



LEBENSMITTELCHEMISCHE GESELLSCHAFT

- Fachgruppe in der GESELLSCHAFT DEUTSCHER CHEMIKER -
Arbeitsgruppe Kosmetische Mittel

Data sheets for the evaluation of the effectiveness of active ingredients in cosmetic products

Panthenol

Substances used

In cosmetic formulations, panthenol (synonyms: dexpanthenol, provitamin B5) is mainly used. Occasionally, one may also find derivatives and related substances (pantothenic acid, panthenyl ethyl ether, panthenyl ethyl ether acetate, panthenyl triacetate). There is a limited amount of data available regarding the latter substances.

When using panthenol as a provitamin, it must be considered that only D-panthenol will be transformed into D-pantothenic acid (vitamin B5), but not L-panthenol. Therefore, a racemic mixture of D- and L-forms (DL-panthenol) will only provide half the physiological activity compared to pure D-panthenol. For all non-physiological effects (ex. improvement of moisture retention, improvement of hair or nail structure), D- and DL-panthenol are equivalent [5]. In the cited literature [1] to [4], the effect of D-panthenol is described in each case.

1. Described efficacy of panthenol

Efficacy	Concentration	Literature
Skin care	0,6 % to 5 %	[1, 2, 3b, 4]
- Improves and increases skin hydration (moisturizer) - Anti-inflammatory, anti-itching - Wound-healing, stimulation of epithelialization		[1]

Efficacy	Concentration	Literature
Hair care (partly cumulative effects)	Up to 5 %	[1, 2, 3b, 3c, 4]
<ul style="list-style-type: none"> - Improves moisture, gives shine, suppleness, and fullness of hair - Improves condition of damaged hair - Improves combability, anti-spliss effect, and thickening of hair - Penetrates via hair root into hair shaft, where it is transformed into panthotenic acid, which is efficient as a vitamin (provitamin function) 	0,1 % to 0,5 % up to 5 % 0,3% D-panthenol	[2]
Nail care	1 %	[1, 2]
<ul style="list-style-type: none"> - Improved moisture retention, improved flexibility and stability of nails - Synergetic effect with 0,5% sodium lauryl sulfate or Triton X 		

Recommended concentrations¹ for panthenol in % [5, 3c]

Skin care (D-panthenol)		
	Face cream	0,5 to 5
	Body lotion	0,5 to 2
	Hand creme	0,5 to 3
	Lipstick	1,5
	After shave lotion	0,5 to 5
	Antitranspirant	0,5 to 1
	Lipstick with sunscreen	1 to 5
	Sunscreen	1 to 5
	After sun lotion	1 to 5
Hair care (D-panthenol or DL-panthenol)		
	Shampoo	0,1 bis 5
	Hair mask	0,2 bis 0,5
	Conditioner (rinse off)	0,5 bis 5
	Conditioner (leave on)	0,1 bis 0,5
	Hair setting	0,1 bis 0,5
Nail care (D-panthenol oder DL-panthenol)		1,0

¹The product group "foam bath and cream bath" listed in the previous version has been deleted, since in the opinion of the working group, a sufficient concentration with any cosmetic effect of panthenol can no longer be expected in these preparations, due to the strong dilution.

In addition to the mandatory requirements of the applicable legal standards, the general notes and recommendations of this data sheet series must be taken into account.

Literature

- [1] Wagner, E.: Panthenol und Phytantriol in der Kosmetik, Parfüm. Kosm. **75**, p. 260-267 (1994)
- [2] Erlemann, G., Merkle, R.: Panthenol, Phytantriol, Vitamin E und Vitamin A in der Kosmetik, SÖFW **117**, p. 379 (1991)
- [3a] Eggensperger, H.: Multiaktive Wirkstoffe für Kosmetika, SÖFW **120**, 178-183 (1994)
- [3b] Eggensperger, H.: Multiaktive Wirkstoffe für Kosmetika, SÖFW **120**, 534-538 (1994)
- [3c] Eggensperger, H.: Multiaktive Wirkstoffe für Kosmetika, SÖFW **120**, 1013-1015 (1994)
- [4] Eggensperger, H.: Multiaktive Wirkstoffe in der Kosmetik, Verlag für chem. Industrie H. Ziolkowsky KG, Augsburg 1995, p. 60ff
- [5] BASF AG: Panthenol – Technical Information (September 2007)

Note

This version replaces the previous data sheet, which had been published in Parfümerie und Kosmetik 80, 3/1999, 42.

All data sheets in their respective actual version are available here:

<http://www.gdch.de/strukturen/fq/lm/ag/kosmetik.htm>