



United States Geological Survey

Certificate of Analysis

Andesite, AGV-1

AGV-1 is an andesite, collected from the eastern side of Guano Valley in Lake county Oregon, by George W. Walker of the U.S. Geological Survey. AGV-1 is aphanitic, finely porphyritic, with a trachytic texture. According to the chemical classification of Rittman (Rittman, 1952) this rock is a trachyandesite.

Element concentrations were determined by cooperating laboratories using a variety of analytical methods. Certificate values are based primarily on international data compilations (Gladney, 1983, Gladney and Roelandts, 1987, Govindaraju, 1994). Initial USGS studies (Flanagan, 1967) provide background information on this material.

Recommended values

Oxide	Wt %	±	Oxide	Wt %	±
SiO ₂	58.84	0.58	Fe ₂ O ₃ T	6.77	0.19
Al ₂ O ₃	17.15	0.34	Na ₂ O	4.26	0.12
CaO	4.94	0.14	K ₂ O	2.92	0.37
MgO	1.53	0.093	TiO ₂	1.05	0.05
P ₂ O ₅	0.50	0.03			

Element	µg/g	±	Element	µg/g	±	Element	µg/g	±
Ba	1230	16	Gd	5.0	0.6	Sc	12	1
Be	2.1	0.4	Ge	1.25	0.1	Sm	5.9	0.4
Ce	67	6	Hf	5.1	0.4	Sr	660	9
Cl	119	26	La	38	2	Ta	0.90	0.09
Co	15	1.2	Li	12	2	Tb	0.70	0.1
Cr	10	3	Lu	0.27	0.03	Th	6.5	0.5
Cs	1.3	0.1	Mn	710	50	U	1.92	0.15
Cu	60	6	Mo	2.7	0.9	V	120	11
Dy	3.6	0.4	Nd	33	3	Y	20	3
Eu	1.6	0.1	Pb	36	5	Yb	1.72	0.2
F	425	50	Rb	67	1	Zn	88	9
Ga	20	3	Sb	4.3	0.4	Zr	227	18

Oxides	Wt %	Other	Wt %
FeO	2.06	LOI	1.2
Fe ₂ O ₃	4.46	H ₂ O+	0.78
		H ₂ O-	1.00

Element	µg/g	Element	µg/g	Element	µg/g
Ag	0.078	Cd	0.069	Ni	16
As	0.88	Er	1.7	Pr	7.6
Au	0.00062	Hg	0.02	Sn	4.2
B	7.8	I	0.27	Tl	0.34
Bi	0.057	In	0.041	Tm	0.34
		Nb	15	W	0.55

Denver, Colorado
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Branch of Geochemistry

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., 1967, U.S. Geological Survey silicate rock standards, *Geochimica et Cosmochimica Acta*, 31: 289-308
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- Flanagan, F.J., 1986, Reference Samples in Geology and Geochemistry, U.S. Geological Survey Bulletin 1582, p 70
- Govindaraju, K., 1994, 1994 Compilation of Working Values and Descriptions for 383 Geostandards, *Geostandards Newsletter*, 18:1-158
- Rittman, A., 1952, Nomenclature of volcanic rocks, *Bull. Volcanoe. Series II*, 12:76-102

Glossary

Fe ₂ O ₃	Total iron expressed as Fe ₂ O ₃
C _{tot}	Total carbon concentration
S _{tot}	Total sulfur concentration
Wt %	Percent of total element concentration
µg/g	Total element concentration expressed as micrograms of element per gram of solid sample
±	One standard deviation

Notes

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

Ordering Information

This reference material is no longer available

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