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# Certificate of Analysis

## TDB-1

### Diabase Rock PGE Reference Material

### Certified PGE Values

| Au ng/g | Pt ng/g | Pd ng/g |
|---|---|---|
| 6.3 ± 1.0 | 5.8 ± 1.1 | 22.4 ± 1.4 |

### Additional Certified Values

| Ba µg/g | Ce µg/g | Cr µg/g | Cu µg/g | Fe % | Ni µg/g | Th µg/g | Zn µg/g |
|---|---|---|---|---|---|---|---|
| 241 ± 13 | 41 ± 4 | 251 ± 13 | 323 ± 15 | 10.4 ± 0.2 | 92 ± 6 | 2.7 ± 0.3 | 155 ± 11 |

## DESCRIPTION

TDB-1 was obtained from Tremblay Lake, Saskatchewan, Canada. This diabase rock is composed of a siliceous matrix containing numerous small masses, aggregates and discrete grains of titaniferous magnetite and ilmenite intimately associated with ferroan titanite. Several small grains of chalcopyrite and bornite are associated with the oxide aggregates. Some of the bornite grains are partly replaced by a thin layer of covelline. The siliceous matrix consists largely of plagioclase feldspar and pyroxene with minor amounts of mica and quartz.

TDB-1 was prepared and certified in cooperation with the Analytical Method Development Section of the Mineral Deposits Division of the Geological Survey of Canada (GSC).

The raw material was dried, comminuted and sieved to obtain a sub-74-micron (-200 mesh) product which was blended and bottled.

The homogeneity of the stock with respect to its gold, platinum and palladium contents was confirmed at GSC using bottles chosen according to a stratified random sampling scheme.

## CERTIFICATION

Thirty-three university, commercial, and government laboratories from Canada, United States, Europe, Australia, Africa, and Japan participated in an inter-laboratory certification program. Up to 80 elements were analyzed by methods of each laboratory's choice. A statistical analysis of the data yielded recommended values for gold, platinum, palladium, and eight others, and provisional values were assigned for rhodium, iridium, and forty-seven others. An information value for ruthenium is also given.

## LEGAL NOTICE

The Canadian Certified Reference Materials Project has prepared this reference material and statistically evaluated the analytical data of the interlaboratory certification program to the best of its ability. The purchaser, by receipt hereof, releases and indemnifies the Canadian Certified Reference Materials Project from and against all liability and costs arising out of the use of this material and information.

## REFERENCE

The preparation and certification procedures used for TDB-1 will be given in CANMET report *CCRMP 94-1E* which is in preparation. This report will be made available free of charge on application to:

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## Provisional PGE Values

| Rh ng/g | Ir ng/g | Ru* ng/g |
|---|---|---|
| 0.7 | 0.15 | 0.3 |

* Information value only

## Additional Provisional Values
($\mu$g/g, except where noted)

| Al(%) | As | Ca(%) | Co | Dy | Eu | Ga | Hf | Ho |
|---|---|---|---|---|---|---|---|---|
| 7.1 ± 0.3 | 2.5 ± 0.5 | 6.8 ± 0.5 | 47 ± 4 | 8 ± 1 | 2.1 ± 0.1 | 21 ± 2 | 5 ± 0.5 | 1.3 ± 0.4 |

| K(%) | La | Li | Lu | Mg(%) | Mn | Mo | Na(%) | Nd |
|---|---|---|---|---|---|---|---|---|
| 0.77 ± 0.07 | 17 ± 2 | 15 ± 4 | 0.52 ± 0.06 | 3.5 ± 0.2 | 1577 ± 76 | 1.6 ± 0.7 | 1.7 ± 0.1 | 23 ± 1 |

| P(%) | Pb | Rb | Sc | Sb | Sm | Sn | Sr | Ta |
|---|---|---|---|---|---|---|---|---|
| 0.08 ± 0.02 | 17 ± 3 | 23 ± 2 | 36 ± 3 | 1.0 ± 0.4 | 6.0 ± 0.2 | 2 ± 1 | 230 ± 24 | 0.8 ± 0.2 |

| Tb | Ti(%) | Tm | U | V | Y | Yb | Zr |
|---|---|---|---|---|---|---|---|
| 1.2 ± 0.1 | 1.4 ± 0.1 | 0.6 ± 0.1 | 1.0 ± 0.1 | 471 ± 21 | 36 ± 4 | 3.4 ± 0.4 | 156 ± 20 |

# TDB-1

## Provisional Whole-Rock Constituents, wt %

| $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | $TiO_2$ | CaO | MgO | $K_2O$ | $Na_2O$ | MnO | $P_2O_5$ | LOI | $S_{tot}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50.2 | 13.6 | 14.4 | 2.3 | 9.6 | 5.9 | 0.89 | 2.2 | 0.20 | 0.23 | 0.3 | 0.03 |

## Information Values for Other Elements, μg/g

| Ag | B | Be | Bi | Br | Cd | Cl | Er | F | Gd |
|---|---|---|---|---|---|---|---|---|---|
| 0.5 | 20 | 1.5 | 0.8 | 2 | 0.4 | 1050 | 4 | 400 | 7 |

| Ge | I | In | Nb | Pr | Se | Si(%) | Te | W |
|---|---|---|---|---|---|---|---|---|
| 1 | <8 | 0.2 | 11 | 6 | 0.7 | 24.0 | 0.2 | 0.6 |