

euxyl™ k 712 preservative

mild blend, compliant with many natural certification requirements

product description

Euxyl™ K 712 preservative is a liquid cosmetic preservative, which can be used in leave-on as well as in rinse-off products. Euxyl™ K 712 preservative was developed for use in cosmetic formulations with a skin-friendly pH value of up to 5.5. It has a broad, balanced spectrum of effect against bacteria, yeasts and mold fungi.

INCI declaration

Sodium Benzoate
Potassium Sorbate
Aqua

key features and benefits

- strong broad spectrum efficacy
- suitable for certified natural cosmetics
- mild, liquid blend
- fully effective in anionic, cationic and non-ionic systems
- cost effective



microbiological efficacy

Euxyl™ K 712 preservative is equally effective against bacteria, yeasts and mold fungi. For euxyl™ k 712 preservative to perform effectively in destroying organisms in products already contaminated, a minimum contact time of 48 hours is necessary.

Good production hygiene, as well as the use of raw materials with low microorganism levels as a result of correct raw material control, are of course vital prerequisites for the production of microbiologically faultless finished products.

challenge test

(Ashland Koko test)

This method is used to determine the preservative effect of chemical preservatives in cosmetic formulations, e.g. creams, lotions and shampoos. For this, in various test series, the preservative to be tested is added in different concentrations to unpreserved samples. A constant microorganism load is achieved by means of periodic inoculation (inoculation cycles) of the test preparations. Immediately before inoculation, samples of the individual preparations are streaked out onto nutrient media. The preservative effect is evaluated on the basis

of the microorganism growth on the nutrient media. The longer the time before the occurrence of the first microbial growth, the more effective is the preservative. Experience has shown that a well preserved product should remain growth-free for six inoculation cycles in order to ensure the shelf-life in the original packaging required in practice (30 months).

Different leave-on and rinse-off systems are proved to be well protected with euxyl™ k 712 preservative.

test material / product	inoculation cycles							assessment
	0	1	2	3	4	5	6	
shampoo with betaine at pH 5 unpreserved	–	+++ B,Y,M	+++ B,Y,M	./.				failed
+ 0.75% euxyl™ k 712 preservative	–	–	–	–	–	–	–	A
shampoo with APG at pH 5 unpreserved	–	+++ B,Y,M	+++ B,Y,M	./.				failed
+ 0.75% euxyl™ k 712 preservative	–	–	–	–	–	–	–	A

legend

0 = sterility control
B = bacteria
M = molds
Y = yeasts

– = free of microbial growth
+ = slight growth
++ = moderate growth
+++ = massive growth
./. = test stopped

assessment

A = free of growth during 6 inoculation cycles
B = slight (+) growth during 6 inoculation cycles

APG = Alkylpolyglycoside

test material / product	inoculation cycles							assessment
	0	1	2	3	4	5	6	
lotion w/o at pH 5 unpreserved	–	+++ B,Y,M	+++ B,Y,M	./.				failed
+ 0.75% euxyl™ k 712 preservative	–	+++ B, M	+++ M	+++ M	./.	–	–	failed
+ 1.00% euxyl™ k 712 preservative	–	+++ B, M	+++ M	+++ M	./.	–	–	failed
+ 1.25% euxyl™ k 712 preservative	–	+ M	+ M	+ M	+ M	+ M	+ M	B
lotion o/w at pH 5 unpreserved	–	+++ B,Y,M	+++ B,Y,M	./.				failed
+ 0.75% euxyl™ k 712 preservative	–	–	–	–	–	–	–	A

legend:

0 = sterility control
B = bacteria
M = molds
Y = yeasts

– = free of microbial growth
+ = slight growth
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assessment:

A = free of growth during 6 inoculation cycles
B = slight (+) growth during 6 inoculation cycles

germ count reduction test

Dilutions of euxyl™ k 712 preservative are prepared with sterile demineralised water, 25 ml portions of the end solutions are each inoculated with 0.1 ml microorganism suspension (initial microorganism count approx. 10^8 cfu/ml) and stirred.

The solutions are streaked out onto tryptone soya agar or Sabouraud-dextrose 4% agar after 3, 6, 24, 48, 72 and 168 hours, depending on the test organism. The cultures are incubated for 48 hours at 37 °C, except for *Aspergillus Niger*, which is incubated for 72 hours at 25 – 27 °C.

The evaluation is made on the basis of semi-quantitative assessment of the microbial growth of the streaks.

In the table below, the microorganism reduction achieved by euxyl™ k 712 preservative at pH 5.0 as a function of the contact time and use-concentration is presented for the various test organisms:

test organism	use-concentration [%]	contact time [h]					
		3	6	24	48	72	168
<i>Pseudomonas aeruginosa</i>	0.5	C	C	++++	+	–	–
	0.75	C	C	+++	–	–	–
	1.0	C	C	–	–	–	–
	1.25	C	++++	–	–	–	–
	1.5	C	+++	–	–	–	–
<i>Escherichia coli</i>	0.5	C	++++	++++	+++	++	–
	0.75	C	++++	+++	++	+	–
	1.0	C	++++	+++	+	–	–
	1.25	C	++++	+	–	–	–
	1.5	C	++++	–	–	–	–
<i>Candida albicans</i>	0.5	++++	++++	++	++	–	–
	0.75	++++	++++	++	++	–	–
	1.0	++++	++++	++	++	–	–
	1.25	+++	+++	+	+	–	–
	1.5	+++	++	–	–	–	–
<i>Aspergillus niger</i>	0.5	–	–	–	–	–	–
	0.75	–	–	–	–	–	–
	1.0	–	–	–	–	–	–
	1.25	–	–	–	–	–	–
	1.5	–	–	–	–	–	–

symbol	finding	germ count/ml
–	= no growth	< 100
+	= slight growth	approx. 10^2
++	= moderate growth	approx. 10^3
+++	= heavy growth	approx. 10^4
++++	= massive growth	approx. 10^5
C	= completely overgrown	approx. 10^6

global approvals

	leave-on	rinse-off
Ashland recommendation	0.50 – 1.50%	0.50 – 1.50%
EU Cosmetics Regulation	max. 1.96%	max. 5.35%
CIR (USA)	max. 3.33%	max. 3.33%
ASEAN Cosmetic Directive	max. 1.96%	max. 5.35%
TSSC 2015 (China)	max. 1.96%	max. 1.96%
MERCOSUR	max. 1.96%	max. 5.35%

For approvals in further countries please contact your local sales representative.

The individual use concentration is dependent on the sensitivity of the product to microbial contamination, the choice of raw materials and production hygiene. For the determination of the optimum dosage we recommend a preservation test, as the efficacy is highly influenced by the other ingredients of a finished formulation. The staff of Ashland's microbiological laboratories will be pleased to give customers the appropriate support.

indications for use

general

Euxyl™ K 712 preservative is fully effective in anionic as well as cationic and nonionic systems. Euxyl™ K 712 preservative proved to have good compatibility with anionic surfactants such as sulphates, ether sulphates and sulphosuccinates, as well as with non-ionogenic surfactants. Euxyl™ K 712 preservative shows no interactions with sulphite ions.

temperature stability:

When using euxyl™ k 712 preservative prolonged heating periods (max. 4 hours) > 80 °C should be avoided. As a result of the low surface tension of euxyl™ k 712 preservative solutions, good dispersion in the various systems even at low temperatures is guaranteed.

applications

Euxyl™ K 712 preservative is a liquid cosmetic preservative and suitable for leave-on, rinse-off, wet wipes and sensitive applications. The efficacy depends on the pH value.

discoloration

The concentrate is a clear, colorless until brownish liquid. When used in the cosmetic preparation it doesn't lead to discoloration as long as the formulation remains acidic.

product-specific properties

material compatibility

concentrate

In the material compatibility tests with the concentrate of euxyl™ k 712 preservative stainless steel, polyethylene (PE) and hard polyvinyl chloride (hard PVC) proved to be suitable materials for handling the undiluted product.

Non-metallic materials must be tested for their suitability, especially polycarbonate (PC), polymethyl-methacrylate (PMMA) and acrylonitrilebutadiene-styrene copolymer (ABS) should not be used. As sealing material when handling undiluted euxyl™ k 712 preservative fluorinated rubber (FKM), ethylene-propyleneterpolymer (EPDM) and polytetrafluoroethylene (PTFE) should be preferred. Other sealing materials could lead to severe swelling or to pronounced discoloration of euxyl™ k 712 preservative.

dilutions

Euxyl™ K 712 preservative in 1.0% aqueous solution showed material compatibility behavior which was not significantly different from that of the water used for dilution. No incompatibilities with plastics have been observed with products preserved with euxyl™ k 712 preservative.

effect on surface tension

The addition of 1.0% euxyl™ k 712 preservative in water has no effect on the surface tension.

foaming behavior

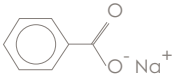
In the foaming test in accordance with DIN 53 902, a 1.0% solution of euxyl™ k 712 preservative in demineralised water proved to be non-foaming.

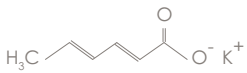
solubility

Euxyl™ K 712 preservative is fully soluble in water. In polar solvents such as 1,2-propylene glycol, propanol euxyl™ k 712 preservative is readily soluble. In polyalcohols such as glycerol and sorbitol euxyl™ k 712 preservative is readily soluble. In aliphates with hydrophilic groups such as 2-octyldecanol and isopropyl myristate, euxyl™ k 712 preservative is limitedly soluble. In pure aliphatic solvents, it is slightly soluble.

general information

description of individual substances (active ingredients)

sodium benzoate	
	$C_7H_5O_2Na$ 144.10 g/mol
CAS no.	532-32-1
INCI name	Sodium Benzoate
name according to EC 1223/2009	Benzoic acid, its salts and esters
No. according to EC 1223/2009	1
EC name	Sodium Benzoate
EC no.	202-859-9

potassium sorbate	
	$C_7H_5O_2Na$ 144.10 g/mol
CAS no.	24634-61-5
INCI name	Potassium Sorbate
name according to EC 1223/2009	Sorbic acid (Hexa-2,4-dienoic acid) α. its salts
No. according to EC 1223/2009	4
EINECS name	Potassium-(E,E)-hexa-2,4-dienoate
EINECS no.	246-376-1

physical-chemical data	
appearance	clear, colorless – brownish liquid
odor	characteristic
refractive index n_D^{20} :	1.436 – 1.441
density (20 °C)	1.166 - 1.185 g/ml
vapour pressure (20 °C)	approx. 25 hPa
flash point (ISO 2719)	> 100 °C
flow time (DIN 53 211/20 °C)	< 15 DIN seconds
viscosity (20 °C)	approx. 11 mPa s
water solubility (20 °C)	in all proportions

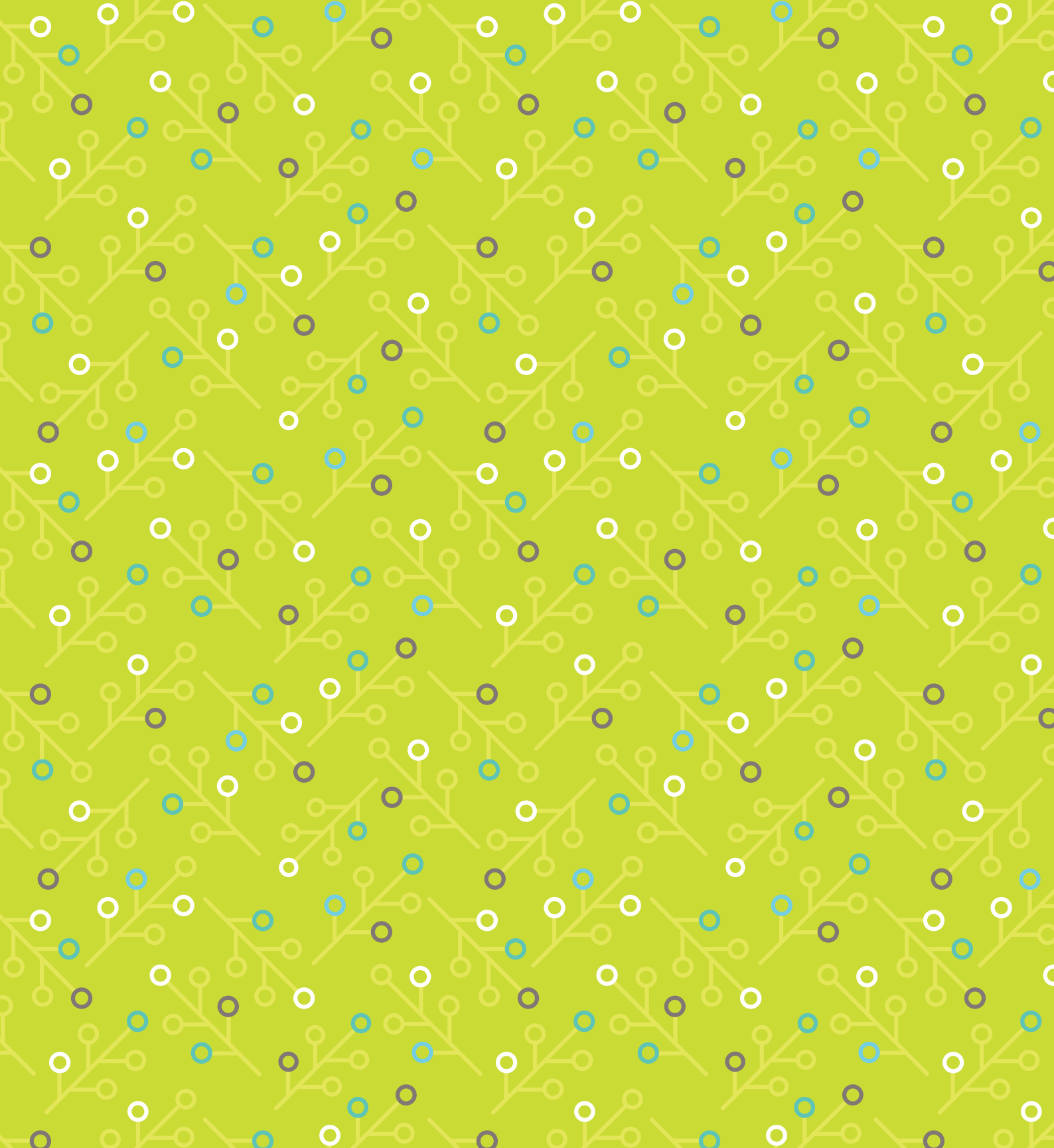
storage

We recommend storing in the original container at room temperature.

More details regarding handling, toxicity and labelling are available in the Safety Data Sheet (SDS).

always

solving™



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