# INSTRUCTION FOR USE

Ena White® System

estetica M® GRUPPO MICERIUM

## ENA WHITE SYSTEM FOR TREATMENT OF PATHOGEN & IATROGENIC DISCOLOURATION

**Attention**
**The ready-mixed bleaching gel irritates the skin and the mucous membranes, and it causes severe eye damage. Always wear protective gloves and goggles when using the material! Avoid contact of the material with eyes, skin and mucous membranes. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor. Do not use the product after the expiry date, as the treatment efficacy can no longer be guaranteed. Please store the material in a refrigerator (3-9 °C)! The product contains 12% or 35% hydrogen peroxide and glycol derivates: it should not be used in cases known to be allergic or intolerant to either of these substances. Do not use in case of pregnancy and lactation and for patients younger than 18 years.**

**Indications**
– Treatment of non-vital teeth
– Treatment of pathogen discolouration of teeth
– Treatment of tooth discolorations caused by drugs (e. g. Tetracycline)
The product contains hydrogen peroxide, potassium nitrate and sodium fluoride.

### TREATMENT OF PATHOGEN & IATROGENIC DISCOLOURATION OF VITAL TEETH

The treatment of **pathogen & iatrogenic** discolouration of vital teeth can be done by the dentist in office using a gel based on hydrogen peroxide.

**Professional treatment in office**
The professional treatment of vital teeth consists in the application on the tooth surface of products containing **gels based on 12% or 35% hydrogen peroxide**. **NOTE:** Before starting treatment, it is appropriate to carry out a preliminary treatment of **plaque and stain removal** and **cleaning of the enamel** to remove superficial stains. **Isolation of the field** is achieved with the rubber dam or with the **Ena Dam** light curing paste (curing times: 40 sec. with LED or high-power alogen light curing unit). **Ena White Power (35% hydrogen peroxide)**: Facing away from the patient, first remove the clamp. Next, remove the cap and replace it with a mixing tip. The product is activated immediately before use, by pressing the piston of the syringe and mixing the two components. The first millimetres of material that will exit from the syringe will be light red coloured and they need to be removed. Storage for long periods at high temperatures may sometimes cause bubbles to form in the gel. This can also lead to inhomogeneous and more liquid mixtures, especially in the last quarter of the dual syringe. If this occurs, do not use the affected parts of the material. The gel should be applied approx. 1-2 mm thickness onto the labial surfaces of the teeth. The point of the mixing tip is designed to spread the gel evenly. After 10 min. remove the gel with suction, wipe it away and then thoroughly rinse with water. The procedure can be repeated twice until the desired effect has been achieved. Ensure beforehand that the gingiva has adequate protection. Curing light or laser increase the effect of hydrogen peroxide, but can cause overheat of the pulp and of the soft tissue creating damages. If a more evident result is desired, the patient can be given another professional treatment in other sessions or can continue with applications of hydrogen peroxide in a tray, 12 % with outpatient treatment or 6% with home treatment.

**Treatment with tray**
It's another system, created for the treatment of pathogen & iatrogenic discolouration in the waiting room.
Before treatment, it is wise to schedule the patient for a prophylaxis and oral hygiene visit including plaque and stain removal and enamel cleaning and polishing. In the same session, an **alginate impression** of the dental arches is taken to construct the individual matrix tray.
This will be carried out by placing a sheet of thermoplastic material on the stone model softening and modelling it in an appropriate thermoforming machine. Before thermoforming, the buccal surfaces of the teeth on the model should be covered with a light-curing resin (**Ena White Block-out**) so as to create the reservoirs for the hydrogen peroxide gel. The matrix tray should be adapted and finished by removing the interdental zones and smoothing the gingival contours, in order to stabilize it at the top of the muco-gingival line. The borders of the matrix are softened over a flame to remove rough margins and avoid irritation of the oral mucosa. The gel is applied using a tray and left to act for a variable time from 30 minutes to 2 hours a day. **The average cycle of treatment recommended with Ena White Regular** (12% hydrogen peroxide) is 2 hours a day for 10 days. As an alternative a home treatment can be made by applying for 6/8 hours a day for 10 days a 6% hydrogen peroxide cosmetic gel like Ena White Light that can be delivered to the patient together with the tray and the detailed application instructions and precautions (see Ena White Light dentist and patient instructions).

## TREATMENT OF PATHOGEN & IATROGENIC DISCOLOURATION OF NON-VITAL TEETH ("Walking" technique)

Always check the quality of the endocanalar seal before the endodontic treatment; if in doubt, retreat the canal and fill it to assure an optimal seal with gutta-percha and endodontic cement. Once the tooth is isolated with rubber dam, the pulp chamber is emptied of root canal filling material, to about 2 mm below the gingival margin; to reduce the risk of external root resorption, do not treat the cavity beyond the crest bone. A layer of zinc oxyphosphate cement, about 2 mm thick, is inserted at the bottom of the newly prepared endodontic cavity; the cement will function to isolate and protect the root canal from possible infiltration of oxygen and gel; if the quality of the endodotic seal is optimal, the layer of cement can be avoided. For a better treatment result it is suggested to sandblast the cavity with aluminium oxide for few seconds, to rinse with water and dry the cavity. The **Ena White Regular** gel **(12% hydrogen peroxide)** is then applied. A cotton pellet is then positioned and sealed in the cavity with a temporary material. The gel is changed after 1-2 days and the procedure can be repeated more times until slight over discolouration is obtained. It is pertinent to allow for a small relapse, caused by the progressive re-hydratation of the tooth and the action of intrinsic factors of discolouration, which are usually active in the oral environment. Remove the gel with suction and rinse with distilled water in order to eliminate the residual material. Clean the cavity with sodium hypochlorite to neutralize the eventual presence of oxygen in the dentinal tubules, that could inhibit the polymerisation phase of the dentino-enamel bonding and of the composite later used to seal the tubules and close the cavity. Etch the cavity for 60 sec., apply the dentino-enamel bonding, cure and close with composite.

### In office treatment

It is possible to treat pathogen & iatrogenic discolouration of non-vital teeth in office with **Ena White Power (35% hydrogen peroxide)**. The suggested **protocol** is as follows: radiographic examination and possible endodontic treatment to obtain an **optimal root canal seal**; cleaning of the external surfaces of the tooth and application of the rubber dam, opening of the pulpal chamber and removal of the endodontic material up to 2 mm beyond the buccal gingival margin.
Cleaning of the cavity, first by hand and rotary instruments, then with a prophy-jet unit with sodium bicarbonate, water and air spray that guarantees a thorough cleaning without the risk of excessive abrasion. Etching of the cavity with 37% orthophosphoric acid for 60 seconds to eliminate dentine smear layer and encourage the internal diffusion of the oxygen. Application of the **Ena White** gel in the cavity and on the external surface of the tooth. Every 5 minutes remixing the gel with a little paintbrush and replacing it after 15 minutes. The cycle is repeated until the achievement of the desired result. In cases where the patient feels pain, the treatment is immediately suspended and the patient recalled when the symptoms have completely disappeared. Once an excess of discolouration is obtained, necessary because the treated tooth tends to slowly darken during the days following the treatment, the gel is removed by aspiration and rinsed with distilled water to eliminate possible precipitation at the entrance of the tubules. The cavity is washed with sodium hypochlorite and then with water to neutralize as much as possible the presence of nascent oxygen in the dentinal tubules, which even in minimal quantity can inhibit the polymerisation of the dentino-enamel bonding, necessary at this stage for sealing the dentinal tubules and avoiding a possible relapse of fluids and pigments. Etching for 30 seconds and applying a dentino-enamel adhesive system; this is polymerised and the cavity is closed with a cotton pellet and a resinous temporary filling material. The patient is re-evaluated after two weeks and if the result is optimal, restoration of the tooth can be proceeded.

## CONTRAINDICATIONS AND SIDE EFFECTS

The principal **complications** derived from treatment of non-vital teeth with hydrogen peroxide are fundamentally three:
• Caustic and ischemic lesions of the gingival tissues • External root resorption • Relapse
To avoid **lesions of the gingival tissues**, the rigorous use of rubber **dam**, which needs to be of a heavy type, well positioned and stabilized at the tooth-necks with ligatures, is recommended. For greater security, rubber dam in combination with a barrier product, e.g. **Ena Dam,** can be used, positioned on the gingival margin under the rubber dam. The prolonged contact of the **Ena White** gel with the soft tissues produces caustic and ischemic lesions which, by eliminating the cause and establishing a rigorous oral hygiene programme, generally heal with restitution of intact tissues, the healing times being directly proportional to the extent of the damage.
The problem of **root resorption** instead, is more complex and seems to be caused by the hydrogen peroxide in concentration above 30% and by heat that can produce a strong denaturing of the protein component of the dentine and by direct contact with the periodontal tissues.
The dental tissue, denatured by oxygen and/or by heat, is not recognised at an immunological level by the cells of the periodontal tissues and it is thus attacked and destroyed. According to another theory proposed in the literature, the process of external resorption can be initiated by the lowering of the pH of the environment, caused by hydrogen peroxide.
The destructive process is not immediate but appears after 1-7 years after treatment. To reduce the risk of this complication, **it is recommended not to use the thermo-catalytic technique**, as heat seems to be the principle cause of the resorptions. Moreover, in teeth that have lost a great deal of dentinal tissue at the level of the cemento-enamel junction, it is useful to avoid the use of products with high concentration of oxidising agents (35% hydrogen peroxide) and to reduce the contact time.

Therefore, the use of products with a lower concentration of oxidant (**Ena White Regular** - 12% hydrogen peroxide) is suggested, to be used with the "walking bleach" technique and taking care to avoid leaving the product in the cavity for long periods or repeated in office applications. Once treatment is completed, the dentinal tubules need to be accurately sealed in the reconstructive phase, to avoid infiltration of bacteria and pigments into the cavity; furthermore, it is recommended to place the patient under regular radiographic control, in order to diagnose possible precocious processes of resorption and to start immediately the appropriate therapy (surgical curettage, orthodontic extrusion of the root, lengthening of the clinical crown, obturation with MTA, glass ionomer cement and composite), when necessary.
To reduce the risk of **relapse**, there is a need to accurately remove all the pulpal tissue, especially at the level of the pulp horns and to avoid the use of pigmented materials and medicaments.
After treatment, the dentine must be hybridised to obtain a good internal seal of the tubules and the restoration needs to guarantee an external seal against infiltration, which may cause a relapse.

### Maintenance

To maintain a long term result, it is useful to advise the patient to carry out periodical cycles of home treatment using a cosmetic gel with low concentration of hydrogen peroxide like Ena White Light (see Ena White Light dentist and patient instructions).
The times and frequency of the application of the gel, are limited to the teeth treated, and subordinate to the aesthetic sensibility of the patient who, when well motivated, will constantly control the colour of the teeth, deciding when and how often to intervene with home maintenance.

**Contraindications and side effects for the treatment of vital teeth with hydrogen peroxide**

The use of peroxide can give rise to a series of problems, the more common being **dentine hypersensitivity** and **irritation of the mucosa**; it is therefore contraindicated in the presence of certain conditions, as listed below.

- Exposed dentine areas
- Pregnancy
- Patients younger than 18 years
- Presence of gingival inflammation
- Presence of extensive caries
- Presence of amalgam restorations in the anterior teeth (possible grey colouration caused by the chemical reaction peroxide-silver)
- Defected filling margins
- Dentinal hypersensitivity

A certain reduction in the micro-hardness of enamel, after treatment with hydrogen peroxide, has been recently observed, which nevertheless, returns to its initial condition, thanks to the remineralisation process commencing immediately after treatment. Topical application of a fluoride gel (**Ena White desensitizing gel**) which progressively re-mineralises the enamel hence is indicated to reduce the phenomenon of pulpal sensitivity. Finally, it was noted that treatments with hydrogen peroxide condition the possibility of performing an **adhesive restoration**, since they affect the presence of residual free radicals on the surface of the tooth and this could influence the bond strength between the adhesive system and the tooth surface. It is therefore appropriate to allow at least **two weeks** after the treatment is completed, before obtaining a clinically viable adhesive bond. With regards to the soft tissues, the necessity for an adequate design of the matrix tray is paramount or else, the outflow of the material will occur with the consequence of more or less acute gingival irritations, sensations on an unpleasant taste and burning of the palate. The use of peroxide in general is not recommended for a patient, who has recently had periodontal surgery, nor in handicapped patients, in pregnant women or in heavy smokers.

## *TREATMENT OF PATHOGEN & IATROGENIC DISCOLOURATION OF VITAL TEETH WITH ENA WHITE POWER 35% HYDROGEN PEROXIDE*

*Patient before treatment*

*Application of gingival protection Ena Dam*

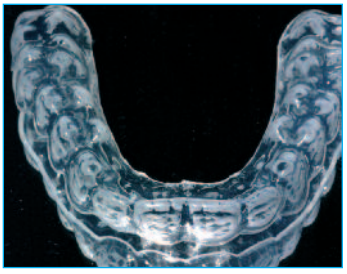
*Application of 35% hydrogen peroxide Ena White Power (3 sessions 10 min. each)*

*Results after one session with Ena White Power*

## *TREATMENT WITH TRAY WITH ENA WHITE REGULAR 12% HYDROGEN PEROXIDE*

*Plaster model obtained from an alginate impression*

*Creation of reservoirs in light-curing resin (Ena White Block-out) to contain Ena White gel. The tray will be carried out by placing a sheet of thermoplastic material on the model.*



*The tray shaped and finished*


*The Ena White gel is applied on the buccal side of the teeth involved*

Ena White System®

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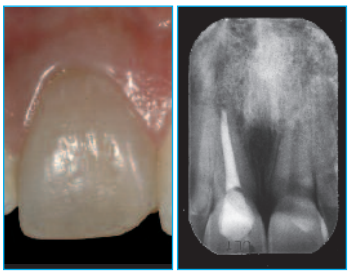
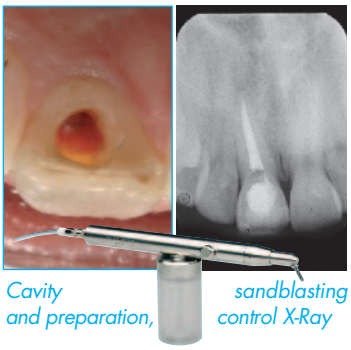
## TREATMENT OF PATHOGEN & IATROGENIC DISCOLOURATION OF NON-VITAL TOOTH ("WALKING" TECHNIQUE) WITH ENA WHITE REGULAR 12% HYDROGEN PEROXIDE

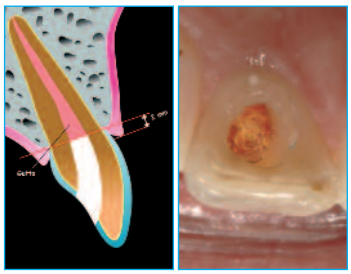
Initial case



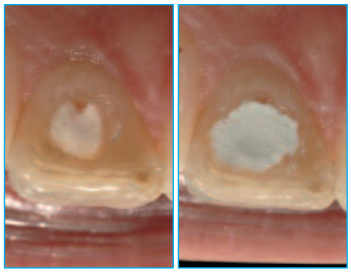
Non-vital tooth before treatment



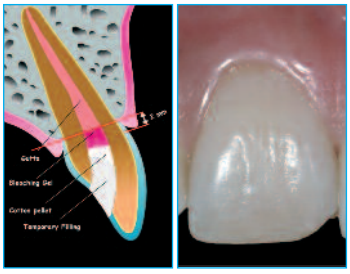
Cavity and preparation, sandblasting control X-Ray



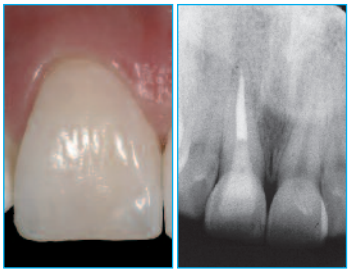
Application of the Ena White Regular gel



Cavity sealing with cotton pellet and temporary material




"Walking" technique and final result after treatment



Composite restoration (Enamel Plus HRi) and final X-Ray

Final result

## "WALKING" TECHNIQUE AND SURFACE TREATMENT WITH ENA WHITE REGULAR 12% HYDROGEN PEROXIDE

Initial case

"Walking" technique (non-vital tooth)

Tray filled with Ena White Regular gel (for 2 hours a day)

Tooth preparation

Composite restoration (Enamel Plus HRi)

Final result