

Spheroidal Beads from Boiler Slag and Fly Ash

Paul W. Meyer

Black Diamond, Inc., 499 Cottage Grove Drive, Woodbury, MN, 55129

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ABSTRACT

Boiler slag granules fuse into round, black, glassy beads during free-fall through a vertical tube furnace heated above 1250°C (2280°F). The sphericity, hardness and compressive strength of the beads are comparable to those of soda-lime glass beads marketed for shot peening. Self-cemented pellets of coal fly ash fuse under these conditions into round beads with equally high sphericity but reduced strength and hardness. Beads fused from slag or fly ash may find use as shot peening media, aggregate for concrete or mortar, or hydraulic fracturing proppant. This paper describes preliminary test results on chemical and mechanical properties relevant to these applications. The energy required to produce the beads is also reported.