

ekkomaxx™ ASTM C1157 Certification

BACKGROUND

ASTM C1157 “Standard Performance Specification for Hydraulic Cement” was developed to characterize the physical properties of hydraulic (i.e., portland) cement. Testing of ekkomaxx™ was performed by an independent test laboratory to determine the conformity of ekkomaxx™ to the ASTM C1157 standard.

TESTING

The following test sequence was performed and followed by Froehling & Robertson Inc., an independent accredited test laboratory:

- ASTM C187 “Standard Test Method for Normal Consistency of Hydraulic Cement” was followed to ensure the proper consistency needed to perform ASTM C191 “Time of Setting of Hydraulic Cement by Vicat Needle”, mixed per ASTM C305 “Standard Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency”.
- ASTM C191 “Time of Setting of Hydraulic Cement by Vicat Needle”.
- ASTM C151 “Test Method for Autoclave Expansion of Portland Cement” using ekkomaxx™ cement.
- ASTM C1437 “Test Method for Flow of Hydraulic Cement Mortar”, mixed per ASTM C305, to ensure the proper consistency of the mortar used in ASTM C109 “Standard Test Method for Compressive Strength of Hydraulic Cement Mortars Using 2 inch Cube Specimens” and ASTM C1038 “Test Method for Expansion of Portland Cement Mortar Bars Stored in Water”.
- ASTM C109 “Standard Test Method for Compressive Strength of Hydraulic Cement Mortars Using 2 inch Cube Specimens.”
- ASTM C1038 “Test Method for Expansion of Portland Cement Mortar Bars Stored in Water.”
- ASTM C185 “Test Method for Air Content of Hydraulic Cement Mortar.”
- ASTM C1012 “Test Method for Length Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution.”
- ASTM C430 “Test Method for Fineness of Hydraulic Cement by the 45 µm (325 Mesh) Sieve”.
- ASTM C204 “Test Method for Fineness of Hydraulic Cement by Air Permeability Apparatus.”

RESULTS

The results for ekkomaxx™ are tabulated below.

Test	ekkomaxx™	ASTM C1157 Specification Requirements
C191 Vicat Set Time, min	160	45 - 420
C109 Compressive Strength, psi		
3 day	2290	> 1890
7 day	3380	> 2900
28 day	4890	> 4060
C151 Autoclave Length Change, %	0.062	0.80 % max
C185 Air Content of Mortar Volume, %	8.58	12 % max
C1038 mortar bar expansion; %	0.002	0.020 % max
C1012 Sulfate Expansion, %	0.002	0.1 % max = Moderate resistant 0.05% max = High resistant
C430 Fineness: 325 Mesh wet sieve	85.1%	Report value
C 204 Fineness: Blaine	515.9 m ² /g	Report value

CONCLUSION

ekkomaxx™ meets the ASTM C1157 specifications for General Construction Use (GU) cement. In addition, long term sulfate resistance testing proves **ekkomaxx has exceptional resistance to sulfates.**

A copy of the independent test results is available upon request.