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: Trident
Address: 4070 Trident Road
Three Forks, MT 59752
Contact: Zach Gill
Phone: (406) 285-3988

Cement Type: 1157 GU / 595-1L
Date Issued: 9-Aug-19
Production Period: 1-Apr-19
To: 31-Jul-19

STANDARD REQUIREMENTS ASTM C150/ASTM C1157/ASTM C595

Trident is and ISO 9001 Certified Facility

CHEMICAL

Item	ASTM Test Method	ASTM C595IL Spec. Limit	Test Result
SO_3 (%)	C114	3.0 max[A]	2.5
Loss On Ignition (%)	C114	10.0 max	4.5
$CaCO_3$ in Limestone (%)	C150	70 min	99

PHYSICAL

Item	ASTM Test Method	ASTM C595IL Spec. Limit	ASTM C1157GU Spec. Limit	Test Result	
Air Content (%)	C185	12 max	12 max	7	
Blaine Fineness (m^2/kg)	C204	-	-	437	
Residue 45 µm (No.325) Sieve (%)	C430	-	-	1.7	
Autoclave Expansion (%)	C151	0.80 max; 0.2 max contraction	0.80 max	0.38	
Compressive Strength					
3 days, MPa (psi)	C109	13.0 (1890) min	13.0 (1890) min	27.5	(3990)
7 days, MPa (psi)	C109	20.0 (2900) min	20.0 (2900) min	34.1	(4950)
28 days, MPa (psi)[B]	C109	28.0 (4060) min	28.0 (4060) min	43.0	(6230)
Time of Setting, Initial Vicat (min)	C191	45 min / 420 max	45 min / 420 max	148	
Mortar Bar Expansion (%)	C1038	0.020 max	--	0.004	

ADDITIONAL DATA

Type	Limestone	Test Method	Base Phase Composition	ASTM Test Method	Test Result

OPTIONAL REQUIREMENTS ASTM C150/ASTM C1157

CHEMICAL

Item	ASTM Test Method	ASTM C150 Spec. Limit	Test Result
Equivalent Alkalies (%)	C114	0.60 max	0.30

PHYSICAL

Item	ASTM Test Method	ASTM C150 Spec. Limit	ASTM C1157 Spec. Limit	Test Result

[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] Test result of prior month

GCC of America Cement is warranted to conform at the time of shipment with current ASTM C150/ASTM C1157/ASTM C595. No other warranty is made or implied. Having no control over the use of its cements, GCC of America does not guarantee finished work.