ERYTHRULOSE

A new dimension for your self-tanning products

CHARACTERISTICS

Introduction

ERYTHRULOSE is a naturally derived self-tanning ingredient that delivers a more authentic, more uniform and longer lasting tan. Due to its smooth tanning kinetics it is particularly useful in classical self-tanners and gradual tanning products. It can be favourably combined with DHA.

Composition

INCI name	Content	CAS No.	EINECS/ELINCS	Chemical name
Erythrulose	>50%	533-50-6	443-800-9	S-1,3,4-Trihydroxy-2-butanone
Aqua	10-25%	7732-18-5	231-791-2	Water

General Properties

Appearance: Clear, colorless to yellowish, highly viscous liquid

Erythrulose content: 75-82%

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FORMULATING

Solubility

- ERYTHRULOSE is soluble in water at all ratios.

Incorporation

10 Golden Rules for formulating stable self-tanning products:

1. For long-term stability of ERYTHRULOSE formulations and specifically to avoid discoloration, temperature, pH value and possible interaction with critical substances should be taken into account.
2. ERYTHRULOSE should be added to the formulation at temperatures below 40°C.
3. ERYTHRULOSE can simply be added into the aqueous phase or at the end of the process.
4. The optimal pH for the base formulation prior to addition of ERYTHRULOSE ranges from 4.0-4.5 and might drop to 3.0-4.0 after addition of ERYTHRULOSE. We found the active ingredient to be most stable under these conditions.
5. Do not buffer formulations at higher pH values.
6. Avoid critical ingredients: Any compounds that contain nitrogen functional groups, particularly amines, oxidizing substances, inorganic oxides (eg TiO_2, ZnO, iron oxides, $Al_2O_{3)}$, hydroxyl-acids and phosphates.
7. Emulsifiers should be preferably non-ionic.
8. Use thickeners that do not have to be neutralized, like xanthan gum and cellulose derivatives.
9. Select raw materials that are stable at low pH values and show good performance at these pH values (e.g. preservatives, UV Filters).
10. Overall, ERYTHRULOSE is fairly easy to formulate with and shows good compatibility with many commonly used raw materials, e.g glycerine, propylene glycol and cosmetic oils.

Compatibilities

- Optimal pH for the stability of ERYTHRULOSE in cosmetic formulation is 3-4, optimal tanning pH is 5-6. The skin is able to adjust to the optimal tanning pH.

- Due to this low pH required in formulations, thickeners and other ingredients need to be stable and effective in this pH range.

- Nevertheless, the compatibility always depends on the complete final formulation. So the formulator has to monitor potential incompatibilities during the time of storage with each formulation.

VARIOUS

Storage

ERYTHRULOSE may be stored for at least 36 months from the date of manufacture in the unopened original container protected from light and humidity and at a temperature between 2 and 8°C. The 'Best use before' date is printed on the label. Keep package tightly closed. Once opened, use contents quickly. In order to avoid secondary microbial contamination, following opening, containers should be handled with special care.

Use Level

Recommended use level for skin care is 1 to 5 % ERYTHRULOSE.

Patent Information

DSM Nutritional Products Ltd. holds the patent rights for the production and topical application of ERYTHRULOSE in combination with DHA.

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