

### 1. Product Name

- Coal Ash (including Fly Ash), Class C and Class F

### 2. Supplier

Holcim (US) Inc.  
8700 Bryn Mawr Avenue  
Chicago, IL 60631  
Phone: (888) 646-5246  
E-mail: [ask@holcim.com](mailto:ask@holcim.com)  
Web: [www.holcim.us](http://www.holcim.us)

### 3. Product Description

#### Usage

Coal ash (including fly ash) is a pre-consumer recycled material which can be used in a wide variety of applications including concrete construction. The use of coal ash as a partial replacement of cementitious materials can result in stronger, more durable concrete.

Coal ash can also be used to improve concrete workability, decrease permeability, reduce sulfate attack, enhance bleeding and segregation, reduce shrinkage, reduce heat of hydration, increase compressive strength and increase flexural strength. Coal ash is suitable for a variety of concrete construction applications from general construction to dams, piers, massive mat placements, footings and similar structures.

Uses include:

- Bridges
- Cast-in-place
- Concrete Masonry Units (CMU)
- Drains
- Grout
- Masonry
- Pipe
- Precast
- Pre-stress or post-tension
- Ready-mix
- Roads
- Soil Stabilization
- Tilt-up
- Water tanks

#### Packaging

Coal ash (including fly ash) is regionally available and can be supplied in bulk quantities.

#### Composition and Materials

Coal ash can be various shades of brown or gray in color, depending on the type of coal source. It is primarily silicate glass containing silica, alumina, iron and calcium. Minor constituents are magnesium, sulfur, sodium, potassium and carbon. Chemical composition of coal ash varies widely.



Lake Murray Dam Project in South Carolina

Coal ash is the by-product of the combustion of pulverized coal at power generating plants. Exact chemical composition of coal ash is largely determined by the coal used. Upon ignition in the furnace, most of the volatile matter and carbon in the coal are burned off. During combustion, the coal's mineral constituents (such as clay, feldspar, quartz and shale) fuse in suspension and are carried away from the combustion chamber by the exhaust gas.

The fused material cools and solidifies into spherical particles called coal ash or fly ash. This is then collected from the exhaust gas by electrostatic precipitators or bag filters. The coal ash collected from exhaust gases needs no further processing for use in blended cement or concrete.

Most particles of coal ash are spherical. The particle size of coal ash varies from one micron to as large as 100 microns (typical particle size is under 20 microns). Specific gravity can range between 2.2 and 2.8, depending on the type of coal ash.

#### Types

Coal ash is categorized by ASTM C618 and AASHTO M 295 as either Class C or Class F.

#### Benefits

Coal ash is a versatile building material that is suitable for a variety of concrete construction applications. To achieve these and other special properties, particular care is needed when proportioning, batching, placing, finishing and curing concrete containing these products.

### Limitations

There are many variables that affect concrete performance beyond the control of the cement manufacturer. Good concreting practices are required in order to achieve desired results. Attention must be given to formwork, batching, mixing, placing, finishing and curing. In special applications, selection of aggregates, admixtures and additives may need to be scrutinized. Holcim (US) Inc. recommends that all concrete mix proportions be evaluated for acceptable performance prior to use.

## 4. Technical Data

### Applicable Standards

Produced in accordance with:

- **ASTM C618** Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- **AASHTO M 295** Standard Specification for Coal, Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

### Physical / Chemical Properties

Coal ashes are manufactured to conform to all applicable requirements for the designated class of ASTM C618 and AASHTO M 295.

## 5. Installation

### Requirements

For best practices in utilizing coal ash, consult application specifications and guides as available from the American Society of Testing and Materials (ASTM), American Concrete Institute (ACI), American Coal Ash Association (ACAA) or other reputable industry organization.

### Methods

Concrete is a material that includes several constituents such as cement, aggregate (usually sand and gravel), water, and admixtures. Freshly mixed concrete should generally be plastic or semi-fluid and moldable.

Good concreting practices are required for durable and strong concrete. Proper proportioning, batching, mixing, placing, consolidating, finishing and curing, as well as proper subgrade preparation, formwork, uniform slump, special techniques and other steps are all critical to achieving the desired results.

The character of concrete is largely determined by the water-cement ratio (w/c), and is especially critical to a durable, strong concrete. Freshly mixed (plastic) and hardened properties of concrete can be enhanced by adding supplementary cementitious materials (SCM's) or admixtures during batching. Admixtures may be used to adjust setting time and/or hardening, reduce water demand, increase workability, entrain air, improve cost-effectiveness or other properties.

### Safety Precautions

Refer to the applicable Safety Data Sheet (SDS), which should be consulted prior to the use of this product. These SDS's are available at [www.holcim.us](http://www.holcim.us).

Avoid direct contact with the skin. If contact occurs, wash skin with water as soon as possible. Proper PPE is always required.

## 6. Availability and Cost

Availability: Coal ash (including fly ash) is regionally available. Contact the nearest Holcim (US) Inc. sales office for availability in your area.

Cost: Pricing information can be obtained from the nearest Holcim (US) Inc. sales office.

## 7. Warranty

Upon request, Holcim (US) Inc. can provide Material Certification Reports demonstrating that coal ash meets applicable ASTM and AASHTO standards. Holcim (US) Inc. will not guarantee finish work, having no control over the use of this product. Holcim (US) Inc. shall not be responsible for condition of material after delivering to dealer or distributor.

## 8. Technical Services

Technical service is available by contacting the nearest Holcim (US) Inc. sales office at (888) 646-5246.

For questions on any technical information contained in the document, contact a Holcim (US) Inc. Technical Services Engineer for further detail.

## 9. Filing Systems

Additional product information is available from the manufacturer.

### Corporate Headquarters

Holcim (US) Inc.  
8700 Bryn Mawr Avenue  
Chicago, IL 60631  
(888) 646-5246

### Corporate Office

6211 Ann Arbor Road  
P.O. Box 122  
Dundee, MI 48131  
(888) 646-5246