

Oral Care

Natural Minerals for
Oral Care Formulations



THINKING OF TOMORROW

About Omya

Omya is a leading global producer of industrial minerals and a worldwide distributor of specialty ingredients. Founded in 1884 in Switzerland, Omya has a global presence extending to more than 160 locations in over 50 countries with 9,000 employees.

Oral Care

Excellent cleaning performance, remineralization, and desensitization for dental care

Thanks to many years of research and development, Omya's expertise outperforms expectations based on consumer needs for oral care formulations.

The focus of toothpaste formulators continues to be on 'all-in-one' and 'total care' products comprising cavity protection, prevention of gingivitis and plaque, extra fresh breath, tartar control, tooth whitening properties, enamel strengthening and sensitivity relief.

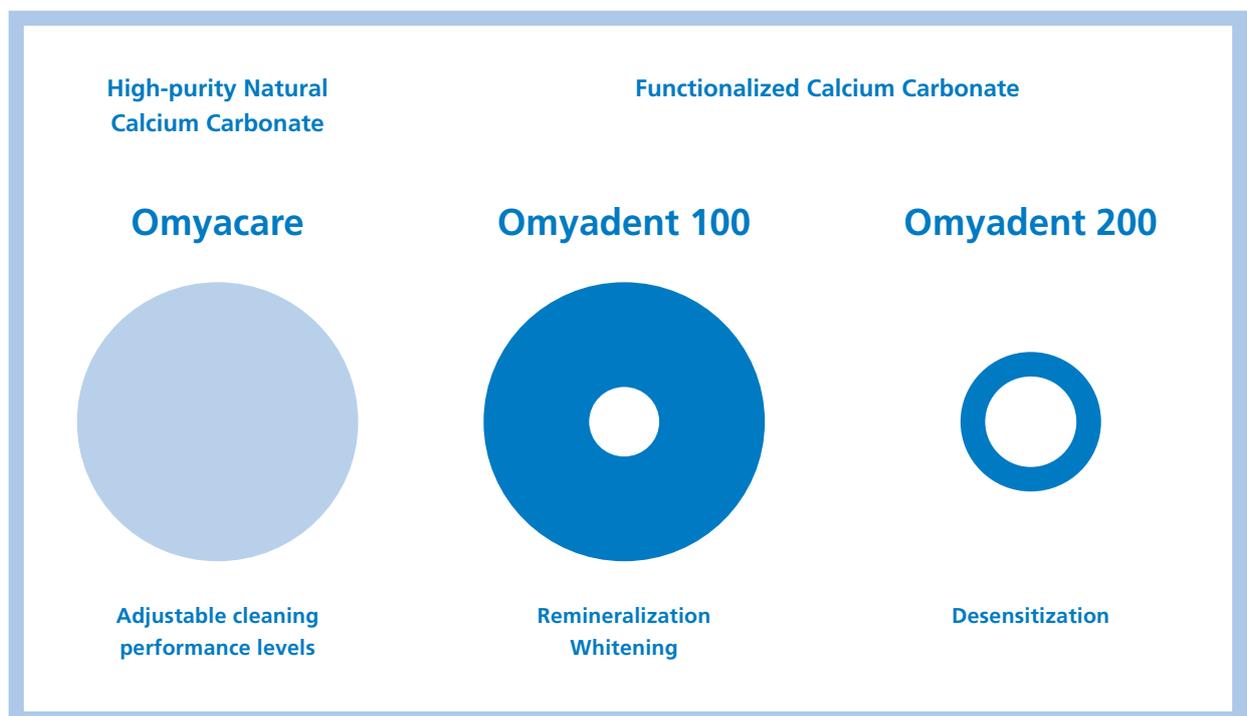
In oral care, Omya minerals are known as multifunctional ingredients, providing enamel remineralization, whitening and excellent cleaning performance.

Benefits

- *Effective cleansing*
- *Remineralization & repair*
- *Natural whitening*
- *Desensitization*



Omya offers a wide portfolio of oral care ingredients





Omyacare

Natural Abrasives for Oral Care

Abrasives are a fundamental component of the oral hygiene regimen. Whether brushing your teeth with a traditional toothpaste or a more progressive water-free tooth tablet, the abrasive does much of the work. Abrasives are more than just particles that aid in the cleaning of teeth, as they influence many of the properties of the final product.

Abrasion & Cleaning Performance

There are two main indicators used to characterize abrasive powders and finished products: abrasion and cleaning. Abrasion is measured using a test called RDA (Relative Dentin Abrasion) that is measuring how much dentin is removed by the test product using a standardized brushing procedure. RDA is a way to determine if a product is safe. Any value below 250 is recognized as safe for daily use¹. Another common misconception is that more abrasive products provide better cleaning. Although this is often true, RDA is a safety test and doesn't provide any information about cleaning. Cleaning is measured using a different test called PCR (Pellicle Cleaning Ratio). PCR uses stained enamel, which is much harder than dentin and measures the change in color after a standardized brushing procedure. Products with a higher PCR value remove more stains from the enamel.

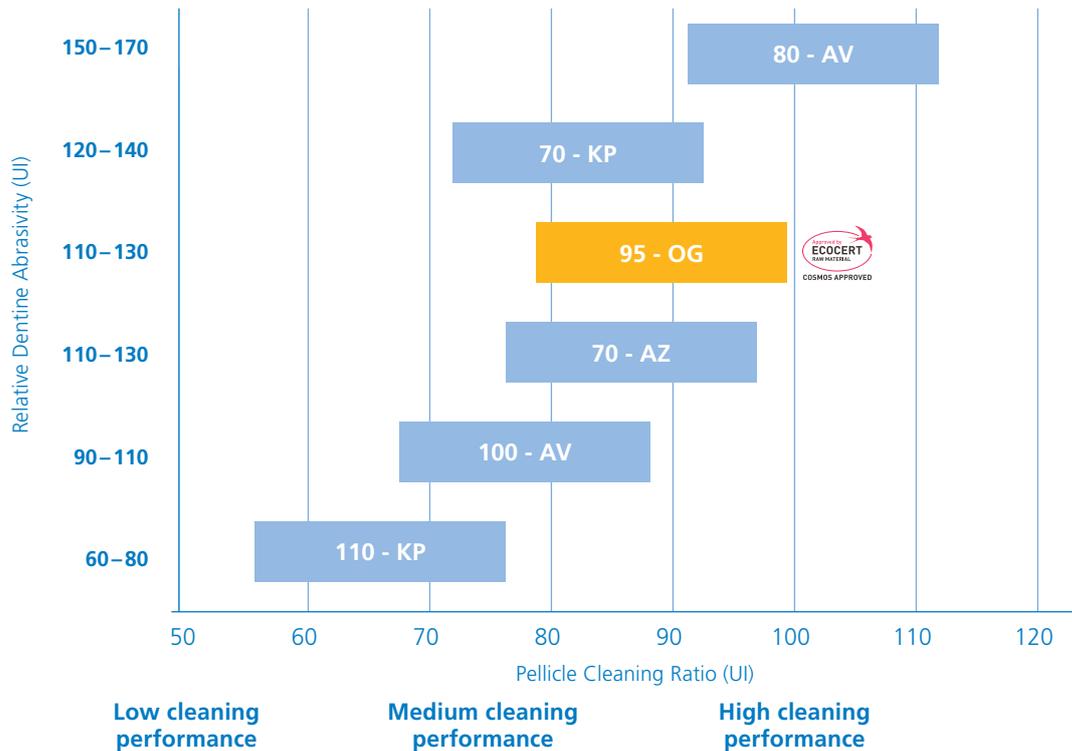
Omyacare Natural Calcium Carbonates are a high-quality, natural and pure solution to meet your oral care requirements. Omyacare NCCs undergo less processing and have a lower carbon footprint than precipitated calcium carbonate or silica. Omya uses different source materials and grinding processes to create a complete line of Omyacare abrasive powders with different properties.

¹⁾ American Dental Association

Test Method

The values have been obtained with an Omya in-house developed method, which is correlated to the method from the Indiana University School of Dentistry¹. This values can differ from the method defined by the University of Zurich².

Omyacare S abrasion and cleaning performance ranges



Texture & Mouthfeel

Mouthfeel is an important property and it is highly regarded by consumers in the final formula.

Factors such as the concentration of the cleaning ingredient and particle size directly affect texture and mouthfeel. Omyacare, when used at the recommended concentration and right combination of grades, is suitable for adjusting organoleptic properties such as texture, color, opacity and viscosity as well as cleaning performance, to best meet the customer's needs.

Omyacare can adjust texture, color and cleaning performance in formulations

¹) ISO 11609 - Dentistry - Dentifrices - Requirements, test methods and marking - ISO 11609:2017 (E)

²) Imfeld, T (2011). Bestimmung der relativen Dentinabrasion (RDA) von Zahnpasten. Prophylaxiedialog. Sonderausgabe RDA:1-3.

High-purity and perfect performance

Omyacare is chemically pure and has high microbiological quality. It complies with the most stringent quality requirements. Some grades are COSMOS approved.

In addition, Omyacare minerals are suitable for fluoridized toothpastes which, formulated at the right pH value, provide remineralization properties in the final product.

Calcium Carbonate provides remineralization and lasting protection, when formulated with sodium monofluorophosphate (SMFP), thanks to particles retained in plaque for neutralizing harmful acids.

Omyacare is suitable for Sodium Monofluoro- phosphate (SMFP) toothpastes

Toothpaste containing 40% Omyacare® S80-AV

	Ingredients	INCI Nomenclature	% w / w
A	Sorbitol 70%	Sorbitol	23.00
	Glycerin	Glycerin	10.00
	Aqua dem.	Aqua (Water)	add. 100
	Cellulose Gum	Cellulose Gum	0.80
	Phoskudent Na211	Sodium Monofluorophosphate	1.10
	Sodium Benzoate	Sodium Benzoate	0.10
	Sodium Saccharin	Sodium Saccharin	0.10
	Trisodium Phosphate	Trisodium Phosphate	1.00
B	Omyacare® S80-AV	Calcium Carbonate	40.00
C	Sorbosil TC15	Hydrated Silica	4.70
D	Galaxy 796G	Sodium Lauryl Sulfate	3.00
	Mint Aroma	Aroma	0.80
			100.00

Procedure

- 1 Phase A: Into a beaker combine Glycerin and Cellulose Gum only. Add the rest of the ingredients and mix under strong agitation. Add water and stir to make a homogeneous texture.
- 2 Add part B & C step by step to part A under strong agitation and homogenize.
- 3 Stir slowly and cool down to room temperature.
- 4 Add surfactant of the part D under slow agitation, optionally under vacuum.
- 5 Finally add phase D starting with Galaxy then aroma

Natural Whiteness

Marble stone a bright white opacifier used for centuries

Calcium carbonate was first used in prehistoric art in the form of chalk to opacify and whiten formulations. The term “white pigment” corresponds to a pigment that gives a white color, which is always the case when using any calcium carbonate.

Calcium Carbonate listed under a Color Index Generic Name

CI 77220 (Calcium Carbonate) is a white pigment that is used in cosmetics and personal care products to obtain opacity in formulations. It can further be mixed with other colorants to obtain different shades and hues in a product.

Excellent whiteness & brightness properties

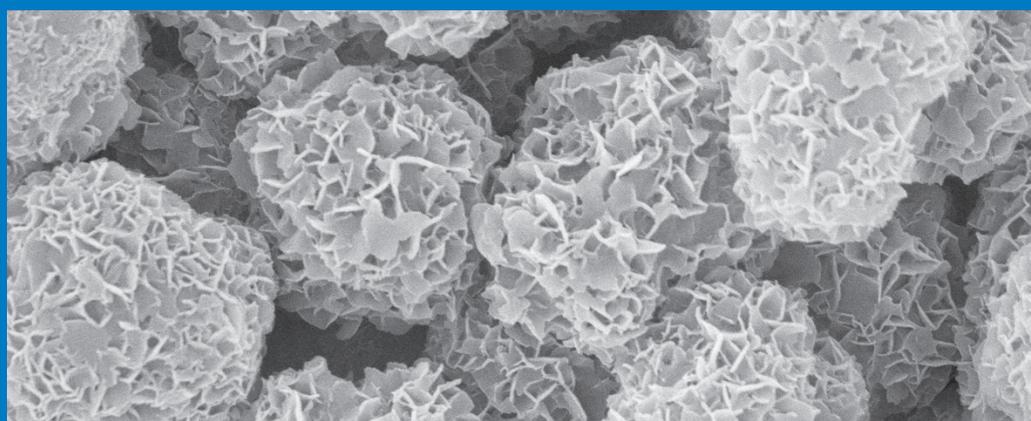
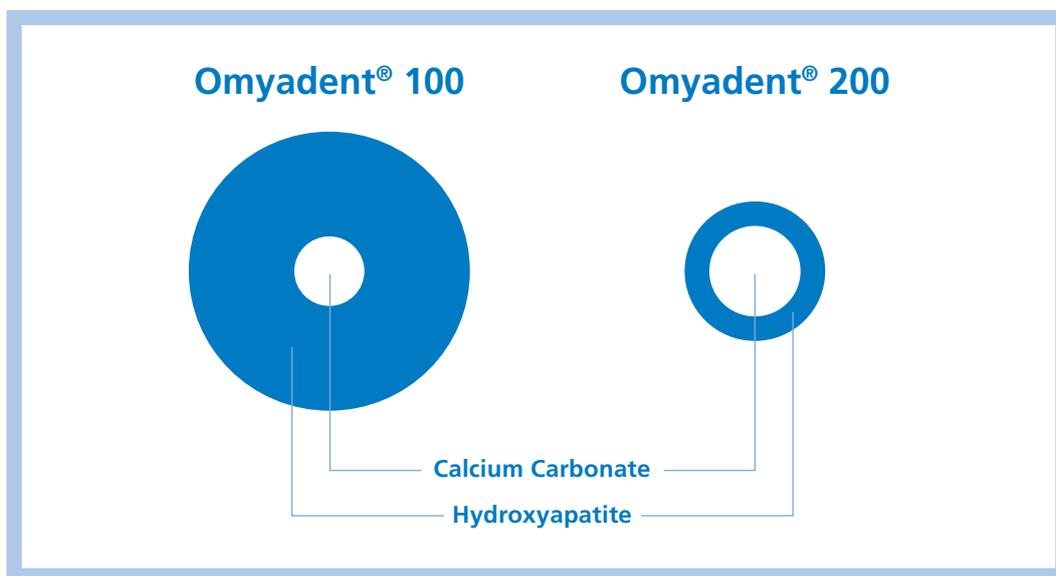
Our marble-based solution, 110-KP was specially selected and further improved to confer whiteness and a rich, creamy appearance to toothpastes. Our 100% natural opacifier features optimal particle size in the micrometer range and provides white coloring in toothpaste at concentrations as low as 3 to 5%.



Omyadent

Improve your formulation with a functionalized mineral

Starting with limestone from the hills of the French Provence, natural ground calcium carbonate undergoes a proprietary treatment process with natural acid resulting in a new mineral structure. Cores of calcium carbonate remain surrounded by an elaborate scaffold of lamellar hydroxyapatite, the main constituent of the enamel and dentin in our teeth. This allows for a variety of products with a broad spectrum of properties, capabilities and applications.



Omyadent 100 particles in Scanning Electro Microscopy (SEM) images



Omyadent grades are COSMOS and ECOCERT raw material approved as well as certified by NATRUE.



Omyadent 100 remineralizes and repairs for a whiter, healthier smile

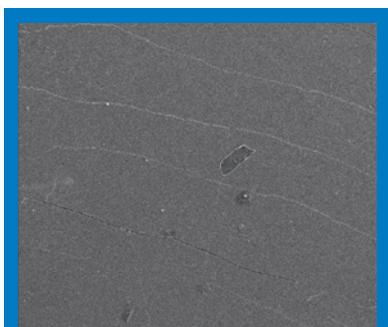
Omyadent 100

Remineralization and Whitening

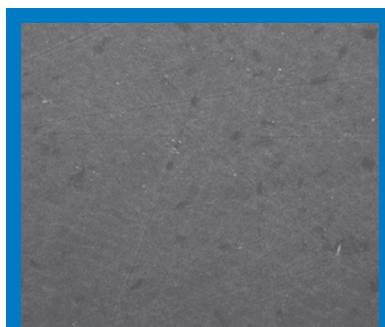
Omyadent 100 particles are a source of calcium and phosphate, ensuring high reactivity and efficient remineralization of the enamel by repairing microscopic defects. Applying Omyadent 100 - OG results in a smoother and whiter tooth surface.

Mechanism of action

Enamel surface lesions can be effectively repaired with Omyadent 100. As a result, Omyadent 100 improves tooth whiteness while smoothing the surface of the teeth.



Before treatment



After treatment

Bovine tooth enamel treated with Omyadent 100 and 1450 ppm of sodium monofluorophosphate, provide a smoother tooth surface as defects have been repaired by a remineralization process (images 1000x).

Omyadent 200

Desensitizing

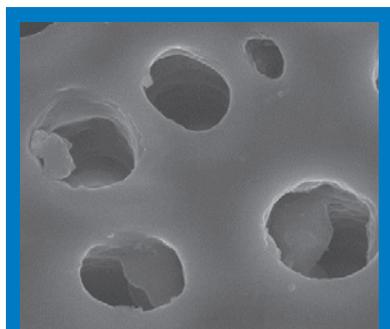
Omyadent 200 is specifically developed to meet the requirements of teeth with exposed dentin which is characterized by hypersensitivity.

Dentin hypersensitivity

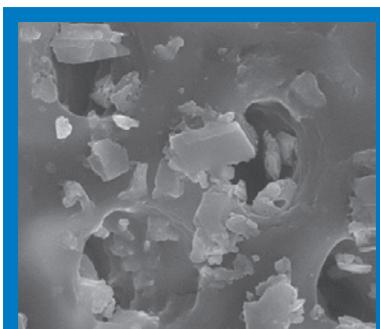
Dentin hypersensitivity (DH) affects peoples quality of life. People that suffer from DH start to avoid consuming products that cause pain. Dentin hypersensitivity arises when tubules within dentin become exposed, most commonly due to receding gums or enamel wear. Once exposed, these tubules may encounter stimuli such as hot, cold, sweet foods and beverages, which can cause the movement of fluids within the tubules. This movement in turn triggers nerves in the pulp, which ultimately causes short, sharp pain.

Mechanism of action

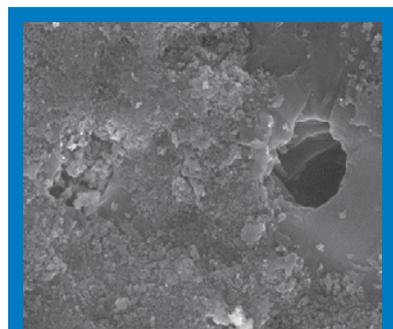
Dentin hypersensitivity can be treated by various means. One approach is to occlude dentin tubules and prevent therefore stimuli and dentinal fluid movement. Thanks to its tailored small particles, Omyadent 200 penetrates the tubules and occludes them effectively. The hydroxyapatite shell ensures improved acid-resistance versus calcium carbonate and makes Omyadent 200 survive acid attacks.



Dentin tubules untreated



Effect after treatment with 5% Omyadent 200 in Hydroxymethyl cellulose



Effect after treatment with toothpaste containing 5% Omyadent 200

Showing dentin tubules before and after the treatment with Omyadent 200

Omyadent 200 fights against dentin hypersensitivity naturally

Toothpaste containing 5% Omyadent® 100-OG

	Ingredients	INCI Nomenclature	% w/w
A	Sorbitol 70%	Sorbitol	23.00
	Glycerin	Glycerin	10.00
	Zemea® Propanediol	Propanediol	10.00
	Aqua dem.	Aqua (Water)	add. 100
	Cellulose Gum	Cellulose Gum	0.80
	SMFP Wendeng Jinye	Sodium Monofluorophosphate	1.10
	Sodium Benzoate	Sodium Benzoate	0.10
	Sodium Saccharin	Sodium Saccharin	0.10
	Phoskudent Pyro	Tetrasodium Pyrophosphate	3.00
	B	Omyadent® 100-OG	Hydroxyapatite (and) Calcium Carbonate
Sorbosil AC35		Hydrated Silica	20.00
C	Sorbosil TC15	Hydrated Silica	5.20
D	Galaxy 796G	Sodium Lauryl Sulfate	1.25
	Mint Aroma	Aroma	0.80
			100.00

Procedure

- 1 Phase A: Into a beaker combine Cellulose Gum and Glycerin and mix under strong agitation. Add the rest of ingredients except water. Add water and stir to make a homogeneous texture.
- 2 Add part B step by step to part A under strong agitation and homogenize.
- 3 Stir slowly and cool down to room temperature.
- 4 Add part C under slow agitation, optionally under vacuum.
- 5 Finally add phase D starting with Galaxy then aroma.

Toothpaste containing 5% Omyadent® 200-OG

	Ingredients	INCI Nomenclature	% w/w
A	Sorbitol 70%	Sorbitol	23.00
	Glycerin	Glycerin	10.00
	Zemea® Propanediol	Propanediol	10.00
	Aqua dem.	Aqua (Water)	add. 100
	Cellulose Gum	Cellulose Gum	0.80
	NaMFP Wendeng Jinye	Sodium Monofluorophosphate	1.10
	Trisodium Phosphate	Trisodium Phosphate	1.00
	Phoskudent Pyro	Tetrasodium Pyrophosphate	1.00
	Sodium Benzoate	Sodium Benzoate	0.10
	Sodium Saccharin	Sodium Saccharin	0.10
	B	Omyadent® 200-OG	Calcium Carbonate (and) Hydroxyapatite
Omyacare® S95-OG		Calcium Carbonate	20.00
C	Sorbosil TC15	Hydrated Silica	5.50
D	Galaxy 796G	Sodium Lauryl Sulfate	1.25
	Mint Aroma	Aroma	0.80
			100.00

Procedure

- 1 Phase A: Into a beaker combine Glycerin with cellulose gum and mix under strong agitation. Add the rest of ingredients. Then, pour water and stir to make a homogeneous texture.
- 2 Add part B step by step to part A under strong agitation and homogenize.
- 3 Stir slowly and cool down to room temperature.
- 4 Add part C under slow agitation, optionally under vacuum.
- 5 Finally add phase D starting with Galaxy then aroma.

Product offering – Finding the right solution

Product	Cleaning performance	Recommended for	Usage level (%)
Natural Calcium Carbonate			
S 80 - AV	High	Whitening formulas	10 - 50
S 70 - KP	Medium - Low	All-purpose formulas	10 - 50
S 95 - OG*	Medium	Organic toothpastes	10 - 50
S 70 - AZ	Medium	All-purpose formulas	10 - 50
S 100 - AV	Medium	All-purpose formulas	10 - 50
110-KP	Low	Sensitive toothpastes	10 - 50
Functionalized Calcium Carbonate			
Omyadent 100 *	Low	Premium repairing formulas and whitening	10 - 50
Omyadent 200 *	Low	Desensitization	10 - 50

* COSMOS approved by Ecocert Raw Material and NATRUE certified



Cosmospheres

The first step to making oral hygiene exciting is to make the products exciting to use. The right aesthetic helps a product stand out. This is especially important when teaching children to adopt good hygiene practices.

Cosmospheres are optically attractive beads, sourced from natural and sustainable ingredients. This eye catching technology can be used in aqueous based formulations. Cosmospheres can be enriched with a wide variety of liquid or powdered ingredients to create stable, high performance products with a unique visual sensation.

Toothpaste containing 40% Omyacare® S70-KP

	Ingredients	INCI Nomenclature	% w / w
A	Sorbitol 70%	Sorbitol	20.00
	Zemea® Propanediol	Propanediol	5.00
	GLE Organic Glycerin	Glycerin	10.00
	Aqua dem.	Aqua (Water)	add. 100
	Cekol® 2000	Cellulose Gum	0.80
	Evicare® Magnolia	Magnolia Officinalis Bark Extract	0.10
	Erylite® Stevia 400	Erythritol (and) Stevia Rebaudiana Extract	0.10
	SMFP Wendeng Jinye	Sodium Monofluorophosphate	1.10
B	Omyacare® S70-KP	Calcium Carbonate	40.00
	Sorbosil TC15	Hydrated Silica	4.80
C	Galaxy 796G	Sodium Lauryl Sulfate	3.00
	Cosmospheres Activated Carbon Beads 2S	Mannitol (and) Carbon Black (and) Microcrystalline Cellulose	2.00
	Mint Aroma	Aroma	0.80
			100.00

Procedure

- 1** Phase A: Into a beaker combine Cekol® 2000 and Glycerin and mix under strong agitation. Add the rest of ingredients except water and mix. Add water and stir to make a homogeneous texture
- 2** Add part B step by step to part A under strong agitation and homogenize.
- 3** Stir slowly and cool down to room temperature.
- 4** Add Galaxy, then mint aroma under slow agitation, optionally under vacuum.
- 5** Finally add Cosmosphere beads also under slow agitation.

Low water solutions

Waterless in a full boom

Consumers are becoming environmentally aware and expressed the intent to limit negative environmental impact by using eco-friendly products. Looking ahead, oral care is a segment in which the development of water-efficient products can have a real impact in current environmental concerns as oral hygiene is an ever growing interest globally. As a result of the rise of the environmentally-conscious consumer and the global water crisis, formulators are in need of ingredients that may help their creations to be performing, cost efficient, clean label and , of course, water efficient or waterless. Omya faces this challenge with its portfolio of minerals and a range of formulations to inspire its customers.

A format tailored to current needs

Much potential remains for the development of products that reduce water wastage. Omya responds to the oral care market developing toothpowders, stick and solid toothpastes that provide optimal abrasivity and cleaning performance. Formulations include Omyacare S95-OG which are approved Cosmos and Natrue cleaning particles. Other products that reduce unnecessary water usage are toothtabs, which are increasing presence in the market. For this application, Omya has incorporated Omyanutra 300 Flash to facilitate tabs compactibility and disintegration, to improve the tableting process and the mouthfeel experience.

Multiple formulation options

Omya products are easy to blend and have countless attributes depending the application. They may contribute positively to waterless formulations by improving tabs compactibility and disintegration, increasing cleaning performance, remineralizing tooth enamel, desensitizing dentine or increasing foaming performance while contributing to smoothness. To release the full potential of products during use, incorporate a small water quantity into products as conventional waterless products.



Toothtabs based on Omyacare® S95-OG,
Omyanutra® 300 Flash and Omyadent® 100

	Ingredients	INCI Nomenclature	% w/w	Procedure
A	Omyacare® S95-OG	Calcium Carbonate	10.00	1 Into a beaker combine Omyacare and Omyadent and add Plantapon ACG 50 using the high shear mixer from Glatt. Mix it first for 5 minutes then for 10 minutes. 2 Add phase B, except Mannitol and mix all together under agitation for 10 minutes using the Erweka Turbular mixer. 3 Blend the mixture with Mannitol and mix for 5 minutes. 4 Press the mixture on the tablet press Fette 1200i.
	Omyadent® 100-OG	Hydroxyapatite (and) Calcium Carbonate	5.00	
	Plantapon® ACG 50	Disodium Cocoyl Glutamate	3.00	
B	Omyanutra® 300 Flash	Calcium Carbonate (and) Hydroxyapatite (and) Sodium Croscarmellose	30.00	
	Pearlitol	Mannitol	26.68	
	Essential Mint Oil	Mentha Piperita Oil	2.00	
	Phoskadent SF	Sodium Fluoride	0.32	
	Evicare® GB	Glyceryl Behenate	15.00	
	Vivapur CS 130 FM	Microcrystalline Cellulose	5.00	
	Stevia	Stevia	1.00	
			100.00	

Tip: Bite down on tablet to break. Brush for 2 minutes with wet toothbrush.

Solid toothpaste based on Omyacare® S95-OG
and Omyadent® 200

	Ingredients	INCI Nomenclature	% w/w	Procedure
A	Omyacare® S95-OG	Calcium Carbonate	40.00	1 Into a beaker combine Omyacare, coconut oil and Plantapon ACG 50 using the high shear mixer from Glatt. Mix it first for 5 minutes then for 10 minutes. 2 Add phase B, except Xylitol and mix all together under agitation for 10 minutes using a mixer. 3 Blend the mixture with Xylitol and mix for 5 minutes.
	Omyadent® 200-OG	Calcium Carbonate (and) Hydroxyapatite	5.00	
	Plantapon® ACG 50	Disodium Cocoyl Glutamate	3.00	
	Coconut Oil	Cocos Nucifera (Coconut) Oil	20.00	
B	Xylisorb® 90	Xylitol	27.20	
	Erylite® Stevia 400	Erythritol (and) Stevia Rebaudiana Extract	0.10	
	Evicare® Xanthan Aquatex 80	Xanthan Gum	1.00	
	Essential Mint Oil	Mentha Piperita Oil	1.00	
	Green Tee Extract (EGCG) 90	Epigallocatechin Gallate	2.00	
				100.00

Tip: Wet your toothbrush and rub it against the toothpaste to form a lather. Then, collect the foam created on the toothbrush and brush teeth.



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Cosmospheres is a registered trademark of Omya AG in Italy.

Omya International AG, CH-4665 Oftringen, e-mail: info.cosmetics@omya.com, oralcare.omya.com



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