



Cement: Type I/II

Date: March 17, 2023

Production Period: February-2023
 STANDARD REQUIREMENTS
 ASTM C150 - 21

Chemical Requirements:	Spec. Limit	Test Result
SiO ₂ , (%)	A	19.0
Al ₂ O ₃ , (%)	6.0 max	4.9
Fe ₂ O ₃ , (%)	6.0 max	3.5
CaO, (%)	A	64.1
MgO, (%)	6.0 max	1.0
SO ₃ , (%) ^C	3.0 max	3.3
Loss on Ignition, (%)	3.5 max	3.4
Insoluble residue, (%)	1.50 max	0.48
CO ₂ , (%)	A	2.0
Limestone, (%)	5.0 max	4.5
CaCO ₃ in Limestone, (%)	70 min	99
Potential phase composition, (%): ^B		
C ₃ S	A	60
C ₂ S	A	9
C ₃ A	8 max	7
C ₄ AF	A	11
C ₃ S + 4.75(C ₃ A) (%)	100 max	93
Optional Chemical Requirements	Spec. Limit	Test Result
Total Alkalies (Na ₂ O equiv.), (%)	A	0.54

Physical Requirements:	Spec. Limit	Test Result
Air content, Volume, (%)	12 max	8
Average Fineness (Blaine), (m ² /kg)	260 min	393
	430 max	
Autoclave Expansion, (%)	0.80 max	0.00
Time of setting:		
Vicat Initial set, minutes	45 min	93
	375 max	
Compressive strengths, (Mpa)		
3 days	12.0 min	26.0
7 days	19.0 min	31.6
Compressive strengths, (psi)		
3 days	1740 min	3777
7 days	2760 min	4583
Heat of Hydration (cal/g)	D	71
C1702 3 day		
Mortar Bar Expansion ^E	0.020 max	0.000
C1038-19		
Optional Physical Requirements	Spec. Limit	Test Result
Compressive strengths, (Mpa)		
28 days (January 2023)	28.0 min	41.5
Compressive strengths, (psi)		
28 days (January 2023)	4060	6025

^A Not applicable.

^B Adjusted for limestone per A1.6

^C It is permissible to exceed the SO₃ limit provided that C1038 expansion does not exceed 0.020%

^D Test result represents the most recent value and is provided for information only

^E Test result represents most recent result available

Signature: Tommy Campbell
 Title: Area Quality Control Manager

Date: 03/17/23

We certify that the above described cement, at the time of shipment meets the chemical and physical requirements of ASTM C - 150 specifications.