In 2016, the Geological Brigade No. 103 of Guizhou Geology and Mineral Exploration and Development Bureau discovered two super-large manganese deposits at Pujue and Taoziping, in Songtao County, Guizhou Province (Fig. 1). The Pujue manganese deposit has 191.59 million tons of proven (332+333) class ore reserves, including 35.54 million tons of 332 class and 156.05 million tons of 333 class at an average Mn grade of 17.05%. This deposit ranks first in Asia and seventh in the world for its abundant manganese ore resources, with a potential economic value exceeding 100 billion yuan. The Taoziping manganese deposit has up to 106.39 million tons of proven (332+333) class ore reserves, including 33.48 million tons of 332 class and 72.91 million tons of 333 class at an average Mn grade of 15.98%. This deposit ranks fourth in Asia and twelfth in the world for its rich...
The Pujue and Taoziping manganese deposits are located 224° southwest of Songtao County, which is about 20 km away. The ore district, seated in the piedmont area northeast of Fanjing Mountain, is located in the slope zone that is transitional from the Yunnan–Guizhou Plateau to the low hills in western Hunan Province. It is related to a tectonic denudation and karst erosion landform, with gullies and deeply cutting terrain.

These two manganese deposits are located in the same III-order faulted basin, and are controlled by the same syn-sedimentary fault. The orebodies are hosted in the bottom carbonaceous shale of the first member of the Datangpo Formation (Nd1d1, 720–660 Ma) of the Lower Nanhuanian (725–635 Ma); they belong to a typical sedimentary manganese deposit type associated with an ancient gas leakage. They occur as gently dipping stratiform and stratoid orebodies on a large scale. The largest manganese orebodies in the Pujue deposit are >700 m long, 2000 m wide, and 1.61–13.41 m thick, 5.21 m on average. Those in the Taoziping deposit are 7850 m long, 2500 m wide, and 1.07–14.58 m thick, 4.05 m on average. The ores are mainly massive and banded rhodochrosite, and display micritic, micro-scale and silty textures. The dominant ore minerals are rhodochrosite and manganocalcite.

The mining technical conditions of both deposits are generally simple. This type of manganese ore has been suggested to be high quality for hydrometallurgy based on industrial tests of mining technical performance and practices of deep processing enterprises. A number of electrolytic manganese plants have been built in the mine area, with mature production technology and good development and utilization conditions.

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