

HEAVY MINERALS IN NEOGENE SEDIMENTS FROM SOFIS BASIN, BULGARIA

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Neogene sequence in Sofia Basin comprises alluvial and lacustrine sediments: conglomerates, gravels, sands, silts and clays and a few lignite and limestone beds in the lower and the upper part of the sequence. It is thick about 1300 m.

The mineralogical composition of fractions 0,063-0,125 and 0,125-0,25 mm was studied. The following heavy minerals were determined: epidote, zircon, tourmaline, titanite, rutile, apatite, garnet, amphibole, disthene, brockite, anatase, biotite and chlorite. Ilmenite, leucoxene, limonite and hematite represent opaque minerals. The transparent minerals could be grouped into two associations of heavy minerals – epidote-titanite-garnet (with apatite and anatase) and zircon-tourmaline-rutile (with brockite). The first one is characteristic for sediments from the eastern part of the basin, and the last one - for those from the western part. Disthene, anatase and partially brockite present only in sands from the lowermost part of the sequence.

Hydrodynamic, chemical and mechanical maturity indexes of the associations of heavy minerals were calculated. In the lower and the upper levels values are similar and in the sediments from the middle of the sequence – they are significantly lower. The maturity of the associations of heavy minerals from the western part of the basin is higher than from the eastern part. A correlation between the maturity of the associations of heavy minerals and structural and mineralogical maturity of the sediments was established only for sands from the western part of Sofia basin.