

Boron and chlorine contents of upper oceanic crust

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Boron and chlorine have great potential as tracers of deep earth fluids and recycled crustal materials in the solid earth geochemical cycle. However, little is known about depth profiles of B and Cl concentrations within oceanic crust sequences. We therefore determined B and Cl contents of oceanic crust samples by prompt gamma neutron activation analysis. The samples are basalts and gabbros obtained at various depths (369-1503 mbsf) from Hole 1256D. The results show stepwise downhole variations; B content and B/K decrease, and Cl content and Cl/K increase with increasing depth. High B content in shallower rocks is probably achieved by low-temperature seawater alteration, and high Cl contents in the deeper rocks would show result of high-temperature hydrothermal alteration. Average B and Cl values for the upper oceanic crust in Hole 1256D are 1.5 ppm and 334 ppm, respectively.