

Other constituents of the detrital fraction are metamorphic quartzite grains and rarer argillaceous (?sedimentary) lithic fragments. Among the feldspars the distinctively-twinned microcline is predominant - a fact which indicates a plutonic source region for at least some of the clastic material. Tourmaline and zircon are the major accessory heavy minerals. These indicate the overall maturity of the sediment, more friable and unstable heavy minerals having been broken down or removed. It is notable that the few zircon grains in the thin section are almost perfectly circular whereas tourmalines are irregular and have apparently broken and splintered during transport rather than having suffered abrasion; possibly the zircon is recycled sedimentary material and the tourmaline is indicative of brief transport during the latest cycle of weathering and deposition. The persistence of microcline and wisps of mica in the fragments enhances this view.

Authigenic materials are carbonate and kaolinite/dickite. Carbonate is present as anhedral crystals up to 0.3 mm across; these are plain-extinguishing unstrained material which has clearly partially replaced both quartz and clay. Loose aggregates of brown carbonate granules are probably only slightly remobilised parts of the detritus. Much of the intergranular material has a grain size of about 0.01-0.08 mm and has low relief and birefringence; this is kaolinite/dickite. The latter is known to be present in the Hawkesbury sandstone of the Sydney Basin and in Permian sandstones of the Cooper Basin. In some places this material forms "rouleaux" which are so large that they must have been formed in situ; even moderate transport would have destroyed them. Some of the dickite has absorbed a little of the purple-dyed araldite used to impregnate the rock and hence may contribute to the rock's porosity.

In different places (often adjacent to each other) the intergranular material has a different texture and composition (usually ratio of 'detrital' clay:quartz:authigenic dickite) and this can be taken to indicate that the different pools of this material were originally lithic fragments now squashed between the more rigid quartz grains and forming 'pseudomatrix'. Although now apparently part of the matrix this material was transported and deposited with the quartz.

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