



United States Geological Survey Certificate of Analysis

Quartz Latite, QLO-1

Sample for this reference material was collected in Lake County, Oregon approximately 380 km south east of Portland. The sample is derived from a lava flow on the flanks of an extrusive dome which is probably of late Miocene or early Pliocene age. The rock is greasy black and aphanitic, containing <1% microphenocrysts of plagioclase feldspar, pyroxene, and magnetite.

Element concentrations were determined by cooperating laboratories using a variety of analytical methods. Certificate values are based primarily on international data compilations (Abbey, 1983, Gladney, 1983, Gladney and Roelandts, 1987, Govindaraju, 1994). USGS reports (Flanagan, 1976) provide background information on this material.

Recommended values

Oxide	Wt %	±	Oxide	Wt %	±
SiO ₂	65.6	0.47	CaO	3.17	0.08
Al ₂ O ₃	16.2	0.19	MgO	1.00	0.07
Fe ₂ O ₃	1.02	0.13	Na ₂ O	4.20	0.13
FeO	2.97	0.05	K ₂ O	3.60	0.12
Fe ₂ O ₃ T	4.35	0.14	P ₂ O ₅	0.25	0.02
			TiO ₂	0.62	0.03

Element	µg/g	±	Element	µg/g	±	Element	µg/g	±
Ag	0.064	0.005	F	280	20	Ta	0.82	0.1
B	36	3	La	27	2	Tb	0.71	0.07
Ba	1370	80	Li	25	2	Th	4.5	0.5
Ce	54	6	Lu	0.37	0.4	Tm	0.37	0.04
Cl	220	18	Mo	2.6	0.3	U	1.9	0.12
Co	7.2	0.5	Nb	10	1.3	V	54	6
Cr	3.2	1.7	Pb	20	0.8	W	0.58	0.05
Cs	1.8	0.2	Rb	74	3	Y	24	3
Cu	29	3	Sm	4.9	0.2	Yb	2.3	0.2
Dy	3.8	0.3	Sn	2.3	0.09	Zn	61	3
Er	2.3	0.1	Sr	340	12	Zr	185	16
Eu	1.43	0.12						

Information values

Element	µg/g	Element	µg/g
As	3.5	Nd	26
Br	2.1	S	30
Ge	1.3	Tm	0.4

Denver, Colorado
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Bibliography

- Abbey, S., 1983, Studies in "Standard Samples" of Silicate Rocks and Minerals 1969-1982, Canadian Geological Survey paper 83-15, p-114.
- Flanagan, F.J., 1976, Descriptions and Analyses of Eight New USGS Rock Standards, U.S. Geological Survey Professional Paper 840, p 192
- Gladney E.S., and Roelandts, I., 1988, 1987 Compilation of Elemental Concentration Data for USGS BHVO-1, MAG-1, QLO-1, RGM-1, SCo-1, SDC-1, SGR-1, and STM-1, Geostandards Newsletter, 12: 253-362.
- Govindaraju, K., 1994, 1994 Compilation of Working Values and Descriptions for 383 Geostandards, Geostandards Newsletter, 18:1-158

Glossary

$\text{Fe}_2\text{O}_3\text{T}$	Total iron expressed as Fe_2O_3
C_{tot}	Total concentration of carbon
S_{tot}	Total concentration of sulfur
Wt %	Percent of total element concentration
$\mu\text{g/g}$	Total element concentration expressed as micrograms of element per gram of solid sample
\pm	One standard deviation

Notes

Unless otherwise indicated total element concentrations are reported for material on an as-received basis, i.e., no drying.

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