The University of North Dakota has developed a method that increases the value of Class C fly ash for beneficial use. This cement is resource friendly, with low NaOH, water, and energy use. Soft cement aggregates rather than flowable liquid cement are produced using this method, are used to fill a form of desired size and shape, and then compressed prior to curing. As a result, this method is ideal for blocks, bricks, pavers, and similar products.

Advantages

- Expands beneficial use opportunities for Class C fly ash
- NaOH can be reduced to just a few percent of typical amounts that are used with Class C fly ash, and even eliminated entirely
- Na₂CO₃ may be used as an alternative activator to regulate activation kinetics
- Water use reduced by more than 50%
- Compressive strength routinely exceeds 35 MPa
- Simple, cost-effective cold pressing manufacturing with standard curing time
- Lower carbon footprint

The Technology

This low-alkali fly ash cement is produced by adding just enough water to dampen the fly ash so it forms soft aggregates when mixed. A very small amount of NaOH or Na₂CO₃ activator may optionally be added. The soft, moist aggregates are added to a form of suitable size and shape, cold-pressed, and then cured at ambient temp or fast-cured at elevated temp.