

COSMETICS - PRODUCT FOCUS

Why Zemea™ Propanediol is the cream of the crop - First corn-derived glycol for home care and personal care formulations

ABSTRACT

Zemea™ Propanediol is a colourless and highly pure glycol derived from a sustainable and renewable corn sugar fermentation process. This corn-derived 1,3-propanediol can be used to replace petroleum-based glycols in home care, personal care, and cosmetic formulations meeting and often exceeding formulation performance and aesthetic requirements. The most significant benefits of Zemea™ Propanediol are its nature-based origin, high purity, lack of odour, lack of skin irritation and sensitization, and environmentally-friendly nature.

Zemea™ HC Propanediol can be used in home care formulations to replace propylene glycol (1,2-propanediol). This unique corn-derived propanediol can function as an enzyme stabilizer or a solvent in liquid detergents and other home care formulations. Zemea™ HC Propanediol has been successfully formulated into laundry, hand dish, and automatic dish detergents. The benefits of Zemea™ HC Propanediol in liquid laundry detergent formulations include excellent cloud points, very good stability, and soil and stain removal performance comparable to propylene glycol formulations. Liquid hand dish washing detergent formulations have improved cloud points and foaming, and often require less salt to adjust the viscosity as compared to other glycols. Liquid automatic dish detergent formulations demonstrated very good stability and enhanced rheological effects.

Zemea™ Propanediol can be used in cosmetic and personal care applications to replace propylene glycol (1,2-propanediol), butylene glycol (1,3-/1,4-butanediol), or glycerin (1,2,3-propanetriol). Depending on your formulation needs, Zemea™ Propanediol can function as an emollient, humectant, hand-feel modifier or solvent. Zemea™ Propanediol is the ideal solvent for natural and biotechnology-derived ingredients including extracts, replacing petroleum-based glycols with a sustainable corn-derived alternative. Zemea™ Propanediol has been incorporated successfully into a broad array of personal care product and colour cosmetic formulations. All formulations have exhibited excellent aesthetics and sensory characteristics, and are stable to freeze/thaw and storage at 45°C for 3 months. Many formulation benefits have been achieved with Zemea™ Propanediol. For example, clear shampoo formulations have very low cloud points, excellent stability, improved foaming, and require less salt to adjust the viscosity as compared to other glycols.

LACK OF SKIN IRRITATION AND SENSITIZATION IS KEY BENEFIT FOR LEAVE-ON PRODUCTS

Cosmetic and personal care leave-on products which use higher amounts of glycols in their formulations often cause skin irritation and sensitization in a portion of the population with sensitive skin. Deodorant formulations are some of the most widely used personal care products that may cause skin irritation, and often incorporate as much as 10-75% glycol. Zemea™ Propanediol, at concentrations up to 75%, has been tested in two independent skin patch tests in humans and has not produced skin irritation or sensitization reactions. Figure 1 shows human skin patch test results for Zemea™ Propanediol (1,3-propanediol) and USP grade propylene glycol (1,2-propanediol) at 25%, 50% and 75% concentrations at pH 7. Zemea™ Propanediol was also tested at 75% concentration at pH 4 and pH 9 to span the entire possible pH range of leave-on products. Vehicle controls at pH 4, 7, and 9 were also included. The results show that only the propylene glycol resulted in dermal irritation which increased in frequency with higher concentrations.

Terra Firma Naturals Inc., a leading innovator in "all natural" deodorant formulations which are free of synthetic chemicals and provide effective odour elimination, has successfully incorporated Zemea™ Propanediol in their products. Tanya Workman, CEO of Terra Naturals based in Ontario, Canada,

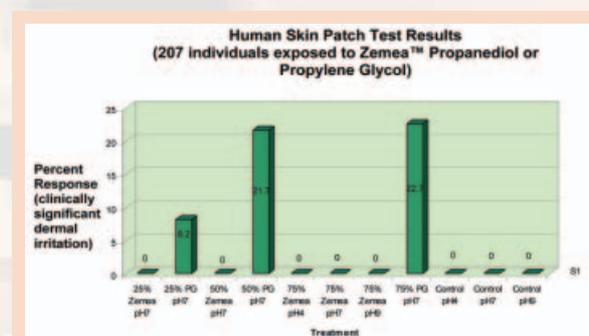


Figure 1

commented: "Zemea™ Propanediol is, in our opinion, one of the most exciting new natural ingredients on the market.

It has allowed us more flexibility in formulation and has some unique pleasant surprises that we were not expecting; well worth the effort to learn about".

NATURAL INGREDIENTS BENEFIT FROM A NON-PETROLEUM-BASED SOLVENT

Many ingredients used in cosmetics, personal care, and home care formulations are formulated with petroleum-based solvents including propylene glycol and butylene glycol. With the trend towards natural product formulations, there is an increased demand for all natural ingredients as well. One example is the use of botanical

or vegetable extracts in formulations. Although these extracts are derived from plant materials, quite often the solvent is petroleum-based. Corn-derived Zemea™ Propanediol is the ideal solvent for botanical, marine, and other bio-based extracts. AKONATURE all natural vegetable extracts are produced with Zemea™ Propanediol by Akott Ltd. Valerio Vergani, Technical Sales Manager for Akott Italia Srl., emphasized key advantages for the use of Zemea™ Propanediol in the AKONATURE extracts: "Zemea™ Propanediol is a natural alternative to propylene glycol and is less tacky and easier to handle than butylene glycol and glycerine in extract production".

SUMMARY

Zemea™ Propanediol is a non-petroleum-based, highly pure, colourless, and odourless glycol, derived from a sustainable and renewable corn sugar fermentation process. It has many functions in home care, cosmetics and personal care formulations such as an emollient, humectant, hand-feel modifier, solvent, and enzyme/ingredient stabilizer. Formulators demanding excellent performance, enhanced aesthetics, and/or improved environmental benefits from a glycol will benefit from incorporation of Zemea™ Propanediol in their formulations.



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