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Certificate of Quality

Combitips® advanced/ViscoTip®: Typical values for trace metals

The values in the table indicate typical values of trace metal concentrations which are obtained after incubating Combitips advanced/ViscoTip with concentrated nitric acid for 1 hour (see: Materials and Methods, page 2).

As the indicated values were determined in a one-time measurement, they cannot be guaranteed for every lot of Combitips advanced/ViscoTip. Rather, they provide an indication of the extent trace elements can be eluted from Combitips advanced/ViscoTip.

	Trace metal release [ng/μL]								
	Al	Cd	Cr	Cu	Hg	Mn	Ni	Pb	Zn
Combitips® advanced									
0.1 mL	0.005366	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
0.2 mL	0.003799	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
0.5 mL	0.002405	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
1.0 mL	0.001700	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
2.5 mL	0.001076	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
5.0 mL	<0.001	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
10 mL	<0.001	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
25 mL	< 0.001	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
50 mL	<0.001	< 0.00002	0.0001	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001
ViscoTip®									
10 mL	< 0.001	< 0.00002	< 0.00005	< 0.0001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.001

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Materials and Methods

The Combitips advanced/ViscoTip (0.1 mL – 50 mL) were filled to their nominal volume with conc. nitric acid (65 %) and incubated for 1 hour at room temperature (20 °C). The eluate was then analyzed by inductively coupled plasma mass spectrometry (ICP-MS). The trace metal concentrations are stated in ng/μL.

The values represent an average of three individually analysed samples. The trace metal release of the Combitips advanced/ViscoTip were calculated from their surface/volume ratio. All values labelled with "<" indicate concentrations below the detection limit of the ICP-MS method.

No trace metal release was observed after 5-10 times rinsing with conc. nitric acid or after rinsing with 10 % acetic acid or water. All analyses were performed by GALAB Laboratories, Geesthacht, Germany accredited according to ISO/IEC 17025:2018-03.

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