



## Productivity

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## Determination Sulfide Sulfur by Oxidation of Blended Slag Cement



### Description and Benefit

Slag cement has been incorporated into concrete projects in the United States for over a century to improve durability and reduce life cycle costs. MoDOT has utilized slag cement in concrete for bridges and highways because of its longer hydration periods, ultimate strength gain and longevity. Slag cement contains calcium, silicon, aluminum, iron, titanium and sulfur. The main form of sulfur in slag cements is sulfide sulfur. This type of sulfur is distinguishable due to its odor. In an acidic environment, slag cement releases hydrogen sulfide gas or “rotten egg” smell. ASTM C989, Standard Specification for Slag Cement for Use in Concrete and Mortars, limits sulfide sulfur to a maximum of 2.5% in slag cements. This is due to the potential of sulfides producing sulfuric acid in concrete and corroding the rebar.

This innovation focuses on safety, simplifying work, saving time and money. The reduction of acids and bases used for this procedure implements higher safety measures since the ASTM C114 sulfide sulfur test requires the use of many different chemical reagents to perform the test and hazardous waste is generated by this procedure. Work is simplified by performing the normal testing specified for this material without having to deviate from this by performing a separate procedure independently and saves money since excess chemicals and glassware will not need to be purchased. Currently, no other state DOT is utilizing this procedure.

### For More Information Contact

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