

Reference Material BRP-1 (Basalt Ribeirão Preto): can it be used as an isotope standard?

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Previous results based on limited data set suggested that the geochemical reference material Basalt Ribeirão Preto BRP-1 [1] could be also used as a standard for isotope analysis. Here we report isotopic data of Pb, Nd e Sr obtained for BRP-1, as well as, the mass fractions of Pb, Nd, Sm, Rb and Sr determined by ID-TIMS on this material. All analytical work was carried out at the Center of Geochronological Research, University of São Paulo. The test portions of BRP-1 were dissolved using HF, HNO₃ and HCl acids, followed by element separation from matrix by a routine ion exchange procedure. The Pb isotope ratios obtained were: $^{206}\text{Pb}/^{204}\text{Pb} = 17.995 \pm 0.012$, $^{207}\text{Pb}/^{204}\text{Pb} = 15.527 \pm 0.009$, $^{208}\text{Pb}/^{204}\text{Pb} = 38.381 \pm 0.031$. These values are means and the uncertainties are two standard deviation of 25 analyses. The mean of $^{143}\text{Nd}/^{144}\text{Nd}$ ratios (n=13) was 0.512388 ± 0.000009 , and the average of $^{87}\text{Sr}/^{86}\text{Sr}$ ratios (n= 23) was 0.706002 ± 0.000068 . The mass fractions of some elements determined by ID-TIMS yielded the values (mean $\pm 2\sigma$): Pb = $5.29 \pm 0.05 \mu\text{g.g}^{-1}$ (n=16), Rb = $35.8 \pm 0.4 \mu\text{g.g}^{-1}$ (n=15), Sr = $501 \pm 8 \mu\text{g.g}^{-1}$ (n=16), Sm = $10.7 \pm 0.1 \mu\text{g.g}^{-1}$ (n=17), Nd = $51.8 \pm 0.7 \mu\text{g.g}^{-1}$ (n=17). These data agree with the certified values within the 95% confidence level. The new set of isotopic data confirms that BRP-1 (Basalt Ribeirão Preto) can be also used as reference material for isotope analysis in rock samples. Our data were validated by analysis carried out on BCR-1 and AGV-1 reference materials.

[1] Cotta & Enzweiler (2008) *Geostandards and Geoanalytical Research* **32**, 231-235