National Institute of Advanced Industrial Science and Technology (AIST)

Geological Survey of Japan

Certified Geochemical Reference Material

GSJ CRM JCp-1 Coral (*Porites* sp.)

Geochemical Reference Material Technical Information

Intended uses for this CRM are controll of the precision of analysis or confirmation of the validity of analytical methods or instruments for analysis of main or trace components in corals, other carbonate salts or similar samples.

Certified Value

Component	Certified Value (mass fraction %)	Analytical Method (*vide infra*)
CaO	53.50 ± 0.28	1, 2, 3, 4

Component	Certified Value (mg/kg)	Analytical Method (*vide infra*)
Ba	10.3 ± 0.5	2, 6
Fe	29 ± 2	2, 3
K	185 ± 8	2, 3
Mg	972 ± 8	2, 3
Mn	1.0 ± 0.1	2, 3, 6
Na	4350 ± 30	2, 3
P	4.1 ± 0.9	2, 5
Sr	7240 ± 70	2, 3

after ± value is expanded uncertainty.

Information Value

Component	Information Value (mg/kg)	Analytical Method (*vide infra*)	Component	Information Value (mg/kg)	Analytical Method (*vide infra*)
Al	490, 480	2, 3	Li	1.3	3
B	47.7	2	Mo	0.08, 0.070	7, 6
Cd	0.028, 0.032	7, 6	total S	1920	2
Cl	584	5	Zn	0.5	3

The analytical value of other components (including the above-mentioned components) is opened sequentially on the GSJ geochemical reference materials web page.
https://gbank.gsj.jp/geostandards/

Analytical Method

1) Gravimetry
2) ICP atomic emission spectrometry (ICP-AES)
3) Flame atomic absorption spectrometry (AAS)
4) Titration
5) Spectrophotometry
6) ICP mass spectrometry (ICP-MS)
7) Solvent extraction flameless atomic absorption spectrometry

Decomposition Method

Nitric acid – perchloric acid – hydrofluoric acid decomposition was mainly used.

Traceability

Traceability of this CRM was ensured by using standard solutions for chemical analysis prepared accroding to JCSS (Japan Calibration Service System).

Method of Characterization

The values of CRM were determined by interlaboratory testing by 8 collaborating organizations and 2 laboratories in the Geological Survey of Japan/AIST. After some data were rejected by statistical treatments, certified values and uncertainties were obtained from the averages of the analytical results and 95% confidence intervals respectively.

Precautions for Use

From the point of homogeneity, it is recommended to use more than 100 mg at each analysis.

Notes for Storage

The CRM should be stored at room temperature without direct sunshine and high humidity. After unsealed, the CRM should be stored in a bottle with a tightly fixed inner lid.

Preparation Method

Locality : A *Porites* sp. coral colony was collected in the northeast coast of Ishigaki Island, the Ryukyu Islands, Japan

Sample processing : The surface part of the coral colony was cut off in order to minimize the contamination with biological tissue, and the sample was cut to 50～70 mm cubes. The cubes were washed with pure water and dried. The dried cubes were crushed to less than 20 mm pieces by a jaw crusher, and the pieces were washed again with pure water and dried. The dried pieces were milled in a chert-lined ball mill with balls made of high alumina. The powder was then screened with a 250μ m stainless steel sieve and mixed well, and approximately 37 g of the powder were put in each glass bottle.

Homogeneity

Seven bottles were randomly sampled from the products. And each 100mg of 2 samples from each bottle were analyzed by ICP-AES for several chemical components. The results showed good homogeinity.

Expiration of Certification

The expiration date of this sample is not especially provided. However, it notifies the customer when the alteration not anticipated happens, and the change is caused in the certified value.

Measurement Laboratory

Geological Survey of Japan/AIST
Dowa Techno Research Co.,Ltd.
KAWAJU TECHNO SERVICE CORPORATION
Kurita Analysis Service Co.,Ltd.
Mitsubishi Materials Techno Corporation
Mitsui Chemical Analysis & Consulting Service Inc.
NIPPON STEEL TECHNORESEARCH
Shimadzu Techno-Research Inc.
Sumitomo Metal Technology Inc.

Note : This paper is a translation of the original Japanese certificate and is not an official document.

If you have any questions about this CRM, please contact

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