NEW DIRECTIONS AUSTRALIA

Preservatives Master Data Sheet

Preservative Trade Name	Preservative INCI	Dose Range	Avoid these situations	Origin	Price Guide (* <$50 per Kg, ** $51-$200 per KG, *** $201-600 per KG, **** over $601 per application	pH Range	Heat Tolerance	Spectrum	Best Suited To	Added Benefits	Solubility	Effect on our emulsion base.
AMTCide Coconut	Lactobacillus & Cocos Nucifera Fruit Extract.	0.25-2%	Adding into a hot product - this preservative is best added in the cool down phase at temperatures of 50C or less although it is heat stable up to around 70C	Natural (fermented coconut)	***	3 to 8	Low <70C with <50C recommended	Mould specific	Any type of product and especially those looking for a mould boost!	Moisturising and conditioning for the skin.	Water soluble.	None
Leucidal	Leuconostoc/Radish Root Ferment Filtrate	2-4%	Adding into a hot product - this preservative is best added in the cool down phase at temperatures of 50C or less although it is heat stable up to around 70C	Radish root and Kimichii bacteria	***	3 to 8	Low <70C with <50C recommended	Broad Spectrum	All types of cosmetics but may be a bit slow to act in very high bioburden products such as those containing clays, pigments (colour cosmetics such as foundations and BB creams), fresh or dried plant material and exfoliating particles. May need to employ other strategies to help - lowering pH, adding chelating agent, reducing free water etc.	No aroma, completely natural, acceptable 'gentle' INCI name.	Water soluble.	None
Glyceryl Caprylate	Glyceryl Caprylate	0.3-1%	Avoid pH of above 7 as the ingredient will break down.	Natural (plant based, can be used in many organic formulations)	**	4.5 to 7	Heat Tolerant – 80C	Bacteria, Yeast, moderate action on mould	Any type of cosmetic product but will require the addition of another preservative to boost mould cover.	Moisturising, re-fatting, strong action against Propionibacterium acnes. Also a co-emulsifier for oil products,	Clearly soluble in surfactant solutions, water-alcohol mixes and emulsions. in water alone it may require a solubiliser.	Slight loss of viscosity across emulsions. Nothing dramatic.
Naticide	Parfume	0.6-1%	Products that require no aroma,	Natural	****	4 to 9	Heat Tolerant – 80C	Bacteria, Yeast, Mould	Those cosmetic products with a medium to low bio-burden - that means no clays, no natural colours, no particulates (exfoliating agents), milk powder or other proteins. If you do wish to make a product containing any of the above and preserve with Naticide it is key to choose good packaging, run stability testing and perform preservative efficacy testing.	Pleasant smell, allowed in organics, all natural, broad tolerance of manufacturing conditions	Only 0.6% will be soluble in water, above that a solubiliser may be needed to create a clear, well mixed product. Naticide is readily soluble with water/ alcohol mixtures, glycols (glycerin) and in emulsions.	No change in viscosoty or apparent stability of any of the emulsions - olive emulsifier, vegetable or ceteareth-20, cetearyl alcohol.
P-Anisic Acid	P-Anisic Acid	0.05-0.3%	Do not use this alone as it will only give cove from mould. Not suitable for use in AHA formulations.	Natural (basil)	****	4.5 to 5.5	Heat Tolerant – 80C	Mould	Hard-to-preserve products that require a mould-protecting boost. Can be used with naticide or glyceryl caprylate to give broad-spectrum cover.	Low dose rate for high efficiency. No aroma.	Limited solubility in water but can be pre-dissolved in Glycerin for water-based products. Will be fine to add to the water phase before forming an emulsion.	No affect on emulsion stability
Phenethylalcohol	phenethyl alcohol	0.3-1%	products that require no aroma. Products that won't smell right with a 'rose' note included.	Natural (rose)	****	3 to 9	Reasonable but avoid holding at 80C	Bacteria, Yeast, Mould	Any type of formula,	Can boost your rose notes to give a more fuller, longer-lasting aroma	does mix in well with water up to 2% so 1% in a spritz spray would work well.	Slightly reduced viscosity with the olive derived emulsifier. Dramatically reduced viscosity with the vegetable emulsifier but stable with the cetearyl alcohol, ceteareth-20.
Phenoxyethanol	Phenoxyethanol	up to 1%	can't be used in organic formulations and those claiming to be petrochemical derivative free.	Synthetic	*	3 to 11	Heat Tolerant- 80C	Bacteria, Yeast, Mould	All types of formula but in high risk formulations it is best to pair this with another preservative to improve kill time of microbes as phenoxyethanol can take quite a while to get on top of things!	Very cost effective!	Readily soluble in water, can be used in emulsions (oil and water blends)	no effect at all, completely fine.
Plantaserv D	Glycerin, Aqua, Sodium Levulinate, Sodium Anisate, p Anisic Acid	3-4%	In AHA formulations where the final pH is below 4 the active components in the blend will become less water soluble. This is not a problem usually in a product that contains a decent sized oil phase but may affect the appearance of a spritzer. As the pH of the product increases the salt form of the actives predominates thus increasing the preservatives water solubility. A high water solubility is not a problem in a product with a relatively small oil phase but may mean the preservative is not effective enough in an emulsion. So basically low pH for emulsions, higher is OK for water based formulations.	Natural	***	4 to 5.5 for best performance but can work up to pH 6.5	Heat Tolerant- 80C	Bacteria, Yeast, Mould	All types of formulation but for those containing high-risk ingredients such as zinc oxide, pigments, clays and plant material a stronger preservative may be required. The only way to know if this is strong enough is to run PET.	Also boosts solubilty of essential oils in water based formulations, clear and no-odour.	Good water solubility, easy to incorporate into a water based product or emulsion. Not suitable for oil only products.	Reduced viscosity in olive, vegetable and cetearyl alcohol, ceteareth-20 cream.
Plantaserv C	Glycerin - Vegetable/Palm Free, Water, Sodium Levulinate, Sodium Anisate	3-4%	As above. This is the 'allowed in organics' version.	Natural and suitable for OFC and Eco Cert Organic. Not Suitable for ACO Organic	***	5 to 5.5 for best performance but can work up to pH 6.5	Heat Tolerant- 80C	Bacteria, Yeast, Mould	All types of formulation but for those containing high-risk ingredients such as zinc oxide, pigments, clays and plant material a stronger preservative may be required. The only way to know if this is strong enough is to run PET.	Also boosts solubilty of essential oils in water based formulations, clear and no-odour.	Good water solubility, easy to incorporate into a water based product or emulsion. Not suitable for oil only products.	Reduced viscosity in olive, vegetable and cetearyl alcohol, ceteareth-20 cream.
Plantaserv E	Phenoxyethanol, Ethylhexylglycerin	0.3-1%	Not suitable for organics.	Semi-Synthetic	**	Up to 12	Heat Tolerant – 80C	Bacteria, Yeast, Mould	All types of formula	Cost effective, versatile, easy to use	Good water solubility.	Doesn't seem to affect viscosity negatively in any of the olive, vegetable and cetearyl acohol/ ceteareth-20 emulsions. Improves the glossiness of the ceteareth-20 emulsion.
Plantaserv K	Ethylhexylglycerin, Water, Methylisothiazolinone	up to 0.12%	Not suited to organic products. High surfactant loads can reduce efficacy.	Synthetic	*	Up to pH 10	Add in cool down phase <50C	Bacteria, Yeast, Mould	All types of formula. This is suited for leave-on, rinse-off and wet-wipe applications including cloth facial masks.	Very cost effective when low dose is taken into consideration. Fast acting so good for formulations with a naturally high bioburden due to clays, colourants or exfoliant particulates.	Water dispersable with good agitation at use levels.	None
Plantaserv M	Benzyl Alcohol, Salicylic Acid, Glycerine, Sorbic Acid	0.3-1%	Can't be used in organic formulations	Semi-Synthetic	**	3 to 8	not heat tolerant, add at temperatures of 45C or less.	Bacteria, Yeast, Mould	All types of formula	Cost effective, low odour (slightly chemical but not overpowering).	Insoluble in water but soluble in water/ alcohol, glycerin solutions so can be added into those ingredients before adding to the water phase.	Dramatically reduced viscosity with the olive emulsifier - created instability in our formula. No problem with the vegetable derived and cetearyl alcohol, ceteareth-20 blend. Also a tendency to turn colour of the product to a slight pink. The pink colour is more pronounced in water-only formulations or serums.
Plantaserv N	Glyceryl Caprylate, Glyceryl Undecylenate	0.9-1.1%	Avoid pH over 7 to prevent the glyceryl caprylate component from hydrolysing. Can have an impact on formula viscosity (reducing it) as the glyceryl caprylate component reduces surface tension. If using in a spritzer pre-mix with surfactant (solubiliser) or alcohol before adding to improve final formula clarity and preservative solubility.	Natural (Mixed vegetable oils. Renewable - Green chemistry processing	**	Up to 7	Heat Tolerant - 80C +	Bacteria, Yeast, Mould	Suitable for all types of formula but best in O/W or W/O creams where it also acts as an emollient, co-emulsifier and skin refatting agent.	Allowable input in organic formulation. Versatile and better on mould than many other naturals so ideal for pigmented creams or those rich in herbal extracts. Also great in acne products as the Glyceryl Caprylate has been found to be affective against various acne causing bacteria.	This preservative can be in the form of a liquid or semi-solid depending on the time of year (similar to what happens to coconut oil). In any case if being added to the water phase heat to 80C to speed up dissolution.	Can reduce the viscosity in an emulsion.
Plantaserv P	Phenoxyethanol, Caprylyl Glycol	0.75-1.5%	Can't be used in organic formulations. Not suitable for use in AHA formulations with pH under 4.	Synthetic	**	4 to 8	Heat tolerant to 80C	Bacteria, Yeast, Mould	All types of formula	Cost effective, low odour, easy to use.	Good water solubility	Dramatically reduced viscosity with Olive Emulsifier and Cetearyl alcohol, ceteareth-20 but good stability with the vegetable emulsifier.
Plantaserv S	Origanum Vulgare Extract, Thymus Vulgaris Extract, Cinnamomum Zeylanicum Bark Extract, Rosmarinus Officinalis Extract, Lavandula Angustifolia Extract, Citrus Limon Fruit Extract, Mentha Piperita Extract, Hydrastis Canadensis Extract, Olea Europaea Leaf Extract	0.45	Can't be used in water based formulations	Natural	****	NA	20-35C	Bacteria, yeast, mould	Oil based products that might come into contact with a little water - oily products for shower area, pigmented lip balms/ lip sticks, massage oils containing plant material etc.	All natural, pleasant smell and colour	Oil soluble	Only suitable for use in water-in-oil emulsions where it won't affect emulsion stability.
Potassium Sorbate	Potassium Sorbate	0.1-0.5	Allowed in organics even though this is nature-identical rather than naturally derived. Can be irritating to skin, especially in formulations containing no oil. When used with Sodium Benzoate the maximum combined input is 0.5%	Synthetic (Nature-Identical)	*	Up to pH 5 is ideal but can work between pH 5 and 6	20-45C	Mould and yeast	All types of formula that contain oils	Cost effective, nature-identical.	Good water solubility	No effect on emulsion stability
Sodium Benzoate	Sodium Benzoate (E211 food additive number)	0.1-0.5	Avoid use with Ascorbic Acid as this combination can react to form benzene. Vitamin C oil soluble does not cause this issue . Can be irritating to skin, especially in oil-free formulations. When used with potassium sorbate the maximum combined imput is 0.5% Allowed in organics	Synthetic (Nature-Identical)	*	Up to pH 5 is ideal but can work between pH 5 and 6	Heat tolerant	Bacteria, Mould	All types of formula that contain oils	Cost effective, nature identical	Good water solubility	No effect on emulsion stability
Sodium Hydroxymethylglycinate	Sodium Hydroxymethylglycinate	Up to 0.5%	Can't be used with citrus essential oils as it will turn the product pink due to a reaction between the preservative and essential oil components. This ingredient is also a formaldehyde releaser which is why the maximum permitted input is 0.5% - a safe level. When using formaldehyde releasing ingredients avoid adding AMINES into your formula - these include Triethanolamine, Urea, Some hair dye components and colours.	Synthetic (but from naturally derived starting materials- Amino Acid Glycine)	**	Up to pH 12	Heat tolerant to 85C	Bacteria, Yeast, Mould	All types of formula	Can be used as a neutraliser to help balance the pH of a formula from acidic to neutral.	Good water solubility	No effect on emusion stability

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