

Aggregate Alkali-Silica Reactivity (ASR) Testing

Aggregate Alkali-Silica Reactivity (ASR) testing represents an integral part of ongoing laboratory testing services at American Engineering Testing, Inc. (AET). We can test for this important parameter using any of seven accepted methods. AET is USACE-validated and AMRL-accredited for several of these methods.

The following table details our scope of services for ASR testing:

Test Method	Name of Test	Completion Time	Sample Size (lbs.)
ASTM:C1260	Potential alkali reactivity of aggregates (Rapid Mortar Bar Method)	3 - 4 weeks	10# Aggregate 3# Cement
ASTM:C1260/C1567	FAA test involves 28 day exposure readings using potassium acetate runway deicer (an alternative to C1260 & C1567 methods)	5 weeks	10# Aggregate 3# Cement
ASTM:C1293	Length change of concrete due to alkali-silica reaction	12 months minimum	125# Aggregate 50# Cementitious
ASTM:C1567	Potential alkali reactivity of aggregates with cement/pozzolan combinations (new method)	3 - 4 weeks	10# Aggregate 3# Cement 3# Fly Ash/Slag
ASTM:C227	Potential alkali reactivity of cement-aggregates combinations (Original Mortar Bar Method)	6 months	15# Aggregate 5# Cementitious (of each size & source)
ASTM:C289	Potential alkali-silica reactivity of aggregates (Chemical Method)	3 - 4 weeks	5# Aggregate
ASTM:C295	Petrographic examination of aggregates for concrete	2 - 4 weeks	5# Fine aggregate 30# Coarse aggregate (of each size & source)
ASTM:C856	Petrographic examination of hardened concrete	2 - 3 weeks For rush orders: add 20% to cost	10# Aggregate 3# Cement

ASR is the reaction between unstable silica in aggregates and the alkali in the cement paste, which produces an expansive gel. This reaction causes extensive cracking and expansion within the aggregate particles and ultimately damages the concrete itself. Common reactive aggregates include chert and shale as well as igneous and metamorphic rocks containing strained quartz. As these reactions are driven by moisture, reactive aggregates used in exterior construction are typically the most susceptible. The reaction continues as long as reactive silica and moisture are available.

Additional services are available. For more information, contact:

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To avoid ASR issues, fine and coarse aggregates are tested in concert with a high alkali cement. For specific projects, testing may be performed with the actual materials proposed for the new construction. Representative testing in early stages can minimize problems in the future.



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