

GREEN LINE

WE HAVE NEVER BEEN
SO CLOSE TO NATURE.



Swiss quality product 
www.saremco.ch

30
YEARS
SAREMCO
DENTAL

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. Questions about their toxicology/biocompatibility have raised a growing interest. Monomer and co-monomer compounds are used in dental medicine, e.g. in composites and dentine adhesives. It is possible for such compounds to 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, metabolism and elimination of a substance in an organism. Only resorbed substances can cause damage. 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 to CO₂ in the body. It has also been shown that intermediates produced during this metabolism can have strong toxic effects themselves – leading to “poisoning”. During the decomposition of HEMA and TEGDMA in human liver microsomes, the formation of an epoxy intermediate, 2,3-epoxymethacrylic acid, has been detected. 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 at what level do health problems start manifesting in the organism. In the past 10 years, 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 methacrylates HEMA and TEGDMA, which are commonly used in dental medicine. In con-

tinued personal research, the release rate of such compounds was determined for many of the commercially available composites and adhesives and the world’s largest database of its kind was established. In collaboration with the clinics at LMU Munich, allergy tests were developed to prove the possible presence of any existing allergies to substances from dental materials.

Selection of the best tolerated dental materials before a dental restoration

LMU Munich has recently established the International Advisory Centre for the Tolerance of Dental Materials (www.dentaltox.com). Today, after allergy testing and using the world’s largest available database it is possible to select the optimal, best tolerated filling material for a given patient before a planned dental restoration. Patients with known allergies and intolerance reactions are emphatically advised to consult this dental toxicology advisory centre at LMU before undergoing dental restoration. At this centre it can also be determined whether the patient currently has dental material in his or her mouth that is responsible for the symptoms. If that is the case, the patient should have the material removed as quickly as possible and replaced by the recommended, best tolerated dental material.

Prof Dr Dr Franz-Xaver Reichl, LMU Munich

HEMA and TEGDMA belong to these kinds of substances within the group of (methyl-) methacrylates which are known to have the highest allergization.¹

Dental employees can be seen as a high-risk group, because they probably have frequent and direct contact with these substances.¹

Statistically speaking, every 25th patient already shows allergic symptoms on dental materials.²



1. picture: Perioral dermatitis after application of a ceramic inlay with an adhesive³
2. picture: Adverse effects of composite/adhesive applications in patients: Lingua plicata (fissured tongue) and Lingua geografica (benign migratory glossitis)³

¹ “Biokompatibilität zahnärztlicher Werkstoffe”, G. Schmalz & D. Arenholt-Bindslev, Urban & Fischer 2005.

² Prof. Dr. Dr. F.-X. Reichl, Polyclinic for Conservative Dentistry and Periodontology Munich, Swiss Dental Journal 12-2014.

³ Pictures were kindly provided by the Walther-Straub-Institute for Pharmacology and Toxicology at the University of Munich.

WE HAVE NEVER BEEN SO CLOSE TO NATURE.

PIONEERING MATRIX TECHNOLOGY

SAREMCO Dental produces its Green Line restoration system explicitly without the monomers TEGDMA and HEMA, and does not replace these substances by adding other monomers of low molecular weight. Moreover, SAREMCO Dental avoids urethane-methacrylate (e.g. UDMA), because UDMA always contains HEMA, albeit in traces. Given the toxicology and allergology of TEGDMA and HEMA described in the literature, the removal of these substances from dental materials has a preventive effect in toxicological and allergological terms, and thus provides a benefit.

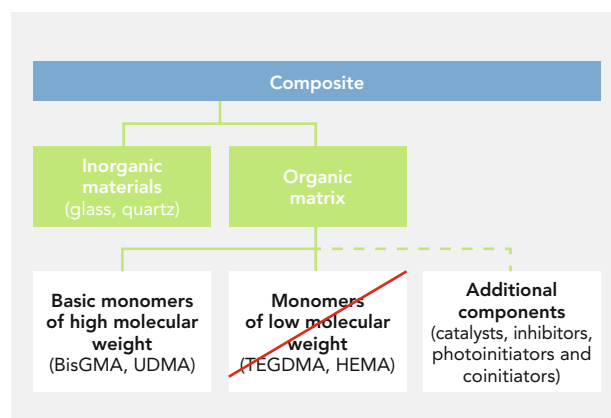


Figure: simplified illustration of a conventional composite composition

HIGHLY TOLERATED BY HUMAN GINGIVAL FIBROBLASTS

A study conducted by the University of Lyon shows, through 3D confocal laser scanning microscopy combined with time-lapse imaging, that the composite *els extra low shrinkage*® is significantly better tolerated by human gingival fibroblasts than the tested composite X¹.

Contact time (hours)	Cell viability (%)				
	1	2	3	4	5
Control cells	100	100	100	100	100
<i>els extra low shrinkage</i> ®	93.9 ± 7	91.3 ± 5*	89.5 ± 3*	87.6 ± 2*	87.7 ± 3*
Composite X*	83.2 ± 5*	88.3 ± 8*	71.5 ± 2	54.7 ± 1*	37.9 ± 1*

Table: Rate of live HGF cells evolution after 1, 2, 3, 4 and 5 h of contact with composites extracts. Data show mean values ± SD of nine images stacks analysis. Values are significantly different from control cells at $p < 0.05$.

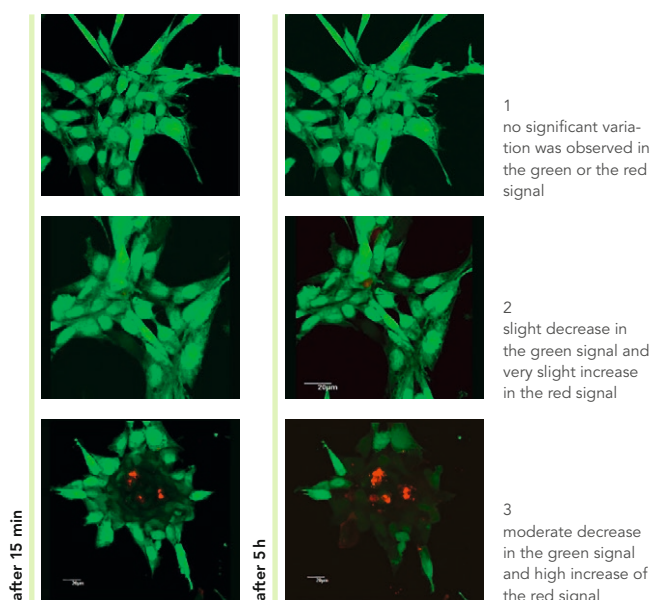


Figure: CLSM images of a cell population from (1) a control chamber, (2) *els extra low shrinkage*® chamber and (3) composite X chamber; at the beginning and the end of the time-lapse period (15 min and 5 h, respectively). Green areas are live cells and red areas are damaged cells.

"The present study demonstrates qualitatively and quantitatively the high biocompatibility behaviour of the *els extra low shrinkage*® composite." ¹

¹ Reference: Nina Attik¹ and Brigitte Grosgeat ^{1,2}

¹ Laboratoire des Multimatériaux et Interfaces, UMR CNRS 5615, Université Lyon1, Villeurbanne, France

² Université Lyon1; Service de Consultations et de Traitements Dentaires; Hospices Civils de Lyon, Lyon, France

* consult original study for comparison composite.

SAREMCO ADHESIVE SYSTEM



ELS UNIBOND

1-component

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

free from TEGDMA, HEMA and BisGMA

excellent bonding strength*

rapid and problem-free preparation at the patient's side

suitable in combination with all etching techniques (non-etch, total-etch, selective etch, etc.)

	REF
els unibond bottle 5 ml	8013
sample kit els unibond 1 x els unibond 1 ml, 2 x 2 els composite tips 0.37 g (A2, A3), 1 x els FLOW composite tip 0.3 g (A3op.)	8015

*Bonding measures els unibond

OA Dr. Uwe Blunck, Mai 2016 (Charité – Universitätsmedizin Berlin, Charité Centrum für Zahn-, Mund- und Kieferheilkunde, Abteilung für Zahnerhaltung und Präventivzahnmedizin)

shear bond strength (mean in MPa) after 24 h

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



ELS DUOBOND

2-component

Dual-curing 2-component self-etching adhesive. It is used to create a permanent, gap-free bond between the dental hard tissue and light-, self- or dual-curing filling / fixing material.

free from TEGDMA, HEMA and BisGMA

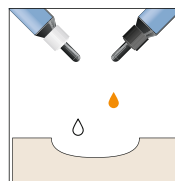
high bond strength*

to use for direct self- or dual-curing composite restorations and core build-ups as well as direct light-curing restorations on a composite basis

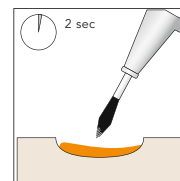
system completion with SAREMCO els cem

	REF
els duobond bottles 2x5 ml (base & catalyst)	8012
els duobond set (incl. els cem) (bottles 2x5 ml, syringe 10 g)	7866

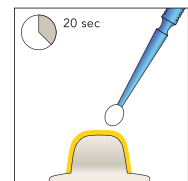
*shear bond strength (human dentine):
> 17 MPa (light curing); > 8 MPa (cold curing)
shear bond strength (human enamel)
> 12 MPa (light curing); > 8 MPa (cold curing)



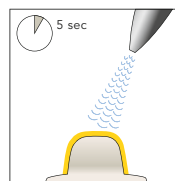
dose
1 drop of base,
1 drop of catalyst



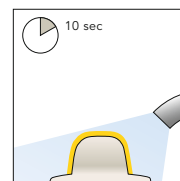
mix
well for 2 seconds



apply
and massage



dry
with oilfree air,
keep dry



optional:
cure for 10 seconds

... immediately
proceed with the
next work step.



CMF ADHESIVE SYSTEM

3-component

A 3-component adhesive system with coordinated etching gel, primer and bonding agent. Cmf etch is a gentle etching gel for the total-etch technique. cmf prime is low viscous and penetrates easily into the dentine tubules. Glass-filled, medium viscosity bonding agent can be applied in the same way as a liner bond. High marginal integrity and bond values on enamel and dentine.

CMF etch

total-etch technique (etches quickly, thoroughly and gently)

precise application due to the fine application needle with positional stability, to dose accurately

outstanding wetting properties

gentle on dentine and enamel due to its higher pH value

risks like overdrying and collapse of the collagen fibres are reduced

CMF PRIME & BOND

free from TEGDMA, HEMA and BisGMA

light-curing enamel and dentine bonding agent

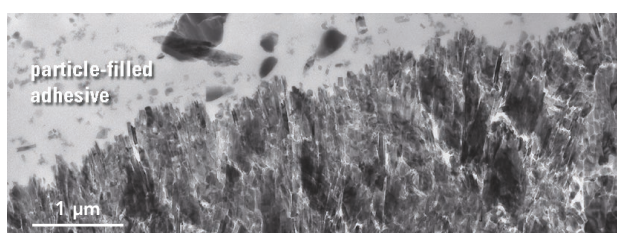
prevents postoperative sensitivity (protects the pulp)

excellent coordination of cmf prime and cmf bond viscosities

reliable sealing due to excellent wetting and penetration properties

high bond strength in enamel and dentine*

* cmf adhesive system: microtensile bond strength on dentine: 25.7 ± 5.8 MPa, microtensile bond strength on enamel: 30.7 ± 9.1 MPa (University of Leuven, published 2008)



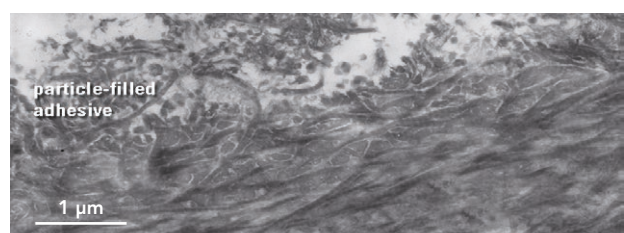
The mild cmf etch produces an optimal microretentive surface that ensures an excellent enamel bond. (University of Leuven, published 2008)

	REF
cmf etch syringe 2.5 ml	7551
cmf etch stock package syringe 25 ml	7559

	REF
cmf prime 2.5 ml	7552
cmf prime stock package 4x2.5 ml	7554

	REF
cmf bond 3 ml	7553
cmf bond stock package 4x3 ml	7555

	REF
cmf adhesive system 1 x cmf etch 2.5 ml, 1 x cmf prime 2.5 ml, 1 x cmf bond 3 ml	7550
cmf start-up set tips 1 x cmf etch 2.5 ml, 1 x cmf prime 2.5 ml, 1 x cmf bond 3 ml, 3x10 els tips 0.37 g (A1, A2, A3), 3x1 els flow tip 0.3 g (A2, A3 op., A4)	7561
cmf start-up set syringe 1 x cmf etch 2.5 ml, 1 x cmf prime 2.5 ml, 1 x cmf bond 3 ml, 3x els syringe 4 g (A1, A2, A3)	7560



A uniform hybrid layer of 3 µm forms the basis for an excellent dentine bond. (University of Leuven, published 2008)

ELS EXTRA LOW SHRINKAGE® COMPOSITE



ELS EXTRA LOW SHRINKAGE® COMPOSITE

Light-curing microhybrid composite without TEGDMA and HEMA and with very low shrinkage stress. For all Class I to V restorations in the anterior and posterior regions. Can also be used for the indirect technique.

free from TEGDMA and HEMA

low shrinkage stress and minimum risk of micro cracks

resistance to the operating light for up to 7 minutes at 11 000 lux

minimum water absorption and water solubility

easily sculpted and positionally stable even at 50° Celsius

long-term shade stability/radiopaque

vital colours, ideal for aesthetic dentistry (based on VITA® shades)

easily polished to an excellent high lustre

does not adhere to the instrument

syringe 4 g, tips 20x0.37 g	REF syringe	tips	syringe 4 g, tips 20x0.37 g	REF 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	RB op.	7062	7063
A3.5/B4	7106	7126	IA	7064	7065
A4	7057	7077	IB	7052	7072
A4 op.	7060	7061	IT	7058	7078
B1	7108	7128	SW-	7066	7067
B2	7107	7127	SW	7055	7075
B3	7102	7122	SW+	7068	7069
C2	7109	7129			

	REF
els introkit with tips 6x10 els tips 0.37 g (A1, A2, A3, A3 op. A3.5/B4, B2),	7160
els start-up set syringes 1xcmf etch 2.5 ml, 1xels unbond 5 ml, 3xels syringes 4 g (A2, A3, A3.5/B4)	7650

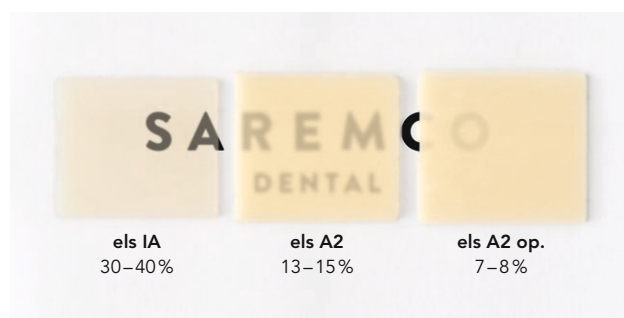
RB reddish brown | IB incisal blue | IT incisal transparent
IA incisal amber | SW snow white

Analytical report "Eluting behaviour of a new developed ELS dental filling material"
Prof Dr Dr Franz-Xaver Reichl, Walther-Straub-Institute for Pharmacology and Toxicology, 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 detectable

OPACITY OF VARIOUS ELS COMPOSITES COLOURS



The percentages indicate the proportion of light that passes through



ELS EXTRA LOW SHRINKAGE® FLOW COMPOSITE

Flowable microhybrid composite for small cavities and extended fissure sealing free from TEGDMA and HEMA. Reduced shrinkage stress, light-curing, radiopaque, very low water absorption and very low water solubility.

free from TEGDMA and HEMA

low shrinkage stress and minimum risk of micro cracks

fine flow

precise to dose

ideal for working with minimal invasion

minimum water absorption and solubility

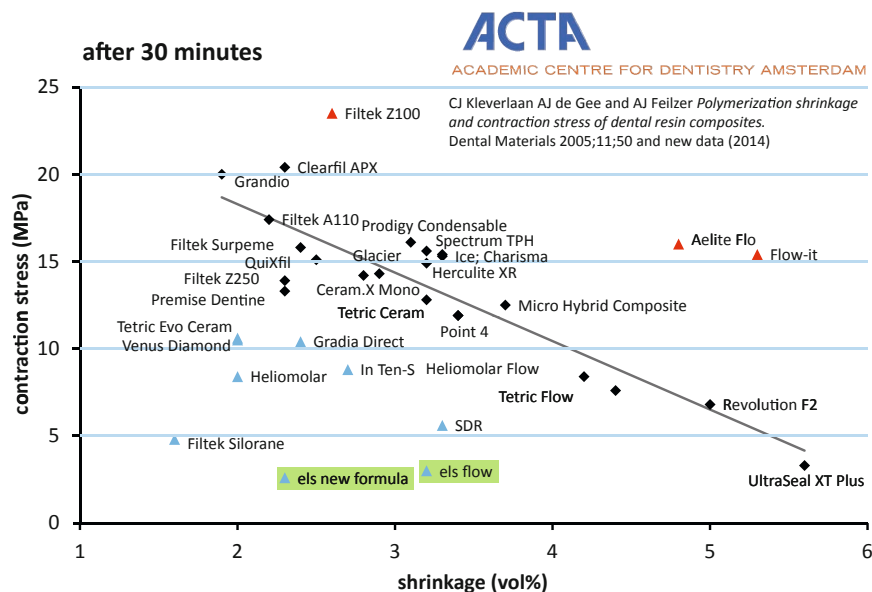
vital shades (based on VITA® shades)

high shade stability/radiopaque

easily polished to an excellent high lustre

syringe 2 g, tips 16x0.3 g	REF syringe	tips	syringe 2 g, tips 16x0.3 g	REF syringe	tips
A1	7113	7013	A4	7117	7017
A2	7114	7014	B1	7118	7018
A3 op.	7115	7015	C2	7119	7019
A3.5/B4	7116	7016	SW	7111	7011

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



WE HAVE NEVER BEEN SO CLOSE TO NATURE.



ELS BULKFILL

Flowable, light-curing and radiopaque microhybrid composite for lining (basis for filling) and lining for Class I and II.

free from TEGDMA and HEMA

low shrinkage stress

increased curing depth (increment thickness 4 mm)

precise to dose

has to be coated occlusally with at least a 2 mm thick layer of a methacrylate-based universal or lateral composite

	REF
els bulkfill syringes 2x2 g, universal shade (transparent)	7864
els bulkfill tips 12x0.3 g, universal shade (transparent)	7865



ELS SEAL

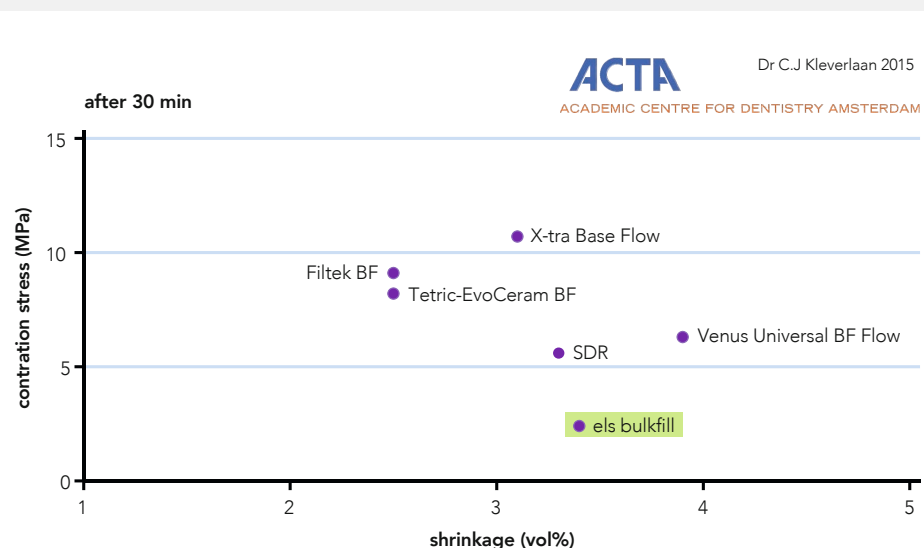
Light-curing, easy-flow fissure sealing resin free from TEGDMA, HEMA and BisGMA.

preventative sealing of untreated or extended fissures or grooves in primary teeth and permanent teeth (ideal for paediatric dentistry)

available in two shades

	REF
els seal syringe 1 ml, transparent	7745
els seal stock package syringe 3x1 ml, transparent	7867

	REF
els seal syringe 1 ml, white opaque	7863
els seal stock package syringe 3x1 ml, white opaque	7868





ELS CEM

Light- and self-curing radiopaque composite luting cement free from TEGDMA, HEMA and BisGMA. For the final cementation of inlays/onlays, crowns, bridges, root posts and screws, in a practical 10 g double mix syringe for precise application.

free from TEGDMA, HEMA and BisGMA

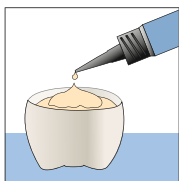
for use with indirect composite, metal and porcelain/zirconium oxide restorations

outstanding physical values

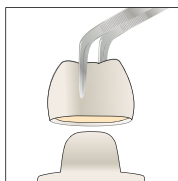
optimum mixing ratio and spot-on application due to the double syringe

system completion with els duobond

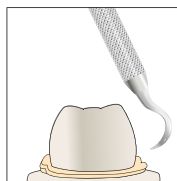
	REF
els cem syringe 10 g, universal shade (transparent)	7463



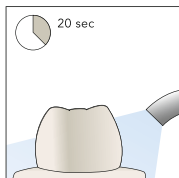
dispense directly into the restoration



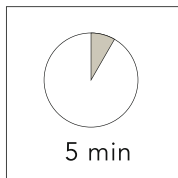
place the restoration, hold in place, light pressure



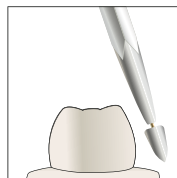
remove excess cement



cure from all sides
20 sec each



wait 5 min



finish and polish



ELS EXTRA LOW SHRINKAGE® PAINTART

Light-curing shade modifiers for optimum aesthetics.

free from TEGDMA and HEMA

perfect aesthetics

available in six different shades

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

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

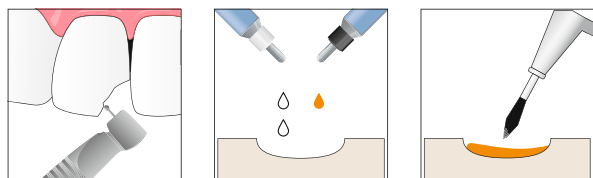
WE HAVE NEVER BEEN SO CLOSE TO NATURE.



CSP CERAMIC SILANE PRIMER

Mixable, two-component primer for silanising silicate and aluminium oxide porcelains to improve the bond strength with resin-based materials and improve the bond strength between composite cement and glass fibre reinforced composite posts.

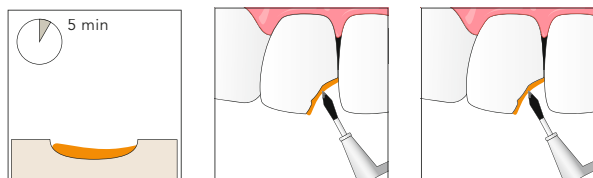
	REF
csp ceramic silane base 3 ml	7481
csp ceramic silane activator 1.5 ml	7482
	REF
csp ceramic silane primer set 1 xsilane base 3 ml, 1 xsilane activator 1.5 ml, accessoires	7480



roughen surface,
keep dry

dose
2 drops base,
1 drop activator

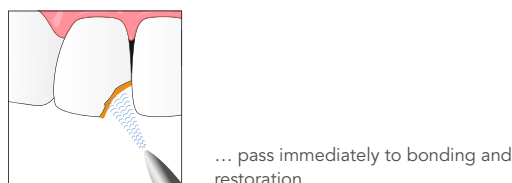
mix well



wait until liquid
appears homogenous
and transparent

apply

massage
to a lustrous film



dry
with oilfree air,
keep dry

... pass immediately to bonding and restoration.



DENTAL GEMS SWAROVSKI

Jewellery of the highest quality and processing. Pain-free, gentle to the teeth with quick attachment and traceless removal.

with finest cut (Ø 1.8 mm), available in five noble colours

easily inserted and removed

	REF
diamond crystal , 10 pieces	7815
shimmershell , 5 pieces	7816
ruby , 5 pieces	7817
aqua marine , 5 pieces	7818
sapphire , 5 pieces	7819
start-up kit 10x diamond crystal, 1x shimmershell, 1x ruby, 1x aquamarine, 1x sapphire	7813
colour kit 10x diamond crystal, 10x shimmershell, 10x ruby, 10x aquamarine, 10x sapphire	7811
economy kit 50x diamond crystal	7814



ACCESSORIES

SAREMCO APPLICATOR

This robust, ergonomic applicator is suitable for dispensing all standard composite tips. The extended holder ensures easy handling even in the molar region. Parallel guidance reduces extrusion pressure and ensures uniform dispensing. The SAREMCO applicator is sterilisable and durable.

SAREMCO SHADE GUIDE

Manageable, movable fan with the SAREMCO shades at a glance to determine the patient's tooth shade exactly (based on VITA® colours).

	REF
SAREMCO applicator	7842
SAREMCO shade guide	7850

CLINICAL CASE STUDY ON ELS EXTRA LOW SHRINKAGE®



INITIAL SITUATION

35-year-old insufficient amalgam restoration, teeth 14, 15



PREPARATION

Excavation and finely finished preparation margins



ETCHING USING CMF ETCH

Prepared cavity with sectional matrices and separations, rubber dam, total etching



BUILD-UP WITH ELS EXTRA LOW SHRINKAGE®

Reconstruction in several layers with shade A3



FINISHED BUILD-UP

Finished build-up before finishing, fissures created using SAREMCO els paintart brown



FINAL RESULT

Filling fabricated to be anatomically correct after finishing and polishing

Photographic series of a clinical case of dentist Christoph Pröbstl, Wurmlingen bei Tuttlingen (D), March 2014

SAREMCO

DENTAL



OUR NEW, BRILLIANT APPEARANCE AND OPTIMISED PRODUCTS LEAD TO SUCCESS!

30 years after the company was founded, SAREMCO Dental has strengthened its position as a niche player for products for dental filling treatment. The fresh company appearance goes along with the high-quality products which are developed and produced with a lot of know-how in Switzerland. With brilliant products such as the composite **els extra low shrinkage®** or the universal adhesive **els unbond** in keeping with

the mood of the times, SAREMCO Dental provides proven allergy patients and users with composite solutions free from TEGDMA and HEMA. Visit the website www.saremco.ch and be convinced by the Swiss quality products.

SAREMCO Dental – we have never been so close to nature.

