

Sample Number : 3171

Identification : Unwelded vitric tuff which has been intensely altered to calcite-chlorite-sericite-leucoxene and weakly pyritized

Description :

The sample is a hand specimen of lightly weathered, fine-grained, greenish grey rock with aligned inconspicuous, dark, lenticular clasts smaller than about 1mm. The rock is jointed and has slaty cleavage.

A staining test revealed no K-feldspar.

In thin section the sample plainly displays textures consistent with unwelded vitric tuff but it has been altered largely to carbonate, sericite, chlorite and leucoxene. Most of the shards had fragile, cusped shapes, about 0.2mm in size, but there were a few larger, cusped vitric clasts up to 2mm. There are no confidently recognisable phenoclasts, but several carbonated clasts could possibly represent sparse feldspar clasts. There are angular clasts of clear, untwinned albite and/or quartz, up to 0.1mm in size.

A few subhedral cubes of pyrite, about 0.1 to 0.5mm in size, are clustered within some of the largest carbonated, chloritized, formerly vitric clasts.

An approximate mode is :

25-35%	carbonate (apparently calcite)
25-35%	chlorite
25-30%	sericite
1-2%	leucoxene (after fine rutile or sphene)
5-10%	fine albite and/or quartz
0.1%	pyrite

Comments and Interpretations :

The sample is interpreted confidently to have been composed mainly of unwelded vitric shards. Deposition is likely to have been by airfall mechanism or possibly by distal ashflow processes. There is no evidence of any aqueous rounding or sorting but deposition on land or into still water are both possibilities. There has been intense hydrothermal alteration to produce a calcite-chlorite-sericite-leucoxene assemblage with a trace of pyrite. This alteration has obscured recognition of the composition of the source magma for the vitric tuff.