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The Ričice deposit, as well as the whole of the Crna Mlaka Basin, is mostly composed of Quaternary clay beds, intercalated with layers and lenses of sands and fine-grained conglomerates, developed in the Pliocene-Pleistocene period.

The Rečica clay deposit is represented by a seried of sub-parallel and gently inclined, almost horizontal, layers of silty clay, which are laterally continuous. The major part of the clays is represented by the alternation of brown and grey, sometimes yellow clays that are underlain by greenish-grey and grey-blue clays. The clay deposits are 8-12 m thick.

Clays from the Rečica deposit can be classified as a montmorillonite-illite variety, in accordance with their genetic type. The main mineral constituents are quartz, 10 Å phyllosilicate (illite and/or mica) and smectite group minerals, while goethite, kaolinite, chlorite, feldspars and dolomite are subordinate to accessory minerals. The Rečica deposit can be classified as a montmorillonite-illite variety, in accordance with their genetic type. The main mineral constituents are quartz, 10 Å phyllosilicate (illite and/or mica) and smectite group minerals, while goethite, kaolinite, chlorite, feldspars and dolomite are subordinate to accessory minerals.

The clay deposit is of an allochthonous fluviatile-swamp type. The sediments with clay were deposited during the Holocene under fluviatile conditions, as well as in areas in which ponds, swamps and small lakes prevailed.