

# Eppendorf Certificate

## Certificate of Quality

### Combitips advanced®: Typical values for trace metal(s)

The values in the table indicate typical values of trace metal concentrations which are obtained after incubating Combitips advanced with conc. nitric acid for 60 minutes (see: Materials and Methods).

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

Trace Metal Release [ng/μL]									
CBT advanced	Al	Cd	Cr	Cu	Hg	Mn	Ni	Pb	Zn
0,1 ml	0,005366	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
0,2 ml	0,003799	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
0,5 ml	0,002405	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
1,0 ml	0,001700	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
2,5 ml	0,001076	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
5,0 ml	0,000761	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
10 ml	0,000538	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
25 ml	0,000340	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
50 ml	0,000241	<0,00002	<0,00005	<0,00010	<0,001	<0,00005	<0,00005	<0,00005	<0,0010
Detection Limit [ng/μL]									
	Al	Cd	Cr	Cu	Hg	Mn	Ni	Pb	Zn
	0,001	0,00002	0,00005	0,0001	0,001	0,00005	0,00005	0,00005	0,001

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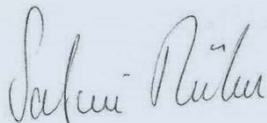
## Material and Methods

The Combitips advanced (0.1 mL – 50 mL) were filled with their nominal volume with conc. nitric acid (65 %) and incubated for 60 minutes at room temperature (20°C). The nitric acid was then analyzed by inductively coupled plasma - mass spectrometry (ICP-MS). The trace metal concentrations are expressed in ng/μL.

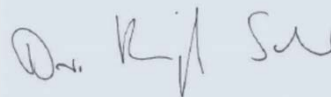
The values are the average of three samples individually analyzed. The trace metal release of the Combitips advanced were calculated from their surface/volume ratio. All values labelled with "<" indicate concentrations below the detection limit of the ICP-MS method.

No 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 to DIN ISO/EC 17025).

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