White spots? Yes, but **not on teeth**

Icon Vestibular Infiltration treatment

Treating
enamel defects

Transillumination
as a diagnostic aid

DMG

Preserving healthy tooth structure with infiltration treatment

Infiltration treatment is a simple and effective treatment method in the case of caries-related white spots and enamel defects such as MIH and fluorosis. The specific advantages for the patient? The healthy tooth structure remains intact, and dental health is restored. Icon Vestibular is ultra gentle and can be applied in just one session –
a treatment method that's ideally suited to young patients, too.

Why you should opt for the **infiltration method:**

- Clinically proven success for more than 15 years [9]
- One of the best-researched methods with more than 400 studies
- Backed by science and verified in several studies
- Recipient of many awards and positive press statements
- For gentle treatment and lasting results
- Easy usability and preservation of the tooth structure
- Increases patients' quality of life [3, 5]

Der Deutsche Innovationspreis

2015 REALITY Four Star Award

Deutschland Land der Ideen
Ausgewählter Ort 2009

DER INNOVATIONS PREIS 2009
Die Zahnarzt Woche pluradent

Icon Vestibular – because tooth substance is worth protecting

How do you treat caries-related white spots and enamel opacities appropriately – i.e. with lasting effectiveness, efficiency and in a manner that is pleasant for the patient? Bleaching alone will not achieve a consistently convincing result in most cases. Invasive treatments, such as veneers, are not only time-consuming and costly, they also always come at the expense of healthy tooth substance.

Vestibular infiltration treatment with Icon Vestibular is a minimally invasive yet highly effective solution for treating enamel opacities – with maximum preservation of the tooth substance.
Because tooth substance is worth protecting!

Vestibular enamel opacities are based on a number of different structural disorders that differ from each other in terms of their topography and structural composition. These include trauma, fluorosis, caries and MIH.

The good news: infiltration treatment with Icon Vestibular offers the ideal treatment solution for all forms of enamel opacities – regardless of their specific cause.

Scientifically proven.

“Resin infiltration achieves the best esthetic outcomes compared with microabrasion and remineralisation therapy.”

Ibrahim DFA, Venkiteswaran A, Hasmun NN. Esthetic Effects and Color Stability of Resin Infiltration on Demineralized Enamel Lesions: A Systematic Review. J Int Soc Prev Community Dent. 2023 Aug 30;13(4):273-286.

Fig. 1: Teeth before infiltration

Fig. 2: Teeth after infiltration

Infiltration treatment: an ingeniously simple principle

Back to a natural smile in just three steps: with the infiltration treatment, enamel opacities are treated by etching, drying and infiltration so that they are no longer visible and blend seamlessly into the individual tooth profile.

After pretreatment with an etching gel, the “infiltrant”, a highly liquid resin, is applied to the affected area. Through capillary action, the infiltrant penetrates deep into the porous tooth enamel where it is then light-cured. This allows enamel opacities to be masked, as the infiltrated area resembles the appearance of the natural enamel. The healthy tooth substance remains intact.

The three treatment steps with Icon:

1. Etching with Icon Etch

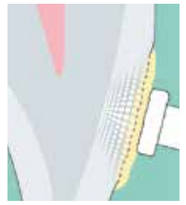
Icon Etch is used to prepare the tooth for infiltration.
The HCl Gel is applied to the treatment area using special applicators, thereby removing the pseudo-intact surface layer. This is the only way to enable the infiltrant later to penetrate the pore system.

2. Drying with Icon Prime

A dry environment is required for the subsequent step of actual infiltration. For this purpose, the lesion is dried with Icon Prime and air.

3. Infiltration with Icon Infiltrant

A low viscosity resin, i.e. the infiltrant, is applied, penetrates deep into the enamel through capillary action and fills the lesion. It is then light-cured. The infiltrated lesion has similar optical characteristics to those of the healthy tooth enamel.



Source of user images: Dr Ingo Frank, Germany

Enamel opacities
at a glance

Enamel defects vary greatly in terms of their location, their position in the enamel, their colour and also the enamel structure. The treatment protocol for the infiltration treatment should be tailored to the properties of the lesion. The most common causes of enamel opacities and their prevalences are outlined below.

CARIES

Caries-related white spot lesions often occur after orthodontic treatment with fixed brackets. These lesions are clearly demarcated from the healthy enamel, are typically located around the brackets, and are mostly in the cervical region.

46%

after orthodontic treatment lasting > 12 months

(Tufekci et al., 2011)[8]

FLUOROSIS

Depending on the severity, 25% to 100% of the enamel surface can be affected. The appearance of the lesions can range from tiny white spots or stripes to dark brown spots or even rough, pitted enamel. The tooth may present irregular, demarcated or diffuse opacities.

7.1–11.3 %

in the 15 year-old age group in Germany

(Momeni et al., 2007)[4]

TRAUMA

Traumatic hypomineralisation of a permanent tooth is the result of periodontal trauma or apical periodontitis in primary teeth. This clearly demarcated opacity mostly affects the facial surface.

30%

of children aged < 7 years have trauma to ≥ 1 primary incisors

(Akin et al., 2011)[1]

MIH

MIH is a condition associated with distinct hypomineralised lesions that affect at least one permanent molar, and often the permanent incisors as well. The lesions are usually confined to the incisal or cuspal third of the crown. The defects are well defined and range in colour from whitish-cream to yellow-brown. Depending on the severity, loss of enamel is also possible.

14%

average worldwide prevalence

(Zhao et al., 2018)[7]

Source of user images: Dr Shiraz Khan, UK (caries), Prof. Leandro Hilgert, Brazil (fluorosis), Prof. Zafer Cehreli, Turkey (trauma), Prof. Dr. Carlos Rocha Gomes Torres, Brazil (MIH).
List of references: See page 14.

Treatment of
MIH–related enamel defects

One in seven or eight children worldwide is affected by MIH (molar incisor hypomineralisation). The causes of MIH have yet to be definitively clarified. Clinically, the manifestation of MIH varies greatly, ranging from small whitish opacities to massive enamel collapses. The enamel structure also differs significantly from healthy enamel. For example, the protein content is significantly higher.[10] The hypomineralised enamel is soft and porous and a protein layer covers the surface. This is often accompanied by a high degree of hypersensitivity in the affected teeth.

On the whole, MIH causes significant psychological stress in the children and adolescents affected, often exacerbated by bullying in their social environment.

Treatment of a 12-year-old patient with MIH

Fig. 1: Teeth before infiltration

Fig. 2: Teeth after infiltration

Studies:

In their study, Athayde et al. (2022) examined the effects of the treatment of distinct opacities in the anterior region on the aesthetic perception of children and their parents. In addition, the study assessed the masking effect quantitatively and qualitatively.

Opacities in the anterior region have a negative effect on the self-image of children and parents.

15 minutes of infiltration

with Icon masks opacities in the permanent incisors and restores the social well-being of children and parents.

As a minimally invasive procedure, Icon Infiltration can also be used for children.[2]

Icon supports clinicians in the effective and conservative treatment of MIH patients: infiltration reduces hypersensitivity [of teeth] in children with MIH, thereby facilitating oral hygiene and improving patient comfort and dental health.[5]

Icon can significantly enhance the oral health-related quality of life (OHRQoL) of children with MIH, helping to improve the physical appearance of the teeth of children with MIH, boosting their self-esteem and socio-emotional wellbeing.[3]

Source of user images: Dr Paulo Monteirio, Portugal **List of references:** See page 14.

Planning the **minimally invasive** treatment

The high variability of the clinical appearance of vestibular enamel defects means an individual approach is required when it comes to planning infiltration treatment.

Especially for younger patients with enamel opacities (a group especially likely to be adversely affected by the appearance of their teeth), gentle treatment options are important.

Being able to assess the location of the lesion in the enamel is essential for treatment planning and contributes to an optimal infiltration result. This minimises the risk of misdiagnosis and unnecessarily invasive treatments.

Transillumination: the key to successful infiltration

First, the lesion topography is assessed with the help of transillumination before treatment begins. A suitable light source is positioned palatally and the light-optical properties of the transilluminated teeth are evaluated from the vestibular angle. Transillumination allows you to observe the lesion in greater detail and makes areas visible that are difficult to see with the naked eye.

Fig. 1: Initial situation without transillumination

Fig. 3: Outcome without transillumination

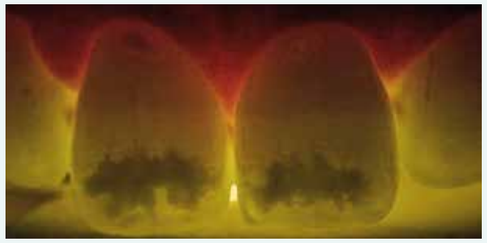


Fig. 2: Initial situation with transillumination

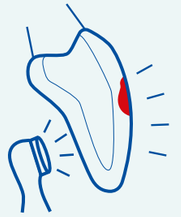
Fig. 4: Outcome with transillumination

Bringing light to the darkness: transillumination for more in-depth diagnosis

It all depends on the surface. How deep is the lesion located in the enamel and how strong is the intact enamel layer above the lesion? Being able to assess this is crucial for establishing the right treatment procedure. Transilluminating the enamel provides information about the position of the lesion in the enamel. This allows the thickness of the intact surface above the opacity to be estimated and a suitable method for removing this surface layer to be selected.

Example 1: Distinct margins

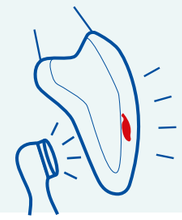
Distinct margins indicate superficial opacities without a thick surface layer. In this case, less invasive treatment is required and the use of Icon Etch alone is sufficient to establish access to the lesion.

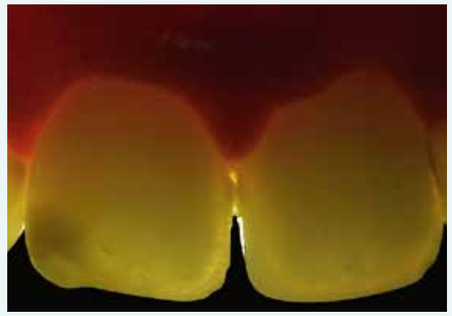


Diagnosis of the depth of the lesion:
surface lesion

Example 2: Vague margins

Vague opacity margins indicate opacities that lie deeper in the enamel and have a thicker surface layer. To ensure access to the opacity for infiltration, more extensive surface removal is required.





Diagnosis of the depth of the lesion:
deep lesion

Source of user images: Dr Omar Marouane, Tunisia

DIAGNOSIS

Position of the lesion in the enamel: treatment of surface lesions

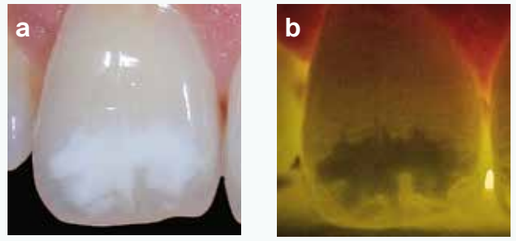


Fig. 1 a + b show initial images of a surface lesion in reflected **(a)** and transilluminated light **(b).** During transillumination, the surface lesion exhibits very distinct margins. Since these lesions are located close to the surface of the enamel, a few etching sessions with Icon Etch are generally sufficient to provide access to the lesion.

Fig. 1 a + b: Diagnosis of the depth of the lesion: surface lesion

TRANSFORMATION

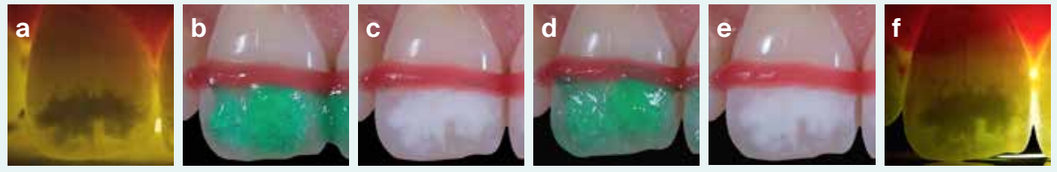


Fig. 2 a – f

In the surface lesion **(Fig. 2 a – f)** in this specific case only two etching steps were necessary to remove the thin surface layer covering the lesion. The lesion was etched twice for 120 seconds with Icon Etch (15% HCl) **(Fig. 2 b + 2 d).** Since it is a surface lesion, the transilluminated lesion looks similar before and after the erosive steps **(Fig. 2 a + 2 f).**

RESULT

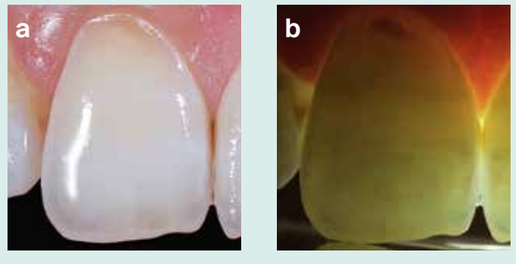


Fig. 3 a + b: Surface lesion after completed infiltration treatment in direct **(a)** and transilluminated light **(b).**

Treatment of deep lesions

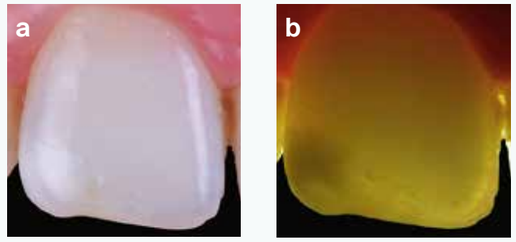


Fig. 4 a + b show initial images of a deep lesion in reflected **(a)** and transilluminated **light (b).** When transilluminated, the deep lesion exhibits vague margins, indicating a thick surface layer covering the lesion that needs to be removed to make the lesion accessible.

Fig. 4 a + b: Diagnosis of the depth of the lesion: deep lesion

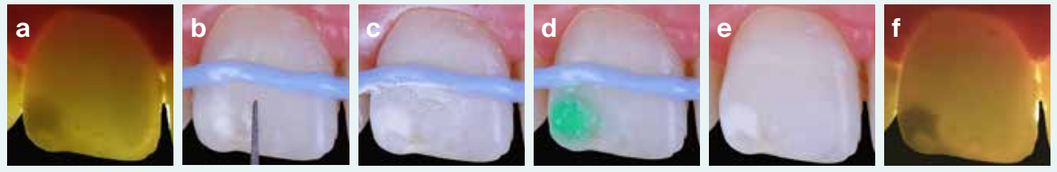


Fig. 5 a – f

Different abrasive methods can be selected to remove the surface layer covering the lesion which renders it inaccessible for infiltration. Suitable abrasion methods might for example include microabrasion, blasting or even the partial use of a diamond drill.
The use of a diamond drill was opted for in this specific application case **(Fig. 5 a – f)** since this enables a controlled and precise removal of the surface layer **(Fig. 5 b).** This step was checked under transillumination until a clearly defined interface could be seen as a feature of a surface lesion. The exposed hypomineralised enamel was then etched for 120 seconds using Icon Etch **(Fig. 5 d).** When transilluminated, the lesion margins are now well defined following the abrasive and erosive steps **(Fig. 5 f),** indicating that the lesion has been transformed from a deep lesion into a surface lesion.

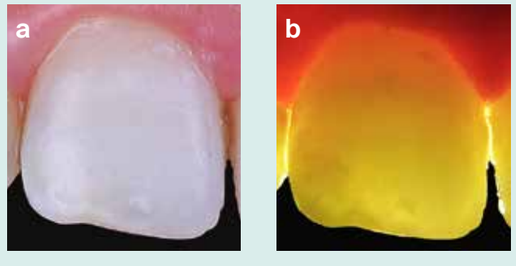


Fig. 6 a + b: Deep lesion after infiltration in direct **(a)** and transilluminated light **(b)**

Source of user images (Fig. 1 a to 6 b) and case documentation: Dr Omar Marouane, Tunisia

Infiltration and bleaching: a perfect team

Application example **Dr Erik-Jan Muts (Netherlands):**

"To obtain a better colour for the hypomineralisations, bleaching using 10 % carbamide peroxide was performed for ten days for just two hours per day."

In addition to the whitening effect, the deproteinising effect of carbamide peroxide (CP) can lead to an improved infiltration result.

Initial situation

After bleaching with 10% carbamide peroxide for ten days

After infiltration

After treatment

Schoppenmeier et al. (2018) show in their study that bleaching before infiltration treatment leads to significantly better masking after six months compared to infiltration treatment alone. Bleaching prior to infiltration treatment resulted in significantly higher patient satisfaction after three months compared with infiltration treatment alone.[6]

List of references: See page 14.

Good reasons to opt for bleaching before Icon:

- Reduces the colour difference between healthy and affected enamel
- Better results after infiltration where using combination of infiltration and bleaching[6]
- Avoidance of patient dissatisfaction due to darker appearance of the teeth after an infiltration treatment
- In the case of yellowish or brownish discolouration, a bleaching treatment is strongly recommended prior to infiltration to improve the overall result

Flairesse Bleaching Gel: gentle and non-invasive for a carefree smile

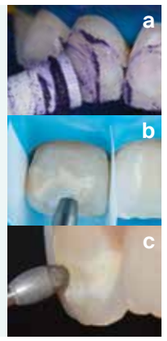
DMG Flairesse Bleaching Gel is a medical product that enables gentle whitening thanks to its mild CP concentrations of 5% and 10%. Using it in conjunction with the DentaMile bleaching tray with its gel reservoir prevents the gel from leaking into the sensitive gum area. It can be used in combination with Icon Vestibular to treat enamel opacities while preserving as much of the tooth substance as possible.

Tips for **successful infiltration**

1 Different options for removing the surface layer of deep opacities:

For the successful aesthetic treatment of white spots, the lesion must be fully accessible for infiltration. For lesions that are located deep in the enamel and have a thicker surface layer, Icon Etch alone may not be enough to guarantee access to the lesion.

Alternatively, in such cases the lesion can be prepared for infiltration by microabrasion (a), blasting (b) or the partial use of a diamond drill (c).



2 Transillumination during treatment

Transillumination can prove a useful tool during infiltration too – for monitoring the success of the infiltration process. This makes transillumination a useful tool for quality assurance as well as for diagnosis.

Caution!
Do not use a polymerisation lamp for this.

3 Transillumination during drying

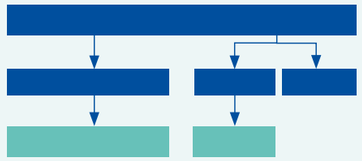
Transillumination can also be used during the application of Icon Prime to enable a better assessment of the drying stage.

4 Before/after documentation

Optimise your patient communication by taking before and after photographs. These photos give your patients definitive proof of the success of the treatment.

5 Waiting period

For a combined treatment of bleaching and infiltration, a waiting period of two weeks should be observed between treatments.



Support for your treatment planning: the Icon Vestibular decision tree

Our support for you and your patients

The Icon Shop

For info, support materials and ideas
for your dental clinic and waiting room visit
www.dmg-dental.com/icon-shop

The Icon website for patients

The Icon Dentist Finder and infiltration treatments, clearly illustrated. Why not take a look?
www.dmg-dental.com/en/dentist-finder

The material collection

Whether it's a casebook, compendium or the Icon Vestibular decision tree – find tips, examples, report and support in the material collection.
www.dmg-dental.com/en/icon-vestibular

List of references:

[1] Akin A., Uysal S., Cehreli Z.C. Segmental Alveolar Process Fracture Involving Primary Incisors: Treatment and 24-Month Follow Up. Dent. Traumatol. 2011;27:63–66.

[2] Athayde GDS, Reis PPGD, Jorge RC, Americano GCA, Fidalgo TKDS, Soviero VM. Impact of masking hypomineralization opacities in anterior teeth on the esthetic perception of children and parents: A randomized controlled clinical trial. J Dent. (2022)

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[6] Schoppmeier CM, Derman SHM, Noack MJ, Wicht MJ. Power bleaching enhances resin infiltration masking effect of dental fluorosis: A randomized clinical tiral. J Dent. (2018)

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[9] Ibrahim DFA, Venkiteswaran A, Hasmun NN. Esthetic Effects and Color Stability of Resin Infiltration on Demineralized Enamel Lesions: A Systematic Review. J Int Soc Prev Community Dent. 2023 Aug 30;13(4):273-286.

[10] Farah RA, Monk BC, Swain MV, Drummond BK. Protein content of molar-incisor hypomineralisation enamel. J Dent. 2010; 38(7):591-6

Advantages of the flexible portfolio at a glance: always just as much material as you need!

Product overview

Icon Vestibular

1 Treatment unit contains
1 Syringe @ 0.45 ml Icon Etch
1 Syringe @ 0.45 ml Icon Prime
1 Syringe @ 0.45 ml Icon Infiltrant
6 Icon Vestibular Tips + 1 Icon Capillary Tip

Starter pack:	
1 Treatment unit	REF 220520
Pack:	
2 Treatment units	REF 220521
Economy pack:	
7 Treatment units	REF 220522

NEW:
Icon Dry + MDP = Icon Prime

Refill Packs

Icon Etch:	
3 Syringes @ 0.45 ml Icon Etch	REF 220530
Icon Prime:	
3 Syringes @ 0.45 ml Icon Prime	REF 220531
Icon Infiltrant:	
3 Syringes @ 0.45 ml Icon Infiltrant	REF 220532
Icon Vestibular Tips:	
20 pcs	REF 220533
Icon Capillary Tips:	
20 pcs	REF 220535

A smile ahead
together

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