preservatives for personal care

made for me preservatives

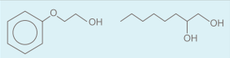
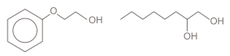
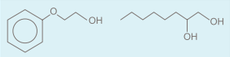
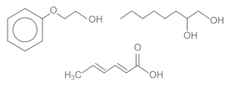
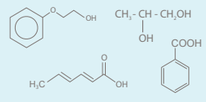
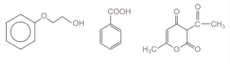
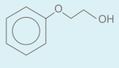
ashland.com / efficacy usability allure integrity profitability™

A challenge for every formulator is selecting the right preservative system that delivers an effective level of protection against bacteria, yeast and mold. The family of preservatives from Ashland Specialty Ingredients offers a variety of solutions for skin, sun and hair care products. Available in five categories – progressive, nature-identical, aromatic, classic and boosters – these versatile products are fast-acting and long-lasting to help product manufacturers comply with regulatory requirements around the world. Featuring widely trusted brands such as Optiphen™ preservative, Germall™ preservative, Germaben™ preservative, Rokonsal™ preservative and others, our preservatives are supported by Ashland's global technical expertise and service so you can formulate with confidence knowing we have a system that meets your preservation requirements. To learn more about how Ashland can help protect your personal care products, contact one of our preservative experts today.

progressive preservatives

As personal care product manufacturers sell to an increasingly global client base, they need approved ingredients to easily navigate regulatory hurdles. Ashland's family of progressive preservatives featuring the Optiphen preservative and Rokonsal preservative product lines is approved for use in all major markets, compatible with a variety of formulations and not based on paraben, formaldehyde or halogens. Effective against gram-positive and gram-negative bacteria, yeast and mold, they offer excellent heat stability, work across a wide pH window and are easily solubilized in water.

progressive preservative range

Trade Name								Main Antimicrobial Activity Profile				Applications									
												Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/ Form	Structure	Non-Paraben	Non-FA-Donor	Non-Halogen	Gram+/Gram- Bacteria	Yeast	Mold	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Optiphen preservative	Optiphen preservative	Phenoxyethanol (and) Caprylyl Glycol	Clear to pale straw liquid		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold • Effective over pH of 4 to 8 • Global use†	+++	++	+++	++	+++	0.75–1.5%	Below 80 °C	4–8		a
Optiphen 200 preservative	Optiphen 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	Clear to pale straw liquid		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold • Effective over pH of 4 to 8 • Global use†	+++	+++	+++	+++	+++	0.75–1.3%	Below 80 °C	4–8		a
Optiphen 300 preservative	Optiphen 300 preservative	Phenoxyethanol (and) Caprylyl Glycol	Clear to pale straw liquid		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold additional fungicidal protection may be needed in difficult formulations • Effective over pH of 4 to 8 • Global use†	++	+++	++	+++	++	0.75–1.1%	Below 80 °C	4–8		a
Optiphen Plus preservative	Optiphen Plus preservative	Phenoxyethanol (and) Caprylyl Glycol (and) Sorbic Acid	Clear to pale straw liquid		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold • Ideal for slightly acidic personal care products • Effective pH range up to 6.0 • Global use†	+++	+++	+++	+++	+++	0.75–1.5%	Below 80 °C	up to 6.0		b
Rokonsal BSP preservative	Optiphen BSP preservative	Phenoxyethanol (and) Propylene Glycol (and) Benzoic Acid (and) Sorbic Acid	Liquid		X	X	X	X	X	X	• Microbiostatic spectrum of activity against bacteria, mold and yeast • Effective up to pH 5.4 • Global use†	+++	+++	+++	+++	++	0.3–1.0%	Below 80 °C	up to 5.4	2	
Rokonsal ND preservative	Optiphen ND preservative	Phenoxyethanol (and) Benzoic Acid (and) Dehydroacetic Acid	Clear, yellowish solution		X	X	X	X	X	X	• Microbiostatic spectrum of activity against bacteria, mold and yeast • Effective up to pH 6.4 • Global use†	+++	+++	+++	+++	+++	0.3–1.0%	Below 80 °C	up to 6.4	3, 4	a
Optiphen PO preservative	Optiphen PO preservative	Phenoxyethanol	Clear liquid		X	X	X	X	X	X	• Microbiostatic activity • Wide pH 3 to 10 • Global use†, usually in combination with other actives	++	++	++	++	++	up to 1%	Below 80 °C	3-10		a

+++ highly recommended, ++ recommended, + suitable, - not recommended

Ashland™ always solving

optiphen™ P platform

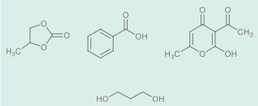
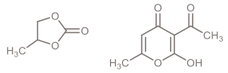
Optimizing the delivery of non-alcohol preservatives is essential to the viability of next-generation preservative systems. Ashland's Optiphen P platform is the first preservative technology platform without alcoholic antimicrobials, based on an optimized delivery system.

The delivery system serves to ostensibly maximize preservative efficacy without interfering or destabilizing cosmetic formulations, such as emulsions. All of the preservative products offered within the Optiphen P platform address today's demands for cost-efficient preservatives that follow natural ingredient trends.

Optiphen™ DP preservative offers broad spectrum protection and complies with one or all of the following labels: Bra Miljöval (Good Environmental Choice), Nordic Ecolabel (Swan) and EU Ecolabel (Flower) 2014/893/EU.

Optiphen DLP preservative provides antifungal boosting at lower use levels. When used at higher dosages full protection can be achieved.

optiphen P platform

Trade Name								Main Antimicrobial Activity Profile				Applications									
												Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/ Form	Structure	Non-Paraben	Non-FA-Donor	Non-Halogen	Gram+/Gram- Bacteria	Yeast	Mold	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Optiphen DP preservative	Optiphen DP preservative	Propylene Carbonate (and) Benzoic Acid (and) Dehydroacetic Acid (and) Propanediol	Liquid		X	X	X	X	X	X	Microbiostatic spectrum of activity, in some formulations additional booster is needed Effective up to pH 6.0 Global use† Cost efficient preservative Optimized delivery system without alcoholic antimicrobials	+++	+++	+++	+++	+++	0.3–2.0%	Below 80 °C	up to 6.0	4, 9	
Optiphen DLP preservative	Optiphen DLP preservative	Propylene Carbonate (and) Dehydroacetic Acid	Liquid		X	X	X		X	X	Antifungal boosting activity at low levels; full antimicrobial spectra at high levels Effective up to pH 6.4. Global use† Cost efficient preservative based on nature identical active ingredient Optimized delivery system without alcoholic antimicrobials	+++	+++	+++	+++	+++	0.3–2.0%	Below 80 °C	up to 6.4	4, 9	

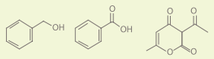
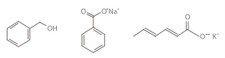
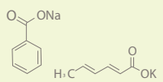
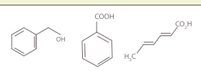
+++ highly recommended, ++ recommended, + suitable, - not recommended

Ashland™ always solving

nature-identical preservatives

The natural movement continues to drive consumer buying habits, so it's no surprise that marketers also harbor a preference for all things green. That's why Ashland's nature-identical preservatives are ideal solutions for products aimed at the eco-aware consumer. ECOCERT-, NATRUE-, COSMOS- and BDIH-compliant Rokonsal™ and Optiphen™ BS and BSB-type preservatives are synthetic versions of naturally occurring substances with excellent efficacy and global approval for rinse-off and leave-on applications. These effective preservatives support a variety of natural personal care products.

nature-identical preservative range

Trade Name								Main Antimicrobial Activity Profile				Applications									
												Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/ Form	Structure	Non-Paraben	Non-FA-Donor	Non-Halogen	Gram+/Gram-Bacteria	Yeast	Mold	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Optiphen BD preservative	Not available	Benzyl Alcohol (and) Benzoic Acid (and) Dehydroacetic Acid	Clear, yellowish solution		X	X	X	X	X	X	• Microbiostatic spectrum of activity against bacteria, mold and yeast • Effective up to pH 6.4 • Global use† • Nature-identical combination	+++	+++	+++	+++	+++	0.3–1.0%	Below 80 °C	up to 6.4	3, 4	c
Optiphen BSB-W preservative	Optiphen BSB-W preservative	Benzyl Alcohol (and) Aqua (Water) (and) Sodium Benzoate (and) Potassium Sorbate	Yellowish-brownish liquid		X	X	X	X	X	X	• Effective against gram-positive and gram-negative bacteria, yeast and mold • Effective up to pH 5.4 • Global use† • Nature-identical combination	+++	+++	+++	+++	+++	0.3–1.0%	Below 80 °C	up to 5.4	2	c
Rokonsal BS preservative	Optiphen BS preservative	Sodium Benzoate (and) Potassium Sorbate	Yellow to light brown solution		X	X	X	X	X	X	• Microbiostatic spectrum of activity • Effective up to pH 5.4 • Nature-identical combination • Global use†	++	+++	++	+++	+	0.3–1.0%	Below 80 °C	up to 5.4	2	c
Rokonsal BSB-N preservative	Optiphen BSB-N preservative	Benzyl Alcohol (and) Glycerin (and) Benzoic Acid (and) Sorbic Acid	Colorless liquid		X	X	X	X	X	X	• Effective against gram-positive and gram-negative bacteria, yeast and mold • Effective up to pH 5.4 • Global use† • Nature-identical combination • Validated by COSMOS and NATRUE	++	++	+++	++	+	0.3–1.0%	Below 80 °C	up to 5.4	2	c

+++ highly recommended, ++ recommended, + suitable, - not recommended

Ashland™ always solving

aromatics with antimicrobial properties

Growing consumer demand for multifunctional and nature-identical ingredients is giving rise to new product brands and new personal care formulations.

Addressing these trends, Ashland offers formulators with a range of solutions through its Conarom™ aromatic product line, a fortifying system containing naturally derived and nature-identical ingredients that add mild flowery fragrance to personal care formulations and deliver broad antimicrobial protection as an additional effect.

In addition, Conarom™ P-2 displays good formulation compatibility and does not impart color change on final formulations.

The naturally derived emulsifier systems and the contained booster can enhance moisturizing properties in the final formulation. Conarom P-2 conforms to ecolabels such as Bra Miljoval (Good environmental choice), Nordic Ecolabelling (Swan) and EU Ecolabel (Flower) 2014/893/EC. Conarom P and Conarom P-2 aromatic are offering a gentle rose-like aroma that heightens the characteristic of the end products.

aromatic range

Trade Name							Main Antimicrobial Activity Profile				Applications									
											Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/Form	Non-Paraben	Non-FA-Donor	Non-Halogen	Gram+/Gram-Bacteria	Yeast	Mold	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Conarom B aromatic	Conarom B aromatic	Phenylpropanol, Humulus Lupulus (Hops) Extract	Nature-derived and nature-identical fragrance additive	X	X	X	X	X	X	o Mild flowery spicy fragrance, containing naturally derived and nature identical ingredients that provides broad-spectrum protection o Complements aroma of final product o Effective pH range 4–8	+++	+++	+++	+++	++	0.2–2.0%	Below 40 °C	4–8		
Conarom P aromatic	Conarom P aromatic	Phenethyl Alcohol (and) Caprylyl Glycol (and) Trideceth-8	Nature-identical fragrance additive in glycolic solution	X	X	X	X	X	X	o Mild rose-like aroma o Aromatic ingredient that provides broad-spectrum protection o Complements aroma of final product o Effective pH range 4–8	+++	+++	++	++	+	0.3–2.0%	Below 80 °C	4–8		
Conarom P-2 aromatic	Conarom P-2 aromatic	Phenethyl Alcohol (and) Caprylyl Glycol (and) Propanediol (and) Polyglyceryl-4 Laurate/ Sebacate (and) Polyglyceryl-6 Caprylate/ Caprate (and) Aqua (Water)	Nature-identical fragrance additive with naturally derived emulsifier system	X	X	X	X	X	X	o Mild rose-like aroma, containing naturally derived and nature identical ingredients o Aromatic ingredient that provides broad-spectrum protection o Complements aroma of final product o Effective pH range 4–8	+++	+++	+++	+++	++	0.3–2.0%	Below 80 °C	4–8		

+++ highly recommended, ++ recommended, + suitable, - not recommended

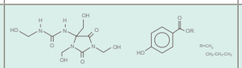
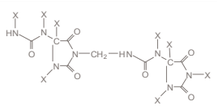
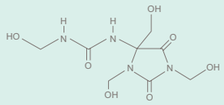
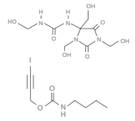
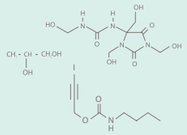
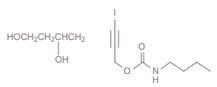
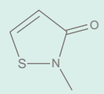
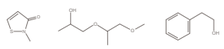
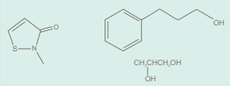
Ashland™ always solving

classic preservatives

Tried and true, Ashland's classic preservatives deliver efficient antimicrobial power to a wide variety of personal care products. Balanced, synergistic and boasting broad-spectrum protection, Germaben™ preservative, Germall™ preservative, Suttocide™ preservative, Liquagard™ preservative, LiquaPar™ preservative and Rokonsal™ preservative are compatible with many other cosmetic ingredients.

Approved for use in most countries, the family of classic preservatives are effective at low doses and can be used to bolster other preservatives.

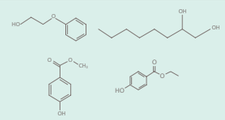
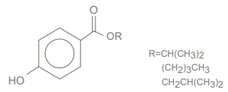
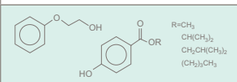
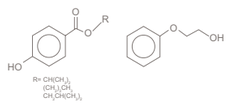
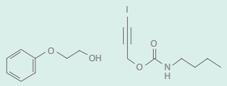
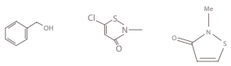
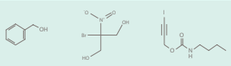
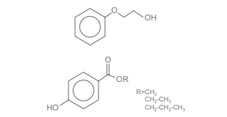
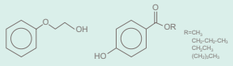
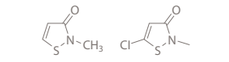
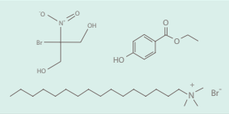
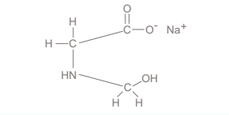
classic preservative range

Trade Name								Main Antimicrobial Activity Profile				Applications									
												Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/ Form	Structure	Non-Paraben	Non-FA-Donor	Non-Halogen	Gram+/Gram- Bacteria	Yeast	Mold	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Germaben II Germaben II-E preservative	Germaben II Germaben II-E preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben	Clear liquid				X	X	X	X	• Broad-spectrum activity against gram-positive and gram-negative bacteria, yeast and mold • Effective over broad pH range 3.0–7.5	+++	+++	+++	+++	++	0.5–1.0%	Below 60 °C	3.0–7.5	10	
Germall 115 preservative	Germall 115 preservative	Imidazolidinyl Urea	White, free-flowing hygroscopic powder		X		X	X			• Very effective against gram-positive and gram-negative bacteria • Acts synergistically with other preservatives • Effective over broad pH range 3.0–9.0 • Global use†	++	++	++	++	+	0.2–0.6%	Below 60 °C	3.0–9.0	8	
Germall II preservative	Germall II preservative	Diazolidinyl Urea	White, free-flowing hygroscopic powder		X		X	X			• Broad-spectrum activity against gram-positive and gram-negative bacteria • Synergistic with other preservatives • Effective over broad pH range 3.0–9.0	++	++	++	++	+	0.1–0.3%	Below 60 °C	3.0–9.0		
Germall Plus preservative	Germall Plus preservative	Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	White, free-flowing hygroscopic powder		X			X	X	X	• Broad-spectrum antimicrobial activity • Effective over broad pH range 3.0–8.0	+++	+++	+++	+++	+++	0.05–0.2%	Below 50 °C	3.0–8.0	5, 6	d
Liquid Germall Plus preservative	Liquid Germall Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	Clear liquid		X			X	X	X	• Broad-spectrum antimicrobial activity • Effective over broad pH range 3.0–8.0	+++	+++	+++	+++	+++	0.1–0.5%	Below 50 °C	3.0–8.0	5, 6	d
Not available	Liquagard™ preservative	Butylene Glycol (and) Iodopropynyl Butylcarbamate	Liquid		X	X			X	X	• Effective fungicide • Works over wide pH range 4.0 – 9.0 • Temperature stable • Compatible with broad range of raw materials including surfactants and proteins	+	++	+	++	++	0.1–0.2%	Below 50 °C	4.0–9.0	5, 6	d
Optiphen™ MIT preservative	Optiphen MIT preservative	Aqua (Water) (and) Methylisothiazolinone	Colorless to yellowish solution		X	X	X	X			• Effective against gram-positive and gram-negative bacteria • Effective between pH 2 and 10 • Global use†	–	+++	–	++	–	0.05–0.1%	Below 70 °C	2–10	1, 12, 13	
Optiphen MIT Plus preservative	Optiphen MIT Plus preservative	Aqua (Water) (and) Methylisothiazolinone (and) Phenethyl Alcohol (and) PPG-2 Methyl Ether	Colorless to yellowish solution		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold • Effective between pH 2 and 10 • Global use†	–	+++	–	+++	–	0.05–0.2%	Below 70 °C	2–10	1, 12, 13	
Optiphen MIT Ultra preservative	Optiphen MIT Ultra preservative	Aqua (Water) (and) Methylisothiazolinone (and) Phenylpropanol (and) Propylene Glycol	Colorless to yellowish solution		X	X	X	X	X	X	• Broad-spectrum activity against bacteria, yeast and mold • Effective between pH 2 and 10 • Global use†	–	+++	–	+++	–	0.05–0.3%	Below 70 °C	2–10	1, 12, 13	

+++ highly recommended, ++ recommended, + suitable, - not recommended

Ashland™ always solving

classic preservative range

Trade Name EMEA	Trade Name NA	INCI Name	Description/ Form	Structure	Non-Paraben	Non-FA-Donor	Non-Halogen	Main Antimicrobial Activity Profile: Gram+/ Gram- Bacteria	Main Antimicrobial Activity Profile: Yeast	Main Antimicrobial Activity Profile: Mold	Features and Benefits	Applications: Hair Care: Leave-on	Applications: Hair Care: Rinse-off	Applications: Skin Care: Leave-on	Applications: Skin Care: Rinse-off	Applications: Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
LiquaPar™ ME preservative	Not available	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Caprylyl Glycol	Clear, yellowish solution			X	X	X	X	X	○Provides similar efficiency to traditional paraben combinations ○Effective over broad pH range 3.0–7.5 ○Global use†	+++	+++	+++	+++	++	0.3–1.0%	Below 85 °C	3.0–7.5		e
LiquaPar Oil preservative	LiquaPar Oil preservative	Isopropylparaben (and) Isobutylparaben (and) Butylparaben	Clear liquid			X	X	X	X	X	○Solvent-free ○Effective against gram-positive bacteria, yeast and mold ○Effective over broad pH range 3.0–7.5	++	++	++	++	–	0.4–0.8%	Below 85 °C	3.0–7.5	11	e
LiquaPar Optima preservative	LiquaPar Optima preservative	Phenoxyethanol (and) Methylparaben (and) Isopropylparaben (and) Isobutylparaben (and) Butylparaben	Clear liquid			X	X	X	X	X	○Broad-spectrum activity against bacteria, yeast and mold ○Effective over broad pH range 3.0–7.5	++	++	++	++	–	0.5–1.0%	Below 85 °C	3.0–7.5	11	e
LiquaPar PE preservative	LiquaPar PE preservative	Phenoxyethanol (and) Isopropylparaben (and) Isobutylparaben (and) Butylparaben	Clear liquid			X	X	X	X	X	○Broad-spectrum activity against bacteria, yeast and mold ○Effective over broad pH range 3.0–7.5	++	++	++	++	–	0.5–1.0%	Below 85 °C	3.0–7.5	11	e
Rokonsal™ J preservative	Not available	Phenoxyethanol (and) Iodopropynyl Butylcarbamate	Liquid		X	X			X	X	○Effective fungicide ○Works over wide pH range 4.0–9.0 ○Temperature stable ○Compatible with broad range of raw materials including surfactants and proteins	+	++	+	++	++	0.05–0.25%	Below 80 °C	4.0–9.0	5, 6	d
Rokonsal KS-4 preservative	Not available	Propylene Glycol (and) Benzyl Alcohol (and) Methylchloroisothiazolinone (and) Methylisothiazolinone	Clear, yellowish solution		X	X		X	X	X	○Broad-spectrum activity against bacteria, yeast and mold ○Fast-acting ○Effective up to pH 8 max. ○Global use†	–	++	–	++	–	0.05–0.12%	Below 40 °C	8 max.	1, 7, 12	
Rokonsal LJ-1 preservative	Not available	Benzyl Alcohol (and) 2-Bromo-2-Nitropropane-1,3-Diol (and) Iodopropynyl Butylcarbamate (and) Deceth-8 (and) PPG-2 Methyl Ether	Light yellow to light brown solution		X	X		X	X	X	○Broad-spectrum activity against bacteria, with enhanced performance against fungi and yeast ○Fast-acting ○Effective up to pH 7 max. ○Global use†	+++	+++	+++	+++	+++	0.1–0.4%	Below 40 °C	7 max.	5, 6	d, f
Rokonsal MEP preservative	LiquaPar MEP preservative	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben	Clear, yellowish solution			X	X	X	X	X	○Broad-spectrum activity against bacteria, yeast and mold ○Effective over broad pH range 3.0–7.5 ○Global use†	+++	+++	+++	+++	++	0.3–1.0%	Below 85 °C	3.0–7.5	10	e
Rokonsal PB-4 preservative	LiquaPar PN preservative	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben (and) Butylparaben	Clear liquid			X	X	X	X	X	○Broad-spectrum activity against bacteria, yeast and mold ○Effective over broad pH range 3.0–7.5 ○Global use†	++	++	++	++	+	0.5–1.0%	Below 85 °C	3.0–7.5	10	e
Rokonsal S-1 preservative	LiquaGard™ S-1 preservative	Methylchloroisothiazolinone (and) Methylisothiazolinone	Colorless to yellow solution		X	X		X	X	X	○Broad-spectrum of activity ○Fast-acting at low use-levels ○Global use†	–	++	–	++	–	0.03–0.1%	Below 40 °C	8 max.	1, 7, 12	
Rokonsal SE-2 preservative	Not available	2-Bromo-2-Nitropropane-1,3-Diol (and) Ethylparaben (and) Cetrimonium Bromide (and) PPG-2 Methyl Ether	Clear, yellow to brown solution			X		X	X	X	○Broad-spectrum activity against bacteria, fungi and yeast ○Fast-acting ○Effective up to pH 7 max.	+++	+++	+++	+++	++	0.1–0.3%	Below 40 °C	7 max.		f
Suttocide™ A preservative	Suttocide A preservative	Sodium Hydroxymethylglycinate	Clear to pale yellow solution		X		X	X	X	X	○Broad-spectrum preservation ○Long history of use for efficacy ○Fast-acting ○Effective pH 3.5–12.0	++	++	++	++	++	0.5–1.0%	Below 60 °C	3.5–12.0		g

+++ highly recommended, ++ recommended, + suitable, - not recommended

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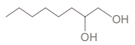
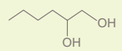
preservative boosters

Diols can influence the overall microbial stability due to their water binding properties. They are widely used in skin care, hair care, wet wipes, toiletries and color cosmetics. With their moisturizing and solubilizing properties they are considered to be multifunctional. Their neutral smell and wide pH tolerance makes them suitable for many applications. In emulsions the Diols should be added at the post-emulsification stage, to enhance their availability at the water/oil interface.

Preservative Booster Range

Trade Name						Applications									
						Hair Care		Skin Care							
EMEA	NA	INCI Name	Description/ Form	Structure	Features and Benefits	Leave-on	Rinse-off	Leave-on	Rinse-off	Wet Wipes	Use Levels	Temp. During Production (influenced by matrix)	pH	Not to be used for (see p.15)	Notes (see p.15)
Optiphen™ OD preservative booster	Optiphen OD preservative booster	Caprylyl Glycol	Liquid to waxy		○Moisturizing agent ○Solvent for active ingredients ○Humectant ○Preservative booster	+++	+++	+++	+++	+++	0.3–2%	Below 80 °C	2–10		
Optiphen HD preservative booster	Optiphen HD preservative booster	1,2-Hexanediol	Liquid		○Moisturizing agent ○Solvent for active ingredients ○Humectant ○Preservative booster	+++	+++	+++	+++	+++	0.5–3%	Below 80 °C	2–10		

+++ highly recommended, ++ recommended, + suitable, - not recommended

As of December 2017, the information presented here is accurate and factual to the best of our knowledge, based on available data.

[†]For country-specific details, please contact your technical service representative.

[1]Japan: Not permitted in products that come into contact with mucous membranes.

[2]In products with pH higher than 5.4.

[3]In products with pH higher than 6.4.

[4]E.U.: Not for use in aerosols.

[5]E.U.: Not for oral hygiene and lip care products; Not to be used in products for children < 3 years except in bath products/shower gels and shampoos; Not to be used in body lotion and body cream.

[6]U.S. and Japan: Not for use in aerosols.

[7]Japan: Not permitted in leave-on products.

[8]Japan: Not permitted in products that come into contact with mucous membranes. Required warning: Should not be used by infants or by people who are hypersensitive to formaldehyde.

[9]In products with pH higher than 6.

[10]E.U.: Not to be used in leave-on products designed for application to the nappy area of children younger than 3 years. For leave-on products not intended to be applied to the nappy area of children younger than 3 years, required warning “Do not use on the nappy area”.

[11]E.U.: Not permitted due to isopropylparaben and isobutylparaben content.

[12]E.U.: Approved only for rinse-off products.

[13]E.U.: Recommended use levels exceed maximum allowed concentration of Methylisothiazolinone (from 27 January 2018 for products being placed on the market; from 27 April 2018 for products available on the market).

[a]Nonionic surfactants might decrease efficacy.

[b]Enhanced efficacy compared to Optiphen in slightly acidic products.

[c]The ingredients contained fulfill recommendations for use in Natural Cosmetic Products like BDIH, COSMOS, NATRUE and ECOCERT.

[d]E.U.: Approved concentrations for specific applications should be verified.

[e]Proteins, nonionic and highly ethoxylated surfactants might decrease efficiency.

[f]Do not formulate with DEA-salts (secondary amines and amides) or triethanolamine, nitrosamine formation might occur.

[g]Avoid cationics and citrus perfumes. Citrus perfumes may lead to discoloration.

FA = Formaldehyde

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