



GCC of America
 600 S. Cherry Street, Suite 1000, Glendale, CO 80246
 Sales (303) 739-5900, Customer Service (800) 225-5422

MATERIAL CERTIFICATION REPORT

Plant: Rapid City
Address: 501 N. St Omge Street, Rapid City, SD 57702
Contact: Gail Amicucci
Phone: (605) 721-7042

Cement Type: III, Low Alkali, HE
Date Issued: 2-Aug-19
Production Period: 1-Jul-19
To: 31-Jul-19

STANDARD REQUIREMENTS ASTM C150/AASHTO M85/ASTM C1157

CHEMICAL			
Item	ASTM Test Method	ASTM C150 Spec. Limit	Test Result
SiO ₂ (%)	C114	-	20.0
Al ₂ O ₃ (%)	C114	-	4.6
Fe ₂ O ₃ (%)	C114	-	3.4
CaO (%)	C114	-	64.9
MgO (%)	C114	6.0 max	1.2
SO ₃ (%)	C114	3.5 max ^A	3.3
Loss On Ignition (%)	C114	3.5 max ^B	2.0
Na ₂ O (%)	C114	-	0.1
K ₂ O (%)	C114	-	0.7
Insoluble Residue (%)	C114	1.5 max	0.4
CO ₂ (%)	C114	-	0.7
Limestone (%)	C150	5.0 max	-
CaCO ₃ in Limestone (%)	C150	70 min	-
Inorganic Processing Addition	C150	5.0 max	-
Potential Phase Composition			
C ₃ S (%)	C150	-	67
C ₂ S (%)	C150	-	7
C ₃ A (%)	C150	15 max	7
C ₄ AF (%)	C150	-	10
C ₃ S + 4.75 C ₃ A (%)	C150	100 max	98

PHYSICAL				
Item	ASTM Test Method	ASTM C150 Spec. Limit	ASTM C1157 Spec. Limit	Test Result
Air Content (% vol)	C185	12 max	12 max	9
Blaine Fineness (m ² /kg)	C204	-	-	598
Residue 45 µm (No.325) Sieve (%)	C430	-	-	0.9
Autoclave Expansion (%)	C151	0.80 max	0.80 max	-0.03
Compressive Strength				Mpa psi
1 day, MPa (psi)	C109	12.0 (1740) min	12.0 (1740) min	25.0 3625
3 days, MPa (psi)	C109	24.0 (3480) min	24.0 (3480) min	37.9 5500
7 days, MPa (psi)				44.4 6445
28 days, MPa (psi)				51.0 7390
Time of Setting, Initial Vicat (min)	C191	45 min / 375 max	45 min / 420 max	114
Mortar Bar Expansion (%)	C1038	0.020 max	0.020 max	0.0050

ADDITIONAL DATA					
Type	Limestone	Test Method	Base Phase Composition	ASTM Test Method	Test Result
SiO ₂ (%)	-	Internal	C ₃ S (%)	C150	67
Al ₂ O ₃ (%)	-	Internal	C ₂ S (%)	C150	7
Fe ₂ O ₃ (%)	-	Internal	C ₃ A (%)	C150	7
CaO (%)	-	Internal	C ₄ AF (%)	C150	10
SO ₃ (%)	-	Internal			

OPTIONAL REQUIREMENTS ASTM C150/AASHTO M85/ASTM C1157

CHEMICAL			
Item	ASTM Test Method	ASTM C150 Spec. Limit	Test Result
Equivalent Alkalies (%)	C114	0.60 max	0.55

PHYSICAL				
Item	ASTM Test Method	ASTM C150 Spec. Limit	ASTM C1157 Spec. Limit	Test Result
False Set (%)	C451	50 min	50 min	61

^A It is permissible to exceed the specification limit provided that ASTM C1038 Mortar Bar Expansion does not exceed 0.020 % at 14 days.

^B Loss on ignition, max: 3.0 % when limestone is not an ingredient; Loss on ignition, max: 3.5 % when limestone is an ingredient

GCC of America Cement is warranted to perform at the time