator	7842

ONE STEP AHEAD WITH INNOVATIVE POLYMER TECHNOLOGY!

Degradation-stable polymers allow for fewer by-products and thus better tolerability.

saremco apt composite based on a new SAREMCO MONOMER. The monomer was developed within the framework of the INNOSUISSE project in collaboration with the Swiss Universities of Applied Sciences Freiburg and Sion (HES-SO). Compared to established filling materials, **saremco apt composite** exhibits up to 10 times reduced degradation due to enzymes in the saliva.

It is well known that methacrylate-based dental plastic materials are broken down by enzymes.⁴⁾ The by-products find their way – more or less – uncontrolled into the human organism. These processes have scarcely been examined to date and remain completely beyond the influence of the dentist. In addition, as a result of the weakening/erosion of the polymer through degradation processes, other micro-organisms can invade the filling and thus produce secondary caries.



ELUTION BEHAVIOR OF SAREMCO APT COMPOSITE

Analytical assessment «Elution behavior of a new SAREMCO filling composite»⁵⁾

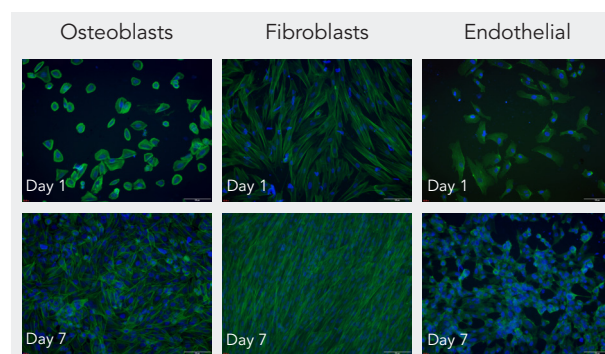
Composite	Distilled water		Methanol	
	HEMA	TEGDMA	HEMA	TEGDMA
apt composite	n.d.*	n.d.*	n.d.*	n.d.*

* n.d. = not detected

«Methacrylates are regarded as substances with high allergic potential. The higher the number of elutable methacrylates and the higher the amount of eluted methacrylates from dental materials, the greater the probability that sensitive patients can develop an allergy to it. With this new filling composite no methacrylate can be detected either in aqueous or methanolic eluate.»⁵⁾

HIGH BIOLOGICAL TOLERABILITY OF THE SAREMCO MONOMER

In multiple studies by the Zurich University for Applied Sciences (ZHAW) in Wädenswil, the **interaction of human cells with saremco apt composite**¹⁾ was examined. Osteoblasts (bone cells), endothelial cells (vascular cells) and fibroblasts (connective tissue cells) exhibit an optimal cell behavior regarding adhesion, morphology and proliferation up to a clear differentiation after 14 days.



¹⁾ Dr. Epifania Bono et. al. "In vitro characterization of a new composite material for biomedical applications an 3D (bio)printing", Zurich University of Applied Sciences ZHAW; 11/2017

²⁾ Prof. Dr. Umberto Piantini, HES-SO Valais-Wallis, degradation measurements; 04/2017

³⁾ Prof. Dr. C.J. Kleverlaan, ACTA Academic Centre for Dentistry Amsterdam; 03/2018

⁴⁾ Delaviz Y., Finer Y., Santerre J. P., Biodegradation of resin composites and adhesives by oral bacteria and saliva: A rationale for new material designs that consider the clinical environment and treatment challenges. Dental Materials 30 (2014) 16-32

⁵⁾ Univ.-Prof. Dr. Dr. Franz-Xaver Reichl, Polyclinic for Conservative Dentistry and Parodontology of the LMU and Walther Straub Institute for Pharmacology and Toxicology of the LMU, Nussbaumstr. 26, 80336 Munich, www.dentaltox.com; 03/2018

CLINICAL RESULTS OF RESTORATIONS WITH SAREMCO APT COMPOSITE COMPARED TO SAREMCO ELS COMPOSITE

SAREMCO APT COMPOSITE PROVES ITSELF IN CLINICAL TESTING

In the study, **saremco apt composite** is compared with **saremco els composite**, which has been clinically proven for almost 20 years. The assessment was done in accordance with internationally agreed standards (FDI World Dental Federation). Both composites perform very well in the published one-year results of Class I and II restorations¹⁾. The two-year results are characterized by successful feedback. A further publication is expected in 2024.

VERY GOOD PATIENT SATISFACTION

High-quality composites like the **saremco apt composite** and **saremco els composite** with low shrinkage behavior help reduce clinical problems such as post-operative sensitivities, enamel cracks, surface discoloration, degradation of the restoration edges and premature development of caries. The results demonstrated a high degree of patient satisfaction, and not only with respect to the esthetics but also regarding post-operative sensitivities, as the latter did not occur¹⁾.

HIGH LEVEL OF SAFETY AFTER ONE-YEAR RECALL

At the one-year recall, there were no cases of occlusal wear or loss of contact points or endodontic complications or post-operative sensitivity for both composites. The color match is predominantly good, with no difference in color and/or translucency compared to the natural tooth.



1

Initial situation:
approximal carious defects,
teeth 15-16



2

Status after final
cavity preparation



3

Completed restoration of teeth
15 with **saremco apt composite** and
16 with **saremco els composite**



4

One-year post-operative result

¹⁾ Medipol University, Dental School, Center for Restorative and Regenerative Medical Research, Biomaterials and Translational Dental Research Laboratory (REMER), Istanbul, Turkey; 09/2019

APT ADHESIVE



SAREMCO APT UNIBOND

1 component

Light-curing, 1-component self-etching adhesive. Used to create a permanent bond free from marginal gaps between the dental hard tissue and light-curing filling/fixing material.

saremco apt unbond can be used for direct and indirect light-curing, composite-based restorations. The latter when using light-curing composite cements to affix inlays, onlays, crowns and bridge work.

Degradation by saliva is reduced by up to a factor of 10 compared to conventional one-bottle adhesives. For optimal results and with regard to the degradation stability, the application is recommended for use together with **saremco apt composite** or **saremco apt flow**.

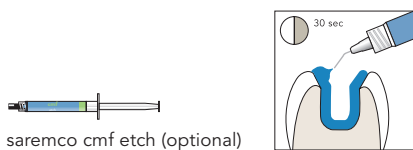
AT A GLANCE

- degradation reduced by up to a factor of 10
- free from TEGDMA, HEMA and BisGMA
- suitable for all etching techniques
- time-saving processing at the patient's side

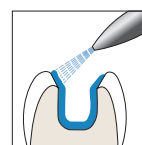
	REF
apt unbond bottle 5 ml	8030

1

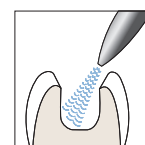
Etch



Etch
optional with cmf etch



Rinse
thorough rinsing



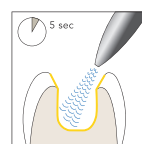
Dry
with oil-free air,
keep dry

2

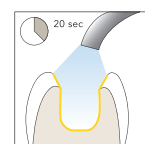
Bond



Bond
apply apt unbond
and rub in



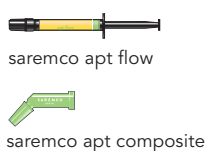
Dry
with oil-free air,
keep dry



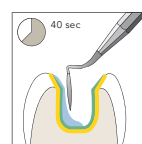
Cure

3

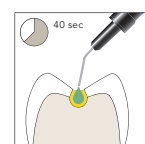
Fill



Fill and cure
optional with apt flow



Fill and cure
layer by layer with
apt composite



Fill and cure
small cavities with
apt flow

APT COMPOSITE



SAREMCO APT COMPOSITE

Light-curing, highly filled, radiopaque microhybrid composite. Degradation by saliva is reduced by up to a factor of 10 compared to traditional plastic materials. This makes the filling longer-lasting and also decreases the risk of micro-organisms penetrating which may cause secondary caries.

saremco apt composite can be used for treatments in the front and posterior tooth area of all classes from I to V as well as for indirect techniques. Outstanding results can be achieved when used in conjunction with **saremco apt unbond**.

AT A GLANCE

- degradation reduced by up to a factor of 10
- free from TEGDMA and HEMA
- very low shrinkage stress (3.1 MPa after 30 minutes)
- vibrant colors, easily sculpted, radiopaque



SAREMCO APT FLOW

Flowable, light-curing, radiopaque microhybrid composite with very low enzymatic degradation. The optimal filling solution for small cavities and expanded fissure sealing.

saremco apt flow is suitable for multiple applications and can therefore also be used for fillings with minimally invasive preparation techniques, replacement fillings for cavities with undercuts, splinting of loose teeth or as the first layer for Class I and II fillings.

AT A GLANCE

- degradation reduced by up to a factor of 10
- free from TEGDMA and HEMA
- micro-flow thanks to thin cannula
- vibrant colors, radiopaque

CUSTOMER FEEDBACK

«The **saremco apt restoration system** won us over due to its proven biocompatibility and functionality. It's free from TEGDMA and HEMA and features a very low biodegradation rate. The materials are also perfectly compatible with each other, have an optimal chameleon effect and meet almost all color requirements. What's more, the material exhibits excellent polishability and is characterized by a long shelf life. We have been happily and successfully working with these materials in our practice for years.»



Dr. Beatrix Bärenklau,
Dentist
Dr. Bärenklau AG

Tips 16x0,37 g	REF Tips	Tips 16x0,37 g	REF Tips
A1	8024	A3	8026
A2	8025	A3.5/B4	8027

Syringe 2 g	REF Syringe	Syringe 2 g	REF Syringe
A2	8028	A3	8029

A RADIO REPORT SURPRISES AND GETS THE BALL ROLLING ON A SUCCESS STORY

In 2016, Franca Schmid, CEO of SAREMCO Dental AG, heard a story on Swiss radio about the up-and-coming 3D printing in various industrial sectors. That transmission marked the beginning of the successful journey of the pioneering "saremco print CROWNTEC" 3D printed material.

"It was during a drive to St. Gallen in 2016 that I happened to hear an interesting report about the use of 3D printing in the medical field. They interviewed representatives from the University of Zurich's Center of Dental Medicine, which had already done some intensive research into the potential of 3D printing in the dental sector.

The experts explained the amazing possibilities offered by 3D printing for the manufacture of dental products, including models, splint materials, dentures and much more. When the journalist asked whether it was theoretically possible to manufacture artificial teeth or crowns with the aid of 3D printing in order to permanently replace natural teeth, it was mentioned that the necessary materials for this were not yet available. The software and 3D printers were already at a high level, but materials with the required physical properties for permanent restorations would still be a long time coming.

Fueled by this statement, I contacted the University of Zurich the next day and told them that we could provide them with test materials for permanent dental prostheses. And that's how the story started. In cooperation with the University of Zurich's Center of Dental Medicine, in-vitro chewing simulations were conducted with 1.2 million thermal cycles for crowns and bridges. The excellent results were published internationally and generated much interest.

AT A GLANCE

- **Surprised by a radio report in 2016:**
CEO Franca Schmid discovers the potential of 3D printing for SAREMCO Dental and immediately responds with a solution.
- **Intensive research and development:**
Based on existing expertise, and in collaboration with the University of Zurich, the SAREMCO Dental AG team develops the revolutionary "saremco print CROWNTEC" 3D printing material.
- **Worldwide success:**
"saremco print CROWNTEC" is sold in over 50 countries.

Encouraged by the results, we manufactured three-unit bridges and subjected them to chewing simulations: but now with 2.4 million thermal cycles. This corresponds to an approximate in-vivo lifespan of about 10 years. The materials stood up to the stress test without any breaks. And eventually the material held its own in clinical studies and numerous case studies.

As a company with more than 30 years of comprehensive experience in developing light-curing plastic materials for dental use, the development of definitive restoration materials for 3D printing was a quantum leap for us. Nevertheless, we delved deeply into the world of 3D printing. We had discussions with experts in the dental sector, established contacts with scientists, engineers and dentists and expanded our understanding of the specific requirements and needs of this new market segment.

The road to market maturity was an intensive time during which we worked hard in order to achieve our objective. Finally, the moment which we were proudly awaiting had come: We presented our saremco print CROWNTEC 3D printed material to the world. It was a ground-breaking success, because this material not only distinguished itself through its physical properties, but also with its biocompatibility and its esthetics.

The validation of over 15 printers at that point confirmed our vision and assured us that we were on the right path. Our sales activities intensified, and today saremco print CROWNTEC is available in more than 50 countries worldwide.

As CEO of SAREMCO Dental, I am proud to have been able to help shape the future of dental 3D printing. We pushed the boundaries of technology and continue to dedicate ourselves to innovation and uniqueness in order to fulfill our customer's needs worldwide."



Franca Schmid, CEO and Owner
SAREMCO Dental AG

SAREMCO PRINT



SAREMCO PRINT - INNOVATIVE AND FIRST-CLASS

The high-performance plastic materials of the **saremco print** product series are the optimal choice for 3D printing in the dental industry. This includes **saremco print CROWNTEC**.

The results after the **10-year chewing simulation with 2.4 million cycles and thermomechanical loading** prove the resilience of **saremco print CROWNTEC**. It exhibits very low fatigue behavior, especially compared to ceramics.

The comprehensive measurements were conducted in accordance with the OECD Principles of Good Laboratory Practice (GLP) [C(97) 186/Final and ENV/MC/CHEM(98)17], and the standards were exceeded: this included various biocompatibility tests, such as exhaustive extraction in an aqueous environment (ISO 10993-18), skin sensitization (ISO 10993-10), intracutaneous reactivity (ISO 10993-10), cytotoxicity (ISO 10993-5) as well as genotoxicity according to the AMES method (ISO 10993-3 and 10993-33).

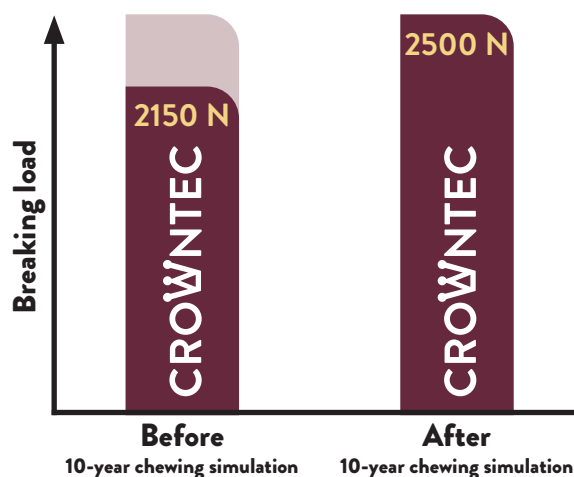
A special characteristic of **saremco print CROWNTEC** is that no substances could be eluted in an aqueous environment. **saremco print CROWNTEC** therefore represents a very well tolerated material from the allergological and toxicological perspective.¹

Digitalization has revolutionized the dental industry: Dental laboratories and dental practices are increasingly relying on 3D printers instead of milling machines. 3D printed materials such as **saremco print CROWNTEC** and **DENTURETEC** are used to manufacture permanent and temporary crowns, inlays, onlays and veneers as well as artificial teeth and all types of denture bases.

¹ Univ.-Prof. Dr. Dr. Franz-Xaver Reichl, Internationales Beratungszentrum für die Verträglichkeit von Zahnmaterialien (International Consulting Center for Dental Material Tolerability), Munich, 2019

10-year chewing simulation

A human bite can reach up to **700 newtons**. **saremco print CROWNTEC** can withstand about **three times this load**, even after aging.



**2,4 Mio.
chewing cycles!**

The aging was simulated by thermomechanical loading and 2.4 million cycles.

SAREMCO PRINT



SAREMCO PRINT CROWNTEC

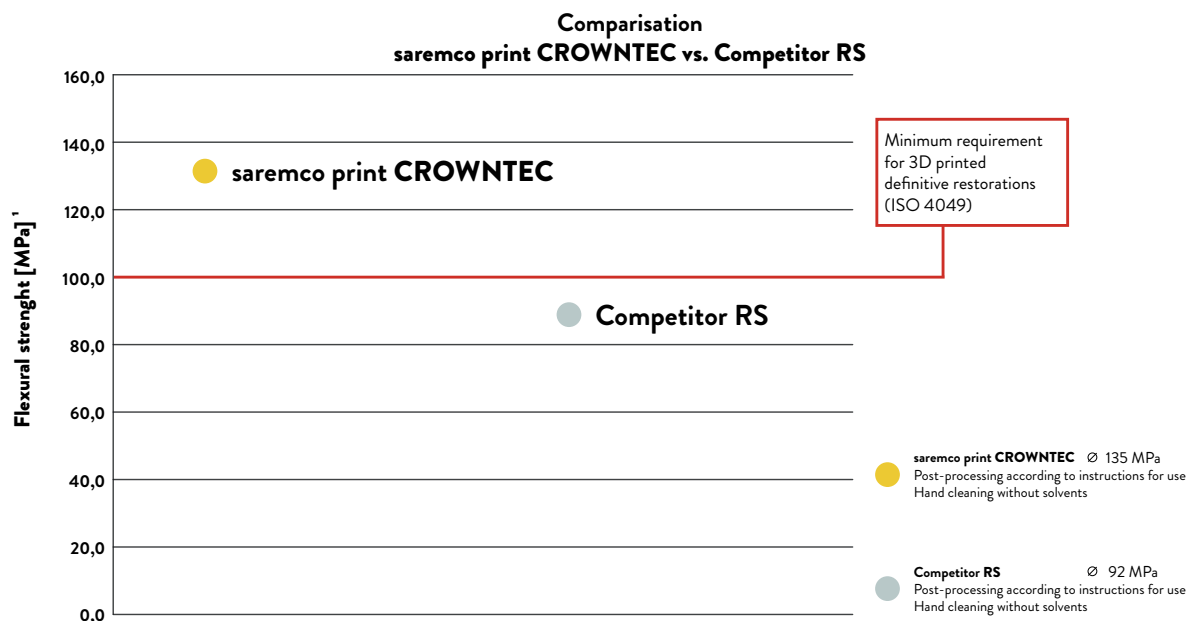
Excellent-quality light-curing plastic material for manufacturing highly biocompatible permanent restorations. The 3D printed material is immediately ready for use and is validated on many 3D printing systems.

REF	Product description
	500 g bottles
8063	CROWNTEC, A1
8052	CROWNTEC, A2
8051	CROWNTEC, A3
8065	CROWNTEC, B1
8066	CROWNTEC, Snow White (Bleach Shade)

	Farben
The following colors are available upon request by reseller	A3.5, A4, B2, B3, C3, C4, D3

AUF EINEN BLICK

- for artificial teeth of dentures
- for permanent crowns, inlays, onlays, and veneers
- for temporary bridges, crowns, inlays, onlays, and veneers
- classic VITA® colors and bleach shade Snow White
- highly esthetic monophase material with perfectly matched opacity
- excellent biocompatibility: no eluates in an aqueous environment
- enhancement with **saremco els paintart** possible



¹ External measurement according to DIN EN ISO 4049:2019-09 para. 7.11 flexural strength

SAREMCO PRINT



Snow White



B1



A1



A2



A3

SAREMCO PRINT CROWNTEC

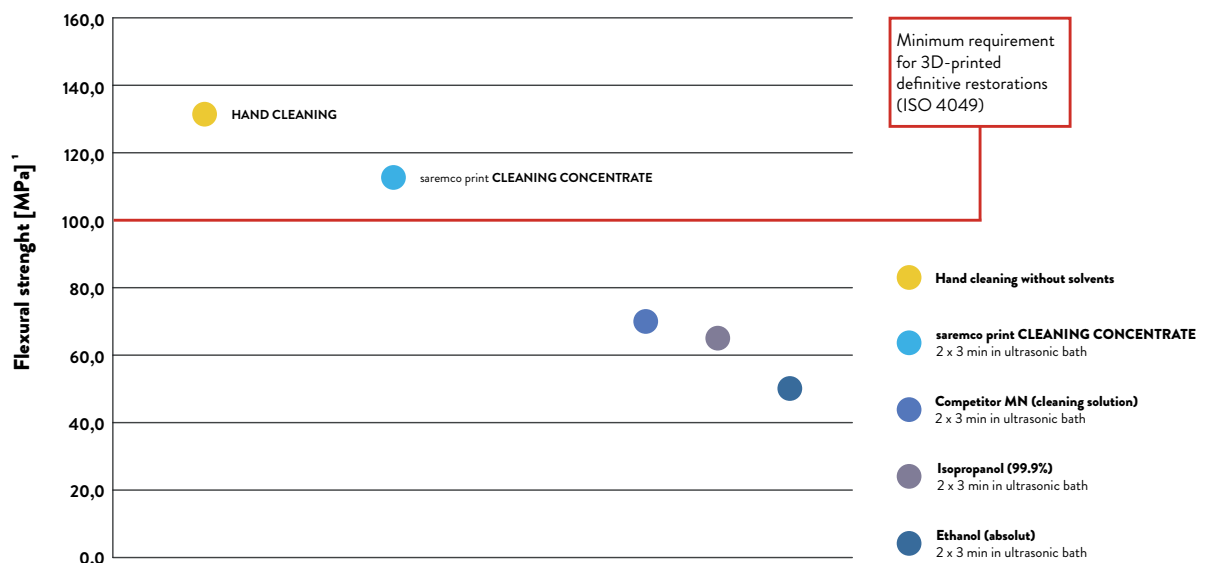
PRODUCT HIGHLIGHTS

- total shelf life of 4 years
- no separation of components
- ready to use without long mixing times
- after thermomechanical 10-year chewing simulation with 2.4 million cycles: Breaking load >2150 N
- very low fatigue behavior compared to ceramics
- durability confirmed by clinical studies and case analyses
- Bending strength >135 MPa (average) DIN EN ISO 4049
- E-module >4000 MPa DIN EN ISO 4049
- FDA 510(k) cleared, CE marked and TGA registered
- officially validated on numerous devices



Image provided by Dr. Alejandro Quesada, Costa Rica.

Comparison of cleaning methods for saremco print CROWNTEC



¹ External measurement according to DIN EN ISO 4049:2019-09 para. 7.11 Flexural strength

SAREMCO PRINT



SAREMCO PRINT DENTURETEC

Excellent-quality light-curing plastic material for manufacturing highly biocompatible denture bases with the aid of a 3D printer. Just like saremcoprint CROWNTEC, saremcoprint DENTURETEC is also immediately ready for use.

REF	Product description
8062	DENTURETEC, Pink

AT A GLANCE

- for all denture bases
- easy, fast and precise manufacturing
- no separation of components
- ready to use without long mixing times
- excellent biocompatibility: proven no residual monomers and MMA*-free
- very good physical properties
- Bending strength >100 MPa
- E-module >1000 MPa
- simultaneously strong and elastic
- long durability and high wearing comfort

* Methyl methacrylate



SAREMCO PRINT



Manufacturing of
17 liters
cleaning solutions

SAREMCO PRINT CLEANING CONCENTRATE

Enables gentle and thorough cleaning of 3D printed objects. In contrast to conventional solvents such as isopropyl alcohol or ethanol, this advanced formula preserves the physical properties of the printed objects. The concentrate is odorless and contains no flammable gases, thereby sparing the user's respiratory system.

Use three liters of saremco print CLEANING CONCENTRATE with deionized water to quickly and easily make 17 liters of ready-made cleaning solution. A highly cost-effective and environmentally friendly solution.

REF	Product description 3L bottles
Miscellaneous	CLEANING CONCENTRATE

AT A GLANCE

- environmentally friendly, water-based cleaning solution
- perfect, residue-free cleaning of 3D printed objects (process safety)
- superior alternative to isopropyl alcohol (IPA) and ethanol
- protects physical properties of 3D printed objects compared to isopropyl alcohol and ethanol
- suitable for SLA and DLP 3D printed objects (e.g. from **saremco print CROWNTEC**, as well as from the dental, jewelry and model-making industry)
- mixed cleaning solution readily biodegradable
- odorless
- can be used in ultrasound devices
- non-combustible
- non-corrosive



MIXING PROTOCOL



Preparation

For a homogeneous cleaning solution, it is essential to measure by **weight**. Measurements by volume are inaccurate.

Mixing

Add 4 parts deionized water to 1 part concentrate. Shake well.

Control

The mixed solution becomes crystal clear after a few minutes.



Scan for mixing demo on Youtube

CLEANING PROTOCOL

1



3 minutes ultrasonic bath in **mixed cleaning solution**.

2



Rinse well with warm water.

3



Blow off excess resin with compressed air.



Repeat process: The cleaning solution for **second bath** must be **fresh**.



Scan for mixing demo on Youtube

AMALGAM REPLACEMENT WITH SAREMCO ELS COMPOSITE



USE OF SAREMCO APT COMPOSITE



GAP CLOSURE WITH SAREMCO ELS COMPOSITE





Case example, posterior tooth area, dentist Christoph Pröbstl, Tuttlingen, Germany



Case example, posterior tooth area, F. Öztürk-Bozkurt, T. Toz, M. Kusdemir, A. Özsoy, E. Yüzbasıoglu, M.Özcan, Medipol University, Istanbul, Turkey



Case example, dentist Holger Isensee, St. Gallen, Switzerland

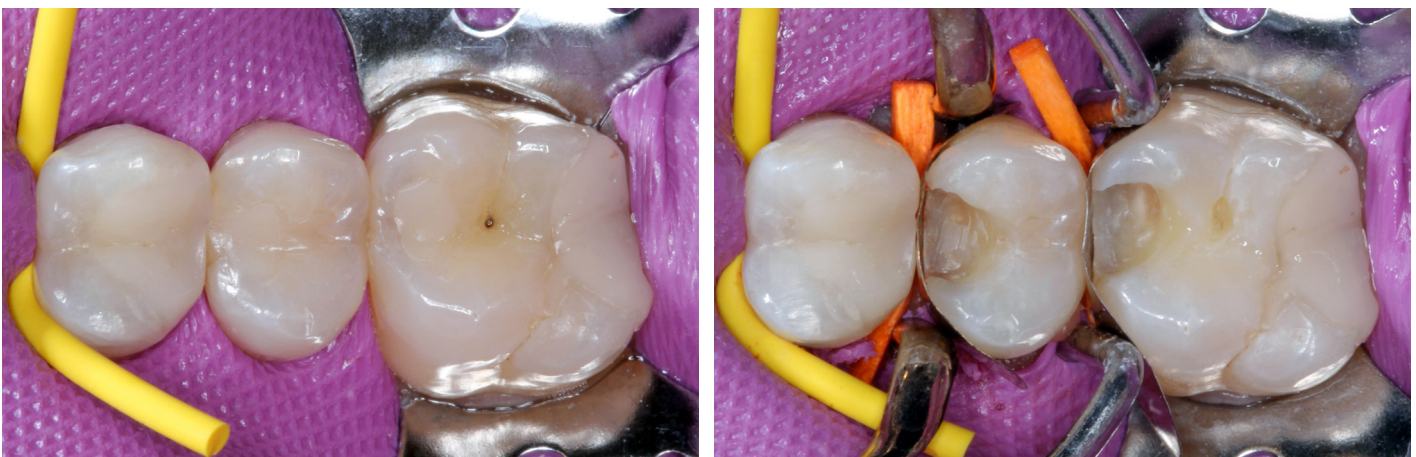
DIRECT COMPOSITE VENEERS WITH SAREMCO ELS COMPOSITE SNOW WHITE



ESTHETIC DIRECT COMPOSITE VENEERS WITH SAREMCO ELS COMPOSITE



FILLING IN POSTERIOR TOOTH AREA WITH SAREMCO ELS COMPOSITE





Case example, direct composite veneers in bleach shade Snow White, Prof. Dr. Esra Uzer Çelik, Izmir, Turkey



Case example, direct composite veneers, Prof. Dr. Esra Uzer Çelik, Izmir, Turkey



Case example, posterior tooth area, Dr. med. dent. Fabio Saccardin, Heiden, Switzerland

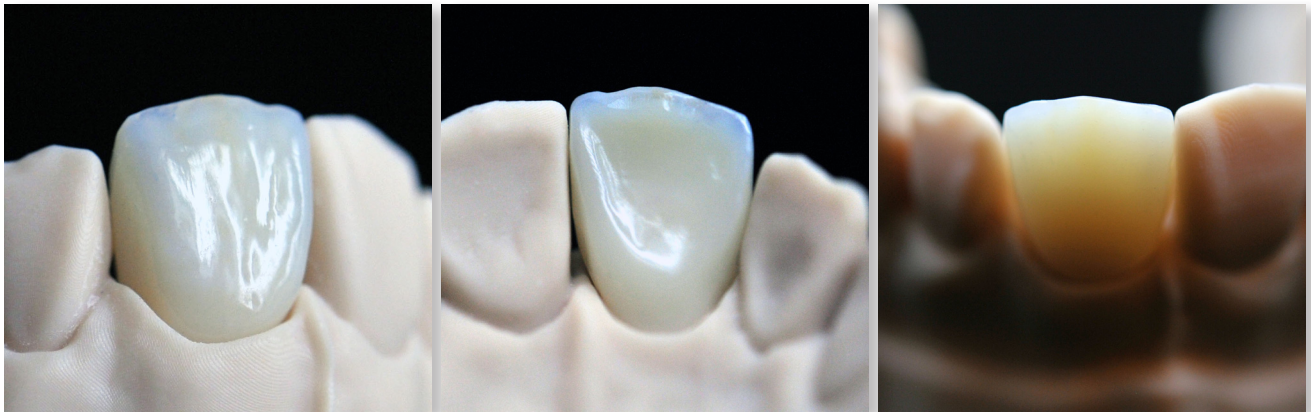
PERMANENT CROWN – POSTERIOR TOOTH

“Easily printed and colored, **saremco print CROWNTEC** represents a cost-effective alternative to monolithic all-ceramic crowns.” Case example, Dominik Mäder, Zahnmanufaktur Zimmermann & Mäder (tooth manufacturer), Bern, Switzerland



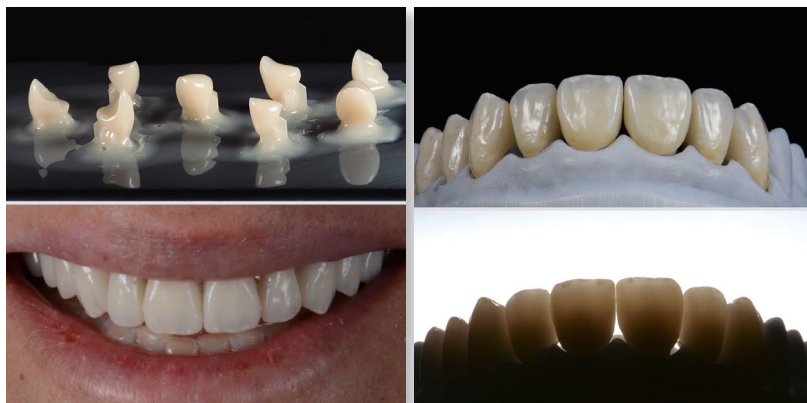
PERMANENT CROWN – FRONT TOOTH

saremco print CROWNTEC – Customization with cutback and layers of incisal composite. Case example, Dominik Mäder, Zahnmanufaktur Zimmermann & Mäder (tooth manufacturer), Bern, Switzerland



PERMANENT CROWN – RESTORATION OF 8 TEETH

saremco print CROWNTEC, excellent esthetics thanks to a natural opacity effect, extremely color-stable. Case example, Tony Zhang, DDS, Los Angeles, CA, USA



PERMANENT CROWNS AND VENEERS – 3-YEAR FOLLOW-UP

Crowns and minimally invasive veneers made from **saremco print CROWNTEC** meet expectations in long-term use. "Patients are very satisfied with the cost-effective 3D-printed option and would choose it again every time." Case example, Dr. Andrew Ip, dentist, Sydney, Australia



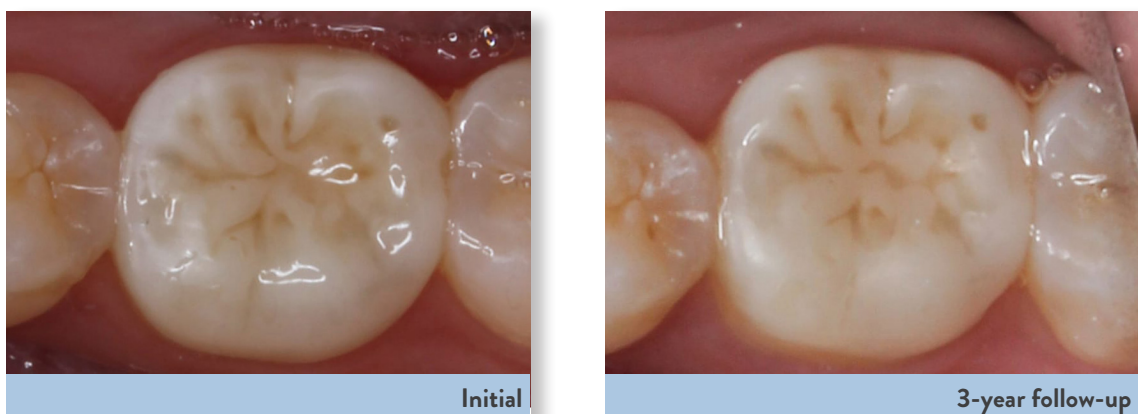
PERMANENT VENEERS

Veneers, manufactured with **saremco print CROWNTEC**. Case example, Dr. Andrew Ip, dentist, Sydney, Australia



PERMANENT CROWN – 3-YEAR FOLLOW-UP

"With proper preparation and design of a case, there is no reason why printed restorations shouldn't have a high life span." Case example, Dr. Andrew Ip, dentist, Sydney, Australia



3D PRINTED FULL DENTURE

Full dentures from **saremco print CROWNTEC** and **saremco print DENTURETEC**. Prosthetic teeth in bleach shade Snow White from **saremco print CROWNTEC**. Polished to a high gloss easily and quickly. Case example, Jeroen Klijnsma, dental technician and coach, Dentiq Dental Services, Melbourne, Australia



NATURAL ESTHETICS

Full dentures from **saremco print CROWNTEC** (shade A3) and **saremco print DENTURETEC**. Printed result before and after high-gloss polishing. Case example, Jeroen Klijnsma, dental technician and coach, Dentiq Dental Services, Melbourne, Australia



before polishing



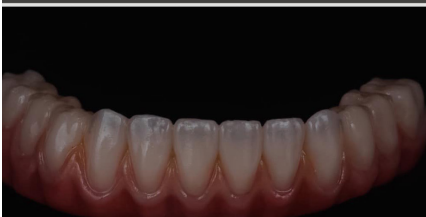
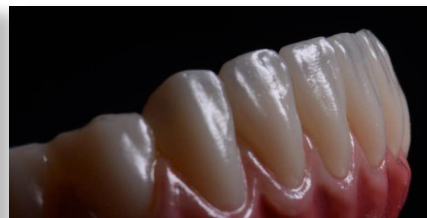
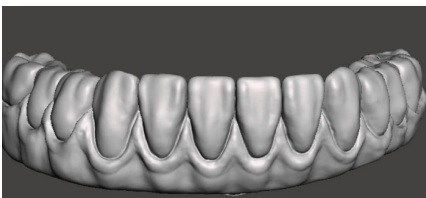
Color selection with VITA® Shade Guide



after polishing

TEMPORARY IMPLANT BRIDGE (ALL-ON-5)

Long-term comfort with robust all-on-5 bridge. Functionality and esthetics with **saremco print CROWNTEC**. Case example, Tony Zhang, DDS, Los Angeles, CA, USA



TEMPORARY IMPLANT BRIDGE FOR IMMEDIATE LOADING

Immediate loading and high degree of precision with **saremco print CROWNTEC** and **saremco print DENTURETEC**.
Case example, Dr. Alejandro Quesada, Costa Rica



Impression with cut-back



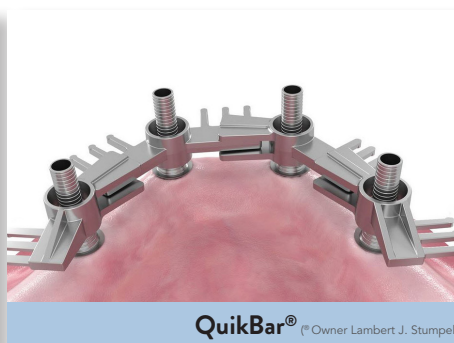
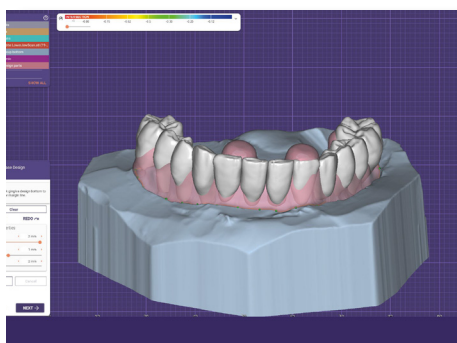
«Shell» technology

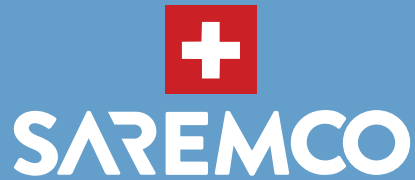


Final product

TEMPORARY IMPLANT BRIDGE (ALL-ON-4 METAL-REINFORCED)

Case example with **saremco print CROWNTEC** in combination with QuikBar®. For stable immediate loading and longevity. Case example, Lambert J. Stumpel, DDS, San Francisco, CA, USA





CONTINUING IN THE DIRECTION OF BIOCOMPATIBILITY!

SAREMCO Dental is a leader in particularly well-tolerated filling materials and has established itself internationally as a pioneer in the field of 3D printing. The company's products are already being successfully sold in over 60 countries.

For over 30 years, the independent traditional Swiss company has been developing and producing dental materials that meet the highest standards in innovation and functionality. SAREMCO Dental places the utmost importance on the health of patients and users.

This enables the company to offer dentists high-quality dental filling systems with added value. By

consistently foregoing substances with high allergic potential, dentists can offer targeted solutions for patients with hyper-sensitivity. What's more, SAREMCO Dental products offer prophylactic protection for all other patients as well as for all dental staff.

With its in-depth know-how in the field of light-curing plastic materials, the company is shaping the field of 3D printing and is setting new standards with the development of 3D printed materials.

Into the future of dental medicine with SAREMCO Dental!

Swiss quality product 

 printed climate neutral
Nr.: OAK-ER-11924-03122
www.oak-schwyz.ch/nummer

