



GCC of America

600 S. Cherry Street, Suite 1000, Glendale, CO 80246
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MATERIAL CERTIFICATION REPORT

Plant: Pueblo
Address: 3372 Lime Road
Pueblo, CO 81004
Contact: Urs Fuchs
Phone: (719) 647-6821

Cement Type: I/II, Low Alkali, GU
Date Issued: 11-Feb-19
Production Period: 1-Jan-19
To: 31-Jan-19

STANDARD REQUIREMENTS ASTM C150/AASHTO M85/ASTM C1157

CHEMICAL			
Item	ASTM Test Method	ASTM C150 Spec. Limit	Test Result
SiO ₂ (%)	C114	-	19.8
Al ₂ O ₃ (%)	C114	6.0 max	4.4
Fe ₂ O ₃ (%)	C114	6.0 max	3.2
CaO (%)	C114	-	63.8
MgO (%)	C114	6.0 max	0.9
SO ₃ (%)	C114	3.0 max ^A	3.5
Loss On Ignition (%) ^B	C114	3.5 max ^C	2.9
Na ₂ O (%)	C114	-	0.16
K ₂ O (%)	C114	-	0.63
Insoluble Residue (%)	C114	1.5 max	0.6
CO ₂ (%) ^B	C114	-	1.6
Limestone (%)	C150	5.0 max	4.0
CaCO ₃ in Limestone (%)	C150	70 min	89
Inorganic Processing Addition	C150	5.0 max	-
Potential Phase Composition			
C ₃ S (%)	C150	-	59
C ₂ S (%)	C150	-	12
C ₃ A (%)	C150	8 max	6
C ₄ AF (%)	C150	-	10

PHYSICAL				
Item	ASTM Test Method	ASTM C150 Spec. Limit	ASTM C1157 Spec. Limit	Test Result
Air Content (% vol)	C185	12 max	12 max	8
Blaine Fineness (m ² /kg)	C204	260 min	-	412
Residue 45 μm (No.325) Sieve (%)	C430	-	-	2.3
Autoclave Expansion (%)	C151	0.80 max	0.80 max	0.04
Compressive Strength				
3 days, MPa (psi)	C109	12.0 (1740) min	13.0 (1890) min	31.0 (4500)
7 days, MPa (psi)	C109	19.0 (2760) min	20.0 (2900) min	37.1 (5380)
28 days, MPa (psi) ^D	C109	-	28.0 (4060) min	45.3 (6570)
Time of Setting, Initial Vicat (min)	C191	45 min / 375 max	45 min / 420 max	97
Mortar Bar Expansion (%)	C1038	0.020 max	0.020 max	0.007

ADDITIONAL DATA					
Type	Limestone	Test Method	Base Phase Composition	ASTM Test Method	Test Result
SiO ₂ (%)	5.7	Internal	C ₃ S (%)	C150	61
Al ₂ O ₃ (%)	1.2	Internal	C ₂ S (%)	C150	12
Fe ₂ O ₃ (%)	1.0	Internal	C ₃ A (%)	C150	7
CaO (%)	50.6	Internal	C ₄ AF (%)	C150	10
SO ₃ (%)	0.5	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	0.57

PHYSICAL				
Item	ASTM Test Method	ASTM C150 Spec. Limit	ASTM C1157 Spec. Limit	Test Result
False Set (%)	C451	50 min	50 min	74

^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 This alternative analysis has been qualified in accordance with ASTM C114 and meets requirements of Table 1.

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

^D Test result of prior month

GCC of America Cement is warranted to conform at the time of shipment with current ASTM C150/AASHTO M85/ASTM C1157. No other warranty is made or implied. Having no control over the use of its cements, GCC of America does not guarantee finished work.