GC Tooth Mousse Plus

MADE FROM MILK.
PERFECT FOR TEETH.

We all brush our teeth everyday. But people who really want to care for their teeth are discovering the many benefits that come from moussing their teeth with this remarkable product.

Recaldent™

Nature knows best

Nature has masterminded a protein system, casein phosphopeptide, that stabilises calcium and phosphate so that the essential building blocks for teeth and bones can be delivered in a non-crystalline state.

Cow's milk is recognised as the most efficient carrier of calcium and phosphate, and the specific peptide which so elegantly and efficiently transports these essential minerals is called RECALDENT™ (CPP-ACP), casein phosphopeptide amorphous calcium phosphate.

GC Tooth Mousse Plus contains 10% RECALDENT™ (CPP-ACP) and 900 ppm fluoride in a formulation designed to deliver CPP-ACPF (casein phosphopeptide amorphous calcium phosphate fluoride) to the tooth surface.

Unique characteristics

Amorphous state

The casein phosphopeptide will bind calcium, phosphate and fluoride in an amorphous state, ie not crystallized. This is essential to its function of delivering bio-available minerals.

Adhesive

The casein phosphopeptide will bind to tooth surfaces to localise bio-available calcium, phosphate and fluoride where it is most needed.

Ideal size

CPP-ACPF is less than 2 nanometres in size and is able to penetrate into biofilms and enamel. CPP-ACPF has a neutral charge, so is not hindered in its diffusion characteristics.

Release of ions

CPP-ACPF is a significant source of calcium, phosphate and fluoride ions, with an increasing level of release as the oral pH lowers.

Acid buffer

Via several mechanisms, CPP-ACPF is an excellent buffer to counter acid challenges.

Adding fluoride is a significant plus

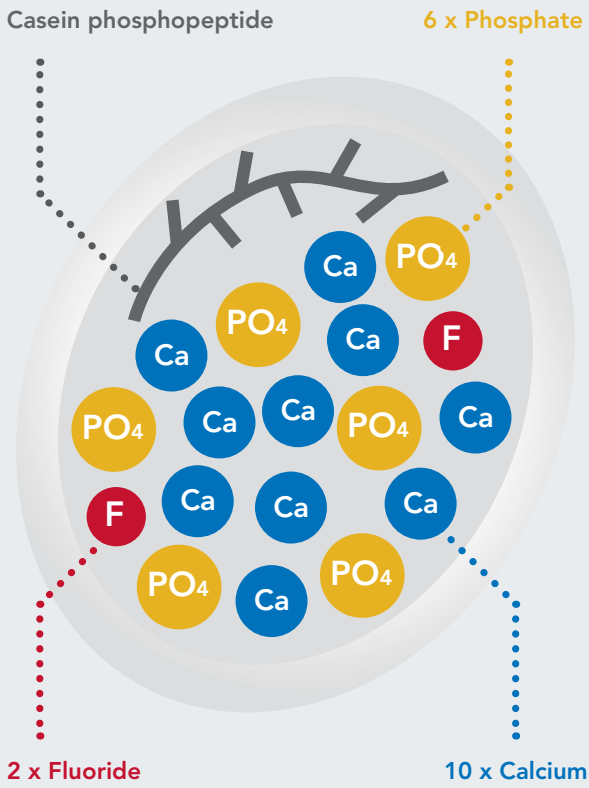
The 5:3:1 ratio of ions within CPP-ACPF is perfectly matched to the ratio required to build fluorapatite: $Ca_{10}(PO_4)_6F_2$

When fluoride ions come into contact with RECALDENT™ (CPP-ACP), the peptide preferentially combines with and stabilises fluoride, to create the ideal source of ions for building fluorapatite; CPP-ACPF.

By matching bio-available calcium, phosphate and fluoride in the ideal 5:3:1 ratio, the full potential of fluoride to help protect and repair teeth can be achieved.

GC Tooth Mousse Plus is the superior delivery vehicle for fluoride.

Diagrammatic representation of CPP-ACPF



Fluorapatite: $Ca_{10}(PO_4)_6F_2$
Molar ratio: 5 : 3 : 1

A perfect outcome

GC Tooth Mousse Plus contains 10% RECALDENT™ (CPP-ACP) and 900 ppm fluoride in a crème consistency, for topical application, either at home following flossing and toothbrushing, or in the surgery as part of a topical fluoride strategy.

Use GC Tooth Mousse Plus for:

- **Active caries**
- **Tooth erosion and wear**
- **Dry mouth, xerostomia**
- **White spot lesions**
- **During orthodontic treatment**
- **Whitening treatment**
- **Developmental defects in enamel**
- **During and after periodontal care**
- **General prevention**

When is GC Tooth Mousse preferred to GC Tooth Mousse Plus?

GC Tooth Mousse contains no fluoride and is recommended for:

- children under 6 years of age
- patients where additional fluoride exposure is not desired

Your first choice for extra protection...

GC Tooth Mousse Plus is the most effective technology for creating fluorapatite and is the first choice for protecting and strengthening teeth and for reversing white spot lesions.

Reversing White Spot Lesions

Immediately after bracket removal

Results at 3 months following twice daily application of GC Tooth Mousse

Dr.H. Hayashi

Creating super enamel

Dissolution of enamel mineral through acid challenges is a daily process, which is fortunately balanced by opportunities for remineralisation. Maximising remineralisation, so that lost mineral is replaced with fluorapatite, means teeth gain additional strength and acid resistance.

Perhaps this is the holy grail of dentistry; creating "super" enamel by enhancing the natural maturation process, so that teeth are stronger and more acid resistant. The objective being to take nature's system of protecting and remineralising teeth (ie saliva) and accentuate and accelerate its properties by providing a bioavailable source of calcium, phosphate and fluoride in the right 5:3:1 molar ratio.

... and for maintaining optimum oral health

GC Tooth Mousse Plus is more than just a source of bio-available mineral; the RECALDENT™ (CPP-ACP) peptide binds to teeth and penetrates biofilms, and is the first choice for:

- **Supplementing saliva**
- **Driving a cariogenic biofilm back to health**
- **Maintaining a neutral oral pH supersaturated with calcium, phosphate and fluoride**
- **Protecting teeth from acid**
- **Lubrication**
- **Reversing the loss of mineral from acid challenges**

GC Tooth Mousse Plus will:

- **Deliver the essential minerals to build fluorapatite – calcium, phosphate and fluoride**
- **Facilitate remineralisation through the body of a lesion, making it stronger and more acid resistant**
- **Reduce plaque acid production**
- **Increase plaque pH**
- **Enhance the level of protection provided by salivary pellicle**

Our oral environment is constantly challenged by many different sources of acid, including those produced by cariogenic biofilms and from external acid sources. The level of protection each patient offers to these acid challenges will vary significantly depending on their saliva, fluoride exposure and their oral hygiene habits. For many patients, maintaining a good oral health balance requires additional help in a number of different ways.

Fluoride needs bio-available calcium and phosphate

Without these ions, the effectiveness of fluoride is significantly reduced

Fluoride is central in any professional recommendation to help maintain or improve a patient's oral health. However, for fluoride to be effective it should be paired with calcium and phosphate in the right molar ratio 5:3:1 (ie 5 calcium: 3 phosphate: 1 fluoride).

For every clinical situation, where there is desire to increase fluoride exposure, the question should be asked, "does this patient have sufficient free calcium and phosphate to ensure the effectiveness of their current level or an increased level of fluoride exposure"?

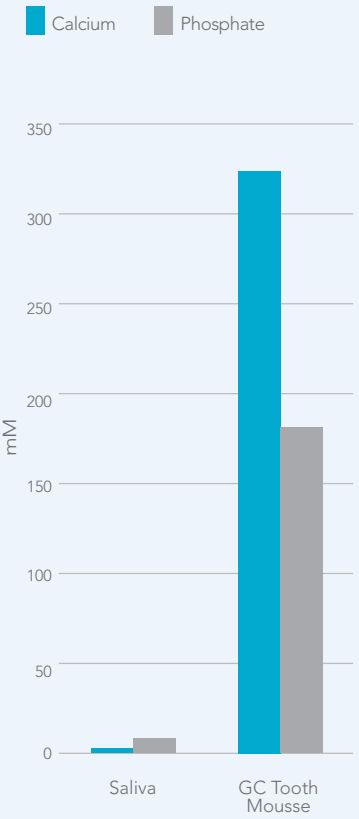
Ensuring fluoride efficacy

Saliva is the main source of free calcium that will ensure fluoride's effectiveness. The salivary protein Statherin is able to bind and stabilise calcium and phosphate to maintain a state of saturation with respect to the tooth mineral under normal oral conditions.

However, if saliva quantity or quality is compromised, or if acid producing biofilms exist on smooth surfaces, or if the tooth is constantly challenged by acid (eg erosion), then significantly more calcium and phosphate is required to enhance fluoride's effectiveness.

RECALDENT™ (CPP-ACP) is the ideal source of such additional calicum and phosphate.

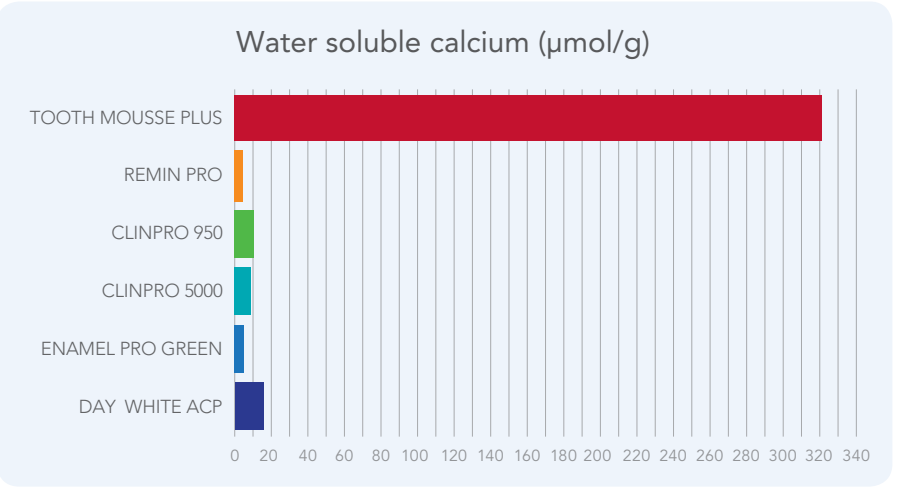
Mineral content
(Bio-available calcium and phosphate)

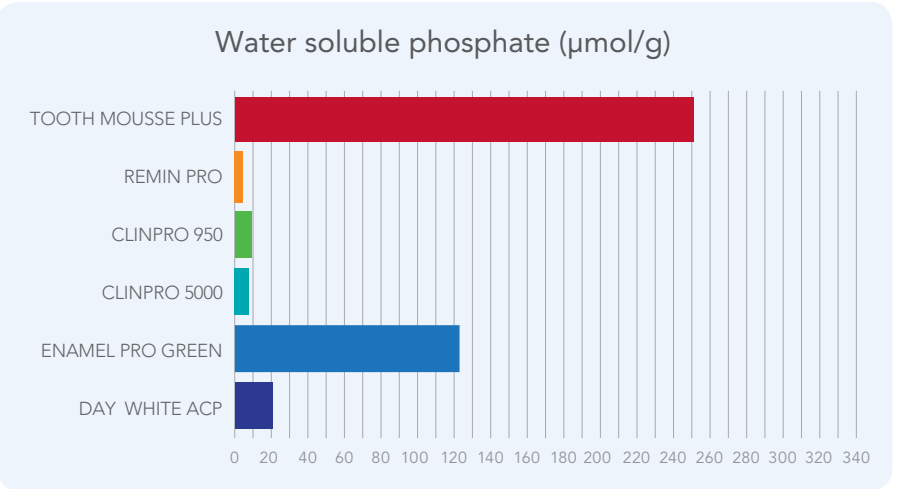


GC R&D Dept. Test protocol on file

Comparing bio-available calcium and phosphate

Measuring the availability of calcium and phosphate ions in a soluble form is a simple measure for recognising the potential availability of ions for uptake into biofilms and remineralisation. When compared to other dental products, GC Tooth Mousse Plus has a high level of availability.





Abstract 57 - IADR APR 2009, Wuhan, China. Water Soluble Calcium, Phosphate and Fluoride of Various Dental Products. F Cai, Y Yuan, C Reynolds and EC Reynolds. Cooperative Research Centre for Oral Health Science, Melbourne Dental School, The University of Melbourne.

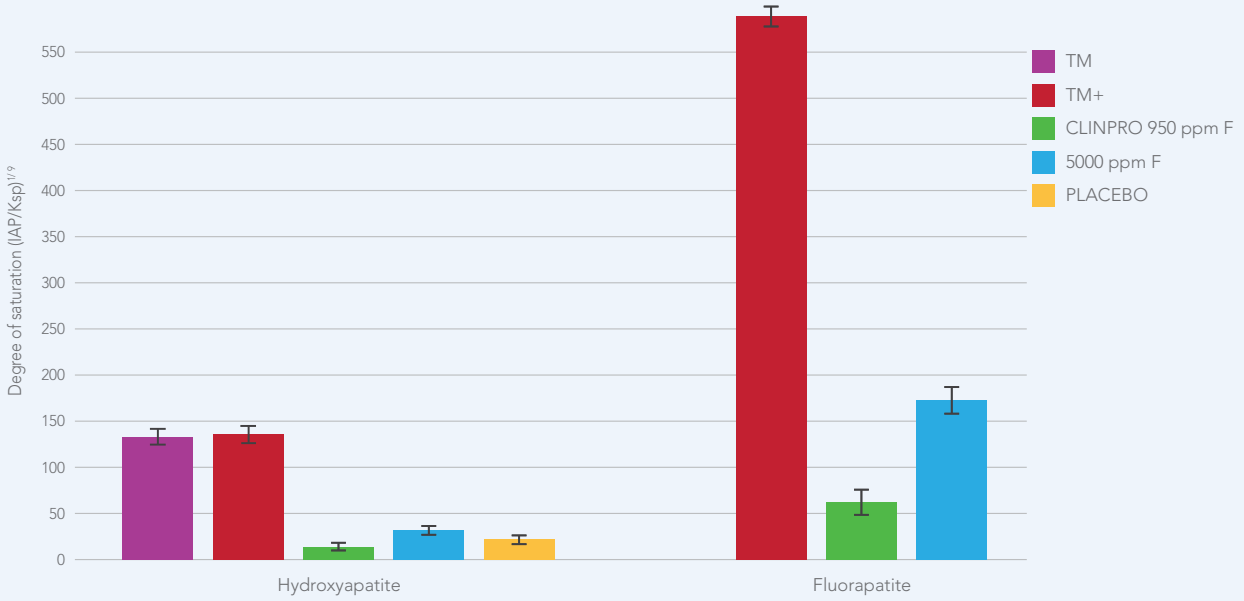
Measuring effectiveness

Changes in salivary mineral content

A group of patients with normal salivary parameters applied various topical remineralisation agents. After 3 minutes, the salivary contents were expectorated and chemical analysis undertaken to determine the mineral forming potential of the saliva.

These results show the limiting factor for the effectiveness of a mineral formation is calcium and phosphate availability. GC Tooth Mousse Plus has a far higher potential to create fluorapatite based on its availability of calcium and phosphate, despite having a lower level of fluoride than many other fluoride containing products.

Degree of saturation of post-rinse/saliva with respect to Hydroxyapatite and Fluorapatite

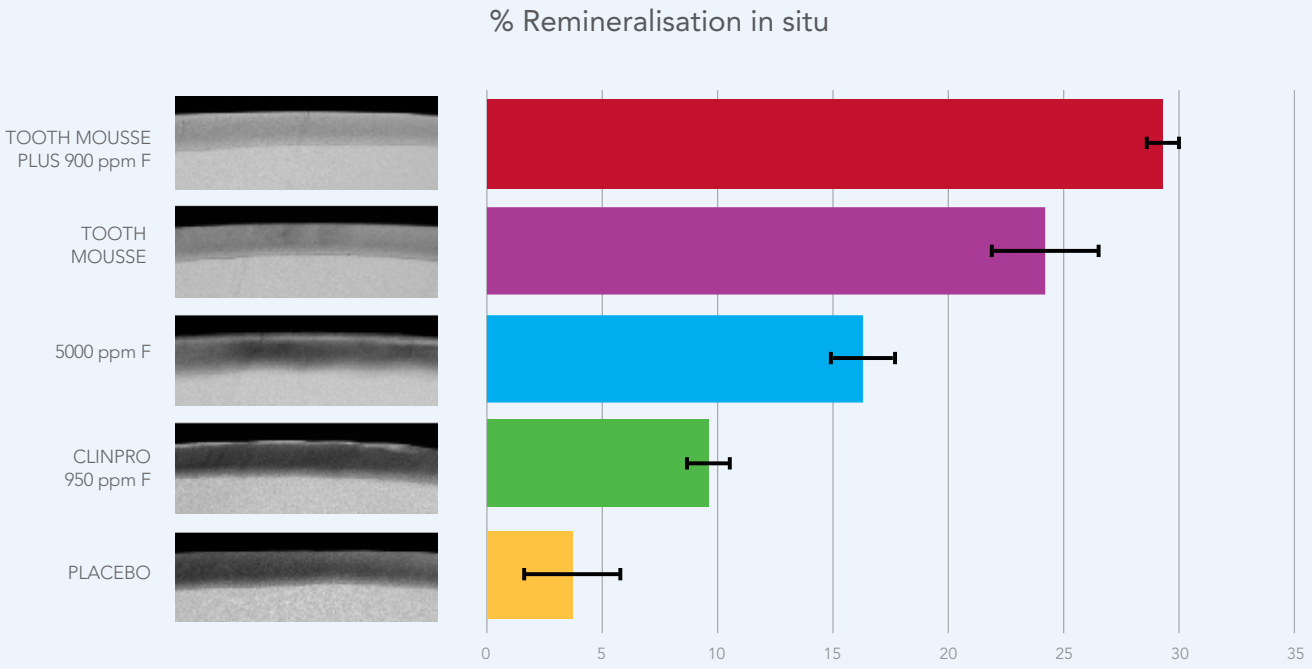


Shen P, Manton DJ, Cochrane NJ, Walker GD, Yuan Y, Reynolds C, Reynolds EC. Effect of added calcium phosphate on enamel remineralization by fluoride in a randomized controlled *in situ* trial. *Journal of Dentistry (in press, 2011).*

The proof

Changes in mineral content of white spot lesions

Creating a highly controlled, proven method of measuring remineralisation provides a mechanism for comparing different technologies and gives guidance for clinical recommendations. The use of an in situ model, where enamel slabs are demineralised, embedded in a palatal appliance and worn by volunteers who have healthy saliva, gives a good understanding of the effectiveness of different products. Results are imaged and measured using highly accurate microradiography as per the following research:



Shen P, Manton DJ, Cochrane NJ, Walker GD, Yuan Y, Reynolds C, Reynolds EC. Effect of added calcium phosphate on enamel remineralization by fluoride in a randomized controlled *in situ* trial. *Journal of Dentistry (in press, 2011).*

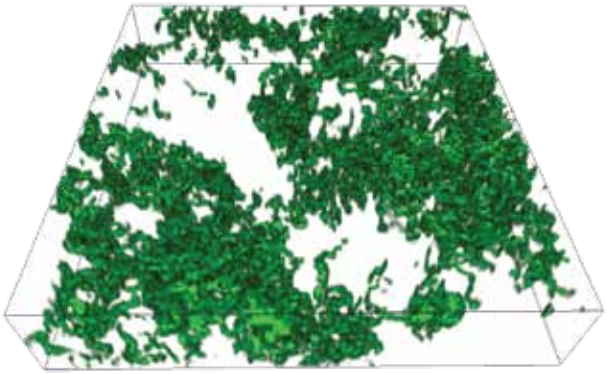
Latest developments

RECALDENT™ (CPP-ACP) for biofilm modification

Mechanism of action:

- CPP-ACP particle size is ≤2 nanometres and is able to penetrate biofilms.
- Increasing the calcium and phosphate ion concentrations in plaque increases the degree of saturation with respect to apatite and therefore depresses demineralisation.
- Both the CPP and phosphate ions are effective acid buffering agents.
- Bacterial degradation of CPP releases ammonia, which increases plaque pH.
- CPP alters bacterial composition of plaque by preventing the adherence and colonisation of specific cariogenic bacteria.
- CPP-ACP will bind free fluoride ions and transport these into plaque, providing a very efficient delivery mechanism for increasing fluoride ion concentration in plaque.

Confocal scanning laser microscope image of cariogenic *Streptococcus mutans* biofilm



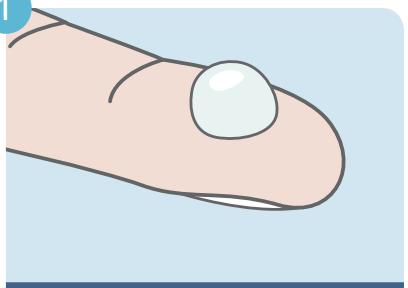
After a 10min treatment with 1% CPP-ACP, the *Streptococcus mutans* biofilm exhibited a 72% reduction in volume

Oral Heath CRC, Melbourne Dental School, The University of Melbourne
www.oralhealthcrc.org.au

Application and usage

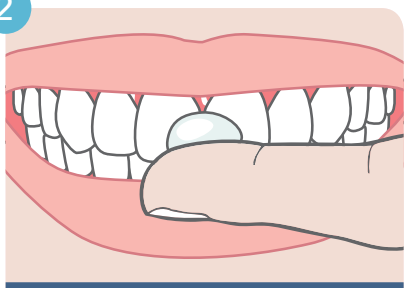
Patient instructions for application

1



Squeeze a small amount of GC Tooth Mousse Plus onto your finger.

2



Apply to all teeth with your finger and use your tongue to spread around evenly.

3

For maximum benefit, leave GC Tooth Mousse Plus on your teeth for as long as possible. The minimum recommended application time is three minutes. At the end of the application, you can expectorate the remainder.

General prevention

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Once a day, after flossing and brushing in the evening	Ongoing as part of a general prevention program	Regular use of GC Tooth Mousse Plus will help maintain a healthy oral environment

MODE OF ACTION
GC Tooth Mousse Plus provides additional protection for teeth through a number of different mechanisms

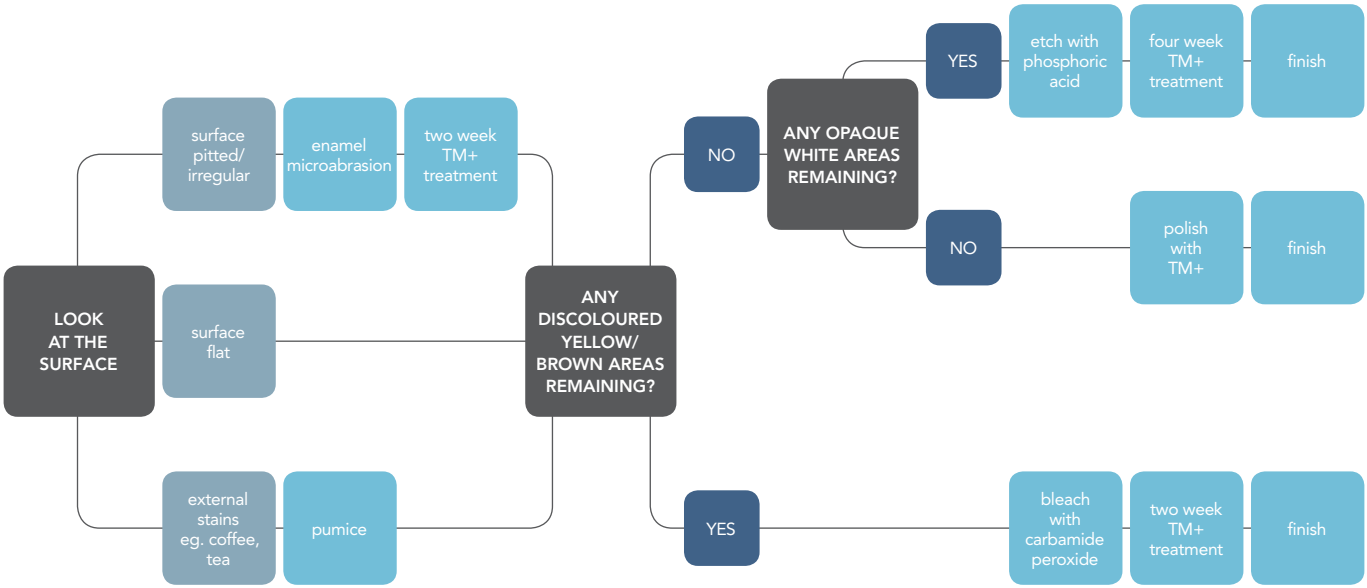
White spot lesions

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Twice a day, after flossing and brushing	8-12 weeks and thereafter as required	There are different types of white spots and pre-treatment of the white spot surface prior to application of GC Tooth Mousse Plus may be required

MODE OF ACTION

The appearance of white spots on teeth is due to variations in the degree of mineralisation of the enamel matrix and resulting retention of excess water and proteins. This changes the reflection and light scattering properties of enamel to give a variable white appearance. These white demineralised areas may require surface pre-treatment so as to enable the RECALDENT™(CPP-ACP) peptide to penetrate.

Professor Laurence Walsh from University of Queensland has prepared the clinical flow chart shown below:



Active caries

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Twice a day, after flossing and brushing	Until risk of future caries has been reduced	Assessment to determine the potential source(s) of risk should be undertaken and suggestions made on how the patient can reduce their caries risk

MODE OF ACTION

GC Tooth Mousse Plus can repair early damage caused by demineralisation and is able to return a cariogenic biofilm back to health. It is able to reduce plaque acid production, reduce the level of cariogenic bacteria, increase plaque pH and the level of calcium, phosphate and fluoride ions in plaque.

Before Treatment

After 3 months

After 2 years

Courtesy of Dr. Kitasako

The clinical application of surface pH measurements to longitudinally assess white spot enamel lesions.
Yuichi Kitasako *et al.* Journal of Dentistry 38 (2010) 584-590

Hypomineralised enamel

Following etch pre-treatment and 6 weeks application of GC Tooth Mousse

Prof. L. Walsh

During orthodontic treatment

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Twice a day, after flossing and brushing	During entire orthodontic process	Complete treatment 12 weeks after the finish of orthodontic procedures, or thereafter as required to reverse any white spot lesions

MODE OF ACTION

The increase of plaque retention sites with orthodontic fixtures generally leads to an increase in caries risk for the patient. GC Tooth Mousse Plus will offer additional protection for an orthodontic patient, through positive biofilm modification, through increased availability of bio-available calcium, phosphate and fluoride in saliva, and, in situations where demineralisation has started, through reversal of any early white spot lesions.

Post-orthodontic decalcification

After regular use of GC Tooth Mousse Plus

Prof. L. Walsh

Developmental defects in enamel

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Minimum twice a day, after flossing and brushing, and as required for sensitivity	Continuous treatment as required	Depending on severity, additional protection can be achieved by sealing hypomineralised surfaces with a glass ionomer cement (eg Fuji VII)

MODE OF ACTION

Hypomineralised enamel is more susceptible to acid attack and is often associated with sensitivity. The RECALDENT™(CPP-ACP) peptide is able to penetrate the hypomineralised enamel and continue the partially completed mineralisation process providing strength and acid resistance to these weakened surfaces. Depending on the degree of severity and compliance, the treatment with GC Tooth Mousse Plus could be the preferred long term treatment strategy, or it may simply be a transitional step focused on patient comfort prior to extensive restorative treatment.

Clinical presentation of Molar Incisor Hypomineralisation

Dr Kelly Oliver

Whitening treatment

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
PRIOR TO STARTING TREATMENT		
Twice a day, after flossing and brushing	Start 1-2 weeks before whitening procedure	Pre-whitening applications of GC Tooth Mousse Plus will help reduce the degree of whitening sensitivity
DURING TREATMENT		
Following removal of the whitening tray	Finish 2 weeks after the final whitening application	The whitening tray can also be used to apply GC Tooth Mousse Plus

MODE OF ACTION

GC Tooth Mousse Plus is able to protect and soothe areas of exposed dentine which are potential sources of sensitivity during the bleaching process. GC Tooth Mousse Plus will not interfere with the action of bleaching agents, and will help improve the aesthetic outcome following whitening treatment, through increased mineral in the enamel structure. Bleaching helps clean protein from interprismatic spaces, providing avenues for improved penetration of RECALDENT™(CPP-ACP) so that higher levels of mineralisation can be achieved.

Before whitening

Immediately following initial whitening appointment – heavy white staining is still apparent.

Two weeks after final whitening appointment and twice daily application of GC Tooth Mousse.

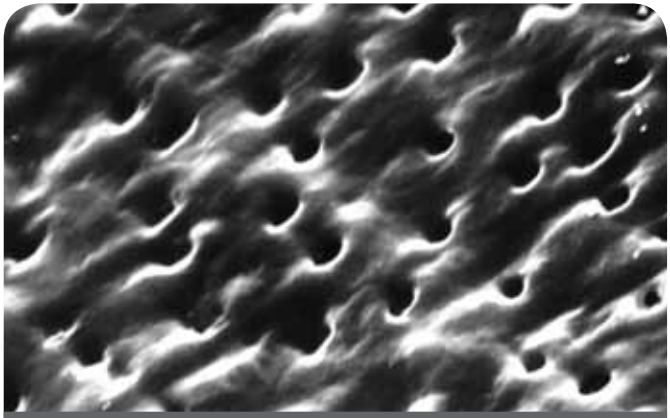
Mr C. Müller

Tooth erosion and wear

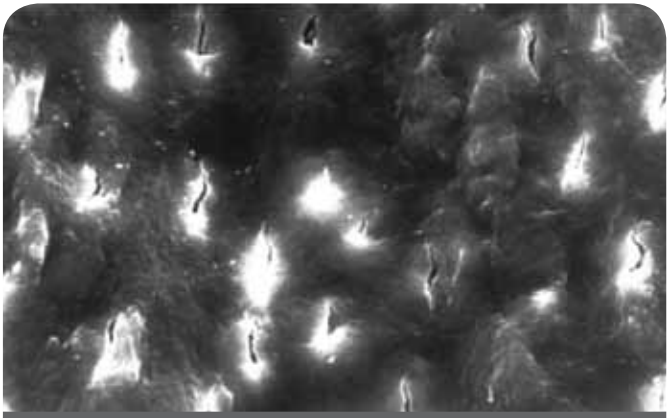
HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Minimum twice a day, before and after exposure to acid challenges	Until risk of acid exposure is reduced	Identify source of acid and, where possible, reduce or encourage a reduction in exposure and increase saliva stimulation

MODE OF ACTION

RECALDENT™(CPP-ACP) is able to bind to the tooth surface to provide a protective coating. This coating functions as a lubricant, helps in the management of dentinal hypersensitivity and provides the tooth with an ion source and barrier to acid attack.



Acid will remove the protective pellicle layer. Exposed dentine tubules will often result in dentine hypersensitivity



Following application of CPP-ACP

Prof. EC Reynolds

Dry mouth, xerostomia

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Minimum twice a day, additional as required, based on measure of saliva quality and quantity	Continuous treatment while the level of protection from saliva is reduced	Saliva testing will help quantify the extent of risk. GC Dry Mouth Gel can be used in conjunction with GC Tooth Mousse Plus to help alleviate dry mouth symptoms and provide oral comfort

MODE OF ACTION

The RECALDENT™(CPP-ACP) peptide stabilises and delivers calcium and phosphate, fulfilling a similar role to that of the salivary protein Statherin; one of many protein systems within the body that transport calcium and phosphate essential for the growth and health of our teeth and bones.

When a patient has reduced saliva flow, they have reduced protection and availability of calcium and phosphate – hence the need for GC Tooth Mousse Plus.

During and after periodontal care

HOW OFTEN	DURATION	ADDITIONAL COMMENTS
Twice a day, after flossing and brushing	During entire period of care and for 4 weeks after completion	GC Tooth Mousse Plus contains RECALDENT™ (CPP-ACP) which inhibits calculus formation

MODE OF ACTION

RECALDENT™(CPP-ACP) is able to bind to the tooth surface to provide a soothing, protective coating.

GC Tooth Mousse Plus

Topical crème with calcium, phosphate and fluoride
Assorted pack 10pcs contains:
4 x Mint, 4 x Strawberry, 2 x Vanilla
40g tube (35ml)

Also available in a mint only 10 pack

GC Tooth Mousse

Assorted Pack 10 pcs, 2 of each flavour
(Melon, Strawberry, Tutti-Frutti, Mint & Vanilla)
Strawberry, Pack of 10 pcs
Vanilla, Pack of 10 pcs
Mint, Pack of 10 pcs
40g tube (35 ml)

GC Tooth Mousse and GC Tooth Mousse Plus contain RECALDENT™ (CPP-ACP), a unique ingredient developed at Melbourne Dental School, The University of Melbourne, Victoria, Australia. RECALDENT and RECALDENT Device are trademarks used under licence. GC Tooth Mousse and GC Tooth Mousse Plus should not be used by people with milk protein allergies. If any allergic reaction occurs, this may indicate sensitivity to the benzoate preservatives, or to some other component of the product. In this event, discontinue use of the product and contact your physician.

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