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## Certificate of Analysis

### Caffeine Standards Kit

Agilent Part Number: G4218-85000

Sample Lot Number: HC17483862

#### Concentrations:

##### Caffeine in water

Nominal value	Effective value determined by UV-spectroscopy using the absorption maximum at 273 nm
250 µg/ml	247.7 µg/ml ± 1.5 %

#### 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%

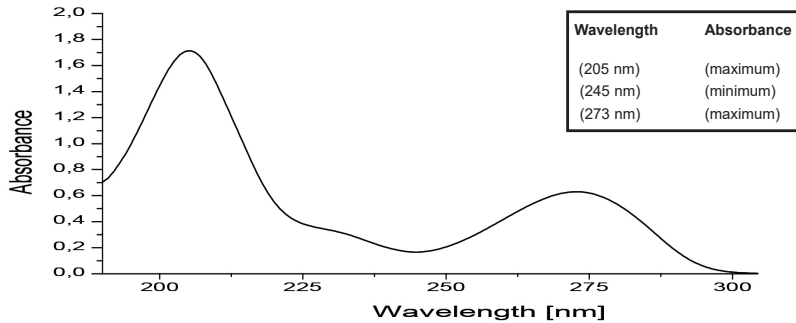
Water: 18.2 MΩ x cm

The standards in this kit have been produced gravimetrically under controlled environmental conditions. Balances used are calibrated regularly against PTB (Federal Physical-Technical Institute, Germany) traceable weight sets. The manufacturing, testing and distribution of these standards meet the requirements of the quality management norm DIN EN ISO 9001:2015.

The standards have been analysed on a high-performance UV/VIS 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 reference material Cat. No. 108166\* [1], emission lines of D<sub>2</sub> and Hg lamps  
Stray light: Cat. No. 108164\* (KCl standard, 200 nm), Cat. No. 108163\* (NaI standard, 220 nm), Cat. No. 108161\* (NaNO<sub>2</sub> standard, 370 nm)  
Spectral resolution power: Half width value of D<sub>2</sub> emission lines for checking the effective optical bandwidth

## UV/VIS Spectrum Caffeine in water [concentration: 250 µg/ml]



\* Products used from Merck KGaA, Darmstadt, Germany

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

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