

# GUIDE TO THE USE OF HYDROXY ACIDS IN COSMETIC PRODUCTS

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**Hydroxy acids (HA)** are a class of highly effective ingredients widely used in skincare and haircare products. They can be found in exfoliating lotions, products for acne-prone skin and anti-ageing products.

The most frequently used classes are  $\alpha$ -hydroxy acids,  $\beta$ -hydroxy acids and the more recent polyhydroxy acids, better known as **AHA, BHA and PHA**.

Formulators wishing to incorporate them into new formulations must be well acquainted with their characteristics in order to make the most of their cosmetic properties and use them **safely**.



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# HYDROXY ACIDS

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## AHAs

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AHAs are carboxylic acids with a carbon-bonded hydroxyl group, soluble in water.

This class includes:

- Glycolic acid, the first to be introduced in skincare products
- Lactic acid, with optimal biological activity in its L form
- Citric acid, which also has a hydroxyl group in the beta position
- Malic acid

Their main cosmetic actions are:

- Exfoliating, smoothing
- Moisturising
- Anti-ageing, anti-wrinkle
- Depigmenting

The Cosmetic Ingredient Review suggests that total concentration should not exceed 10% and a pH of >3.5 should be maintained in leave-on products for at-home use, to avoid the risk of skin irritation.

At concentrations above 20% and lower pH, they are used as chemical peeling agents in professional treatments performed by trained personnel (beauticians and dermatologists).

## BHAs

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BHAs are carboxylic acids with a carbon-bonded hydroxyl group b.

They are lipophilic compounds, more suitable for **oily and impure skin**.

This class includes:

- $\beta$ -hydroxybutyric acid
- salicylic acid

The main cosmetic properties of salicylic acid are:

- Promotes cell renewal
- Smoothing
- Regulates sebum production, minimises pores, reduces blackheads
- Antibacterial
- Anti-inflammatory
- Depigmenting



# HYDROXY ACIDS

## PHAs

PHAs are carboxylic acids with two or more hydroxyl groups.

They perform a similar function to AHAs and BHAs, but are less aggressive, probably due to slower and shallower absorption. This is why they are also considered suitable for **more sensitive** and dry **skin**, even in the presence of rosacea and atopic dermatitis.

This class includes:

- Lactobionic acid
- Gluconolactone

Main properties:

- Exfoliant
- Moisturising: they are hygroscopic molecules
- Chelating and antioxidant, neutralising iron as a source of oxidative stress
- Anti-ageing, hindering collagen degradation



## OTHER ACIDS OF INTEREST

Tranexamic acid, as effective as hydroquinone for lightening skin spots and hyperpigmentation, but better tolerated. Particularly interesting in products for skin subject to photo-ageing.

Azelaic acid, interesting for its antibacterial action in addition to its keratolytic, anti-inflammatory and antioxidant action. Very useful in products for seborrheic and dull skin.

## CREATING FORMULAS WITH HAs

6 Steps to Correct Formulation with HAs:

- 1) Select the type and concentration of HA according to the application and product claims
- 2) Check with the regulatory office compliance with the regulations
- 3) Select cosmetic type and excipients
- 4) Adjust product pH
- 5) Verify the stability
- 6) Test product safety

# HYDROXY ACIDS IN COSMETIC PRODUCTS

ARTICLE NUMBER	INCI	DOSAGE	FORMULATION GUIDANCE	SKIN TYPES
MP 020313	CITRIC ACID MONOHYDRATE BP	0.1-10%	Water soluble	Normal
MP 000048	GLYCOLIC ACID 70%	<ul style="list-style-type: none"> <li>Daily use: 0.5-10%</li> <li>Intensive care: 0.5-30%</li> </ul>	Water soluble Optimum pH: 3.8-4.2	Normal, dull
MP 021584	LACTIC ACID (L+) MIN. 90% HS	3-10%	Water soluble Daily creams with pH>3.5	Normal, dry
MP 031492	MALIC ACID	0.1-2%	Water soluble Can be heated to 80°C	Normal
MP 028788	SALICYLIC ACID	<ul style="list-style-type: none"> <li>Daily use: 0.5-2%</li> <li>Medical applications: 15-40%</li> </ul>	Soluble in octyldodecanol up to 15-20%, in Ethanol up to 14 %	Normal, oily, acneic
MP 033456	GLUCONO-DELTA-LACTONE	0.5-5%	Freely soluble in water. GdL rapidly dissolves in water, and subsequently slowly hydrolyses to gluconic acid	Sensitive, aged
MP 028094	LACTOBIONIC ACID	<ul style="list-style-type: none"> <li>Daily use: 0.5-2%</li> <li>Intensive care: 2-25%</li> </ul>	It can be added to the water phase or as aqueous solution during the cooling process at t<40°C	Sensitive, dry, aged
MP -	AZELAIC ACID	1-10%	Oil soluble	Greasy, seborrheic
MP 029584	TRANEXAMIC ACID	0.5-3%	Predissolve in water, then add below 50°C and stir	Sensitive photoaged

The table contains key information for formulating the best cocktail of HAs for your application.  
Get in touch with your sales contact at ECSA to request offers, documentation and samples.

ECSA Chemicals offers a wide range of products.

Our experts are always at your disposal to help with formulations.

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