



# LEBENSMITTELCHEMISCHE GESELLSCHAFT

- Fachgruppe in der GESELLSCHAFT DEUTSCHER CHEMIKER -  
Arbeitsgruppe Kosmetische Mittel

## Data sheets to evaluate the efficacy 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.

#### Described efficacy of panthenol

Efficacy	Concentration	Literature
Skin care	0,6 % to 5 %	[1, 2, 3b, 4]
<ul style="list-style-type: none"><li>- Improves and increases skin hydration (moisturizer)</li><li>- Anti-inflammatory, anti-itching</li><li>- Wound-healing, stimulation of epithelialization</li></ul>		[1]

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

### Recommended concentrations<sup>1</sup> 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

<sup>1</sup> The 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.

## Note

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/fg/lm/ag/kosmetik.htm>

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