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Sample Number : T 254

Identification : Moderately welded, trachyandesitic ashflow tuff, mildly affected by dynamothermal metamorphism

Description :

The sample is a lightly weathered hand specimen which appears to consist of many aligned, greenish grey, formerly vitric shards and scattered feldspar phenocrasts, up to about 1mm.

A cobaltinitrite staining test produced a bright stain, much of it rather diffuse and related to the fine matrix, but a significant amount related to discrete small grains within plagioclase clasts.

In thin section the sample is seen to consist of distinct phenocrasts, 0.05 to 1mm in size, scattered through a finely recrystallized (0.005mm) matrix in which the textures of moderately welded glass shards (about 0.5mm) and pumice (up to about 2mm) are plainly recognisable. Mild deformation has rotated some clasts and produced streaks of foliated chlorite and minor sericite.

The phenocrasts are mainly clear grains of moderately twinned plagioclase (optically positive - albite/oligoclase), but they have probably had their compositions modified, since some have a patchy appearance and many have irregular inclusions of microcline. Poorly preserved mafic silicate phenocrasts consist of chlorite with inclusions of leucoxenized (?)rutile. There are a few leucoxenized opaque clasts. The matrix is a fine mosaic of probable albite and minor K-feldspar, liberally specked with granules of rutile or sphene and chlorite. There are several small lithic clasts composed of flow aligned laths of plagioclase and minor K-feldspar and chlorite.

An approximate mode is :

30-35%	feldspar phenocrasts
0.2-0.3%	intermediate volcanic lithic clasts
0.5-1%	chloritized mafic phenocrasts
tr	leucoxenized opaque clasts
55-65%	matrix secondary feldspar
3-4%	matrix chlorite
1-2%	matrix leucoxene
1-2%	matrix sericite (confined to foliation)

Comments and Interpretations :

The sample is interpreted confidently to have formed as a moderately welded ashflow tuff, composed of phenocrasts of plagioclase and minor mafic silicates and opaques scattered through a matrix of pumice and glass shards. It is more likely that deposition occurred on land than into water. The parent magma was trachyandesite or potassic andesite. There was probably little or no hydrothermal alteration and diagenesis/incipient metamorphism probably accounts for the conversion of the plagioclase phenocrasts to albite with inclusions of microcline, chloritization of mafics and devitrification of the matrix. Dynamothermal shearing has produced minor streaks of sericite with chlorite.