Personal Care

Geogard® 221

Broad Spectrum Preservation for Personal Care

INCI Name: Dehydroacetic Acid & Benzyl Alcohol & Water

Key Product Attributes:

- Has a wide range of global regulatory approval
- Easy-to-use and compatible with most types of cosmetic formulations
- Wide effective pH range
- Compatible with key raw materials
- Safe handling
- Chemically and physically stable
- Meet ECOCERT and COSMOS requirements
- Soil Association approved
- Not tested on animals

Recommended Use Level

0.2–1.1%

Description

Geogard® 221 preservative is based on dehydroacetic acid (DHA) and benzyl alcohol, and therefore is recognized by major cosmetic, toiletry and fragrance regulatory authorities worldwide for use in cosmetic and personal care products. Geogard®221 is light in color, essentially odorless and compatible in a diverse range of product formulations.

Chemical Compound Breakdown	CAS No.	EINECS No.
Dehydroacetic Acid (DHA)	520-45-6	208-293-9
Benzyl Alcohol	100-51-6	202-859-9
Water	7732-18-5	231-791-2

Compositional Breakdown

Product	Percentage
Dehydroacetic Acid (DHA)	7.7–8.3%
Benzyl Alcohol	85–89%
Water	4%

Applications

- Anhydrous
- Baby care
- Baby wipes
- Body Butter
- Body wash
- Conditioner
- Cream
- Deo/ Anti-Perspirant
- Eye creams/gels
- Eye shadow
- Face Lotion
- Face wipes
- Facial Cream
- Foundation
- Hair gel
- Hand soap
- Lipstick/gloss
- Lotion
- Make up remover
- Mascara
- Oil in Water
- Powder
- Shampoo
- Suncare
- Toner
- Water in Oil

Efficacy

Microbiological Challenge Studies

Studies were run using different concentrations of Geogard® 221 in various formulations to see efficacy against various bacteria, yeast and fungi. All samples were inoculated at the beginning of the study, sampled at 7, 14, 21 and 28 days.

Non Ionic Cream Formula (pH 6.5)

Ingredient	% wt/wt
Sterile DI Water	75%
Myristyl propionate	8%
Glyceryl stearate	6%
Glycerin	5%
PEG-20 glyceryl stearate	4%
Cetearyl alcohol	1.5%
Sodium hydroxide	<1%
Total	100%

% Preservative Required to Achieve <10 CFU/gram Against Mixed Bacteria in a Nonionic Cream

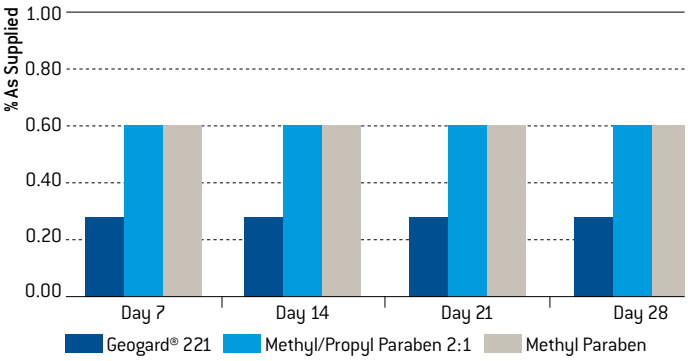

Fig. 1

% Preservative Required to Achieve <10 CFU/gram Against Mixed Fungi in a Nonionic Cream

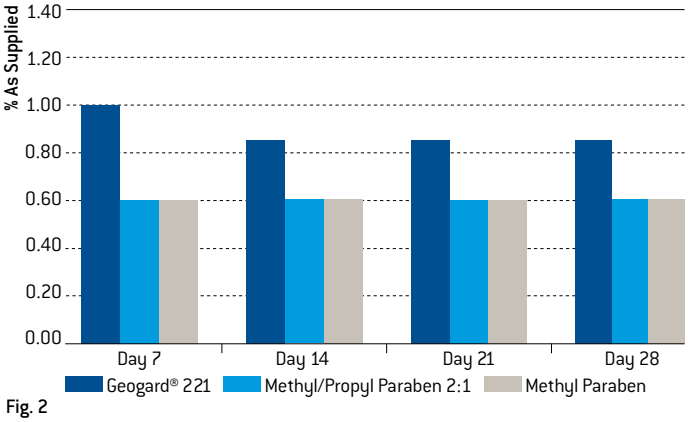

Fig. 2

Shampoo Formula (pH 7)

Ingredient	% wt/wt
Sterile DI Water	36%
Sodium lauryl ether sulfate	35%
Triethanolamine lauryl sulfate	25%
Cocomide DEA	3%
Hydrolyzed collagen	1%
Citric acid	<1%
Total	100%

% Preservative (as supplied) Required to Achieve < 10 cfu/g of Mix Bacteria in the Shampoo

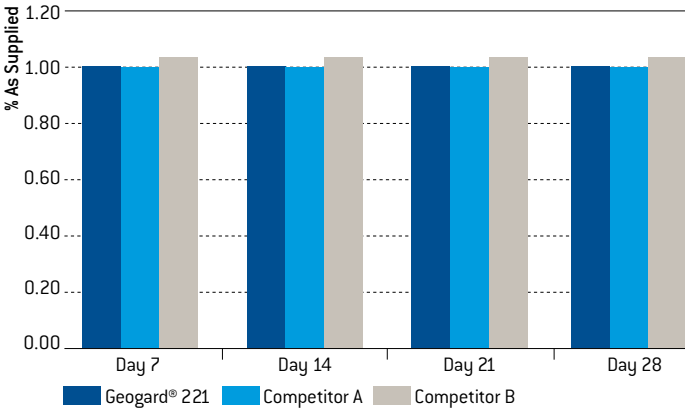

Fig. 3

Competitor A : Phenoxyethanol; methylparaben; ethylparaben; propylparaben; butylparaben Competitor B : Phenoxyethanol; methylparaben; isopropylparaben; isobutylparaben; butylparaben

% Preservative (as supplied) Required to Achieve < 10 cfu/g of Mix Fungi in the Shampoo

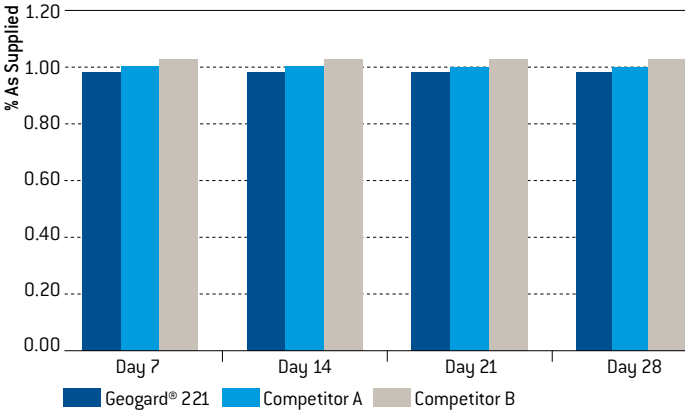

Fig. 4

Competitor A : Phenoxyethanol; methylparaben; ethylparaben; propylparaben; butylparaben Competitor B : Phenoxyethanol; methylparaben; isopropylparaben; isobutylparaben; butylparaben

GMS cream (pH 6)

Ingredient	% wt/wt
Sterile DI Water	75%
Myristyl propionate	8%
Glyceryl stearate	6%
Glycerin	5%
PEG-20 glyceryl stearate	4%
Cetearyl alcohol	1.5%
Sodium hydroxide	<1%
Total	100%

% Preservative (as supplied) Required to Achieve < 10 cfu/g of Mix Bacteria in the GMS Cream

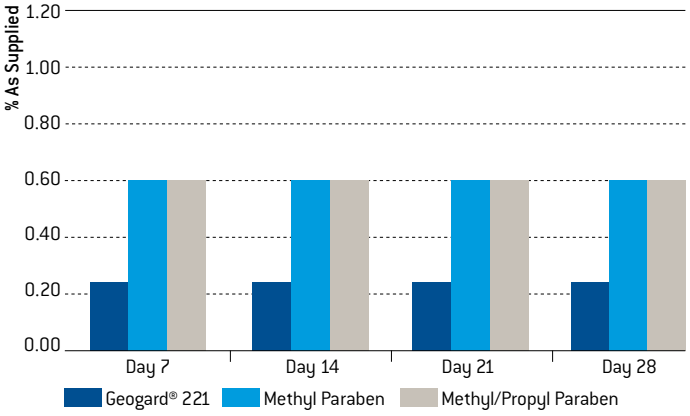

Fig. 5

% Preservative (as supplied) Required to Achieve < 10 cfu/g of Mix Fungi in the GMS Cream

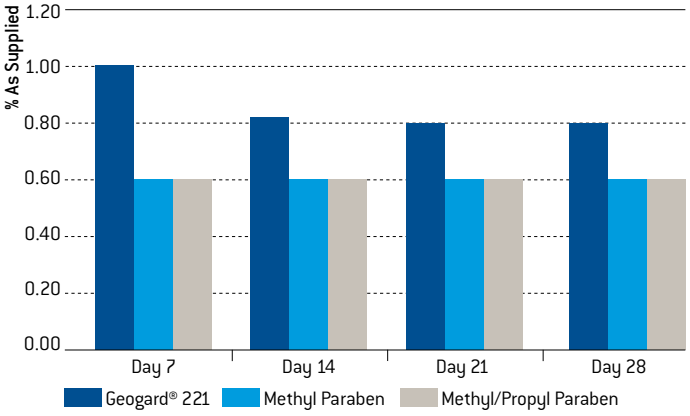

Fig. 6

Cationic cream (pH 4.5)

Ingredient	% wt/wt
Sterile DI Water	90%
Laureth-4	3%
Cetyl alcohol	2%
Cetearyl alcohol	1.5%
Distearyldimonium chloride	1%
Hydrolyzed collagen	1%
Lecthin	1%
Polysorbate 80	0.5%
Sodium hydroxide	<1%
Total	100%

% Preservative (as supplied) Required to Achieve <10 cfu/g of Mix Bacteria in the Conditioner

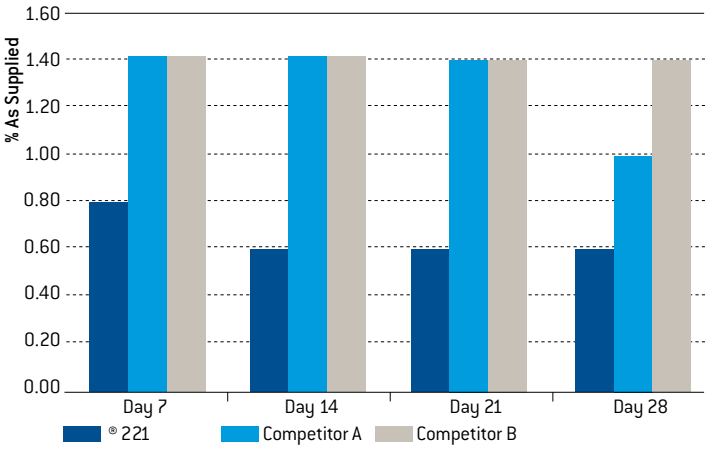

Fig. 7

Competitor A: Phenoxyethanol; methylparaben; ethylparaben; propylparaben; butylparaben; isobutylparaben

Competitor B: Phenoxyethanol; methylparaben; isopropylparaben; isobutylparaben; butylparaben

% Preservative (as supplied) Required to Achieve <10 cfu/g of Mix Fungi in the Conditioner

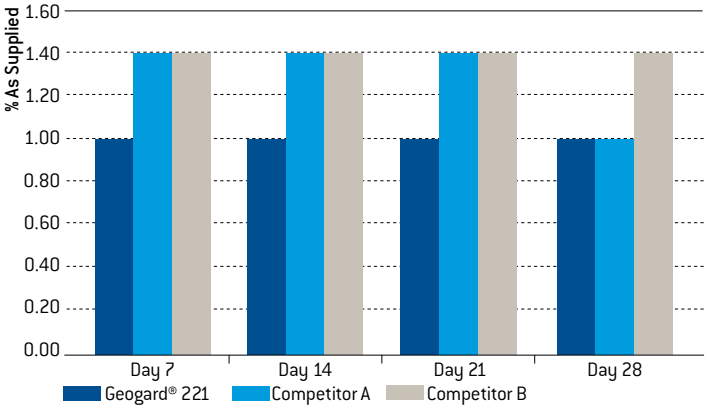

Fig. 8

Competitor A : Phenoxyethanol; methylparaben; ethylparaben; propylparaben; butylparaben; isobutylparaben

Competitor B : Phenoxyethanol; methylparaben; isopropylparaben; isobutylparaben; butylparaben

Formulation Recommendations

- Use between pH 2–7
- Efficacy can be compromised above a pH of 7
- Can be added at both room and elevated temperatures
- Enhanced compatibility allows for the addition of Geogard®221 virtually anywhere in the manufacturing process
- Anionics may cause discoloration – carbomers and certain surfactants
- Highly soluble in polar organic solvents

Global Regulatory

Europe

- Max use level for DHA is 0.6% DHA – rinse-off & leave-on
- Max use level for Benzyl Alcohol is 1% – rinse-off & leave-on

Japan

- Max use level for DHA is 0.5% DHA – rinse-off & leave-on
- Max use level for Benzyl Alcohol is 1% – rinse-off & leave-on

US

- Max use level for DHA is 0.6% DHA – rinse-off & leave-on
- Max use level for Benzyl Alcohol is 1% – rinse-off & leave-on

General

- ECOCERT & COSMOS accepted, Soil Association approved

Typical Properties	
Appearance	Clear Liquid
Color (Gardner 1963)	Pale Yellow, 10 Max
Odor	Characteristic