

SILVER CITRATE SOLUTION (SCS)

Silver Citrate Solution is an active ingredient produced by a physical-chemical process with silver ions and citric acid. Chemically it is a chelated organic metal complex $[\text{Ag}_3(\text{C}_6\text{H}_5\text{O}_7)_{n+1}]_{3n-}$. COSMOS Approved.

INCI: Citric Acid (and) Silver Citrate

Silver content: 2500 ppm

Functions: Antimicrobial, Deodorant agent.

pH: 2 ± 1

Shelf life: 2 years



COSMOS APPROVED

Regulatory: COMMISSION REGULATION (EU) No 866/2014 of 8 August 2014 amending Annexes III, V and VI to Regulation (EC) No 1223/2009 of the European Parliament and the Council on cosmetic products. Do not use in oral and eye care products.

Dosage: Skin Care products: 0.1 - 0.5%
Deodorant: 0.2 - 0.95%
Anti-Dandruff: min. 0.95%
Preservative: 0.95% (24 ppm Ag is the maximum concentration allowed in the finished product)

Appearance: Transparent, odorless and low viscosity liquid

Solubility: Soluble in water. Miscible with ethanol, glycerin and propylene glycol.

Formulation:

Silver Citrate Solution is highly water soluble and easy to incorporate into the aqueous phase of gels, surfactants and emulsions made by a cold process method.

- In the manufacturing of emulsions produced by hot processes, it should be added to the final formulation after the emulsion has cooled down below 50°C.
- For formulations sensitive to acids, **Silver Citrate Solution** can be pre-neutralized prior to addition to the product.
- Exposure of **Silver Citrate Solution** to pH's higher than 7 and temperatures above 50°C should be avoided in order to achieve optimal formulation stability.

Silver Citrate Solution provides a broad-spectrum antimicrobial activity and is effective against unwanted skin bacteria (especially *Corynebacterium*) and pathogenic microorganisms. Its fast-killing activity makes **Silver Citrate Solution** an effective antimicrobial for personal care products. As a stand-alone preservative, it is used at 0.95% and can be combined with other preservatives if needed. Unlike many paraben-containing preservatives, **Silver Citrate Solution** will not migrate into the oil phase of emulsions, thus maintaining strong efficacy against microorganisms in the water phase.

Silver Citrate Solution is a stable active. Maybe slightly incompatible with aluminum and copper metals after prolonged exposure, although it is compatible with almost most metals including stainless steels.

Silver Citrate Solution shows good compatibility in most formulations at pH below 7 with anionic and non-ionic surfactants, emulsifiers and with amphoteric surfactants. **Silver Citrate Solution** is compatible with many other antimicrobial actives and most preservatives. Anionic surfactants in concentrations of 0.03% to 1% increase the efficacy.

Depending on the dosage, combination of **Silver Citrate Solution** with cationic ingredients and incorporation in formulations with pH above 7 should be avoided. It is compatible with xanthan gum and many acrylate polymer thickeners, but incompatibilities may exist with cellulose (HEC, HPMC) and starch derivatives, as well as cationic guard and strongly cationic systems.

Exposure of **Silver Citrate Solution** or **Silver Citrate Solution**-containing formulations to light should be avoided and the product should preferably be stored in containers that provide protection against light. Final formulations should be tested for light stability in case they are sold in transparent packaging.

Applications:

- Creams, gels and Lotions (not cationic)
- Serums, Facial mask, anti-acne creams
- Shower Gels and Shampoos
- Body & foot deodorant
- Wet wipes and hand sanitizers
- Intimate hygiene

Further information:

BSE/TSE according to EMEA/410/01	Complies
GMO according to (EC) 1829/2003, (EC) 1830/2003 & 2001/18/EC	Complies
Residual solvents according to CPMP/ICH/283/95	Complies
Test on Animals	No
Gluten	Gluten free
Allergens listed in Annex II to 1169/2011 and Annex II to 1223/2009	Complies
Lactose	Absent
Phthalates	Absent
Palm Oil	Absent
Latex	Absent
CMR (EC/1223/2009)	Absent
Radiation	Not irradiate
Nanomaterial (EC/1223/2009)	Absent
REACH Silver Citrate	exempt (<1 tn/y)
REACH Citric Acid	Registered
Origin	SPAIN
<u>Compliance with HALAL, KOSHER standards:</u> The product does not contain Ethanol or porcine products. Product not certified HALAL or KOSHER	
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