The Use of Preservatives in Natural & Organic Skin Care

As we all know the use of preservatives always causes discussion, but one thing is for sure, when you use water in products, it is important to add Preservatives to stop the growth of micro-organisms such as fungi and bacteria.

There are ranges of Preservatives that will increase the shelf life of your products - so that you can make natural and professional products! For example, the shelf life of Creams without any Preservatives is 1-2 weeks if stored in the fridge - this can be prolonged to 1.5-2 years by adding Preservatives (depending on the conditions of storage).

Many talk about using vitamins as preservatives but this is wrong; vitamins are antioxidants that stop products from going rancid but they don't affect and stop the growth of bacteria and fungi.

Lists of Compiled & Recommended Preservatives from Various Suppliers:

1. **Phenoxyethanol**
   Latin / INCI Name
   Phenoxyethanol, Methylparaben, Ethylparaben & Propylparaben

Paraben and Formaldehyde free preservative. Low toxicity, non-sensitising. Slight odour. Good bactericide, most active against Gram-negative. Weak on fungicides, so usually combined with other preservative(s), eg Potassium sorbate. Stable up to 85°C. Usually used at 0.1% at water phase.
Recommended Usage Rate: Use at 0.1-1%

2. **Latin / INCI Name**
   Benzyl Alcohol, Salicylic Acid, Glycerine, Sorbic Acid

This is a broad spectrum preservation system that can be included in natural and organic skin and hair care products.

Its four components, Benzyl Alcohol, Salicylic Acid, Glycerine, Sorbic Acid, are all well accepted in a wide range of personal care products. This novel composition of this antimicrobial blend offers broad spectrum protection in a diverse range of products, against gram-positive and gram-negative bacteria, yeast and moulds. It is clear liquid with a mild smell. Natural Odour Reducer may be needed for fragrance-free and fragrance-sensitive formulations.
Recommended Usage Rate: Use at 1% - 1.15%

Benefits:

Non-paraben, non-formaldehyde, non-isothiazolone based preservative system.
Has wide global regulatory acceptance.
Broad spectrum activity on bacteria, yeast and moulds.
Suitable for use in oil-in-water, water-in-oil and anhydrous (non-water containing) formulas so compatible with a wide range range of skin, hair and sun care formulations.

Safe to use in products with a wide range of pH values (3-8).
- **If product contains herbal decoctions or infusions/OR aqueous exfoliators/scrubs and anti-wrinkle creams containing many active ingredients** - add 22 drops using small 0.7mm dropper/OR 1.1g/ OR 1.1%.
- **Maximum Dosage of this preservative** - Because of the high quantity of Benzyl Alcohol in and to meet the European Cosmetic Directive standards, the maximum amount use in products should be 1.15%.

3. Latin / INCI Name
Benzyl Alcohol, Phenoxyethanol, and Potassium Sorbate

A relatively natural Preservative used by green cosmetics companies worldwide, it is a liquid based on Potassium Sorbate and Alcohols. The fungicidal and fungistatic properties of Sorbic Acid (found in the totally natural Potassium Sorbate) form the basis of the effectiveness of Preservative K. Potassium Sorbate is also added for the its qualities of stability and solubility.
Recommended Usage Rate: Use at 0.1-1%

4. Geogard Ultra ®
Latin/INCI Name
Gluconolactone (and) Sodium Benzoate

Geogard Ultra is a natural preservative comprised of a combination of a naturally occurring food additives, glucono delta lactone, derived from corn, and a food grade preservative sodium benzoate, the sodium salt of benzoic acid, along with a trace amount of calcium gluconate as a processing agent. This is the solution for those challenging formulas in which you wish to change the preservation system to an efficacious natural preservative. An effective broad spectrum preservative (biocide) which can be included in Organic Products and is effective within a pH range of 3.0 - 6.5. There are also a few additional benefits – you can add it to the water phase whilst it is still quite hot (giving better control of the emulsion), and also test the pH at the same time, it is GRAS (generally regarded as safe) and is a proven moisturiser – another bonus!

With its multi-functionality, Geogard Ultra can be used in a wide range of cosmetic products including Shampoo and Hair Care Products, Lotions and Creams and Bath and Body Cleansing Gels. In most formulations, testing showed an effective dosage rate of 1.0 – 1.5% of batch weight was suitable.

Suitable for a pH of 3 - 6.5
(ie: at 0.75 - 3% = 7.5g to 30g per 1kg product)
Non GMO, Not Tested on Animals, Ecocert Accredited

Recommended Usage Rate: 0.75 - 3%

5. Optiphen Plus™
Latin/INCI Name
Phenoxyethanol (and) Caprylyl Glycol (and) Sorbic Acid

Optiphen Plus™ is a Paraben Free & Formaldehyde Free highly effective Broad Spectrum preservative which is suitable for surfactant formulations as well as lotions and creams. It is most effective at pH levels below 6.0 and contributes emolliency to the formulation. (Depending on the formulation, Optiphen Plus has also been proven effective at pH levels above 6.0.)

Optiphen Plus is Globally approved, and was developed for those wanting a paraben and formaldehyde-free preservative system, particularly within lower pH systems. It is suitable for Skincare, Suncare, Colour Cosmetics and Hair Care formulations. Contains sorbic acid which is effective against fungal and mould attack. It is the only one in the "family" that offers the broadest protection, and is suitable across most applications and is a highly effective broad spectrum antimicrobial.

Not Suitable for Lip Products
Recommended Usage rate: 0.5-1.5%

6. Liquid Germall® Plus
Latin/INCI Name
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate

Liquid Germall Plus is a broad spectrum, water soluble preservative for Oil in Water, Water in Oil and water based formulations. Liquid Germall Plus is effective at very low concentrations, has no known inactivators and is compatible with most cosmetic ingredients. Liquid Germall Plus has been evaluated as safe for both rinse-off and leave-on products and has a safe toxicology profile.

Suitable for Moisturisers, (Lotions and Creams), Shampoos, Conditioners, body wash, body sprays etc.
Not suitable for use in Lip Products
Suitable for use in most surfactant formulations.
Suitable for a pH range of 3 - 8
Recommended Usage Rate: 0.1 - 0.5%

7. Potassium Sorbate
Latin/INCI Name
Potassium Sorbate

Potassium Sorbate is the most widely used food grade preservative. This water soluble preservative forms sorbic acid when dissolved in water, (its active form). It is effective up to pH 6.5, but is more effective as the pH decreases (ie more acidic). Potassium sorbate is the potassium salt of sorbic acid.

This is not a broad spectrum preservative system. It is important to check the pH of products

if you wish to use this preservative. In foods, it is used to inhibit mould, yeast and fungi and is used in wine, cheese and baked products, it is not effective against bacterial attack. Potassium sorbate is effective in a variety of applications including food, wine, and personal care products. Potassium sorbate occurs naturally in some berries.

Recommended Usage Rate: 0.1 - 0.5%
(ie: at 0.1% = 1g per 1kg product)

8. Preservative NB
Latin/INCI Name
Benzyl Alcohol, Glycerin, Benzoic Acid, Sorbic Acid

Preservative NB consists of a combination of Benzoic Acid and Sorbic Acid in Benzyl Alcohol. It does not contain parabens, formaldehyde or formaldehyde-releasing substances and is classed as "Natural" under the German BDIH recommendation for Natural Cosmetic Products and is compliant with EU Cosmetics Directives. Preservative NB can be processed at temperatures of up to 80 Degrees Celsius. Suitable for use in Creams & Lotions, Shampoos and Bath Products, Gels and Foam Baths.

Your cosmetic product pH needs to be 4 – 5.5 for this preservative to be effective. You can adjust the pH of shampoo and moisturisers with Citric Acid.

Recommended Usage Rates:
For Rinse off and cosmetic products: 0.3% - 1.0%
For simple Surfactant Formulas: Dosages of 0.2% are usually sufficient

9. Rosemary Oleoresin Extract
Latin/INCI Name
Rosmarinus Officinalis (Rosemary) Leaf Extract

Rosemary Oleoresin Extract (also known as ROE) is NOT a preservative, it is an antioxidant - these slow the rancidity of Oils.

If using to extend the shelf life of fixed oils (such as Hemp, Avocado etc), it must be added to the oils when they are fresh, before oxidation has started. It is also most effective if thoroughly dispersed in the oil. Rosemary Oleoresin Extract is a thick liquid, which can be difficult to blend. We suggest you remove a small portion of the base oil, mix thoroughly, and then re-introduce this into the bulk fixed oil. Rosemary Oleoresin will also add shelf life to Sugar/Salt Scrubs, Balms and Moisturisers (Creams and Lotions) and we suggest adding during the cool down phase or when you add the Preservative to your formula.

Use approximately 2 - 10 drops per 100g of product
Recommended Usage Rates: 0.1% - 0.5%

10. Vitamin E

Alpha D Tocopherol (Vitamin E Acetate) is an excellent for skin care. This stable Oil Soluble form of Vitamin E can be added to the oil phase of your Creams and Lotions.

Vitamin E has been shown to benefit the skin in numerous studies. Vitamin E is soothing and cooling on irritated, dry skin, smoothes wrinkles and helps slow the signs of ageing.

Recommended Usage Rate: 1 - 15%

11. Grapefruit Seed Extract
Latin/INCI Name
Citrus Grandis and Glycerin

Grapefruit Seed Extract (commonly referred to as GSE) is normally used as an antioxidant to help prevent rancidity in lotion and lotion bars. Thick and golden like honey, our GSE is 60% extract and 40% Glycerin. Recommended usage is .5% to 1% by weight. There is some belief that GSE also works as a preservative. I do not endorse the use of GSE as the sole preservative. I believe that a full-spectrum preservative such as Optiphen, Phenonip or Germaben II must be used to truly prevent mold and bacterial growth in your lotion products.

12. UNIGERM
Latin/INCI Name
Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben

Synthetic. This product is a synergistic preservative system, distinguished by an exceptional broad-spectrum of activity. Effective on inhibiting the growth of bacteria and fungi in water phase. Solubility @ 25°C in water is 1%.

Recommended Usage Rate: 0.5-3%. Ideal for products intended for retail sale or those requiring a good shelf-life. Shelf life can vary, but 12-24 months (indicative only) can be achieved subject to the product formulation, storage container and storage conditions.