

MAGNETIC ANOMALY (KMA) AREA

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The KMA iron ore basin at the southwest of Russia's European part concentrates huge resources. Identified reserves of iron ore make 66% of those in Russia and 1/6 of the world's. The largest deposits—Lebedinskoe, Stoilenskoe, Mikhailovskoe—are being mined with openpits and Korobkovskoe – with underground workings. The mine for recovery of rich ores is being completed on Yakovlevskoe deposit and experimental method of hydraulic mining of loose martite ores through boreholes 500 – 800m deep is being developed on Shemraevskoe deposit.

Three types of commercial ores are recognized: kursk ferruginous quartzites, belgorod rich ores and visloe combined alumina–iron ores. Easily beneficiated magnetite and moderately beneficiated hematite–magnetite quartzites, hematite–martite, specularite–martite, carbonate–martite ores are commercial.

The kursk ferruginous quartzites are chemogenic–sedimentary rocks of the Early Proterozoic ferruginous–siliceous–schist rock association which undergone greenschist, epidot–amphibolite, rarely amphibolite and granulite metamorphism. The iron accumulation from products of chemical weathering of the Archean rocks supplied to marine basin occurred due to appearance of the oxygen barrier at the time of transition from reduction to oxidation regime of the Earth's external envelopes 2.2–2.0 GA ago.

The belgorod rich iron ore originated during laterite weathering of ferruginous quartzites in the Middle Devonian – Early Carboniferous. The most favorable climatic, morphotectonic and hydrogeological conditions for laterite ore development existed in the Early – Middle Visean when the largest deposits of martite and alumina–iron ores as well as bauxites (Yakovlevskoe, Gostishchevskoe, Vislovskoe, Razumenskoe, and Shemraevskoe) were formed.