$^{10}Be/^{9}Be$ ratios of Be-bearing minerals and suitability for use as Be carrier

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Cosmic-ray-produced ^{10}Be has been used to study exposure ages and earth surface processes. Since lowering the measurement background allows us to broaden its applications, some laboratories prepare in-house Be carrier from deeply-mined minerals [1, 2]. This is because $^{10}Be/^{9}Be$ of commercially available Be carrier solution is generally not enough low for samples that yield young exposure ages. We revisit the laboratory procedures to prepare Be carrier solution using mineral collections stored at Geological Survey of Japan. We selected wide variety of beryl ($Be_3Al_2Si_6O_{18}$) and phenakite (Be_2SiO_4) from the collections as Be-bearing minerals. These minerals are stored with information on the origins that is often scarce for the commercially available minerals. This enables us to test if the ^{10}Be concentrations in the minerals are enough low. We test minerals from Brazil, Japan, Madagascar, Russia, and Ukraine. In terms of purity, phenakite is more suitable for the starting material than beryl, since it does not contain Al. However, it appears that phenakite likely contains considerable amount of B within mineral lattice. This affects the quality of AMS measurements through reactions of $^{10}B(p, \alpha)^{7}Be$ at the entrance of the gas counter. In this presentation, we discuss the efficiency of chemical procedures to separate B and compare the $^{10}Be/^{9}Be$ values with commercially available Be standards. We find similar $^{10}Be/^{9}Be$ values of the commercial standards between different suppliers. This most likely indicates some commercially available Be standards are originated from the same raw material.

[1] Merchel *et al.* (2008) *NIMB* **266**, 4921-4926. [2] Merchel *et al.* (2013) *J. Radioanal. Nucl. Chem.* **298**, 1871-1878.