

# FLUORINE IN VOLCANIC ROCKS OF ICELAND

by

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## ABSTRACT

The fluorine content of volcanic rocks from different volcano-tectonic environments in Iceland differs systematically in concert with other petrochemical parameters. The lowest abundance of fluorine (45-220 ppm F) is found in the petrochemically primitive ol-tholeiites of the rift zone. Evolved basalts ranging from ol-tholeiite to qz-tholeiite composition occur in the volcanic centers of the rift zone. These rocks contain 220-450 ppm F, while with alkaline affinities found in volcanic centers outside the rift zone contain up to 1600 ppm F. The variation in fluorine within the different rock suites is believed to reflect varying degree of crustal involvement in their genesis. In the rift zone fluorine chemistry of the basalts is believed to result from mixing with silicic magmas formed by anatexis in the rift zone crust. In the non-rifting volcanic centers the high fluorine results from a partial melting of amphibolite, which is believed to be a residual assemblage from earlier anatexis in the rift zone.

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