

PRODUCTION OF MANUFACTURED AGGREGATES FROM FLUE GAS DESULFURIZATION BY-PRODUCTS

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ABSTRACT

CONSOL R&D has developed a disk pelletization process to produce manufactured aggregates from the by-products of various technologies designed to reduce sulfur emissions produced from coal utilization. Aggregates have been produced from the by-products of the Coolside and LIMB sorbent injection, the fluidized-bed combustion (FBC), spray dryer absorption (SDA), and lime and limestone wet flue gas desulfurization (FGD) processes. The aggregates produced meet the general specifications for use as road aggregate in road construction and for use as lightweight aggregate in concrete masonry units. Small field demonstrations with 1200 lb to 5000 lb of manufactured aggregates were conducted using aggregates produced from FBC ash and lime wet FGD sludge in road construction and using aggregates made from SDA ash and lime wet FGD sludge to manufacture concrete blocks. The aggregates for this work were produced with a bench-scale (200-400 lb batch) unit.

In 1999, CONSOL R&D constructed and operated a 500 lb/hr integrated, continuous pilot plant. A variety of aggregate products were produced from lime wet FGD sludge. The pilot plant test successfully demonstrated the continuous, integrated operation of the process. The pilot plant demonstration was a major step toward commercialization of manufactured aggregate production from FGD by-products.

In this paper, progress made in the production of aggregates from dry FGD (Coolside, LIMB, SDA) and FBC by-products, and lime wet FGD sludge is discussed. The discussion covers bench-scale and pilot plant aggregate production and aggregate field demonstrations.