Certified Reference Materials

REFERENCEMATERIALER

Produced and certified under DANAK accreditation no. 535 according to ISO 17034

Certified reference materials provide more reliable and traceable documentation.

VKI Certified Reference Materials consist of a broad range of certified reference materials that are used to improve and document the analytical quality of environmental laboratories.



Wastewater

- General water quality parameters
- Nutrients
- Trace elements/metals



Surface water, fresh water and marine water

- Nutrients
- Trace elements/metals
- Nutrients in natural marine water



Drinking water and groundwater

- Major components drinking water
- TOC in natural water
- Trace elements/metals
- Bromide and Iodide



Sludge and Soil

- Trace elements/metals
- Organic contaminants



Wastewater

General water quality parameters and nutrients

(1 L prepared reference material per ampoule)

VKI Reference Material	Unit	NO_3-N	NH_4-N	PO_4-P	TN	TP	COD_{Cr}	BOD	TOC (NVOC)	SS
CONCENTRATION LEVELS										
QC WW1B	mg/L	5	1	0,5						
QC WW2.1	mg/L		10	5						
QC WW2.2	mg/L	1								
QC WW3	mg/L				8	1,2				
QC WW4	mg/L						510		200	
QC WW4A	mg/L						50		20	
QC WW5	mg/L							210		
QC WW6*	mg/L									240

*83 ml prepared reference material per bottle.

Trace elements/Metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	V	ZN	Prepared reference material per ampoule
CONCENTRATION LEVELS																						
QC LL1	µg/L		200	30				20	20				20	20				20		20	50	1 L
QC LL2	µg/L	5			100	2	50			200		50			20	50	100		50			1 L
QC LL3	µg/L										7											1 L
QC LL3A	µg/L										0,4											1 L
QC HL1	mg/L		2							3		2	10		10			10			0,5	0,25 L
QC HL2	mg/L	2			2	1	0,5	4	4					2					5			0,25 L



Surface water, fresh water and marine water

Nutrients
(1 L prepared reference material per ampoule)

VKI Reference Material	Unit	NO_3-N	NH_4-N	PO_4-P	TN	TP
CONCENTRATION LEVELS						
QC RW1	µg/l	100	100	100		
QC RW2	µg/l				260	200

Trace elements/Metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	V	ZN	Prepared reference material per ampoule
CONCENTRATION LEVELS																						
QC LL1	µg/L		200	30				20	20				20	20				20		20	50	1 L
QC LL2	µg/L	5			100	2	50			200		50			20	50	100		50			1 L
QC LL3	µg/L										7											1 L
QC LL3A	µg/L										0,4											1 L

Nutrients in natural marine water (100 mL)

VKI Reference Material	Unit	Salinity (appx value)	NH_4	NO_2	NO_{2+3}	TN	PO_4	TP	SiO_4
CONCENTRATION LEVELS									
QC SW3.1B	µM	11	2	1	10	15			
QC SW3.2B	µM	11					2	2*	15
QC SW4.1B	µM	35	2	1	15	20			
QC SW4.2B	µM	35					1	1*	4

*Non-certified value.



Major components (1 L prepared reference material)

VKI Reference Material	Na	K	Ca	Mg	Cl	F	SO_4	H_{CO3}	K_{25}	pH	TS
CONCENTRATION LEVELS											
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mS/m	-	mg/L
QC DWB	50	5	25	5	60	1	60	65	45	9	250

TOC in drinking water (10 mL)

VKI Reference Material	TOC
CONCENTRATION LEVELS	
Unit	mg/L
QC DW4	3

Trace elements/Metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	V	ZN	Prepared reference material per ampoule
CONCENTRATION LEVELS																						
QC LL1	µg/L		200	30				20	20				20	20				20		20	50	1 L
QC LL2	µg/L	5			100	2	50			200		50			20	50	100		50			1 L
QC LL3	µg/L										7											1 L
QC LL3A	µg/L										0,4											1 L



Sludge and soil

Trace elements/Metals

VKI Reference Material	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn	K	Loss on ignition
CONCENTRATION LEVELS										
Unit	mg/kg DM								g/kg DM	
QC LOAM SOIL B	3	0,3	45	20	0,1	15	120	75	1	25

VKI Reference Material	Ag	As	Cd	Co	Cr	Cu	Hg	Mn	Mo	Ni	Pb	U	Sb	Tl	V	Zn	Al	Ca	Fe	K	Mg	Total N	Total P	Lol**
CONCENTRATION LEVELS																								
Unit	mg/kg DM																g/kg DM							
QC Sludge B - Aqua regia digestion	1	4	1	3	35	140	0,7	360	4	20	30	1	2*	0,2*	15	530	5	110	20	7	5	50	25	600
QC Sludge B - Nitric acid digestion	1	4	1	3	35	140	0,7	360	4	15	30	1	2*	0,2*	15	530	5	110	20	7	5	50	25	600

*Non-certified value. **Loss on ignition.

Organic micropollutants

VKI REFERENCE MATERIAL QC ORGANIC COMPONENTS IN MUNICIPAL SLUDGE																									
Individual components																						Sum parameters			
Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(ghi)perylene	Benzo(b+j+k)flouranthenes	Chrysene	Dibenz(a,h)anthracene	Flouranthene	Flourene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Di(2-ethylhexyl)phthalat (DEHP)	Nonylphenol	Nonylphenolmonoethoxylat	Nonylphenoldiethoxylat	C_{10}-LAS	C_{11}-LAS	C_{12}-LAS	C_{13}-LAS	LAS	∑PAH	NPE	DEHP
CONCENTRATION LEVELS (mg/kg)																									
0,1*	0,05*	0,5*	0,5*	0,5*	0,2*	0,8	0,5*	<0,1*	1	0,3	0,3*	1	1	25	80	5*	2*	70	500*	850	700	2100	5	90	25

*Non-certified value.

Eurofins Miljø A/S
Mail: refmat@eurofins.dk
www.eurofins.dk/refmat

Updated in june 2020