



**Sodium Bicarbonate:
Natural benefits
for Personal Care
applications**



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A whitening smooth abrasive

• Toothpaste

Nowadays, toothpastes are expected to eliminate microbes, treat bad breath and prevent disease, but also strengthen and improve the appearance of teeth and gums. In spite of a longer life expectancy of teeth (thanks to the inclusion of fluoride in today's formulas), a new oral care problem has appeared: dental erosion, leading to tooth sensitivity. Some toothpastes are too abrasive and strip away tooth enamel, which never grows back. Our smooth abrasive sodium bicarbonate preserves tooth enamel, in turn preventing sensitivity to heat or cold.

Relative Dentine Abrasivity (RDA) values of some compounds commonly found in toothpaste:

RDA VALUE	DENOMINATION	EXAMPLES & REMARKS
0 - 70	Low abrasive	Sodium bicarbonate : 10 Silica : 50
70 - 100	Medium abrasive	Standard toothpaste : 70-90
100 - 150	Highly abrasive	Calcium carbonate : 110 (max)
150 - 250	Regarded as harmful limit	FDA Recommended Limit : 200 ADA Recommended Limit : 250



When mixed with saliva, sodium bicarbonate acts as an alkaline pH buffer. It neutralizes plaque acids to eliminate microbes. This is important, because plaque acids contain millions of bacteria that damage tooth enamel and gums and can cause disease, if not rapidly treated with smooth, effective brushing.

Specifics

As a smooth abrasive powder, sodium bicarbonate helps clean teeth without damaging the enamel or dentin (see RDA table). Our sodium bicarbonate portfolio offers a wide range of particle sizes for varying levels of abrasiveness and cleaning power in toothpaste.

Formulation: Mint flavor toothpaste

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	GLYCERIN	GLYCERIN	23
A	PEG-12	PLURACARE E 600 / BASF	2.7
A	CARBOXYMETHYLCELLULOSE	AKUCCELL AF 1985 / Akzo Nobel	0.9
B	AQUA	PURIFIED WATER	60.8
B	SILICA	TIXOSIL 73 / Rhodia	0.3
B	SORBITOL	NEOSORB 70/70 NC / IMCD	2
B	SILICA	TIXOSIL 43 / Rhodia	0.5
B	TITANIUM DIOXYDE	HOMBITAN ANATASE FF-PHARMA / Brenntag	20
C	SODIUM BENZOATE	SODIUM BENZOATE / Univar	0.2
C	POTASSIUM SORBATE	POTASSIUM SORBATE / Brenntag	8
C	SODIUM SACCHARINATE	SODIUM SACCHARINATE	1
C	AROMA	MINT FLAVOR 3124 D / David Michael Europe	1.4
D	SODIUM LAURYL SULFATE	TEXAPON V 95 G / BASF	13
E	SODIUM BICARBONATE	SODIUM BICARBONATE / Novacarb or Novabay	9

Process: Add phase A to the main recipient and mix until even. Add water, then slowly add phase B. After adding all the phase B ingredients, mix until even. Add C and mix until even. Micronize phase D and add it. Add phase E. Stir 30 min and empty. The toothpaste will be even and very smooth, with no grains or air pockets.

Effervescent

- Foaming soap/shampoo & bath tablets

Specifics

In a solution, the reaction between sodium bicarbonate and a weak acid compound – salicylic acid or citric acid – forms dissolved carbonic acid, providing a smooth, enjoyable effervescence against the skin, hair and scalp. This effervescence, which is unique to sodium bicarbonate, offers an amazing feeling of well-being in bath products like foaming soap, bath tablets, bath salts, bath fizzers and bath bombs. Sodium bicarbonate is also a water softener. As an anti-scaling agent, it reduces water hardness for efficient, relaxing cleaning: the skin, hair and scalp are more relaxed, without that dried-out feeling.

Formulation: Foaming powder

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	SODIUM COCOYL ISETHIONATE	ELFAN AT 84 / Masso	22
A	CITRIC ACID	CITRIC ACID / Merck	17
A	SODIUM BICARBONATE	SODIUM BICARBONATE / Novacarb or Novabay	17
B	ALUMINIUM STARCH OCTENYLSUCCINATE	DRY FLO PLUS / Masso	43
B	TITANIUM DIOXYDE	TIO ₂ / Evonik	0.35
B	FRAGRANCE	FRAGRANCE	0.3
B	CL:14700	RED 4 / Sensient	QSP

Process: Crush phase A, then add the crushed powders to a powder mixer, along with the other ingredients (phase B). Mix until even. Careful: The product may lose its evenness if mixed for too long.

- Effervescent shampoo

Formulation: Effervescent shampoo

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	SODIUM LAURYL SULFATE	TEXAPON 95V / BASF	1.50
A	SODIUM COCOYL ISETHIONATE	ELFAN AT 84 / Masso	5.00
A	CITRIC ACID	CITRIC ACID / Merck	22.50
A	SODIUM BICARBONATE	SODIUM BICARBONATE / Novacarb or Novabay	22.50
B	TAPIOCA STARCH	PUR TAPIOCA (28-1810) / Masso	7
B	CORN STARCH	MAIZENA / Unilever	25
B	KAOLIN	KAOLIN / Argilets	15.30
B	XANTHAN GUM	RHODICARE T / SACI / CFPA	0.50
B	FRAGRANCE	JAPANESE GARDEN FRAGRANCE / Floressence	0.70

Process: Crush phase A, then add the crushed powders to a powder mixer, along with the other ingredients (phase B). Mix until even.



The effervescent properties of bicarbonate make bath tablets dissolve even faster.

Deodorant

Anti-odor (1/2)

- Roll-on deodorant

Perspiration is a physical excretion that is normally odorless. But bacteria – which expand because of excretions – generate the strong odors we smell. In fact, perspiration is made up of minerals, but also toxins that provide good conditions for bacteria to grow and produce odors.

In recent decades, antiperspirants dominated the deodorant market. But with rising concerns about the safety and carcinogenicity of some of them, the cosmetics industry decided to enter the natural deodorant market, producing natural odor-fighting compounds.



Specifics

Sodium bicarbonate is an anti-odor alternative to other antiperspirants. It prevents odor from acidifying, by regulating pH levels. Sodium bicarbonate does more than hide odors: it neutralizes them, without impeding perspiration. As a result, when used in a roll-on deodorant, it can be an effective alternative to aluminum salts and other antiperspirants.

Formulation: Roll-on deodorant

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	PPG-15 STEARYL ETHER	MASSOCARE E / Masso	4
A	STEARETH-2	MASSOCARE CSA 02 / Masso	2.2
A	STEARETH-21	MASSOCARE CSA 21 / Masso	1
B	AQUA	PURIFIED WATER	60.8
B	FARNESOL	FARNESOL / Symrise	0.3
B	PEG-8	LUTROL E 400 / BASF	2
B	HYDROXYETHYLCELLULOSE	NATROSOL HHR 250 / Ashland	0.5
C	SODIUM BICARBONATE	SODIUM BICARBONATE / Novacarb or Novabay	20
C	DMDM HYDANTOIN	GLYDANT 2000 / Masso/Lonza	0.2
D	TAPIOCA STARCH	TAPIOCA PURE (28-1810) / Masso	8
D	FRAGRANCE	FRAGRANCE	1

Process: Place phase A in a melting device and heat to 70°C. Add phase B to a mixer and heat to 70°C. Pour contents of melting device into the mixer. Homogenize 5 minutes, then cool. At 45°C, add phase C. At 30°C, add phase D.

Deodorant

Anti-odor (2/2)

- Dry shampoo

Sodium bicarbonate prevents from odor acidifying, by regulating pH levels. Thanks to this property, sodium bicarbonate allows to refresh hair between washes. Furthermore, it allows to reduce greasy hair and scalp issue. Greasy hair is due to sebaceous hyper secretion. So, greasy hair has a high level of acidity. Thanks to its alkaline pH buffer properties, sodium bicarbonate allows to solve this issue.

Formulation: Biphasic dry shampoo

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	AQUA	PURIFIED WATER	28
A	SODIUM BICARBONATE	SODIUM BICARBONATE / Novacarb or Novabay	1.5
B	ALCOHOL	LAVANDER ALCOHOL 96% ORGANIC / Fytosan	64.95
B	MENTHOL	NATURAL CRYSTALLIZED MENTHOL / IMCD	0.1
B	FRAGRANCE	JAPANESE GARDEN FRAGRANCE / Floressence	0.45
C	TAPIOCA STARCH	PUR TAPIOCA (28-1810) / Masso	5

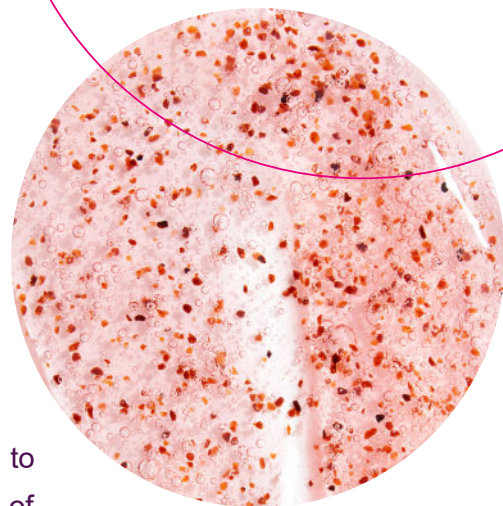
Process: Add phase A to the main recipient and mix until even. Add phase B to the other recipient and mix until even. After adding phase B to the main recipient, mix around 10 minutes. Add phase C and mix around 10 minutes. Empty.



Mild Scrub

• Exfoliating cream

Some cosmetics help the natural process of dead skin detachment. Depending on the particle size of the raw materials, the action of exfoliants will vary, along with their ability to rejuvenate the skin. The more sensitive the skin, the finer the exfoliant's particle size will need to be. Humens' line of sodium bicarbonate products offers a wide range of sensations in the form of exfoliating skin care products.



Average diameter of Sodium Bicarbonate (µm)

From Novacarb	BC EF: 35	BC P: 50	BC GF: 100	BC N: 150	BC UCG: 300
From Novabay	-	-	-	Fine grade: 130	Coarse grade: 280
Body	✓	✓	✓	✓	✓
Face	✓	✓	✓	-	-
Feet	-	-	-	-	✓

Specifics

Sodium bicarbonate is highly efficient at gently peeling and exfoliating skin: the cells detach from the skin, and the pores are cleaned. Skin care products are absorbed more easily, and the skin is protected. Our team has developed a wide range of sodium bicarbonate particle sizes to suit any personal care application. In fact, each particle size corresponds to an intensity of action, and so to a precise exfoliating use for the skin. The correlation table above shows the recommended exfoliant

applications, based on sodium bicarbonate particle size. Custom-made blends of different particles sizes can also be developed, for an even better fit with your application's purposes. Because it is water-soluble, sodium bicarbonate is very easy to rinse. And, above all, it is a great natural, eco-friendly, alternative exfoliant, because it can effectively replace chemical-based scrubs like PE beads, but also plant-based abrasives like nut shells, fruit pits and bamboo.

Formulation: Peeling

PHASE	INCI NAME	COMMERCIAL NAME SUPPLIER	QUANTITY (%)
A	HELIANTHUS ANNUUS SEED OIL	DEODORIZED OLEIC SUNFLOWER OIL / Sophim	50.045
A	COCOS NUCIFERA OIL (AND) HYDROGENATED COCONUT OIL	PREMIUM ORGANIC COCONUT BUTTER / Naturochim	19
A	CAPSICUM ANNUUM	P-80,000G-OS / Maprecos	0.005
A	HYDROGENATED CASTOR OIL	CUTINA HR / BASF Personal Care and Nutrition GmbH	2
A	TOCOPHEROL	COVIOX T 90 EU C / BASF Personal Care and Nutrition GmbH	0.4
B	POLYGLYCERYL-10 LAURATE	S FACE L-1001 / Sakamoto Yakuhiin Kogyo Co, Ltd	9.25
C	SILICA	AEROSIL 200 / Evonik	4
C	SODIUM BICARBONATE	SODIUM BICARBONATE (300 µm) / Novacarb or Novabay	7.5
C	SODIUM BICARBONATE	SODIUM BICARBONATE (150 µm) / Novacarb or Novabay	7.5
D	FRAGRANCE	CAMEL FUGDE DF SP051149 BELL FLAVORS & FRAGRANCES	0.3

Process: Process: Add phase A to a beaker and place in a bain-marie at 80°C. When the mixture is even, add phase B. Cool to 60°C and add phase C. At 50°C, add phase D.

Sodium Bicarbonate:

A natural mineral ingredient



What is sodium bicarbonate?

Sodium bicarbonate (INCI name: Sodium bicarbonate), also known as baking soda, is a mineral compound with the formula NaHCO_3 . It is registered under CAS number 144-55-8. Although its natural form is a white, crystalline mineral solid called “Nahcolite,” the most common form of sodium bicarbonate is a fine white powder, produced by crystallization. Its many properties make sodium bicarbonate an exceptional, versatile compound. Over the years, it has become a key ingredient with hundreds of applications, from housework to personal care and healthcare. Our production methods allow us to produce high-quality sodium bicarbonate that is great for any application, especially personal care.



Sodium bicarbonate in cosmetic applications

Foaming and effervescent shampoo: effervescent; water softener

Toothpaste: whitening smooth abrasive; deodorant/anti-odor

Roll-on-deodorant: deodorant/anti-odor

Exfoliating cream: mild scrub

Dry shampoo: deodorant/anti-odor



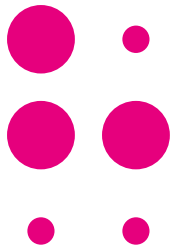
Natural & Eco-friendly

NOVACARB plant (France) is ISO 9001, ISO 14001, ISO 45001 and ISO 50001 certified. NOVABAY plant (Singapore) is ISO 9001 certified. We have implemented the HACCP methodology in all of our processes. Some of our products are also COSMOS approved, Kosher, and Halal certified. Overall we strive to promote sustainable development in daily life.



Easy to formulate: white & solubility

Our sodium bicarbonate grades are pure, white ($L > 99\%$), free-flowing powders. They are completely water-soluble, allowing for clear water solutions up to 84 g/L. All of this makes it very easy to incorporate into any personal care application, particularly for skin care or oral care.



Humens
the purity makers



Our company

Historical know-how

Humens produces sodium-based mineral compounds. Our company has a production history that goes back more than 170 years at our La Madeleine plant in Laneuveville-devant-Nancy, France. Our products are made from two high purity natural mineral raw materials extracted in the Lorraine region: limestone from our Pagny-sur-Meuse quarry and salt from our Lenoncourt salt field. From local to global player, Humens set up a greenfield sodium bicarbonate unit in Singapore in 2016.

Shared goal for product quality

Humens is a state-of-the-art company with 400 skilled and committed employees. We have been passionate about products purity and satisfying our customers' needs since our industrial activities were launched in 1855. Committed to an ambitious CSR strategy, Humens aims to achieve carbon neutrality by 2035.



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