

LKSD-1 to LKSD-4

Lake Sediment Samples

LKSD-1 to LKSD-4 were chosen to represent typical lake sediments from various locations within the Canadian Shield. Efforts were made to incorporate a range of concentrations for a substantial number of elements. Collection was carried out by the Geological Survey of Canada using various dredges and sampling devices both in winter and summer and normally from the centre lake bottom. The samples were prepared, blended and bottled at CANMET. Information on each sample follows. The National Topographic System (NTS) for identifying maps in Canada is used.

LKSD-1: This sample is a mixture of lots from Joe Lake (31F) and Brady Lake (31M) in Ontario.

LKSD-2: This sample is a mixture of a lot from Calabogie Lake (31F) in Ontario and a composite from 86K and 86L in the North West Territories. Composites were produced by mixing unused portions of regional survey samples collected in the corresponding NTS sheets.

LKSD-3: This sample is a mixture of a lot from Calabogie Lake (31F) in Ontario, a composite from 64L and 64M in Manitoba, and a composite from 31M, 31N, 32C, 32D, 41P, and 42A in Ontario.

LKSD-4: This sample is a composite from Big Gull Lake (31C) in Ontario and Key and Sea Horse Lakes (74H) in Saskatchewan.

Thirty-five laboratories provided analytical data and provisionally Certified Values are given for 65 elements. Besides "total" values, the samples were also characterized for values relating to specific types of partial extraction's wherein the sample is not totally dissolved, particularly the silicate components.

A publication giving complete details on these lake sediment reference materials will be forwarded with each order.

Provisional Values for Major and Minor Elements Expressed as Per Cent Oxides

Constituent	LKSD 1	LKSD 2	LKSD 3	LKSD 4
SiO ₂	40.1	58.9	58.5	41.6
Al ₂ O ₃	7.8	12.3	12.5	5.9
Fe ₂ O ₃	4.1	6.2	5.7	4.1
MgO	1.7	1.7	2.0	0.9

CaO	10.8	2.2	2.3	1.8
Na ₂ O	2.0	1.9	2.3	0.7
K ₂ O	1.1	2.6	2.2	0.8
MnO	0.1	0.3	0.2	0.1
TiO ₂	0.5	0.6	0.5	0.4
P ₂ O ₅	0.2	0.3	0.2	0.3
LOI (1000°C)	29.9	13.6	13.4	43.6
SO ₄ *	1.6	-	-	-
Sum	99.9	100.6	99.8	100.2

* One laboratory only

Lake Sediments LKSD-1 to LKSD-4
Provisional Values for "Total" Elements µg/g(except where noted)

Constituent	LKSD 1	LKSD 2	LKSD 3	LKSD 4
Ag	0.6	0.8	2.7	<0.5
As	40	11	27	16
Au (ng/g)	5	3	3	2
B	49	65	25	22
Ba	430	780	680	330
Be	1.1	2.5	1.9	1.0
Br	11	18	16	49
C (%)	12.3	4.5	4.5	17.7
Ce	27	108	90	48

Co	11	17	30	11
Cr	31	57	87	33
Cs	1.5	3.0	2.3	1.7
Cu	44	37	35	31
Dy	3.4	7.3	4.9	3.7
Eu	0.9	1.9	1.5	1.1
F	300	590	490	260
Fe (%)	2.8	4.3	4.0	2.8
H ₂ O (%)	2.92	2.23	2.07	6.55
Hf	3.6	7.0	4.8	2.8
La	16	68	52	26
Li	7	20	25	12
LOI (500°C) (%)	23.5	12.3	11.8	40.8
Lu	0.4	0.6	0.4	0.5
Mn	700	2020	1440	500
Mo	10	<5	<5	<5
Nb	7	8	8	9
Nd	16	58	44	25
Ni	16	26	47	31
Pb	82	44	29	91
Rb	24	85	78	28
S (%)	1.57	0.14	0.14	0.99
Sb	1.2	1.1	1.3	1.7
Sc	9	13	13	7

Sm	4	11	8	5
Sn	16	5	3	5
Sr	250	220	240	110
Ta	0.3	0.8	0.7	0.4
Tb	0.6	1.4	1.0	1.2
Th	2.2	13.4	11.4	5.1
Ti	3010	3460	3330	2270
U	9.7	7.6	4.6	31.0
V	50	77	82	49
W	< 4	< 4	< 4	< 4
Y	19	44	30	23
Yb	2.0	4.0	2.7	2.0
Zn	331	209	152	194
Zr	134	254	178	105

Provisional Values for Partial Extraction Elements
Concentrated HNO₃ - Concentrated HCl - µg/g(except where noted)

Constituent	LKSD 1	LKSD 2	LKSD 3	LKSD 4
Ag	0.60	0.82	0.40	0.2
As	30	9	23	12
Cd	1.2	0.8	0.6	1.9
Co	9	17	30	11
Cr	12	29	51	21
Cu	44	36	34	30
Fe (%)	1.8	3.5	3.5	2.7

Hg (ng/g)	110	160	290	190
Mn	460	1840	1220	430
Mo	12	2	2	2
Ni	11	23	44	32
Pb	84	40	26	93
Sb	1.2	1.2	1.4	1.5
V	27	48	55	32
Zn	337	200	139	189

Provisional Values for Partial Extraction Elements
Dilute HNO₃ - Dilute HCl - µg/g(except where noted)

Constituent	LKSD 1	LKSD 2	LKSD 3	LKSD 4
Ag	0.6	0.8	2.8	0.2
Cd	1.2	0.6	0.4	1.9
Co	8	16	30	9
Cu	44	36	34	31
Fe (%)	1.8	3.7	3.6	2.6
Mn	410	1840	1300	420
Ni	12	23	46	31
Pb	83	34	21	91
Zn	335	205	151	195

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