



December 11, 2012

Ashland announces availability of Lubrajel* BA hydrogel for mouth moisturization

Novel technology helps address a growing concern in oral health

Wilmington, Del. - Ashland Specialty Ingredients, a commercial unit of Ashland Inc., today announced it will offer Lubrajel BA hydrogel¹ to makers of oral care products. The novel ingredient is a clathrate of glycerin and polyacrylate that encloses water by hydrogen bonding and Van der Waals forces. Containing 50 percent water by weight, the hydrogel may be used in oral moisturizing products to provide hydration, mucoadhesion and other beneficial properties, such as lubricity, which is necessary for relief from dry mouth, a condition that may lead to serious dental health concerns if left untreated.

"With the increasing use of medications around the world, a significant number of people now seek artificial saliva products to address dryness in the oral cavity," said Ann Druffner, global marketing manager for Ashland Specialty Ingredients' Oral Care business. "Makers of oral care formulations are responding with a new generation of products designed to act as longer-lasting saliva substitutes. In supplying Lubrajel BA hydrogel, Ashland now provides a new ingredient to oral care formulators in their efforts to mimic natural saliva to provide improved mouth moisturization."

Flow dynamics like natural saliva

Oral moisturizing formulations containing Lubrajel BA hydrogel exhibit shear-thinning properties that resemble natural saliva. Because the viscosity of natural saliva adjusts based on activity such as talking, chewing and rest, substitutes should mimic natural saliva's properties.

Rheological measurements, conducted by Ashland scientists, of model spray and mouth rinse formulations containing Lubrajel BA hydrogel showed performance similar to natural saliva.

High mucoadhesion for longer relief

In vitro evaluations of model oral moisturizing spray formulations with Lubrajel BA hydrogel show higher mucoadhesion than natural saliva. Higher mucoadhesion will hold hydrated material in the mouth longer; a property essential to formulators working on new saliva substitute products aimed at longer-lasting relief from dry mouth.

"With a growing number of consumers expected to experience dry mouth symptoms in the years ahead, Ashland is ideally positioned to help producers of oral care products create new product innovations with highly functional ingredients. Lubrajel BA hydrogel, produced by Ashland's manufacturing partner, United-Guardian, Inc., and many other oral care polymers produced by Ashland, including Natrosol™ hydroxyethylcellulose (HEC) and Plasdone™ polymers, form the basis of many oral care product innovations. As new products are developed in support of better oral care, Ashland will be at work in the laboratory, evaluating a range of polymers with the potential to advance product performance," said Druffner.

For more information about Lubrajel BA hydrogel, visit ashland.com/personalcare.

About Ashland Specialty Ingredients

Ashland Specialty Ingredients offers industry-leading products, technologies and resources for solving formulation and product performance challenges in key markets including personal care, pharmaceutical, food and beverage, coatings and energy. Using natural, synthetic and semi-synthetic polymers derived from plant and seed extract, cellulose ethers and vinyl pyrrolidones, Ashland Specialty Ingredients offers comprehensive and innovative solutions for today's demanding consumer and industrial applications.

About Ashland

In more than 100 countries, the people of Ashland Inc. (NYSE: ASH) provide the specialty chemicals, technologies and insights to help customers create new and improved products for today and sustainable solutions for tomorrow. Our chemistry is at work every day in a wide variety of markets and applications, including architectural coatings, automotive, construction, energy, food and beverage, personal care, pharmaceutical, tissue and towel, and water treatment. Visit ashland.com to see the innovations we offer through our four commercial units - Ashland Specialty Ingredients, Ashland Water Technologies, Ashland Performance Materials and Ashland Consumer Markets.

About United-Guardian, Inc.

United -Guardian, Inc. is a diversified, public company (NASDAQ: UG) that conducts research, product development, manufacturing, and marketing of pharmaceuticals, cosmetic ingredients, health care products, medical devices, and proprietary industrial products. Since its founding in 1942, United- Guardian, Inc. has been granted over 30 patents, and now has a catalog of over 100 products in various stages of development. Over the past few years, United-Guardian, Inc. has entered into

marketing and supply agreements with some of the country's largest companies. Ashland markets United-Guardian, Inc.'s personal care products in the U.S., Canada, Mexico, South and Central America, parts of Europe, and most of Asia, most notably China. For more information, visit u-g.com.

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¹Lubrajel BA hydrogel is manufactured by United-Guardian, Inc. and marketed and distributed by an affiliate of Ashland globally for oral care applications.

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*Lubrajel is a registered trademark of United-Guardian, Inc.

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