

$^{87}\text{Rb}/^{86}\text{Sr}$ Values for NIST, USGS, and MPI-DING Reference Glasses

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The isobaric decay of ^{87}Rb to ^{87}Sr has traditionally stymied *in situ* application of Rb/Sr geochronology. With the advent of ‘triple quadrupole’ laser ablation inductively coupled plasma mass spectroscopy (LA-ICP-MS/MS), *in situ* Sr isotope and Rb-Sr geochemistry is now possible. The innovative geometry of the Agilent 8900 ICP-MS/MS enables online chemical separation of ^{87}Rb from ^{87}Sr using reaction cell gases (i.e., O_2 , N_2O , SF_6) to produce collisions and reactions with ions, facilitating simultaneous measurement of ^{87}Rb and mass-shifted ^{103}SrO [1].

One standing challenge is the characterization of reference materials suitable for *in situ* Rb/Sr geochronology. Measured values for $^{87}\text{Sr}/^{86}\text{Sr}$ in glass reference materials are reported in the GeoREM database [2]; however, no measured values exist for $^{87}\text{Rb}/^{86}\text{Sr}$. In the absence of measured $^{87}\text{Rb}/^{86}\text{Sr}$ values for available Sr isotope reference glasses, we present calculated $^{87}\text{Rb}/^{86}\text{Sr}$ values for NIST, USGS, and MPI DING glasses based on atomic weights, taking into account the measured $^{87}\text{Sr}/^{86}\text{Sr}$ composition in addition to the concentrations of Rb and Sr and natural isotopic abundances.

Data collected by LA-ICP-MS for these reference materials (excluding NIST 616, TB-1G, and BM90/21-G) reproduce calculated $^{87}\text{Rb}/^{86}\text{Sr}$ values within 2.5 % for a range of glasses (NIST 612, BCR-2G, BHVO-2G, GOR128-G, KL2-G, ML3B-G) and within 10 % for all glasses analyzed, using NIST 610 as a primary reference material.

[1] Zack & Hogmalm, 2016, *Chem. Geo.*; [2] Jochum *et al.*, 2005, *Geostand Geoanalytical Res.*

Reference Material	Published $^{87}\text{Sr}/^{86}\text{Sr}$	Calculated $^{87}\text{Rb}/^{86}\text{Sr}$	Reference Material	Published $^{87}\text{Sr}/^{86}\text{Sr}$	Calculated $^{87}\text{Rb}/^{86}\text{Sr}$
NIST 610	0.709699	2.3894	ATHO-G	0.703271	2.0066
NIST 612	0.7089	1.1587	GOR128-G	0.706932	0.3970
NIST 614	0.7083	0.0540	GOR132-G	0.707156	0.0391
NIST 616	0.708	0.0072	KL2-G	0.703517	0.0707
BCR-2G	0.705003	0.3974	ML3B-G	0.703849	0.0538
BHVO-2G	0.703469	0.0672	StHs6/80-G	0.703497	0.1842
GSD-1G	0.709416	1.5551	T1-G	0.710093	0.8120
TB-1G	0.70556	0.2858	BM90/21-G	0.706276	1.3869