Certificate of Analysis

Caffeine Standards Kit

Part No 8500-6917 **Lot No HC015694**

Concentrations:

Caffeine in water:

Nominal value	Effective value determined by UV-spectroscopy using the absorption maximum at 273 nm
50 µg/ml	50.1 µg/ml ± 2 %
25 µg/ml	24.8 µg/ml ± 2 %
5 µg/ml	4.93 µg/ml ± 2 %
1 µg/ml	1.00 µg/ml ± 3 %
0.5 µg/ml	0.51 µg/ml ± 5 %

Purity grades:

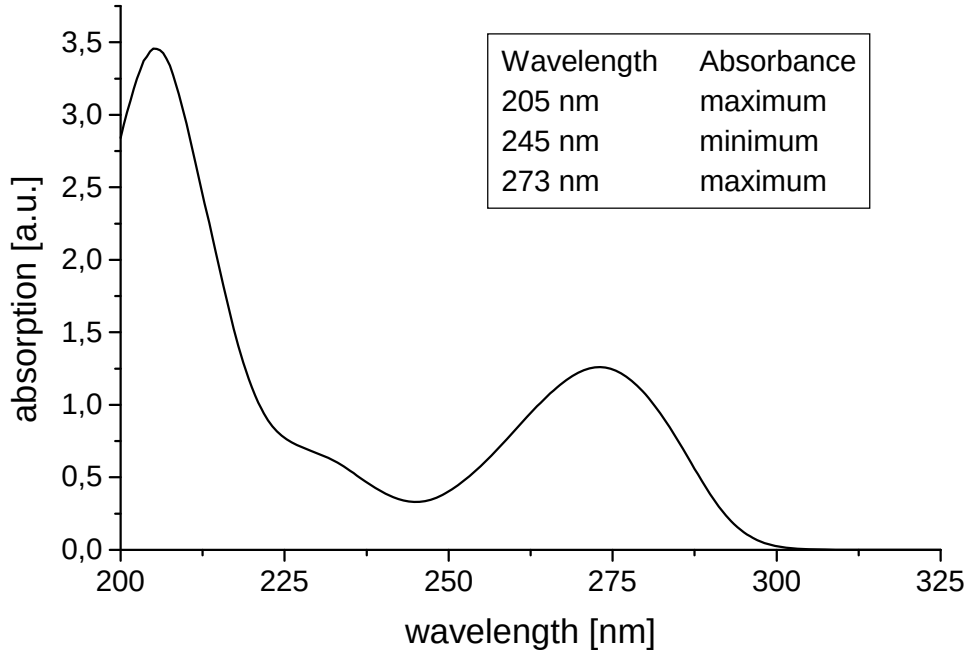
Caffeine:	extra pure, acc. to Ph. Eur.	
	Concentration (acid. titration):	98.5 – 101.5 %
	Heavy metals (as Pb):	< 0.001%
	Loss on drying (105°C):	< 0.5%
Water:	18.2 MΩ x cm	

The standards in this kit have been produced gravimetrically under controlled environmental conditions. Balances used are calibrated regulary against PTB (Physikalisch Technische Bundesanstalt [Federal Physical-Technical Institute] – Braunschweig – Germany) traceable weight sets. The manufacturing, testing and distribution of these standards meet the requirements of the quality management norm DIN EN ISO 9001:2008.

The standards have been analysed on a high-performance UV/VIS/NIR spectrophotometer. The spectrophotometer is regularly validated for accuracy and reproducibility of absorbance and wavelength as well as for linearity, baseline drift, stray light and spectral resolution power using the following testing materials:

Absorbance:	NIST SRM 1930 and double aperture method
Wavelength:	Intrinsic values of a holmium oxide solution Merck reference material Cat. No. 108166 [1], emission lines of D_2 and Hg lamps
Stray light:	Merck Cat. No. 108164 (KCl standard, 200 nm), Merck Cat. No. 108163 (NaI standard, 220 nm), Merck Cat. No. 108161 ($NaNO_2$ standard, 370 nm)
Spectral resolution power:	Half width value of D_2 emission lines for checking the effective optical bandwidth

UV/VIS Spectrum Caffeine in water (concentration 25 µg/ml, path length 1 cm)



[1] J. C. Travis et al., J. Phys. Chem. Ref. Data (2005), 34(1), 41-56.

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