MITSUBISHI CEMENT CORPORATION

CERTIFICATE OF TEST

Portland Cement - Type I, II, II (MH) & V **Date: 08/13/2025**

Source: Cushenbury Plant, 5808 State Highway 18, Lucerne Valley, CA 92356

ASTM designation: C 150 - 16 for Type I, II, II (MH) & V low alkali Cement
CALTRANS Specification: Section 90 – 2.01 for Type II modified and V (2006)
Specification: Section 90 – 1.02B(2) (2015)
NDOT Specification: Section 701 - 03.01 for Type II and V
AZDOTSpecifications Subsection 1006-2.01 for Type II and V

Production Period
From: 07/02/2025
To: 07/31/2025

Chemical Composition:

	ASTM C-150 Limits				Test
	Type I	Type II	Type V		Results
Silicon Dioxide (SiO_2), %	----	----	----	Min.	21.0
Aluminum Oxide (Al_2O_3), %	----	6.0	----	Max.	4.1
Ferric Oxide (Fe_2O_3), %	----	6.0	----	Max.	3.8
Calcium Oxide (CaO), %	----	----	----		63.6
Magnesium Oxide (MgO), %	6.0	6.0	6.0	Max.	1.9
Sulfur Trioxide (SO_3), %	3.0	3.0	2.3	Max.	2.2
Loss on Ignition (LOI), %	3.5	3.5	3.5	Max.	2.5
Insoluble Residue	1.5	1.5	1.5	Max.	0.6
Total Alkali (%Na_2O + 0.658 * %K_2O)	0.60	0.60	0.60	Max.	0.50
Tricalcium Silicate (C_3S), [b] %	----	----	----		56
Tricalcium Aluminate (C_3A), [b] %	----	8	5	Max.	4
$C_4AF + 2*C_3A$ [b]	----	----	25	Max.	20
$C_3S + 4.75*C_3A$ [b]	----	100	----	Max.	77
CO_2, %	----	----	----		1.7
Limestone, %	5.0	5.0	5.0	Max.	4.7
$CaCO_3$ Limestone Purity, %	70	70	70	Min.	80

PHYSICAL RESULTS:

Blaine Fineness (m^2/kg)	260 / ---	260 / 430	260 / ---	Min / Max	385
325 Mesh (% Passing)	----	----	----		98.5
Autoclave Expansion (%)	0.80	0.80	0.80	Max.	0.05
Time of Set Initial Vicat (minutes)	45 / 375	45 / 375	45 / 375	Min / Max	135
Air Entrainment (% Volume)	12	12	12	Max.	7.5
C1702 Heat of Hydration at 7 Days (J/g)	----	----	----	[a]	320
False Set, %	50	50	50	Min.	88
Color, (L value)	----	----	----		54

Compressive Strength Test:

		Type I		Type II		Type V			MPA	PSI
		MPA	psi	MPA	psi	MPA	psi			
1 Day		----	----	----	----	----	----		12.5	1810
3 Day		12.0	1740	10.0	1450	8.0	1160	Min.	23.6	3420
7 Day		19.0	2760	17.0	2470	15.0	2180	Min.	31.6	4580
28 Day	Jun 2025	----	----	----	----	21.0	3050	Min.	41.1	6070

This cement has been sampled and tested in accordance with ASTM standard methods and procedures. All test results are certified to comply with the type specification designated above. No other warranty is made or implied. We are not responsible for improper use or workmanship. **The MCC laboratory is AASHTO accredited. [a] For information only. [b] Adjusted per ASTM C150 A1.6.**

MITSUBISHI CEMENT CORPORATION
Cushenbury plant

Evan Coss
Quality Control Manager

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Additional Data

Limestone Addition

% Addition:	4.7
SiO2 (%)	8.5
Al_2O_3 (%)	2.5
Fe_2O_3 (%)	0.9
CaO (%)	47.1
SO_3 (%)	0.7

Base Cement Phase Composition

C_3S	59
C_2S	17
C_3A	5
C_4AF	12

We certify that the above described data represents the material used in the cement manufactured during the production period indicated.

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