

## APPENDIX B

### Availability of Fly Ash

Fly ash is a pozzolanic material that is a by-product of coal-fired, electrical power-generation plants. Because of its pozzolanic properties, it can be used as a—

- Soil stabilizer.
- Liming material.
- Cement component.

Depending on its calcium oxide (CaO) content, fly ash may be used as a stand-alone product or in combination with other pozzolanic materials.

Fly ash is divided into two classes, based on their CaO content. They are—

- Class F.
- Class C.

Class F fly ash has a low CaO content (less than 10 percent) and is not suitable for use as a stand-alone product for engineering purposes. Class C fly ash is often referred to as “high lime” fly ash. Its CaO content must be a minimum of 12 percent and frequently exceeds 25 percent. Class F fly ash originates from hard coal (anthracite and bituminous coal), whereas Class C fly ash originates from brown coal (lignite and subbituminous coal).

Fly ash occurs throughout the world. In many countries, both classes of fly ash can be found. The likelihood of finding a particular class of fly ash depends on the individual country. Hard coal is more frequently used in industrialized countries in the manufacture of steel. Therefore, in industrialized nations having both hard and brown coal reserves,

the amount of brown coals used for power generation is likely to be greater; thus the percentage of Class C fly ash would be greater.

The major coal-producing countries and the percentages of the hard and brown coal reserves are found in *Table B-1*.

**Table B-1. Percentage of hard and brown coal reserves in major coal-producing countries.**

Country	Hard Coal Reserves (%)	Brown Coal Reserves (%)
South Africa	100	--
India	90	10
Indonesia	2	98
Russia	45	55
Poland	69	31
United Kingdom	100	--
Germany	41	59
United States	48	52
Canada	27	73
Brazil	17	83
Columbia	98	2
China	100	--
Australia	36	64