Specialized refractories in Pakistan

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Refractories are ceramic materials which are employed to withstand primarily the effects of high temperature operations usually involved in metallurgical processes in blast furnaces, Kilns, high temperature reactors and exhausts of furnaces and engines. The refractories are also expected to remain stable under chemical and physical impacts encountered during their use in high temperature operations. The refractories may be produced in the regular shaped pieces like bricks, tubes, plates etc or as ramming and cemmenting powders. The refractory particles are bound together with the help of fluxes or synthetic binding materials when producing regular shaped bodies.

The major materials required for this industry are magnesite and chromite ores or magnesia obtained from other sources. Extensive deposits of magnesite as well as chromite are found in Pakistan.

Huge reserves of high grade refractory magnesite ore have been found and proved in the Kumhar area of Sherwan, just 22 kilometers northwest of Abbottabad. The deposit can be accessed by metalled road. According to latest estimates the minable reserve of just two lenticular magnesite bodies are 2.98 million tons. There are about thirteen more magnesite bodies of different sizes with geological reserves of 12.39 million tons.

Kumhar magnesite is qualitatively one of the best in the world with highest 98% MgO contents and lesser impurities of CaO, Fe_2 O_3 and SiO_2 etc. It has therefore been declared most suitable for use as refractories after detailed geological and chemical studies.

Magnesite finds extensive use in specialized refractories which are used in iron and steel, cement, lime and other industeries. For this purpose magnesite is first calcined deeply to convert it to a stable form of magnesium oxide (periclase), which would not absorb CO_2 or moisture even at lower temperatures. The magnesium oxide in the inert form in the presence of small percentage of iron oxide and silica acts as basic refractory substance.