



United States Geological Survey

Certificate of Analysis

Andesite, AGV-2

Material used in the preparation of AGV-2 was collected from the eastern side of Guano Valley, in Lake County, Oregon. This is the same location used to provide material for AGV-1. Information on the mineralogy and classification of AGV-2 is unavailable but it is assumed to be very similar to AGV-1 (Flanagan, 1967, 1969). Element concentrations for AGV-2 were obtained through a round-robin study involving 23 international laboratories.

Element concentrations are recommended, if results from three or more independent laboratories using three or more independent analytical procedures are in statistical agreement. Information values with standard deviations are reported when three or more independent laboratories using at least two independent analytical procedures have provided information. Information values without standard deviations represent information from a single laboratory or analytical procedure. All isotopic information is from a single laboratory.

Recommended values

Oxide	Wt %	±	Oxide	Wt %	±
Al	8.95	0.11	Al ₂ O ₃	16.91	0.21
Ca	3.72	0.09	CaO	5.20	0.13
Fe	4.68	0.09	Fe ₂ O ₃ T	6.69	0.13
K	2.39	0.09	K ₂ O	2.88	0.11
Mg	1.08	0.02	MgO	1.79	0.03
Na	3.11	0.09	Na ₂ O	4.19	0.13
P	0.21	0.01	P ₂ O ₅	0.48	0.02
Si	27.7	0.35	SiO ₂	59.3	0.7
Ti	0.63	0.13	TiO ₂	1.05	0.22
Element	µg/g	±	Element	µg/g	±
Ba	1140	32	Pb	13	1
Be	2.3	0.4	Pr	8.3	0.6
Ce	68	3	Rb	68.6	2.3
Co	16	1	Sc	13	1
Cr	17	2	Sr	658	17
Cu	53	4	Th	6.1	0.6
Dy	3.6	0.2	U	1.88	0.16
Ga	20	1	V	120	5
La	38	1	Y	20	1
Mn	770	20	Yb	1.6	0.2
Nb	15	1	Zn	86	8
Nd	30	2	Zr	230	4
Ni	19	3			

Information values

Element	µg/g	±	Element	µg/g	±
Cs	1.16	0.08	Lu	0.25	0.01
Er	1.79	0.11	Sb	0.6	
Eu	1.54	0.10	Sm	5.7	0.3
F	440		Sn	2.3	0.4
Gd	4.69	0.26	Ta	0.89	0.08
Hf	5.08	0.20	Tb	0.64	0.04
Ho	0.71	0.08	Tl	0.27	
Li	11		Tm	0.26	0.02

Element	Ratios	±	N
Pb ²⁰⁶ / ₂₀₄	18.864	0.007	1
Pb ²⁰⁷ / ₂₀₄	15.609	0.006	1
Pb ²⁰⁸ / ₂₀₄	38.511	0.020	1

Bibliography

Wilson, S.A., 1998, Data compilation and statistical analysis of intralaboratory results for AGV-2, U.S. Geological Survey Open-File Report (in progress).

Glossary

Wt %	Percent of total element concentration
µg/g	Total element concentration expressed as micrograms of element per gram of solid sample
±-	One standard deviation
N	Number of labs reporting

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Ordering Information

USGS reference materials (RMs) may be obtained directly from Dr. Stephen A. Wilson at the address or numbers listed below. The price for each bottle of RM is \$80.00 (U.S.) **except** DGPM-1 which is \$175.00 (U.S.). This cost includes all shipping and handling charges using normal mail delivery. Urgent requests for RMs should be initiated by FAX or e-mail. If required, overnight delivery is available with these charges added to the final bill.

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URL: http://minerals.cr.usgs.gov/geo_chem_stand/andesite2.pdf