

Stage of Vein Suite	Principal Components	Orientation	Thickness	Morphological and petrographic description	Associated metallic Minerals	
					Principal	Minor
6	Amlerite and/or siderite	Uncertain	few mm	Thin anastomosing or tabular veinlets. Only seen in drill core; very minor vein phase.		Sph, Cpy, Gn
(b)	Carbonate	Irregular	Hairline	Very thin carbonate veinlets, with accessory sulphides, mainly stibnite		Sb, Sph, Mar
5 (a)	Quartz-carbonate	320°-330°	c10-30cm	Pale, Grey semi-translucent quartz+ irregular patches of white carbonate locally gradational into stibnite-rich lenses. No vugs. No discernible wallrock alteration. Fine to coarse grained, granular to prismatic quartz the dominant component with subordinate, dominantly translucent, non-undulose granular to columnar carbonate and overgrown by abundant translucent carbonate. Contains rounded to subangular fragments of ± preceding vein assemblages, gradational to ill-defined zones of wallrock in vein matrix.	Sb	Boul, Sph, Gn [± asp, py]
(b)	Quartz-carbonate	320°-330° to cross cutting	few cm	Single veins, random, intergrowth of quartz and carbonate. Veins Carbonate- to quartz-rich. Carbonate translucent, granular; quartz undeformed, granular to prismatic. Massive.		Sb, Thd (rare)
4 (a)	Sulphides, Quartz-carbonate		Veins <10cm Dissemination zones: few cm to 1 m	Sulphides (aspy, py) disseminated in lode zones and in phyllic altered greywacke adjoining lode zones. Extensive wallrock alteration. Veins = concordant to lode zone, locally cross-cutting; granular to finely banded textures (frequently carbonate rich margins ± banded fine grained sulphides. Veins composes of quartz + two optically distinct carbonates, pale brown distinctly undulose, and translucent non-undulose. Quartz varies from fine to coarse grained, granular to prismatic and is essentially undeformed (weakly undulose). Intergrown with brown carbonate in various proportions, quartz- to carbonate-rich, massive to finely layered: axial quartz + translucent carbonate common. Sulphides idiomorphic towards quartz and both carbonates; primarily associated with qz-brown carbonate.	Asp, Py (Au)	Cpy, Sph, Thd
3	Fault gouge + breccia	320° - 330°	<1m	Polyphase breccias of wallrock and earlier vein suites + rock flour gouge		? Ph, Asp
(b)	Quartz-carbonate ± sericite gradational to sericite-rich	Irregular	1 cm to c.20m	Quartz, pale greyish white or white, the dominant component, but with gradations to carbonate-rich veins.		± Asp, Py
2 (a)	Quartz-carbonate ± chlorite gradational to chlorite-rich			Random intergrowth textures predominant, though with increasing phyllosilicate content, layering more frequent. Minor silicification defined by irregular quartz segregations in wallrock adjacent to lode zones. No vugs. Both vein types principally quartz ± minor carbonate, phyllosilicate + accessory albite and overgrown by patchy carbonate. Grain size very variable, coarse to microcrystalline, equigranular, quartz, carbonate to non equant prismatic quartz. Chlorite as polycrystalline patches or vermicular in quartz; sericite textures as suite 1a. Deformation textures variable from mild to very pronounced cf. suite 1; such textures restricted to veins, indicating brittle shear localised within veins.		± Py

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(b)	Carbonaceous material ± quartz ± carbonate	Stratiform to irregular	few mm to c.30 cm	Dark grey carbonaceous veins and veinlets ± dark grey quartz with or without carbonate infilled transverse fractures, variable to irregular diffuse carbonaceous replacement in greywacke.		± Py euhedra Pryobitumen
(a)	Quartz-carbonate ± carbonaceous material	Stratiform	to 30 cm	<p>Bedding parallel zones of strongly foliated carbonaceous material containing stratiform lenticular, podiform and occasionally sigmoidally folded quartz-carbonate veins resembling in appearance, those of suite 2. Veins composed of quartz, white mica and subordinate intergranular carbonate. Proportion of mica very variable from minor to abundant, either intergranular with quartz, or optically enclosed by it. Moderate to pronounced cataclastic deformation in quartz (undulose extinction, mortar, lamellar/ribbon texture).</p> <p>Principal vein components overgrown by microcrystalline carbonate, frequently associated with dark grey to black cryptocrystalline carbonaceous material. Latter also defines spaced lamellae, frequently anastomosing and oriented parallel to vein margins and similar foliae in wallrock.</p>		± Py euhedra and/or fine grained stratiform or transverse veinlets and patches.

G.M Steed and J.H Morris (1986): Gold Mineralization in Ordovician Greywackes at Clontibret, Ireland