

SECTION 929
FLY ASH, SLAG, MICROSILICA AND OTHER POZZOLANIC MATERIALS FOR
PORTLAND CEMENT CONCRETE

929-1 General Requirements.

929-1.1 Fly Ash: Fly ash shall meet the requirements of ASTM C 618 for Class C or Class F. Sampling and testing shall follow the requirements of ASTM C 311.

929-1.2 Slag: Slag shall meet the requirements of ASTM C 989. Sampling and testing procedures shall follow the requirements of ASTM C 989.

929-1.3 Microsilica: Microsilica shall meet the requirements of ASTM C 1240 using the referenced test methods and frequencies.

929-2 Basis for Source Approval.

929-2.1 Fly Ash: The fly ash supplier shall submit certified test reports from an approved laboratory acceptable to the Engineer, certifying that the fly ash conforms to this Specification and was obtained from the residue of an electric generating plant using ground or powdered coal. The fly ash supplier shall utilize a quality control plan approved by the State Materials Office.

The Department reserves the right to withdraw quality control plan approval and to require fly ash shipments to be individually tested prior to incorporation into Department work. Quality control plan approvals may be reconsidered at any time the performance of a fly ash is in question including problems with concrete quality, erratic quality control data or failure of independent assurance test samples to meet all requirements.

The approved laboratory shall be inspected by the Cement and Concrete Reference Laboratory on a regular basis as a fly ash testing laboratory, and shall have corrected any deficiencies noted at the previous inspection. The laboratory must authorize the Cement and Concrete Reference Laboratory to send a copy of the inspection report to the State Materials Office.

929-2.2 Slag: The slag manufacturer shall furnish, at the time of shipment, certification of test results from samples of the material taken during production or transfer, and certifying compliance to applicable requirements of ASTM C 989. The slag manufacturers shall also state in writing the nature, amount and identity of any processing or other additions made to the slag.

929-2.3 Microsilica: The supplier of microsilica shall furnish a certification stating the results of the tests made on the microsilica taken during production or transfer, indicating that the applicable requirements have been met.

929-3 Special Requirements.

929-3.1 Fly Ash (Class C): When a Class C fly ash is used in moderately or extremely aggressive environments, tests made by the supplier shall verify improved sulfate resistance of the concrete in accordance with ASTM C 1012, and improved corrosion protective properties measured by FM 5-522, as compared to similar concrete made with Class F fly ash. No mix designs will be approved in advance of satisfactory completion of such tests.

929-3.2 Slag: Only Ground Granulated Blast-Furnace Slag Grade 100 or better (28 day Index) will be permitted.

929-3.3 Microsilica: For slurried or densified microsilica, tests shall be made on the raw microsilica from which these products were made.

929-4 Exceptions.

Neither fly ash nor slag shall be used in conjunction with Type IP or Type IS cements.

929-5 Acceptance Testing.

929-5.1 Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on certified tests meeting the chemical (Supplementary Optional included) and physical requirements of ASTM C 618 for each LOT, not to exceed 1,985 tons [1,800 metric tons] per LOT. When the loss on ignition exceeds 5%, the Uniformity Requirements in the Supplementary Optional Physical Requirements shall be mandatory. These tests (including the physical and chemical tests) shall be made for each LOT, not to exceed 400 tons [360 metric tons] per LOT.

Certification of these tests shall be provided to the District Materials Office, and corresponding samples for independent assurance tests shall be provided upon request.

929-5.2 Slag: Acceptance of slag shall be based on certified test reports meeting the chemical and physical requirements of ASTM C 989 for each LOT, not to exceed 2,500 tons [2,300 metric tons] per LOT. Reference Cement used for determination of Slag Activity shall meet the requirements of ASTM C 989.

Certification of these tests shall be provided to the District Materials Office, and corresponding samples for independent assurance tests shall be provided upon request.

929-5.3 Microsilica: Acceptance of microsilica shall be based on certified test reports, meeting the chemical and physical requirements of ASTM C 1240. The frequency of tests shall be as stated in ASTM C 1240.