

Innovative solutions for natural-based rinse-off products

Serving the demand for natural personal care products with performance and emotion

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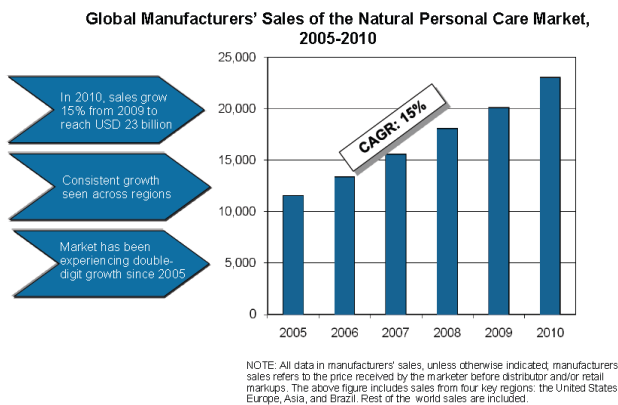
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Rinse-off products such as shower gels, liquid soaps, toothpastes, shampoos and conditioners are a vital part of people's daily hygiene routines. But besides helping to improve or maintain their health and appearance, consumers expect these products to enhance their overall well-being. Research shows that consumers are increasingly looking for natural personal care products and are striving for harmony and balance in their lives. The increasing significance of natural products, as well as consumers' growing environmental awareness, has generated new demands, and opened up numerous new opportunities for manufacturers of rinse-off products. But exploiting these opportunities creates challenges for manufacturers, across areas ranging from formulation to certification. By taking people's real-world needs as a starting point, BASF's Personal Care business develops concepts and solutions that meet the multi-faceted functional and emotional needs of modern consumers, and add new value to its customers' brands and businesses. To support manufacturers who are targeting the flourishing market for natural rinse-off products, BASF's Personal Care business offers a wide range of natural-based and high-performance ingredients.

From niche to mass market: natural personal care products used to be a special treat that consumers indulged in every once in a while. Meanwhile, consumer perception has undergone a significant change. Market data shows that natural personal care products have become a valued part of many consumers' lives: in fact, global sales saw double-digit growth between 2005 and 2010, increasing to 23 billion US dollars (see figure 1). There has been growth in sales of natural personal care products across all regions, with particularly high growth rates in Brazil and the Asia Pacific region (see figure 2) and very consistent growth in the European market. In recent years, total sales in Europe have risen steadily, with a compound annual growth rate of 11.1% between 2006 and 2011 (see figure 3). And with 57% of consumers feeling that beauty products based on natural ingredients are better for them, the market growth looks set to continue (source: Datamonitor, *Global Beauty Trends: Consumer & Product Perspectives*, 2011).

(Figure 1)



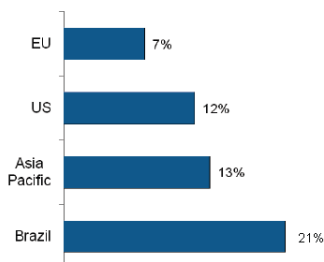
(Caption figure 1)

A compound annual growth rate of 15%

Source: Kline, Natural Personal Care 2011

(Figure 2)

Manufacturers' Sales Growth of Natural Personal Care Products by Region, 2009 - 2010

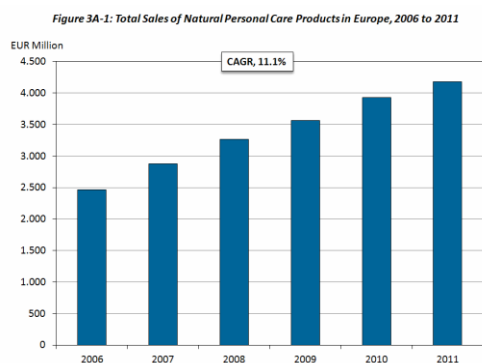


(Caption figure 2)

Manufacturers' sales growth by region

Source: Kline, Natural Personal Care 2011

(Figure 3)



SOURCE: Kline Natural Personal Care 2011.

NOTE: USD 1.00 = EUR 0.7135.

(Caption figure3)

Total sales of natural personal care products in Europe, 2006 to 2011

Source: Kline, Natural Personal Care 2011

Natural-based rinse-off applications: from formulation to certification

Rinse-off applications containing plant-derived ingredients enjoy growing popularity. Consumers are looking for rinse-off products that provide mild and gentle cleansing, prevent irritation and dryness, maintain the natural balance of skin and hair, and keep them healthy and beautiful. In other words, as well as supporting their physical health, consumers expect these rinse-off solutions to deliver in terms of performance and efficacy, and to contribute to their overall sense of well-being – for example, by enabling invigorating shower or home spa experiences. Formulating natural-based solutions that satisfy these diverse needs can prove difficult: choosing suitable, competitively viable ingredients that also deliver in terms of the desired level of mildness and foam quantity, and that also conform to natural cosmetic standards, represents one of the major challenges in securing market share. Besides ingredient choice and formulation expertise, the success of natural-based rinse-off products depends very much on performance and product positioning. For example, carefully considered product certification and labeling lend credibility to a product, and can be an effective tool in this respect.

When developing new solutions, BASF takes all these challenges into account and makes the needs of consumers the starting point. In doing so, the Personal Care business aims to develop solutions that are of real value for consumers, and yield a return for customers. Thanks to its commitment to innovation, technological excellence and formulation expertise adapted to local markets, BASF's Personal Care business is a valued partner – also to those manufacturers targeting the market for natural rinse-off products. Its comprehensive portfolio includes a broad range of naturally-derived, chemically processed ingredients and formulation concepts that help manufacturers satisfy both the functional and emotional needs of consumers. As well as providing ingredients that are tailored to people's diverse everyday needs, BASF offers its customers holistic support – from formulation, to claim and certification support – and also helps when adapting products and formulations to local consumers' specific needs.

Naturalness with a mild touch

Plantacare[®] surfactants, the alkyl polyglucoside range from BASF, give rinse-off products the gentleness that consumers are looking for. They combine naturalness with the mildness required of modern body wash, bath preparations, baby wash products and shampoos. Plantacare[®] can even improve the appeal of oral care products. In documented tests, they have exhibited excellent dermal, ocular as well as mucous membrane compatibility, and provide rich and dense foaming properties. The sugar surfactants are made from renewable plant-derived feedstocks such as vegetable oil and starch, and offer an excellent toxicological and ecological profile. They are ultimately biodegradable under aerobic and anaerobic conditions. Together with outstanding mildness and efficacy, these qualities make Plantacare[®] surfactants ideal for use in sustainable solutions for consumers who prefer mild and natural-based products. They can be recommended for natural cosmetics concepts such as NATRUE, ECOCERT*, BDIH, COSMOS, NPA, NSF-QAI, and FDA GRAS and can also be considered for use in products formulated according to EU Ecolabel, Nordic Swan and BraMiljöval standards.

Formulation example

Suitable basis acc. to natural cosmetic standards

HB-DE-11-107-32

	Ingredients	INCI	Weight % (as is)	Function
I	Monomuls® 90-L 12	Glyceryl Laurate	1.0	Lipid Layer Enhancer
	Plantacare® 818 UP	Coco-Glucoside	14.4	Surfactant
II	Water, demin.	Aqua	77.0	
	Sulfopon® 1216 G	Sodium Coco-Sulfate	4.9	Surfactant
III	Lamesoft® PO 65	Coco-Glucoside (and) Glyceryl Oleate	5.4	Lipid Layer Enhancer
	Perfume	Parfum	0.2	Fragrance
	Sodium Benzoate	Sodium Benzoate	0.5	Preservative
IV	Citric Acid (50%)	Citric Acid	q.s.	pH Adjustment
pH Value				4.9
Viscosity (Brookfield RVT, 23° C, spindle 4, 10 rpm)				4,900 mPas

Preparations in the laboratory

Heat phase I to 60° C. Mix phase II at 40° C until the Sulfopon® 1216 G is completely dissolved. Add phase II to phase I and stir until homogeneous. Below 40° C, add phase III and stir until homogeneous. Adjust pH by using phase IV.

Finely dispersed oil for natural skin protection

Another ingredient that enables nature-based, high-performance rinse-off solutions is Lamesoft® OD (INCI: Coco-Caprylate (and) Lauryl Glucoside (and) Glycerin (and) Polyglyceryl-2 Dipolyhydroxystearate (and) Polyglyceryl-3 Diisostearate, BASF). The new micro-emulsion is derived exclusively from renewable raw materials. It provides shower products, bath preparations, facial cleansers and liquid soaps, as well as baby wash products, with very finely dispersed oil, components of which remain on the skin after washing. By this oil deposition, it respects the skin barrier, leaves the skin feeling soft and smooth, and is also ideally suited for use in sensitive skin care products. Thanks to the micro-emulsion, transparent or opaque formulations can be easily prepared, and even essential oils can be solubilized. It is suitable for all natural/organic cosmetic standards.

Formulation example**NaTrue Body Wash formulated acc. to
NaTrue Standard for Natural Cosmetics**

HB-DE-12-053-81

Ingredients	INCI	Weight % (as is)	Function
Sulfopon® 1216G	Sodium Coco-Sulfate	5.2	Surfactant
Plantacare® 818 UP	Coco-Glucoside	15.4	Surfactant
Texapon® ALS Benz	Ammonium Lauryl Sulfate	5.2	Surfactant
Keltrol® CG-SFT	Xanthan Gum	1.6	Thickener
Lamesoft® OD	Coco-Caprylate, Lauryl Glucoside, Glycerin, Polyglyceryl-2 Dipolyhydroxystearate, Polyglyceryl-3 Diisostearate	4.0	Micro Emulsion
Apple Juice	Pyrus Malus (Apple) Juice	3.0	
Sodium Benzoate	Sodium Benzoate	0.5	Preservative
Citric Acid Sol.	Citric Acid	q.s.	pH Adjustment
Solero Orange (Düllberg-Konzentra)	Parfum	0.3	Fragrance
Water, demin.	Aqua	add. 100	

pH Value

4.6

Viscosity (Brookfield RVT, 23° C, spindle 4, 10 rpm)

9,000 mPas

Shares natural substances (AS)

5.1%

Shares derived natural substances (AS)

17.0%

Preparations in the laboratory

Introduce water, add Sulfopon® 1216G, heat up to approx. 40° C and dissolve while stirring. Add Texapon® ALS Benz and Plantacare® 818UP until the mixture is completely homogeneous. Add Keltrol® CG-SFT while stirring and allow to swell for approx. 30 min. Add Lamesoft® OD, Apple Juice, Sodium Benzoate and Fragrance while stirring until the mixture is completely homogeneous. Adjust pH with Citric Acid.

Environmentally friendly hair conditioning

At the moment, developing natural solutions for the conditioner segment that are both effective and environmentally friendly is one of the major formulation challenges in the hair care market. The new, naturally derived conditioner compound Plantaquat[®] NC (INCI: Cetearyl Alcohol (and) Lecithin (and) Sodium Cetearyl Sulfate (and) Vegetable Oil [PCPC], BASF) closes this gap. It is a high-performance compound especially developed for manufacturing hair conditioning products, particularly those intended to be certified to natural cosmetic standards. The balanced conditioner compound is a combination of an emulsifier, a consistency agent and a conditioning agent, and consists solely of renewable and biodegradable raw materials. Besides rinse-off conditioners, it is also ideally suited for use in hair masks. Comprehensive performance evaluation, including salon hair tests, was carried out, showing that the compound offers excellent hair-conditioning properties, creates volume and protects against hair breakage. As part of the evaluation, its performance was compared with classic conditioner benchmarks on the market in terms of specific claims – such as hair conditioning, anti-hair breakage, increased hair volume, etc. In addition to testing the physical properties of Plantaquat[®] NC, BASF's Personal Care business also carried out half-head tests on Caucasian and Asian hair, which showed that the conditioner compound exhibits outstanding sensorial effects on wet hair. To fulfill the standards set by various natural and organic cosmetic certification bodies, for example, ECOCERT*, COSMOS and NaTrue, a non-GMO lecithin was selected for use in Plantaquat[®] NC.

Formulation example

Nature meets performance

HB-DE-11-092-258

Ingredients	INCI	Weight % (as is)	Function
Plantaquat® NC	Cetearyl Alcohol (and) Lecithin (and) Sodium Cetearyl Sulfate (and) Olus Oil [EU]	7.0	Conditioner Compound
Myritol® 312	Caprylic/Capric Triglyceride	2.0	Care Emollient
Sodium Benzoate	Sodium Benzoate	0.5	Preservative
Perfume	Parfum	0.3	Fragrance
Water, demin.	Aqua	90.2	

pH Value

4.0

Viscosity (Brookfield RVT, 23° C, spindle 5, 10 rpm)

6,400 mPas

Preparations in the laboratory

Place hot water (70 - 75° C) in the vessel. Add conditioner compound Plantaquat® NC in solid form and stir till 55° C is reached. Add emollient Myritol® 312 whilst stirring and homogenize with a rotor/stator mixer, e. g. Ultra Turrax, until a homogenous cream is obtained. At 30 - 35° C, add preservative, thermo-sensitive actives and finally adjust pH.

Personal care concepts and ingredients inspired by real life

BASF's Personal Care business continuously strives to develop even more innovative concepts and ingredients that help its customers meet people's functional and emotional needs – with its unique combination of market empathy and science excellence, including in-depth expertise in technology and research. In line with this holistic approach, its portfolio of naturally-derived ingredients brings together performance and emotion, and helps manufacturers serve the multi-faceted demands of modern consumers who are looking for highly effective and natural-based personal care solutions.

References

Datamonitor, *Global Beauty Trends: Consumer & Product Perspectives*, in-cosmetics Asia, Bangkok, December 14-16, 2011.

Kline & Company, *Natural Personal Care - An Overview of the US Market*, The Holistic Cosmetic Scientific Symposium, St. Paul, MN, March 15, 2011.

*Ecocert disclaimer: raw material certified by Ecocert Greenlife according to the Ecocert standard for natural and organic cosmetics available at <http://cosmetics.ecocert.com>: 100% of total ingredients are from organic farming.

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