



# United States Geological Survey Certificate of Analysis

## Dolerite, DNC-1

Sample used in the preparation of this reference material was collected in 1968 from the Braggtown Quarry near Durham, North Carolina. The material is one of the Triassic-Jurassic olivine-normative dolerites indigenous to the area (Ragland, et al., 1968)

Element concentrations were determined by cooperating laboratories using a variety of analytical methods. Certificate values are based primarily on USGS results (Flanagan, 1984) and international data compilations (Gladney and Roelandts, 1987, Govindaraju, 1994). USGS studies also provide background information on the sample collection site.

### Recommended values

Oxide	Wt %	±	Oxide	Wt %	±
SiO <sub>2</sub>	47.15	0.21	Na <sub>2</sub> O	1.89	0.057
Al <sub>2</sub> O <sub>3</sub>	18.34	0.17	K <sub>2</sub> O	0.234	0.009
CaO	11.49	0.07	MnO	0.15	0.003
MgO	10.13	0.11	P <sub>2</sub> O <sub>5</sub>	0.07	0.005
FeO	7.32	0.06	TiO <sub>2</sub>	0.48	0.007
Fe <sub>2</sub> O <sub>3</sub>	1.79	0.11	Fe <sub>2</sub> O <sub>3</sub> T	9.97	0.15
Element	µg/g	±	Element	µg/g	±
Ba	118	11	Sb	0.96	0.03
Co	57	2.2	Sc	31	1
Cr	270	8.5	Sr	144	1.8
Cu	100	2.6	V	148	8.3
Eu	0.59	0.03	Y	18	0.8
La	3.6	0.30	Yb	2	0.1
Li	5.2	0.29	Zn	70	2.4
Nd	5.2	0.56	Zr	38	1
Ni	247	12			

### Information values

Element	µg/g	Element	µg/g
As	0.12	Ga	15
B	0.9	Gd	2
Be	1	Ho	0.62
Cl	60	Nb	3
Dy	3	Pb	6.3
F	66	Rb	4.5

## Bibliography

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

Ragland, P.C., Rogers, J.J.W., and Justus, P.S., 1968, Origin and Differentiation of Triassic Dolerite Magmas, North Carolina, USA: Contributions to Mineralogy and Petrology, v. 20. no. 1., p. 57-80

## Glossary

$\text{Fe}_2\text{O}_3\text{T}$	Total iron expressed as $\text{Fe}_2\text{O}_3$
$\text{C}_{\text{tot}}$	Total concentration of carbon
$\text{S}_{\text{tot}}$	Total concentration of sulfur
Wt %	Percent of total element concentration
$\mu\text{g/g}$	Total element concentration expressed as micrograms of 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.

## 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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## Payment Options

**Domestic customers:** Payment options include purchase order, check, money order, or credit card (Visa, Mastercard).

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Payments for domestic or international orders using a credit card receive a 10% discount on the per bottle price.

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URL: [http://minerals.cr.usgs.gov/geo\\_chem\\_stand/dolerite.pdf](http://minerals.cr.usgs.gov/geo_chem_stand/dolerite.pdf)