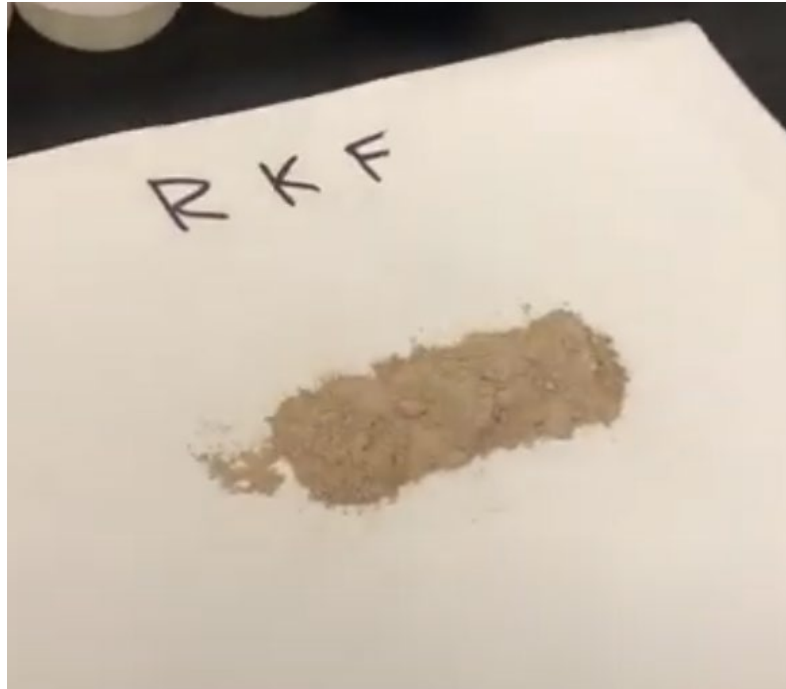


Projects

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Use of RKF in Concrete



Description and Benefit

The Construction and Materials Division was approached about devising a way of lowering the amount of carbon dioxide (CO₂) incorporated in concrete. The concrete industry, especially cement manufacturers, have started this trend by adopting Type IL as the new universal cement, replacing Type I/II. This change reduces the amount of greenhouse gases released at the plant and assists in reducing the carbon footprint. For decades, MoDOT has utilized fly ash as a mineral admixture to produce durable concrete. Unfortunately, quality of fly ash is becoming less and less available as the EPA has placed stringent restrictions on coal-fired power generating stations since large amounts of CO₂ are released at these plants. As an option to fly ash, MoDOT has discovered a viable option in RKF. RKF is the by-product of the production of calcined clay. It's a mineral admixture that provides longer hydration periods in concrete than fly ash, better overall compressive strength, and enhanced durability. On the negative side, Metakaolin is extremely expensive since it's a process-controlled product. On the plus side, RKF is the by-product and a less expensive option. It provides the same properties as metakaolin at a much lower cost and available since this product is produced in Missouri. The most important aspect is no CO₂ is released into the environment when metakaolin/RKF is produced at the plant. MoDOT can reduce CO₂ in concrete by approximately 50% by adding Type IL cement, RKF, naturally occurring gypsum and limestone as an aggregate, sand, water, and chemical admixtures.

For More Information Contact

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