



Diatomite Ores: Origin, Characterization and Applications

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Abstract: Diatomite is a sedimentary silica mineral that composed of the fossilized skeletal remains of the microscopic single-celled aquatic plants called diatoms. Over 10,000 species of these microscopic algae have been recognized, each with its own distinct morphology. Accordingly, diatomite is multifaceted and varies from micro- to macro-meter in size. Diatomite has many important industrial applications due to its unique properties. Its chemical constitution is approximately 85% insoluble silica; accordingly it is inert and will not break down or decompose. It is naturally very porous that makes it selective in the filtration of beverages, oils, waters, chemicals, pharmaceuticals, metallurgy, agro-food intermediates, and sugars. Its porosity contributes also to its ability to draw water, while moving water and nutrients laterally throughout the agricultural medium making it ideal for hydroponics. Diatomite is a lightweight absorbent that is ideal for automotive, custodial, and industrial markets. It is reusable, which makes it economical and cost effective for long term use. According to high absorbency which speeds up incorporation of oil into mixture, diatomite is used in rubber industry to produce good tensile strength and extrudability, and makes rubber remains soft and easily millable. As catalyst carrier, diatomite products could be available as powder and pellet, which can help in reducing structural stress on equipment; while high porosity gives efficient dispersal; and also due to its large surface area permits more active catalyst per unit weight of carrier, and high strength under heat and attrition. The oldest use of diatomite was as a very mild abrasive and for this purpose has been used in toothpaste and metal polishes, where hollow, thin-walled structure collapses under pressure to produce polishing action, and different grades produce effects ranging from gentle buffing to hard abrasion.

Keywords: *Diatom, diatomite ores, porous structure, filter aid, catalyst, soil reclamation, fillers.*

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