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Clastic Sedimentary rocks

Conglomerate & Breccia

Conglomerates

Conglomerate is a solid rock formed in cementation and lithifaction of clasts with angular shape, i.e. pebble sizes of gravel (>2 mm). The mutual relations of pebbles and grains, matrix and cement distinguish between orthoconglomerates and paraconglomerates.

1- Orthoconglomerates

Orthoconglomerates are firmly cemented coarse-grained clastics which are characterized by clasts support and mainly composed of pebbles of gravel dimension and not more than 15% fine-grained matrix (argillaceous and clayey detritus), and cemented with the chemically extracted mineral cement (quartz, calcite, opal, etc.).

The oligomict and petromict conglomerates are distinguished by the mineralogical and lithological composition of pebbles resistant to wear, i.e. the amount of pebbles and grains of quartz, quartzite and chert.

Oligomict conglomerates consist of >90% to wear-resistant pebbles and have simple petrographic and mineralogical composition; consist of pebbles and grains of quartzite and chert. The intergranular pores have relatively high content of chemical secreted cement. Pebbles and grains of oligomict conglomerates are the most stable remains of intensive

spending of large amounts of older rocks. The rock represents the most resistant remnants of resedimentation rock debris after several cycles of transportation and deposition. Therefore, it symbolizes high degree of sedimentological maturity. The degree of sedimentological maturity is determined with content of the most resistant components as a result of several cycles of resedimentation. Pebbles of chert may be the remains of wear large masses of limestone containing lenses, nodules and concretions of chert, quartz and quartzite pebbles, remains of granite , gneiss and other metamorphic rocks that are criss-crossed with veins of quartz, zones or lenses of quartzite, or remains of quartzite inserts in phyllite, or chlorite schists.

Orthoquartzose conglomerates generally do not contain pebbles larger in diameter (8–10 cm) and do not appear in thick layers. It is characterized by a well sorting, a high degree of roundness and clasts support. The grain sizes of orthoquartzose conglomerates make a gradual transition in coarse quartz sandstone. It is typically found as thin layers within coarse-quartz sandstone of alluvial deposits or marine beaches deposited by high energy of water.Petromict conglomerates hold more than 10% of the chemically wear unstable pebbles and grains of various petrographic and mineralogical compositions. The rocks are characterized by clasts support, and in the intergranular pores have excreted chemogenic

cement: calcite, quartz, opal, and dolomite. The petromict conglomerates are mixtures of metastable pebbles (clasts) of different types of igneous, sedimentary and metamorphic rocks and grains primarily of quartz, ±feldspar and mica. The rocks are usually dominated by one petrographic type of pebbles, such as limestone or crystalline schist and quartzite of high degree of metamorphism. This is the most common and widespread type of conglomerate. Petromict conglomerates are characterized by relatively large pebbles, in some cases with a diameter >20 cm, as well as poor level of sorted sand grains in the interspaces between pebbles . It mainly belongs to river sediments (alluvial fan), delta (delta head, the slope of the delta), and coarse-grained, rarely mediumgranularturbidites.

Figure Petromictorthoconglomerate predominantly composed of perfectly rounded pebbles of Jurassic and Cretaceous limestone.

2 - Paraconglomerates

Paraconglomerates are a special type of conglomerates with a muddy or matrix support containing more than 15% clay-dusty (muddy or pelite) matrix whose share is often higher in relationship to the total volume of pebbles sizes of gravel (Table 5.3). These are in reality the sediments, which are not incurred in ordinary conditions of transportation and deposition of clastic material, but mostly a combination of iceberg transport and water floods in rapid melting of glaciers, sudden torrential flows at the foot of the mountains (piedmont zone), debrite flows or alluvial fans in sudden floods. This type of conglomerate has significantly lower distribution with respect to its other counterparts.

Breccias

Breccia is a general term for more or less tightly bound clastic rocks composed of angular to semirounded rock debris and cement or matrix .

Figure. Matrix support breccia composed of rock debris in the form of large angular fragments of limestone and dolomite in the fine-grained matrix

Breccia's, in geological terminology, are often called by prevailing petrographic type of fragments. They can be dolomite breccia, limestone–dolomite breccia, etc. The sedimentological and petrological classification of breccia's is based on the mode of their origin and is divided into the following:

1. Cataclasticbreccias
2. Collapse and emersion breccias
3. Postsedimentary diageneticbreccias
4. Pyroclasticbreccias.