

THIN SECTION LABEL ID: 376-U1527A-5R-1-W 13/15-TSB-TS\_01

TS no.: 1

**Description Group**

**Summaries**

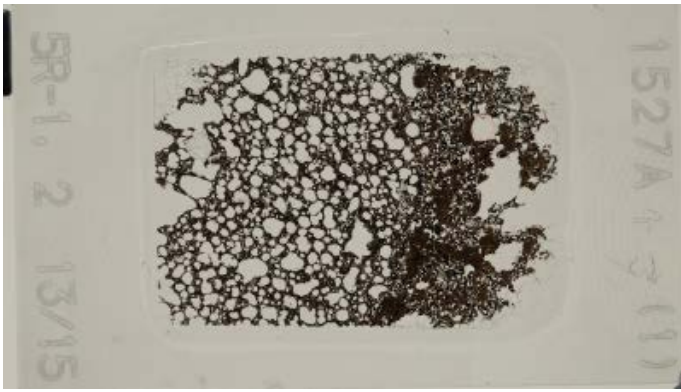
Igneous petrology:

The moderately vesicular plagioclase-clinopyroxene phyric dacite is slightly altered with a porphyritic-glomeroporphyritic texture. Glomerocrysts contain aggregates of euhedral-subhedral plagioclase, clinopyroxene and minor Fe-Ti oxide. The fine-grained groundmass comprises partially altered glass and seriate microlites of swallow tail-skeletal plagioclase and lesser pyroxene.

Alteration:

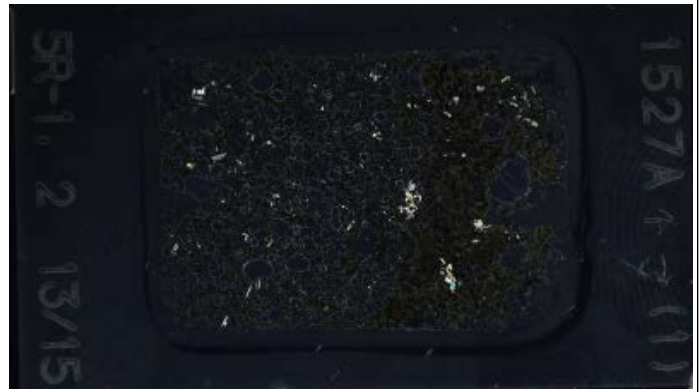
Glassy matrix exhibits minor alteration to brown palagonite. Pyrite is the main sulfide phase (<2%) occurring in three distinct morphologies: large subhedral grains associated with plagioclase and augite glomerocrysts, globular <10 Åµm grains associated with and overprinting plagioclase/magnetite and <<10 Åµm euhedral crystals lining vesicles. Magnetite is a minor phase (<1 %). 30 % of the vesicles filled with secondary minerals, mostly palagonite (clay minerals + Fe-OOH). Very little fresh glass remains. Very slight alteration of matrix and cpx phenocrysts.

Plane-polarized



46918131

Cross-polarized



46918171

THIN SECTION LABEL ID: 376-U1527A-6R-1-W 23/25-TSB-TS\_02

TS no.: 2

**Description Group****Summaries**

Igneous petrology:

The moderately vesicular plagioclase-clinopyroxene phyric dacite is slightly altered with a porphyritic-glomeroporphyritic texture. Glomerocrysts contain aggregates of euhedral-subhedral plagioclase, clinopyroxene and minor Fe-Ti oxide. The fine-grained pilotaxitic groundmass comprises partially altered glass and seriate microlites of swallowtail-skeletal plagioclase and lesser pyroxene.

Alteration:

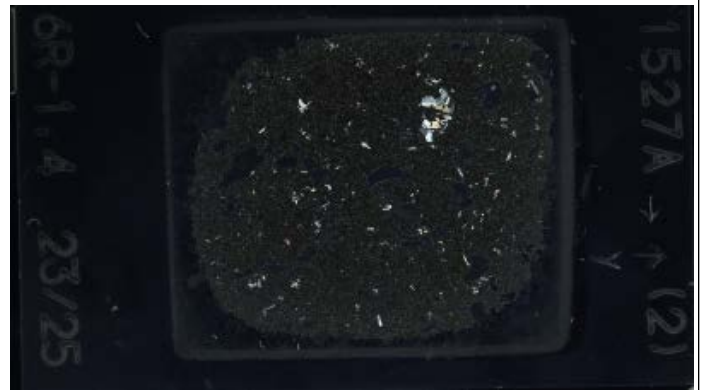
Glassy matrix exhibits variable degrees of alteration. A vein comprising 30% of the section is completely altered to brown-green pelagonite; the remainder of the section is relatively unaltered. Magnetite is relatively abundant (3 %) occurring in clusters associated with globular pyrite and as disseminated grains (10 Åµm) throughout the matrix.

Plane-polarized



46918091

Cross-polarized



46918111

THIN SECTION LABEL ID: **376-U1527C-10R-1-W 12/13-TSB-TS\_03**

TS no.: 3

**Description Group****Summaries****Igneous petrology:**

This is a moderately altered, moderately vesicular, plagioclase- and clinopyroxene-bearing dacite with porphyritic-glomerocrystic texture. Glomerocrysts contain aggregates of euhedral to subhedral plagioclase, clinopyroxene and minor Fe-Ti oxides. The fine-grained and moderately altered groundmass contains sub-trachytic plagioclase laths.

**Alteration:**

The matrix is completely replaced by brownish clay minerals but relicts of a perlitic texture are still observable. Phenocrysts are significantly fractured and partly altered along fractures and cleavages. Vugs are lined with amorphous silica, and minor Fe-oxyhydroxide. Euhedral magnetite crystals and skeletal pyrite crystals of on average 50 micrometers are often associated with phenocrysts.

**Structure:**

Vesicles and microlites of plagioclase have a shape preferred orientation. Sample is not oriented.

Plane-polarized



46992271

Cross-polarized



46992311

THIN SECTION LABEL ID: **376-U1527C-11R-1-W 13/15-TSB-TS\_04**

TS no.: 4

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix-supported monomict lapilli-tuff with fresh to slightly altered clasts in a moderately altered matrix. Only one clast type was observed and it contains relatively unaltered glomerocrysts and phenocrysts of plagioclase, clinopyroxene and minor Fe-Ti oxides in a vesicular groundmass containing trachytic plagioclase microlites. The matrix between clasts is fine-grained, but contains variably altered and often fragmented crystals of plagioclase, clinopyroxene, Fe-Ti oxide, and secondary alteration minerals.

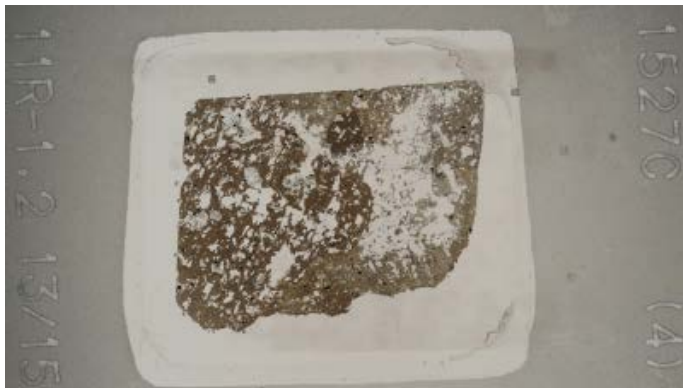
Alteration:

Red-brown alteration style with dark volcanic clast. The matrix is completely replaced by acicular chlorite and Fe-oxyhydroxides. Relicts of a perlitic texture are still observable. Magnetite is common forming large euhedral-subhedral grains. Pyrite occurs only as very fine <0.1 mm euhedral crystals. The boundary between the clast and matrix is sharp.

Structure:

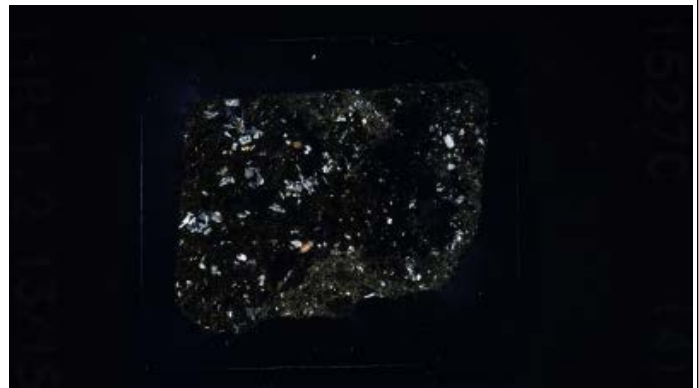
Volcanic clast has a felty texture with aligned plagioclase microcrysts and to a lesser extent phenocrysts.

Plane-polarized



46992351

Cross-polarized



46992371

THIN SECTION LABEL ID: **376-U1527C-11R-2-W 55/58-TSB-TS\_05**

TS no.: 5

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix supported, monomict tuff-breccia with a portion of a cobble-sized plagioclase clinopyroxene and minor Fe-Ti oxide phyric unwelded glassy tuff, in a matrix of very similar composition: variably altered ash/glass and fragmented plagioclase, clinopyroxene and minor Fe-Ti oxide.

Alteration:

Greenish alteration style. The matrix is completely altered to chlorite with perlitic texture. Plagioclase phenocrysts are partly broken up but alteration is only minor. Clinopyroxene phenocrysts are slightly to intermediately altered along cleavages. Ingrowth of fibrous zeolite crystals in vugs. Suggestion of chalcedony infilling relict vesicle. Magnetite, prite, and minor chalcopyrite are finely disseminated.

Structure:

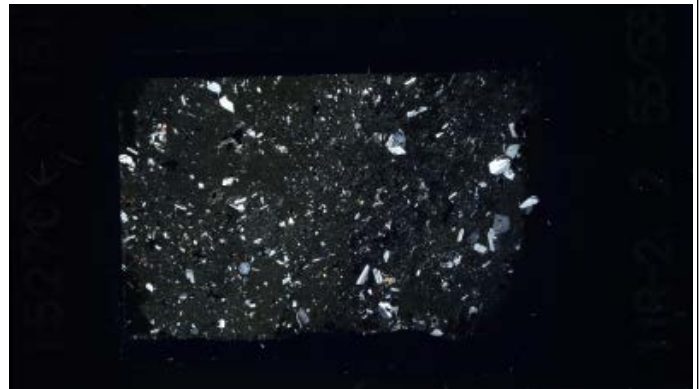
Volcanic fabric defined by microlites in plagioclase in the matrix (top) and volcanic clast (bottom). Orientation in the matrix is subvertical, whereas the orientation in volcanic clast is inclined.

Plane-polarized



46976451

Cross-polarized



46976471

THIN SECTION LABEL ID: **376-U1527C-11R-3-W 3/5-TSB-TS\_06**

TS no.: 6

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix-supported, polymict lapilli tuff, the thin section of which focuses on a large fractured microcrystalline plagioclase-pyroxene phyric dacite clast. Glomerocrysts of plagioclase and clinopyroxene broken and aggregated, cemented by quartz. Clinopyroxene mostly present as splinters. Hyalopilitic groundmass with aligned plagioclase microlites shows perlitic-type (hydrofracture?) textures. Cracks are infilled by smectite, and some are wider open, and groundmass then resembles densely packed ash, especially in part overprinted by yellow alteration halo.

Alteration:

Transition between greenish to yellowish alteration style. Yellow zone stronger affected by alteration. The groundmass is completely altered to illite-chlorite with perlitic texture. Plagioclase grains are sometimes disaggregated and in places altered to chlorite. Evidence of secondary quartz.

Structure:

Shape preferred orientation of plagioclase microlites in volcanic clasts and matrix.

Plane-polarized



46992531

Cross-polarized



46992551

THIN SECTION LABEL ID: **376-U1527C-12R-1-W 84/87-TSB-TS\_07**

TS no.: 7

**Description Group****Summaries****Igneous petrology:**

This is a matrix-supported, polymict tuff-breccia. It is slightly to moderately altered, and is poorly sorted. One clast type is prevalent and it contains relatively unaltered glomerocrysts and phenocrysts of plagioclase, clinopyroxene and minor Fe-Ti oxides in a groundmass of altered volcanic glass of chlorite, clay, and quartz. Matrix between clasts is cryptocrystalline, but contains plagioclase, quartz, Fe-Ti oxide, and the alteration products of chlorite to clay.

**Alteration:**

Greenish alteration style. The matrix is to 95% replaced by irregular shaped clay mineral (chlorite) and acicular illite. Primary euhedral to subhedral plagioclase and pyroxene phenocrysts still persist but are partially replaced by irregular-shaped clay mineral. Plagioclase phenocrysts often includes spherical shaped reddish brown Fe-oxyhydroxide. Vugs are partially filled with fibrous chlorite. Magnetite grains up to 200 micrometer are closely associated with plagioclase and pyroxene phenocrysts. Very fine-grained euhedral to subhedral pyrite grain is also disseminated in the matrix.

**Structure:**

No structure

Plane-polarized



46976161

Cross-polarized



46976181

THIN SECTION LABEL ID: **376-U1527C-12R-2-W 75/77-TSB-TS\_08**

TS no.: 8

**Description Group****Summaries**

Igneous petrology:	This is a moderately altered matrix-supported, polymict lapilli-tuff. The dominant clast type contains glomerocrysts and phenocrysts of relatively unaltered plagioclase, clinopyroxene, and Fe-Ti oxide. The groundmasses of the clasts are altered glass, and the matrix and hand sample contain volcanic ash altered to chlorite and quartz. Very rare pyrite is associated with quartz.
Alteration:	The matrix is pervasively altered to fine grained chlorite and magnetite. Some chalcopyrite and magnetite disseminated throughout the slide. Substantive clusters of primary igneous feldspar and clinopyroxene that are slightly altered.
Structure:	No structure

Plane-polarized



46976241

Cross-polarized



46976261



THIN SECTION LABEL ID: **376-U1527C-13R-1-W 26/28-TSB-TS\_09**

TS no.: 9

**Description Group****Summaries**

**Igneous petrology:** This is a matrix-supported, polymict lapillistone consisting of clasts of fragmented vesicular dacite, with lapilli-sized subangular (vesicular?) clasts cemented by a mixture of finer-grained fragments of the same rock and secondary quartz and clay. Large 5.5 mm euhedral and zoned plagioclase phenocryst. Groundmass of clasts and surrounding cement pervasively altered.

**Alteration:** Greenish alteration style with volcanic clast. The matrix is altered to chlorite. Plagioclase phenocrysts are fragmented, but nearly fresh. Pyrite is rare and generally anhedral; often associated with phenocrysts and magnetite. Trace chalcopyrite was observed. Vugs are lined by chlorite and infilled with barite.

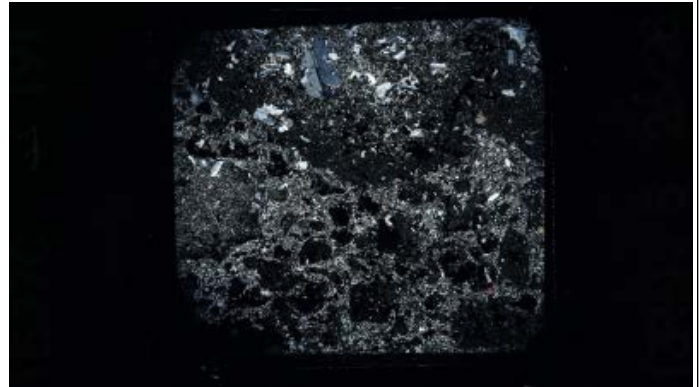
**Structure:** No structure

Plane-polarized



46992391

Cross-polarized



46992411

THIN SECTION LABEL ID: **376-U1527C-13R-2-W 105/107-TSB-TS\_10**

TS no.: 10

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix-supported, polymict lapillistone that is very poorly sorted consisting of fragmented, subrounded plagioclase-pyroxene phyric dacite clasts in clastic, fragmented and cemented matrix. One lapilli-sized dacite clast of fresher appearance. Banding in shear zone very weak. Phenocrysts of plagioclase and pyroxene are fresh, and fresh Fe-Ti-oxides are disseminated throughout. Matrix/groundmass pervasively altered and cemented by chlorite-illite.

Alteration:

The clast is significantly less altered than the surrounding matrix. The contact is sharp; the matrix shows a dark brown-black glassy material, while the clast is replaced by illite-chlorite. Within the clast plagioclase phenocrysts are readily preserved, in contrast the matrix contains only small fragments of disaggregated plagioclase. Pyrite and magnetite are disseminated throughout with very rare chalcopyrite on of which has grey-orange Fe oxyhydroxide alteration rim.

Structure:

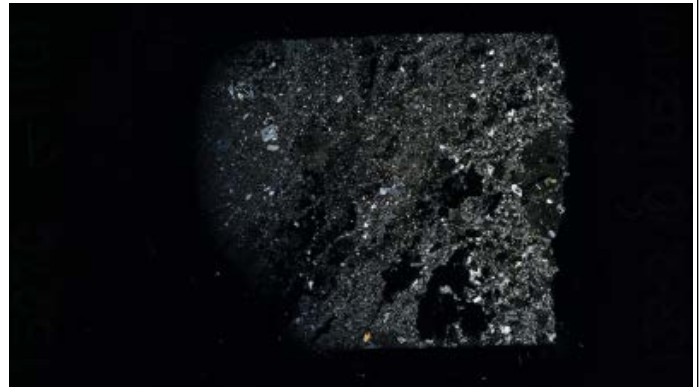
Cataclastic zone with broken, randomly oriented, and equant plagioclase clasts. Matrix is very fine grained clay and chlorite. Volcanic clast in wall rock has a felty texture with only fractured plagioclase phenocrysts.

Plane-polarized



46992451

Cross-polarized



46992471

THIN SECTION LABEL ID: **376-U1527C-13R-3-W 37/39-TSB-TS\_11**

TS no.: 11

**Description Group**

**Summaries**

**Igneous petrology:** This is a poorly sorted, ash- to lapilli sized, angular to subrounded fragments of dacite lava cemented to lapilli-tuff. Dacite clasts are diffuse, embedded into a matrix of similar, more finely ground material and cemented by secondary minerals like quartz etc. Original crypto-crystalline vitric groundmass of clasts is widely altered to chlorite. Plagioclase is dominant and largest phenocryst, often euhedral, mostly fresh, and often forming glomerocrysts, Fe-Ti-oxides, clinopyroxene in minor amounts. Rare pyrite blebs.

**Alteration:** The matrix and clast are replaced by fine-grained illite-chlorite and microcrystalline silica. Chlorite also fills previous stretched vesicle structures. Despite level of alteration relict feldspars and pyroxene are preserved within the clast and the groundmass.

**Structure:** Volcanic clasts have plagioclase with a shape preferred orientation. The foliation within each clast is distinct from the others.

Plane-polarized



46975511

Cross-polarized



46976221

THIN SECTION LABEL ID: **376-U1527C-14R-2-W 74/76-TSB-TS\_12**

TS no.: 12

**Description Group**

**Summaries**

**Igneous petrology:** This is a moderately altered, matrix supported polymict tuff breccia containing two types of clasts. 1. subrounded, light green fine-grained volcanic clast with phenocrysts and glomerocrysts of plagioclase making up a small percentage of sample. The groundmass is intensely altered volcanic ash and contains subhedral to euhedral plagioclase crystals and microlites. Scattered small Fe-Ti oxides are in groundmass. Clast 2 is a subrounded, dark, fine-grained clast with oscillatory zoned plagioclase and trace amounts of pyroxene and Fe-Ti oxides, usually associated with glomerocrysts. Matrix of sample is 50:50 mixture of altered volcanic ash and crystals of plagioclase and quartz.

**Alteration:** Greenish alteration style. Plagioclase and pyroxene phenocrysts still persist but are partially replaced by chlorite. The clast is beside chlorite-illite also replaced by secondary quartz. Vugs are filled with fibrous chlorite and minor Fe-Mn oxyhydroxide. Anhedra magnetite grains are closely associated with plagioclase and pyroxene phenocrysts, Fine-grained magnetite and pyrite is disseminated in the matrix.

**Structure:** Volcanic clasts have plagioclase with a shape preferred orientation. The foliation within each clast is distinct from the others.

Plane-polarized



46992491

Cross-polarized



46992511

THIN SECTION LABEL ID: **376-U1527C-14R-3-W 102/104-TSB-TS\_13**

TS no.: 13

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix-supported lapilli tuff consisting of subrounded, ash-sized clasts of vitric, plagioclase-oxide phyric dacite enclosed in matrix of more finely fragmented dacite clasts. Pervasively altered, with matrix being cemented by secondary phases (quartz, sulfide).

Alteration:

Transition from greenish to yellowish alteration style. Phenocrysts still persist but are often replaced by chlorite. The greenish matrix is replaced by illite-chlorite and quartz. The yellowish alteration zone is stronger altered than greenish, but also mainly by illite-chlorite. Phenocryst preservation is less. The proportion of Fe-oxide and pyrite is more than that of greenish part. Vein filled with silica. Vugs filled with chlorite and Fe-oxides. Finely disseminated magnetite and pyrite. In the yellow alteration zone pyrite is oxidized.

Structure:

Fault breccia to cataclasite at boundary between brown and green alteration styles. Fine grained, matrix supported fault. Fault zone has much smaller plagioclase clasts compared to subhedral to euhedral phenocrysts in wall rock. Volcanic clasts have plagioclase microlytes with a shape preferred orientation. Quartz vein crosscuts all other structures.

Plane-polarized



47024371

Cross-polarized



47024391

THIN SECTION LABEL ID: **376-U1527C-15R-1-W 21/23-TSB-TS\_14**

TS no.: 14

**Description Group****Summaries****Igneous petrology:**

This is a matrix-supported, polymict lapilli tuff with blocks and bombs that is poorly sorted consisting of still closely packed fragmented phyric dacite. Plagioclase phenocrysts are euhedral and may show new growth rims around resorbed cores; oscillatory zoning is rare. Often fragmented. Matrix consists of dacite fragments (vitric and crystal clasts) that are cemented by secondary phases. Original vitric tachylitic clasts with plagioclase microlites still present but strongly fragmented. Pervasively altered.

**Alteration:**

Greenish alteration style. Phenocrysts still persist but are partially replaced by chlorite. The matrix is pervasively replaced by illite-chlorite and quartz. Vugs are filled with chlorite and silica. Finely disseminated magnetite, pyrite, and minor chalcopyrite appear in matrix and in fluid inclusions of quartz crystals.

**Structure:**

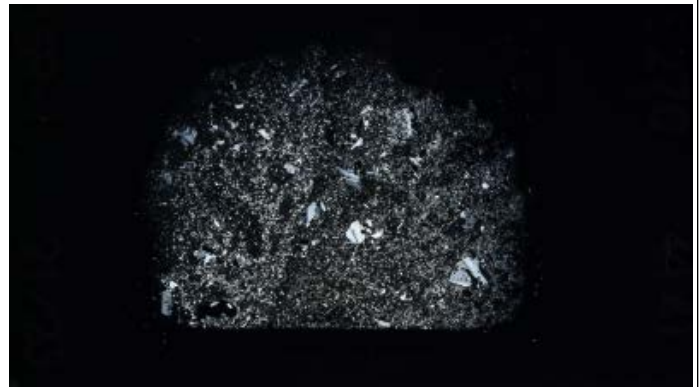
No structure.

Plane-polarized



46992571

Cross-polarized



46992591

THIN SECTION LABEL ID: **376-U1527C-15R-2-W 35/38-TSB-TS\_15**

TS no.: 15

**Description Group**

**Summaries**

Igneous petrology:

This is a matrix-supported, polymict lapilli tuff with blocks and bombs that is poorly sorted consisting of fragmented phyric dacite. Plagioclase phenocrysts are euhedral and may show new growth rims around resorbed cores; oscillatory zoning is common. Phenocrysts are fractured and fragmented. Matrix consists of dacite fragments (vitric and crystal clasts) that are cemented by secondary phases. Residuals of original vitric tachylitic groundmass with aligned plagioclase microlites are still present, but strongly fragmented throughout. Interstices to dacite-clast boundaries and other porosities are barite-filled vugs.

Alteration:

Yellowish alteration style. The matrix is replaced by illite-chlorite and quartz. Phenocrysts are partly altered. Magnetite is common and disseminated throughout. Pyrite is less common but locally occurs in plagioclase associated with chalcopyrite. Chalcopyrite exhibits oxidation rim. Cutting through the matrix is a granular vein of material, mainly barite and silica with the occasional fragment of pyroxene or plagioclase.

Structure:

Volcanic clasts have plagioclase with a shape preferred orientation, best developed in microcrysts.

Plane-polarized



46992611

Cross-polarized



46992631

THIN SECTION LABEL ID: **376-U1527C-15R-2-W 101/104-TSB-TS\_16**

TS no.: 16

**Description Group****Summaries****Igneous petrology:**

This is a matrix-supported, polymict lapilli tuff with blocks and bloms that is poorly sorted consisting of fragmented, closely packed phyric dacite. Plagioclase phenocrysts are euhedral and may show new growth rims around resorbed cores; oscillatory zoning is sometimes present. Residuals of original vitric tachylitic groundmass with aligned plagioclase microlites are still present, but widely replaced by secondary phases. Interstices to lapilli-sized dacite lapilli now often barite-filled vugs. Pervasively and strongly altered.

**Alteration:**

Fine grained green- chlorite-altered matrix with a patchy style and local intensification of alteration in the vicinity of feldspar. Some faint relict perlitic texture evident in the matrix. Vugs are infilled extensively with barite.

**Structure:**

No structure.

Plane-polarized



46992651

Cross-polarized



46992671



THIN SECTION LABEL ID: **376-U1527C-16R-1-W 136/139-TSB-TS\_17**

TS no.: 17

**Description Group****Summaries****Igneous petrology:**

This is a matrix-supported, polymict lapilli tuff that is poorly sorted. Fractured dacite with large euhedral, subequant and fresh plagioclase phenocrysts, often fractured/fragmented often in crystal clots, that show normal zoning. A minor amount of clinopyroxene is present, partially fragmented and replaced, but still fresh. Fe-Ti-oxides are present, and disseminated and lesser associated with plagioclase. Original vitric tachylitic matrix completely altered and mostly replaced.

**Alteration:**

Greenish alteration style. The matrix is pervasively altered by chlorite-illite and shows an equigranular texture of secondary quartz. Magnetite and pyrite occur finely disseminated. Vugs are filled by chlorite and minor pyrite. Phenocrysts are fractured and partly replaced by sericite.

**Structure:**

No structure.

Plane-polarized



47004701

Cross-polarized



47004721

THIN SECTION LABEL ID: **376-U1527C-17R-1-W 110/113-TSB-TS\_18**

TS no.: 18

**Description Group****Summaries**

Igneous petrology:

This is a matrix-supported, polymict tuff breccia with a bomb-sized greenish clast of interwoven tabular plagioclase laths. Moderately and pervasively altered.

Alteration:

Greenish alteration style. Phenocrysts are relatively fresh, but partly replaced by illite-chlorite along cleavages and fractures. The matrix is mainly replaced by chlorite-illite. Magnetite and minor pyrite occur disseminated in the groundmass. Minor chalcopyrite appears. Vugs are unfilled.

Structure:

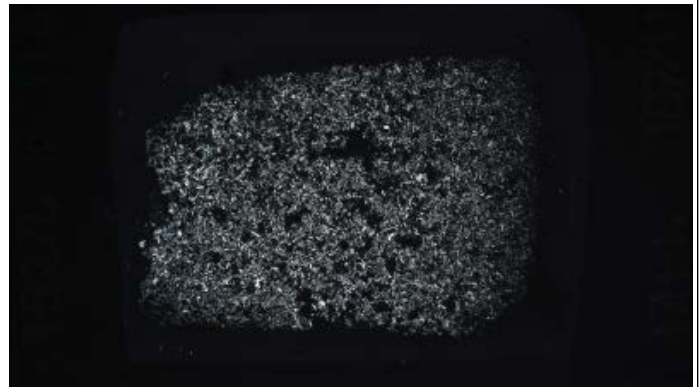
No structure.

Plane-polarized



47005141

Cross-polarized



47005161

THIN SECTION LABEL ID: **376-U1527C-17R-2-W 28/30-TSB-TS\_19**

TS no.: 19

**Description Group**

**Summaries**

**Igneous petrology:** This is a matrix-supported poorly sorted pyroclastic breccia with lapilli showing two distinct domains: (1) phyric dacite clast with large euhedral plagioclase phenocrysts and few vesicles in a mostly replaced groundmass; high clast to matrix ratio; (2) rounded dacite clasts with poorly sorted, sand and granule-sized clasts of plagioclase-Fe-Ti-oxide phyric hyalopilitic dacite set into finely ground and cemented groundmass (clastitic texture). Lower clast to matrix ratio. Phenocrysts of all domains are fresh, while groundmass is pervasively altered.

**Alteration:** Transition between alteration style (2) and (4). The matrix is replaced by chlorite-illite and secondary quartz. Phenocrysts are partly replaced by illite, but mainly fresh. Magnetite and minor pyrite occur unregularly disseminated in the groundmass. Vugs are filled with fibrous chlorite.

**Structure:** Volcanic clasts have plagioclase microlytes with a shape preferred orientation.

Plane-polarized



47005101

Cross-polarized



47005121

THIN SECTION LABEL ID: **376-U1527C-18R-1-W 58/60-TSB-TS\_20**

TS no.: 20

**Description Group**

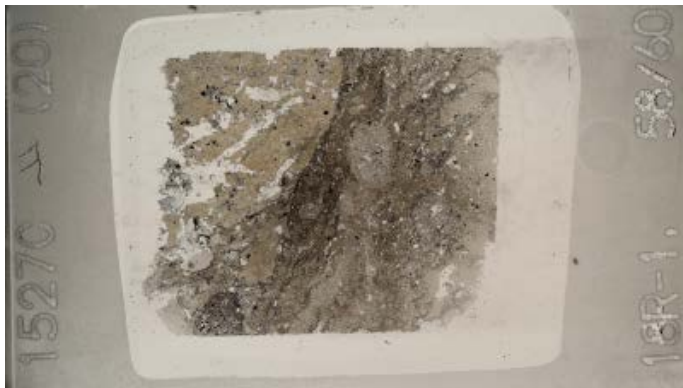
**Summaries**

**Igneous petrology:** This is a clast-supported lapillistone with blocks-bombs consisting of plastically mingled plagioclase-phyric dacite in various stages of clastic fragmentation and disintegration. Larger, clot-forming glomerocrysts are preserved adjacent to clastic zones of fragmented phenocryst and original hyalopilitic groundmass. Groundmass/ matrix pervasively altered. Phenocrysts are unaltered.

**Alteration:** Heterogenous alteration style (4). The matrix is altered to chlorite-illite and quartz. Pyrite is the most often occurring opaque phase, beside minor amounts of magnetite and chalcopyrite. Phenocrysts are partly fractured and replaced by illite-chlorite. Vugs are partly filled with fibrous chlorite-illite.

**Structure:** Cataclasite in contact with volcanic clast. Cataclasite is characterized by fine grained crystals of plagioclase in a matrix of brown clay. Most intense deformation is along contact with volcanic clast. Volcanic clasts have shape preferred orientation of plagioclase microlytes.

Plane-polarized



47005061

Cross-polarized



47005081

THIN SECTION LABEL ID: **376-U1527C-18R-1-W 82/84-TSB-TS\_21**

TS no.: 21

**Description Group**

**Summaries**

Igneous petrology:

This is a clast-supported lapillistone with blocks-bombs consisting of plastically mingled plagioclase-phyric dacite in various stages of clastic fragmentation and disintegration. Clasts of original phyric dacite embedded into hyalopilitic groundmass with perlite-type hydrofracture cracking, next to clastic zones full with finer-sized clasts and phenocryst fragments. Sheared. Matrix/groundmass pervasively altered, phenocrysts are unaltered.

Alteration:

Heterogenous alteration style (4). A darker clast is completely replaced by chlorite-illite and quartz; even the phenocrysts. The matrix also replaced by illite-chlorite and quartz; but phenocrysts are only minor altered. Pyrite appears finely disseminated in the matrix. Magnetite also occurs, but minor. Vugs are filled or partly filled with chlorite-illite.

Structure:

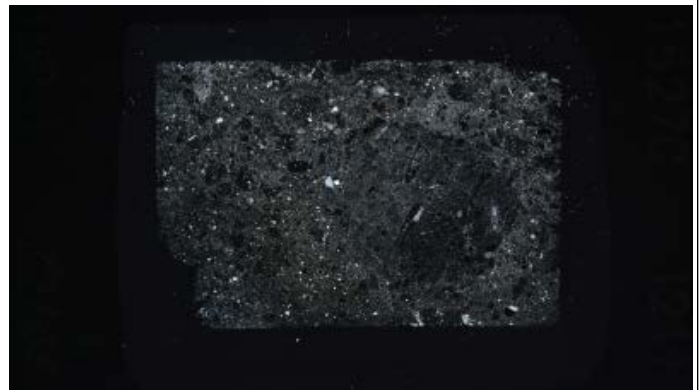
Network of fractures, some filled with opaque minerals.

Plane-polarized



47005021

Cross-polarized



47005041

THIN SECTION LABEL ID: **376-U1527C-19R-1-W 104/107-TSB-TS\_22**

TS no.: 22

**Description Group****Summaries**

Igneous petrology:

This is a matrix-supported polymict lapilli-tuff with fresh plagioclases in various stages of disintegration, ranging from euhedral larger crystals to dispersed fragmented plagioclase. Presumably reflecting a disintegrating vitric dacite. Groundmass completely altered.

Alteration:

Greenish alteration style. The matrix is pervasively replaced by illite-chlorite and quartz; a perlitic texture is preserved in the clast. Magnetite and pyrite occur finely disseminated; magnetite also accumulated along clast margin. Phenocrysts are still relatively fresh but are heavily fractured and partly replaced by sericite. Vugs are only minor and are unfilled.

Structure:

Plagioclase phenocrysts are fractured.

Plane-polarized



47004981

Cross-polarized



47005001

THIN SECTION LABEL ID: **376-U1527C-20R-1-W 29/31-TSB-TS\_23**

TS no.: 23

**Description Group**

**Summaries**

Igneous petrology:

This is a clast-supported, monomict tuff-breccia. Clastite composed of ash to fine lapilli sized, mostly subangular to subrounded fragments of dacite clasts set into groundmass of silt and clay-sized (?) dacite and plagioclase fragments. Some dacite lapilli exhibit banded textures (stress-deformation?). Plagioclase phenocrysts are fresh, and often fractured. Groundmass/matrix pervasively altered (chlorite) and cemented by quartz.

Alteration:

Heterogenous alteration style (4). Phenocrysts still persist but are partly replaced by illite-chlorite. The matrix is replaced by chlorite-illite. Plagioclase phenocrysts are also completely replaced by chlorite-illite and quartz. Vugs are filled with fibrous chlorite and silica. Magnetite and pyrite occur closely associated with phenocrysts and disseminated in matrix. Occasionally, pyrite grains are distributed around the outer rim of vug and clast, which are aligned as a circle shape.

Structure:

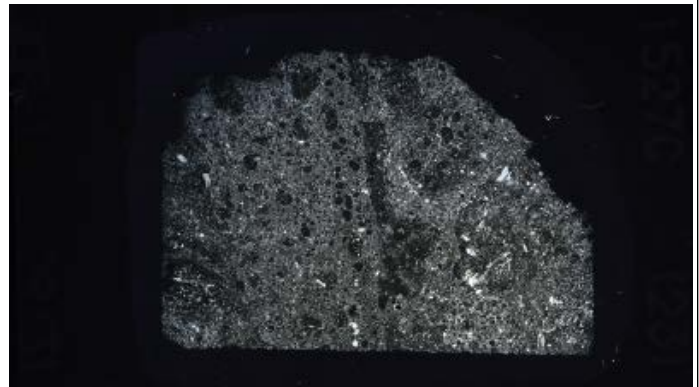
Cataclasite hosted fault zone. Cataclasite is the most altered section with brown clay minerals, fine grained matrix of chlorite, matrix supported. Zones on either side have more and larger clasts, some are recognizable volcanic clasts with plagioclase phenocrysts.

Plane-polarized



47004941

Cross-polarized



47004961

THIN SECTION LABEL ID: **376-U1527C-20R-1-W 52/54-TSB-TS\_24**

TS no.: 24

**Description Group****Summaries****Igneous petrology:**

This is a clast-supported, monomict tuff breccia. Clast of clast-supported tuff-breccia, consisting of moderately to highly plagioclase-phyric dacite. Large, only marginally altered plagioclase phenocrysts (10-15 vol%) and fresh Fe-Ti phenocrysts (ca. 1 vol%) embedded into a hyalopilitic groundmass. Groundmass pervasively altered and completely replaced with original textures only visible in patches.

**Alteration:**

Greenish alteration. Phenocrysts still persist but are partly replaced by illite-chlorite. The matrix is replaced by chlorite-illite. Plagioclase phenocrysts are also completely replaced by chlorite-illite and quartz. Vugs are filled with fibrous chlorite and silica. Magnetite and pyrite occur closely associated with phenocrysts and disseminated in matrix. Occasionally, pyrite grains are distributed around the outer rim of vug and clast, which are aligned as a circle shape. Minor disseminated chalcopyrite.

**Structure:**

No structure.

Plane-polarized



47004901

Cross-polarized



47004921