



United States Geological Survey

Certificate of Analysis

Diabase, W-2

Material was collected in 1976 from the Bull Run quarry near Centreville, Virginia. This is the same collection site as USGS reference materials W-1 (Fairbairn, 1950). The diabase consists of augite and plagioclase with smaller amounts of quartz, potassium feldspar, biotite and opaque minerals.

Recommended Concentrations

Values listed are derived using at least two independent techniques from at least two independent laboratories. Statistical treatment of the data uses the procedures outlined in previous USGS publications (Flanagan and Gottfried, 1980). Supplemental information is derived from international data compilations (Gladney and Roelandts, 1988, Govindaraju, 1994.)

Information values

Values are presented when only a single method of analysis was used or results from independent laboratories are not in statistical agreement

Recommended values

Oxide	Wt %	±	Oxide	Wt %	±
Al ₂ O ₃	15.45	0.16	MgO	6.37	0.058
CaO	10.86	0.078	MnO	0.167	0.004
Fe ₂ O ₃	1.53	0.87	Na ₂ O	2.20	0.037
FeO	8.34	0.093	P ₂ O ₅	0.14	0.12
Fe ₂ O ₃ T	10.83	0.21	SiO ₂	52.68	0.29
K ₂ O	0.626	0.012	TiO ₂	1.06	0.01

Element	µg/g	±	Element	µg/g	±	Element	µg/g	±
Ba	170	11	Hf	2.6	0.18	Sr	190	3
Ce	23	1.5	La	10	0.59	Th	2.4	0.1
Co	43	2.1	Li	9.6	0.54	V	260	12
Cr	92	4.4	Nd	13	1	Y	23	1.6
Cu	110	4.9	Ni	70	2.5	Yb	2.1	0.2
Dy	3.6	0.8	Rb	21	1.1	Zn	80	2
Eu	1.0	0.06	Sc	36	1.1	Zr	100	4
Ga	17	0.89	Sm	3.3	0.13			

Information values

Element	µg/g	Element	µg/g	Element	µg/g
As	1.2	F	205	Sb	0.79
B	12	Ho	0.76	Ta	0.5
Be	1.3	Lu	0.33	Tb	0.63
Cl	190	Nb	7.9	Tm	0.38
Cs	0.99	Pb	9.3	U	0.53
Er	2.5	S _{tot}	79		

Denver, Colorado
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Bibliography

- Flanagan, F.J. and Gottfried, D., 1980, USGS rock standards III; Manganese-nodule reference samples USGS Nod-A-1 and USGS-Nod-P-1: U.S. Geological Survey Professional Paper 1155, 39p.
- Flanagan, F.J., 1984, Three USGS Mafic Rock Reference Samples, W-2, DNC-1, and BIR-1, U.S. Geological Survey Bulletin 1623, p 54
- Gladney, E.S., and Roelandts, I., 1988, 1987 Compilation of Elemental Concentration Data for USGS BIR-1, DNC-1, and W-2, Geostandards Newsletter, 12: 63-118
- Govindaraju, K., 1994, 1994 Compilation of Working Values and Descriptions for 383 Geostandards, Geostandards Newsletter, 18:1-158

Glossary

Fe ₂ O ₃	Total iron expressed as Fe ₂ O ₃
C _{tot}	Total concentration of carbon
S _{tot}	Total concentration of sulfur
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

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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