



# MITSUBISHI CEMENT CORPORATION

## CERTIFICATE OF TEST

Source: Cushenbury Plant

Plastic (Stucco) Cement

Date: 6/10/2016

ASTM designation: C 91 - 05 for Masonry Cement – Type M	Production Period
ASTM designation: C 1328 - 05 for Plastic (Stucco) Cement – Type M	From: 5/10/2016
UBC Standard: 21 - 11 for Cement, Masonry – Type M	To: 5/10/2016
UBC Standard: 25 – 1 for Plastic Cement	

### Chemical Composition:

	Test Results
Silicon Dioxide (SiO <sub>2</sub> ), %	20.1
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ), %	3.8
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ), %	3.7
Calcium Oxide (CaO), %	63.4
Magnesium Oxide (MgO), %	2.1
Sulfur Trioxide (SO <sub>3</sub> ), %	2.3
Loss on Ignition (LOI), %	5.9
Insoluble Residue	1.2
Total Alkali (%Na <sub>2</sub> O + 0.658 * %K <sub>2</sub> O)	0.61
Tricalcium Silicate (C <sub>3</sub> S), %	68
Tricalcium Aluminate (C <sub>3</sub> A), %	4
CO <sub>2</sub> , %	5.7
Limestone, %	14.2
CaCO <sub>3</sub> Limestone Purity, %	92

### PHYSICAL RESULTS:

	ASTM C-91 & C-1328 Limits	Test Results
Blaine Fineness (m <sup>2</sup> /kg)		464
325 Mesh (% Passing)	76 Min.	98.1
Autoclave Expansion (%)	1.0 Max.	0.03
Time of Set Initial Vicat (minutes)	90 Min. / 1000 Max.	115
Air Entrainment (% Volume)	8 Min. / 19 Max.	16.8
Water Retention, % of Original Flow	70 Min.	77

### Compressive Strength Test:

	ASTM C-91 & C-1328 Limits	MPA	PSI
	MPA psi		
1 Day		9.7	1400
3 Day		15.4	2240
7 Day	12.4 1800 Min.	22.0	3190
28 Day	20.0 2900 Min.	29.2	4240

This cement has been sampled and tested in accordance with ASTM standard methods and procedures. All tests 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.

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Cushenbury plant

Tom Gepford  
Quality Control Manager



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**Additional Data**

**Limestone Addition**

% Addition:	14.2
SiO <sub>2</sub> (%)	5.0
Al <sub>2</sub> O <sub>3</sub> (%)	1.0
Fe <sub>2</sub> O <sub>3</sub> (%)	0.3
CaO (%)	50.8
SO <sub>3</sub> (%)	0.1

**Base Cement Phase Composition**

C <sub>3</sub> S	53
C <sub>2</sub> S	20
C <sub>3</sub> A	4
C <sub>4</sub> AF	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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**Cushenbury plant**

**Tom Gepford**  
**Quality Control Manager**