

*Erytan™*

# ERYTHRULOSE

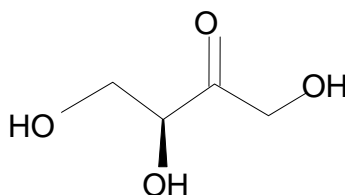
*For a homogenous, long-lasting, superb tan*



## INTRODUCTION

Dihydroxyacetone (DHA) has been used in cosmetic self tanning products for many years, but it does have many disadvantages which have been troubling the people. Therefore, there is an eager desire to find a more safe and effective self-tanning agent to supersede DHA.

Erythrulose has been developed to reduce or even eliminate the disadvantages of DHA, namely an irregular and streaky tan as well as an intense drying effect. It presents a new solution for the increasing demand of self-tanning. It is a natural keto-sugar occurring in Red Raspberries, and may be produced by fermentation of the bacterium *Gluconobacter* followed by multiple purification steps.



Structure of Erythrulose

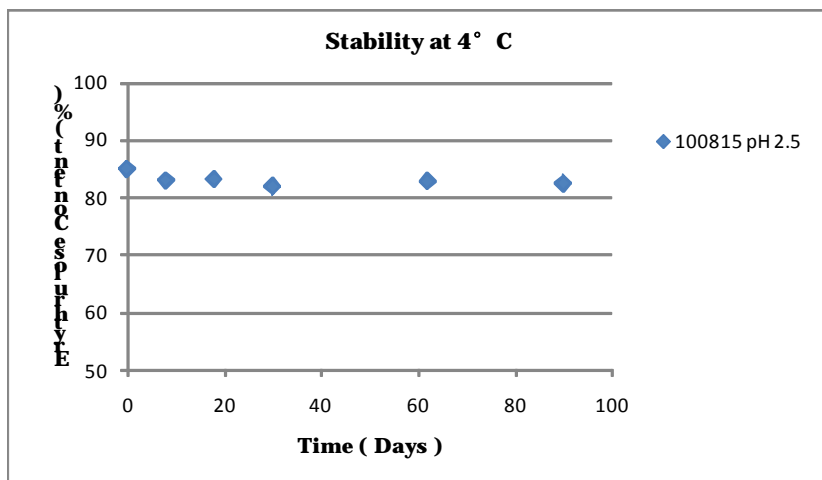
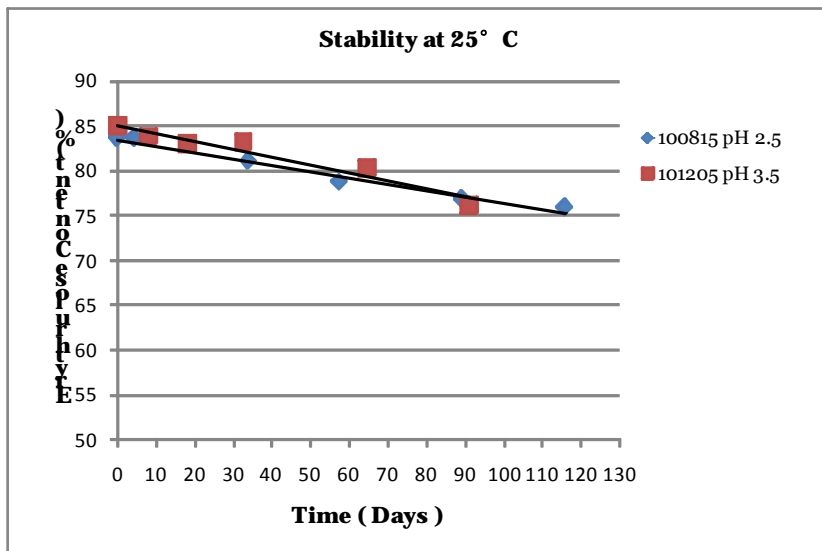
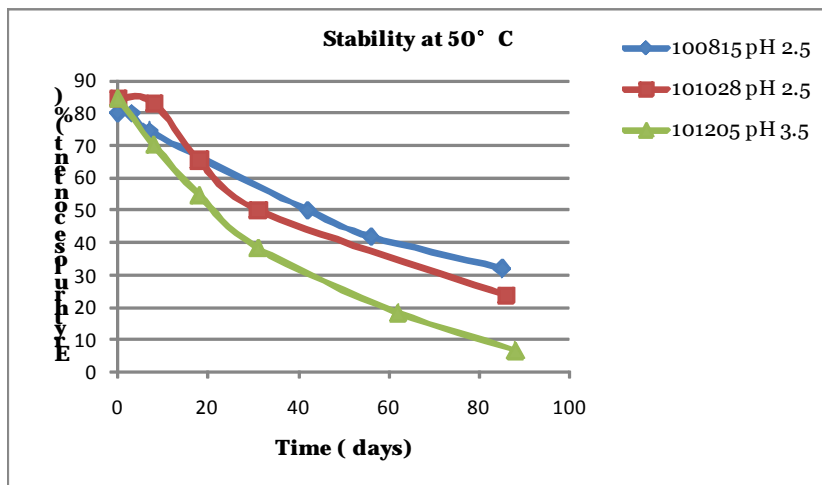
## GENERAL INFORMATION

<b>INCI Name (CTFA)</b>	:	Erythrulose
<b>Trade Name</b>	:	Erytan
<b>Synonyms</b>	:	L-erythrulose (3S)-1,3,4-trihydroxybutan-2-one
<b>CAS No.</b>	:	533-50-6
<b>ELINCS No.</b>	:	443-800-9
<b>Molecular Formula</b>	:	C <sub>4</sub> H <sub>8</sub> O <sub>4</sub>
<b>Molecular Weight</b>	:	120.10
<b>EU-Labeling Name</b>	:	Not listed
<b>NICNAS</b>	:	Listed

**SPECIFICATION**

<b>Controls</b>	<b>Unit</b>	<b>Low Limit</b>	<b>Upper Limit</b>	<b>Method</b>
Appearance		Light yellow to orange-brown coloured, highly viscous liquid		visuell
Odour		Characteristic		visuell
Water content	%		20	Karl Fischer, titration
pH (in 50 % water)		2.0	3.5	Potentiometrical
Erythrulose content (m/m)	%	76	90	HPLC
Total nitrogen	%		0.1	Kjeldahl
Sulfated ash	%		1.5	Ph. Eur. 2.4.14
Preservatives		None		
Total plate count	CFU/g		100	Ph. Eur. 2.6.12
Specified pathogens		Negative		Ph. Eur. 2.6.13
<b><u>PACKAGE &amp; STORAGE</u></b>		<ol style="list-style-type: none"> <li>1. 1kg, 5kgs, 25kgs in well closed containers</li> <li>2. Store between 1 and 10°C, never expose to above 45°C</li> <li>3. Avoid secondary microbial contamination on opening drum.</li> <li>4. Shelf life: 3 years under the recommended conditions.</li> </ol>		

**STABILITY at different storage conditions (pH and T)**



## COMPATIBILITY & FORMULATION SUGGESTIONS

- Avoid amines and elevated temperatures
- Ensure pH range at 2.0-5.0
- Prevent from contact with  $\alpha$ -Hydroxy acids, oxides like iron or zinc oxide or titanium dioxide
- Beware of high amounts of gel formers (e.g. Carbomers, Xanthan gum) or high amounts of ethanol
- Keep buffers at a minimum

## SYNERGY EFFECTS

The following ingredients have been found to produce synergistic effect in combination with erythrose to get amazing colored skin.

<b>Penetration Enhancer</b>	:	Ethoxydiglycol Dimethyl isosorbide alpha bisobola
<b>Phospholipids</b>	:	Probiol L 05018 / Kuhs GmbH & Co. KG
<b>Tanning Accerator</b>	:	Troxeutin, Rutin, Rutin sulfate Walnut extract Lawsonia inermis Eclipta alba Hassk extract ( Mahakanni) Acetyl tyrosine
<b>Antioxidants</b>	:	Sodium metabisulfite Phyllanthus emblicaa fruit extract Pomegranate extract Ellagic acid Caffeic acid phenethyl ester ( CAPE )
<b>Cell Protection Factors</b>	:	Ectoine

## PROCESSING AND DOSAGE

Avoid prolonged contact with hot formulations, and never exceed a temperature of 40°C. Erythrose is readily soluble in water. It can be incorporated into cold formulation, even into cold W/O emulsions. Erythrose is stable at a pH range of 2.0-5.0, slightly acidic pH of ca.4 ensure stability of erythrose and facilitate preservativation. In formulations, erythrose is compatible at concentrations of up to 20%, generally around 1 to 5%. Ca.1-3% in formulations for persons with light skin  
Ca.4-5% for persons with dark skin

## COSMETIC APPLICATIONS

- Self tanning products
- sun care products
- body lotions
- skin care lines for healthy looking skin

## ADVANTAGES OF ERYTHRULOSE as compared with Dihydroxyacetone

	<b>Erythrulose (Worry-free)</b>	<b>Dihydroxyacetone (Great Hassel)</b>
<b>Tanning results</b>		
<i>Nature</i>	Natural	Unnatural
<i>Uniformity</i>	Homogenous and soothing, stain-free	Irregular and mottled, undesired streaks
<i>Skin color</i>	Brown/bronze	Very orange
<i>Flaking</i>	Normal	Uneven peeling
<i>Sustainable time of tan</i>	Long-lasting	Temporary, the fading is more uneven and blotchy because of irregular peeling
<b>Body odor after USE</b>	No special odor	Nasty smell
<b>Stability</b>	Better than DHA	Very poor
<b>Shelf life of formulated product</b>	Longer than DHA-based product	Very short
<b>Compatibility</b>	Compatible with MOST cosmetic ingredients	Require special attention on selecting ingredients
<b>Formaldehyde risk</b>	No	Liberate fission products as well as formic acid, formaldehyde
<b>Safety on skin</b>	Safe	Irritation, contact dermatitis, skin itching, eczema, etc.
<b>Skin drying</b>	Rehydrate skin	Intense drying effect
<b>Risk of Microbial Contamination in formulations</b>	No special requirement	Require special attention on microbial attack