AMPHIBOLITES OF THE KTB TARGET AREA OBERPFALZ, BAVARIA

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The various tectonic units in the KTB target area contain metabasites of different petrographic character and chemical composition.

Amphibolites in the southern part of the Zone of Erbendorf-Vohenstrauss (ZEV) are predominantly striped and consist of tschermakitic hornblende and plagioclase (An 35-65). Trace element abundances and flat to slightly depleted REE-patterns compare well with recent N-MORB compositions.

The northern part of the ZEV contains flaser-amphibolites with tschermakitic hornblende and plagioclase (An 25-35). Typical for this type are garnets, partly replaced by fine-grained aggregates of plagioclase and hornblende, which are interpreted as relics of an older metamorphic event. In their chemical composition the flaser-amphibolites are characterized by enrichment of incompatible trace elements including the light REE, corresponding to modern tholeiitic E-MORB lavas from anomalous ridge segments or to ocean island tholeiites.

The metagabbros and striped metabasites of the Erbendorf Greenschist Zone (EGZ) underwent strong retrogressive alteration with widespread formation of epidote, chlorite and albite. In their geochemical character, these metabasites are transitional between the tholeiitic and the calcalkaline series, comparable to basalts from convergent plate boundaries.

The amphibolites of the Fichtelgebirge area are strongly enriched in incompatible trace elements and exhibit a geochemical character transitional between tholeiitic and alkaline basalts.

The geochemical characteristics of the four groups of metabasites may be used as fingerprints of the geotectonic environment in which their respective basaltic protolith was formed. This rests on the assumption that the discriminant elements were virtually uneffected by post-magmatic alteration processes. Possible exceptions from a conservative behaviour of these elements are discussed