

# Eppendorf Certificate

## Certificate of Quality

### epT.I.P.S.® - Typical values for trace metal

The values in the table indicate typical values of trace metal concentrations which are obtained after incubating epT.I.P.S.® pipette tips with conc. nitric acid for 1 hour. (see: Materials and methods).

As the indicated values were determined in a one-time measurement, they cannot be guaranteed for every lot of epT.I.P.S.® pipette tips. Rather, they give the customer an idea to what extent trace elements can be eluted from epT.I.P.S.® pipette tips.

epTIPS	Trace metal release [ng/μl]								
	Al	Cd	Cr	Cu	Hg	Mn	Ni	Pb	Zn
0,1-10	0,006 ± 0,002	<0,00002	0,0003 ± 0,0001	0,0003 ± 0,0001	<0,001	<0,00005	0,0006 ± 0,0001	<0,00005	0,001 ± 0,001
0,1-20	0,005	<0,00002	<0,0003	<0,00027	<0,001	<0,00005	<0,0005	<0,00005	<0,001
0,5-20	0,005	<0,00002	<0,00025	<0,00025	<0,001	<0,00005	<0,0005	<0,00005	<0,001
2-200	0,002	<0,00002	<0,0001	<0,0001	<0,001	<0,00005	<0,0002	<0,00005	<0,001
20-300	0,002	<0,00002	<0,0001	<0,0001	<0,001	<0,00005	<0,00017	<0,00005	<0,001
50-1000	0,002 ± 0,001	<0,00002	<0,00005	<0,0001	<0,001	<0,00005	<0,00005	<0,00005	<0,001
1250	0,002	<0,00002	<0,00005	<0,0001	<0,001	<0,00005	<0,00005	<0,00005	<0,001
2,5 ml	0,0015	<0,00002	<0,00005	<0,0001	<0,001	<0,00005	<0,00005	<0,00005	<0,001
5 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
10 ml long	0,001	<0,00002	<0,00005	<0,0001	<0,001	<0,00005	<0,00005	<0,00005	<0,001

#### Materials and methods:

The epT.I.P.S.® 0,1 – 10 μL and 50 – 1.000 μL pipette tips were filled with their nominal volume with conc. Nitric acid (65 %) and incubated for 1 hour 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.

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The values are the average of three samples individually analyzed. The trace metal release of the epT.I.P.S.® pipette tips were calculated from their surface/volume ratio. All values labeled with „ < „ indicate concentrations below the detection limit of the ICP-MS method.

No metal release was observed after 5-10 rinsings 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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