



Serpentinites from Northern Central Indian Ridge, Indian Ocean

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Northern Central Indian Ridge (5-10⁰S, 66-70⁰E), spreading at 18-22 mm/yr (half spreading rate) and characterized by short ridge segments longer transform fault geometry, is still a poorly understood area of the ocean ridge system. Basalts have been dredged from the axis of the short segments. However, mantle and lower crust rocks have also been recovered from structurally different locations.

In this paper, we concentrate on serpentinized peridotites. Abundant serpentinized harzburgites were collected from an inside corner high at 6°39'S-68°32'E. The degree of serpentinization is extremely high, between 90 and 100%. Olivine and orthopyroxenes are largely pseudomorphed to lizardite-chrysotile mesh and bastite respectively. Relict cores of olivine and orthopyroxenes are rarely preserved. Partly altered spinel occurs occasionally. The rocks are cross-cut by a variety of serpentine±magnetite veins. Low temperature carbonate veins are also present locally as a late phase. Serpentinites are frequently cross-cut by gabbroic vein which are extensively altered. They contain secondary pyroxenes and chlorite enriched in manganese, epidote, ilmenite, actinolite and apatite. The presence of grossular also suggests incipient rodingitisation. Serpentine veins and bastite have significant chlorine contents (up to 0.35% and 0.20% respectively) and apatite is also chlorine-rich (up to 4%).

Based on mineralogical parageneses, mineral compositions and bulk rock analyses, we discuss the condition of alteration and associated chemical fluxes.