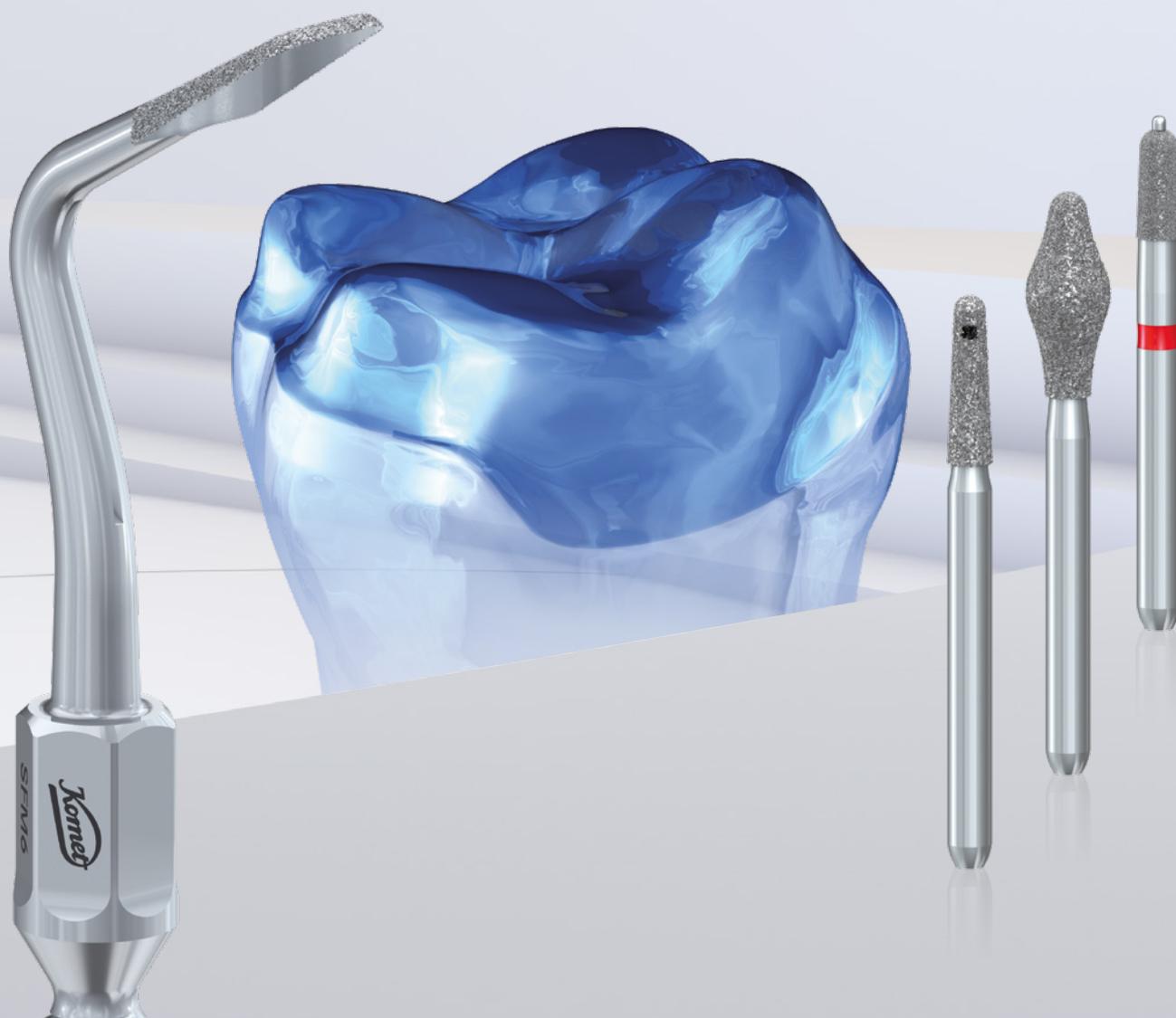




Simply saves tooth structure.  
The occlusal onlay.

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**The traditional approach:**

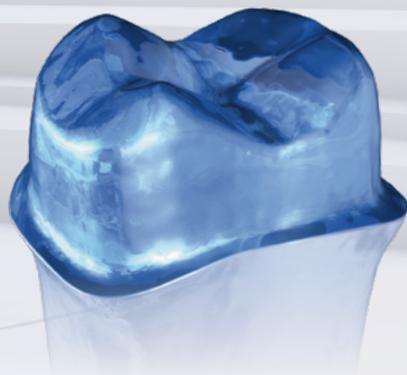
PFM crowns are the traditional restoration method for extensive defects in the hard substance of premolars and molars.

**Advantages:**

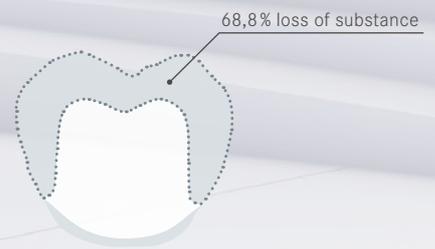
Long-established method. Durable restorations all dentists are familiar with.

**Disadvantages:**

The preparation causes a substantial loss of hard substance. This increases the probability of biological complications, such as pulpitis and crown margins almost reaching up to the gingival.



Traditional crown preparation of a first molar.



68,8 % loss of substance during a traditional crown preparation\*.

\*) from: Edelhoff D, Sorensen JA.: Tooth structure removal associated with various preparation designs for posterior teeth. Int J Periodontics Restorative Dent. 2002 Jun;22(3):241-9.

# Occlusal onlays. The innovative alternative to crowns.

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**The minimally invasive approach:****Occlusal onlays (“Table Tops”).**

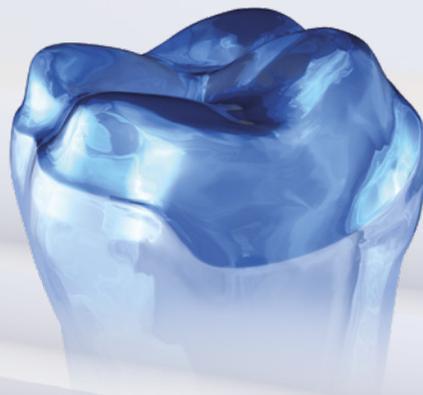
Occlusal onlays have been introduced as a new, minimally invasive alternative for the restoration of occlusal defects in the hard substance of premolars and molars.

**Advantages:**

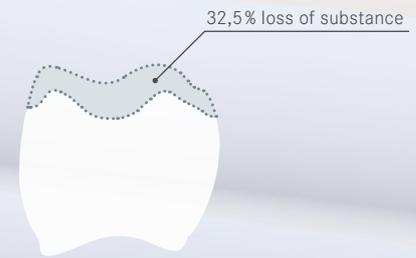
Clearly reduced loss of hard dental substance – and fewer biological risks.

**Disadvantage:**

The preparation of occlusal onlays used to be difficult without special instruments from a technical point of view.



Minimally preparation for an occlusal onlay on a first molar.



The loss of substance involved with the preparation for occlusal onlays\* is less than half of that caused by the preparation of crowns.

# Special instruments. Simple preparation.

---



**Private Lecturer Dr. M. Oliver Ahlers**

Specialist in function diagnostic and therapy  
Head of the CMD Center, Hamburg-Eppendorf



**Prof. Dr. Daniel Edelhoff**

Specialist in dental prosthetics Director of the  
Poliklinik für Zahnärztliche Prothetik  
LMU Munich

These days, indirect all-ceramic restorations are gaining in popularity all the time. They do, however, require special shapes to allow for the properties of the materials and to ensure firm fixation. To this end, preparation guidelines\* were compiled and special preparation instruments\*\* were developed to suit the requirements of all-ceramic inlays, partial crowns and crowns. Beyond the traditional options, the properties of the high-strength dental ceramics – such as for example monolithic lithium silicate – open the door to new, less invasive types of preparation.

These new preparations greatly reduce the trauma involved with the grinding of the site and the fitting of the restoration and therefore, the risk of pulpitis. This is particularly important from a clinical aspect because post-operative pulpitis is the main risk associated with crowns and partial crowns.

In response to this, the DGPro (German Association for Prosthetic Dental Medicine [...] and Biomaterials) issued a statement in 2004 in which they recommended that, to reduce the risk of pulpitis, dentists should check other options first before crowning a tooth. In case of defects limited to the occlusal area, suitable alternatives might include occlusal onlays (also called occlusal veneers or table tops). These types of restorations are, however, difficult to prepare with traditional instruments. This prompted us to put together a whole new sequence of preparation steps and develop appropriate new abrasive instruments that greatly facilitate the procedure.

## Indications

Preparation of occlusal onlays

- for the therapy of carious teeth
- for the treatment of individual or several premolars and molars damaged by bruxism and/or biocorrosion
- to restore the occlusion

\* Ahlers, M.O., Mörig, G., Blunck, U., Hajtó, J., Pröbster, L., Frankenberger, R.: "Guidelines for the Preparation of CAD/CAM Ceramic Inlays and Partial Crowns" Int J Computer Dent 12,4 (2009) 309-325

\*\* "Expert Set 4562ST for ceramic inlays/partial crowns" and "Expert Set 4573ST for ceramic crowns"

\*\*\* Refers to Ivoclar Vivadent IPS e.max CAD (LS2) in case of adhesive fixation (as at 11/2018). Please observe the instructions provided by the manufacturer of the material.



### Pre-preparation

According to the information currently provided by manufacturers, occlusal onlays made of lithium silicate require a minimum thickness of 1 mm<sup>\*\*\*</sup>. Teeth damaged by biocorrosion often have an irregular shape. It is therefore recommended to unite the steps of depth marking and pre-contouring in a pre-preparation process. To this end, we have provided an abrasive diamond instrument of a suitable shape with a black laser mark at 1 mm from the instrument tip. Whenever you wish to remove occlusal substance, apply the instrument 855D to the occlusal surface in a vertical position and prepare guide grooves with a depth of 1 mm [1]. Then even out the occlusal surface, making sure to maintain the correct cusp-fossa relationship (see image) and level any sharp burr at the edges of the occlusal surface [2]. Like this, you can control the amount of substance removed already at the pre-preparation stage – completely without a depth marker – unless, of course, the loss of dental hard substance is so extensive that there is no need to create further occlusal space.

### Occlusal contouring and finishing

Ceramic preparations\* require perfectly round contours. The centre of the occlusal surface needs to have a *concave* shape, whereas the area of the former cusps should have a *convex* shape to optimally support the occlusal onlay. Since none of the previously existing abrasive instruments were able to create such a special shape, we developed brand new occlusal abrasive cutters to this end, the so-called OccluShapers (370). These are the first instruments to be able to combine both shapes. To ensure that the abrasive instruments [3] match the occlusal surfaces of each tooth, the OccluShapers are available in 2 sizes, one for molars and another one for premolars. To complete the range, we have added finishers of matching shape 8370 [4]. For occlusal contouring, prepare the occlusal surface with an OccluShaper of suitable size in a mesio-distal direction, along the central fissure. Repeat with a finisher of the same size and congruent shape.

### Oro-vestibular sides

To give the ceramic restoration stability, the lateral surfaces on the oral and vestibular sides have to be intact and of sufficient size. To make sure that these surfaces can be prepared to the required depth in a reliable manner, we have taken an abrasive diamond instrument with an ideal length/diameter ratio and provided it with a guide pin at the front end of the instrument. Thanks to its special diameter, the instrument can already be used during the first step as a finisher with controlled penetration depth. The instrument hardly vibrates which makes it pleasant to use [5]. With the guide pin instrument 8849P, you can prepare the lateral sides from a vestibular and oral direction – as deeply as the guide pin lets you and as far away from the adjacent tooth as the contour of the instrument allows.

**855D.314.016**  
with laser mark

#### OccluShaper

for premolars



**370.314.030**  
Contouring



**8370.314.030**  
Finishing

for molars



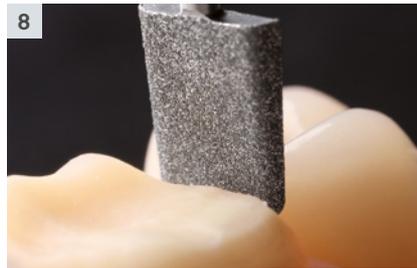
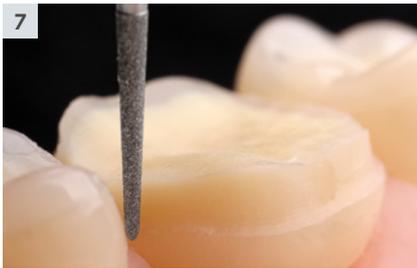
**370.314.035**  
Contouring



**8370.314.035**  
Finishing



**8849P.314.016**



### Separation and finishing

Minimally invasive preparations do not stop at the interproximal region. That's why the set includes particularly slim separating instruments that allow interproximal preparation in the dental enamel. Prepare the interproximal region with the separating instrument 858 in an axial direction, protecting the adjacent tooth with a tension-free matrix strip and without extending the preparation [6]. Next, smooth the interproximal surface with a finisher of matching shape 8858 in preparation for impression taking and production of the restoration [7].

As an even better alternative – compared to the finisher 8858 –, we recommend our sonic tips SFM6 and SFD6 [8] for interproximal smoothing and finishing which we specially developed in line with our occlusal onlay set. Coated with diamond grit on one side only, the geometry of these sonic tips was specially made for the interproximal preparation prior to applying occlusal onlays. Our tests revealed that these tips are particularly suitable for the interproximal finishing of crown preparations. You will be amazed to see how fast interproximal surfaces can be smoothed with these tips – without any risk of damaging the neighbouring teeth!

**Note:** The SFM6 and SFD6 are *not* suitable for the interproximal preparation prior to inserting ceramic inlays! Please use our sonic tips SFM7 and SFD7 instead – they were specially designed for this purpose!

### Transitions

To finish the treatment, connect the vestibular and oral preparations with the interproximal preparations in all four transitional regions by means of the finisher 8856 – and you're done! [9]



**SFM6**  
mesial

**SFD6**  
distal



858.314.010



● 8858.314.010

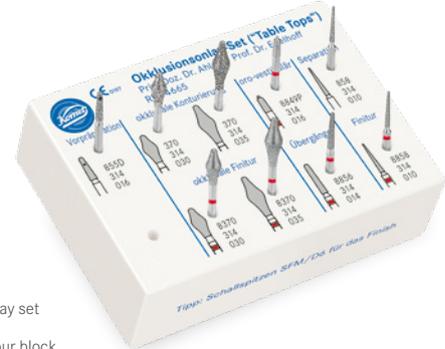
**Handy hint:** If you have the required equipment available at your practice, we suggest that you smooth the interproximal surface with the sonic tips of matching shape and diamond coating on one side – without the need for a matrix.



● 8856.314.014



**Set 4665 ST**  
Occlusal onlay set  
"Table tops" in a stain-  
less steel bur block  
(suitable for sterilization)



**Set 4665**  
Occlusal onlay set  
"Table tops"  
in a plastic bur block

**OccluShaper**

for premolars

for molars



**855D.314.016**  
Pre-preparation  
with laser mark



**370.314.030**  
Contouring



**370.314.035**  
Contouring



**8370.314.030**  
Finishing



**8370.314.035**  
Finishing



**8849P.314.016**  
Oro-vestibular preparation



**858.314.010**  
Separation



**8856.314.014**  
Transitions



**8858.314.010**  
Finishing

**TIP:** For veneers in the anterior region, we recommend the Perfect Veneer Preparations Set 4686/ST.

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Komet Dental

Gebr. Brasseler GmbH & Co. KG

Trophagener Weg 25 · 32657 Lemgo

Postfach 160 · 32631 Lemgo · Germany

Verkauf Deutschland:

Telefon +49 (0) 5261 701-700

Telefax +49 (0) 5261 701-289

info@kometdental.de

www.kometdental.de

Komet Austria Handelsagentur GmbH

Hellbrunner Straße 15

5020 Salzburg · Austria

Telefon +43 (0) 662 829-434

Telefax +43 (0) 662 829-435

info@kometdental.at

www.kometdental.at

Export:

Telefon +49 (0) 5261 701-0

Telefax +49 (0) 5261 701-329

export@kometdental.de

www.kometdental.de