

RIVERSIDE CEMENT COMPANY


Type II / V & Type I Cement Quality Certification

Oro Grande Plant

Chemical Properties (per C114)			Physical Properties				
(Typical) Parameter	Values (%)	ASTM C150 Limits	(Typical) Parameter	Units	Values psi MPa	ASTM C150 Limits	Test Method
SiO ₂	20.5		1-Day Strength	psi/MPa	2200 15.2		C109
Al ₂ O ₃	4.1	Max 6.0	3-Day Strength	psi/MPa	3900 26.9	Min 1740/12.0	C109
Fe ₂ O ₃	4.3	Max 6.0	7-Day Strength	psi/MPa	5010 34.6	Min 2760/19.0	C109
CaO	64.7		28-Day Strength***	psi/MPa	6090 42.0	Min 4060/28.0	C109
MgO	1.3	Max 6.0	***Previous Month				
SO ₃	2.5	Max 2.3*	Blaine Fineness	cm ² /g	4080	Min 2600/260	C204
Na ₂ O	0.15			or m ² /kg	-408	Max****	
K ₂ O	0.24		Vicat Initial Set	Minutes	100	45 to 375	C191
LOi	2.5	Max 3.0	Vicat Final Set	Minutes	220	None	C191
Insoluble Residue	0.44	Max 0.75	Paste False Set	%	86	Min 50 (opt)	C451
C3S %**	63		Air Content	%	6	Max 12	C185
C2S %**	10		Autoclave Exp.	%	-0.04	Max 0.80	C151
C3A %**	4	Max 5	C1038 Exp.	%	0.005	Max 0.020	C1038
C4AF %**	13		Notes:				
(C4AF + 2(C3A))	21	Max 25	****ASTM C150 Table 3, Note G: Maximum fineness limit does not apply if the sum of				
Equivalent Alkali	0.31	Max 0.60	C ₃ S + (4.75 x C ₃ A) is less than or equal to 90. For this quality certification:				
CO ₂ %	1.38		$C_3S + (4.75 \times C_3A) = 82$				
Limestone % CaCO ₃	78	Min 70%	Heat of Hydration (HOH) at 7 days (reported in Cal/g and kJ/kg)				
% Limestone	4	Max 5%	83 Cal/g 346 kJ/kg				
Notes: *ASTM C150 Table 1, Note D applies, **Values adjusted per ASTM C150-12 (A1.8).			Heat of Hydration test result represents most recent value and is provided for information only (per ASTM C150 Table 1, Note H).				

This cement meets the requirements of ASTM Specification C150 for Types I, II, II (MH) and V (low alkali for each type), and is approved for use by the California, Arizona, Utah and Texas Departments of Transportation. It appears on the CALTRANS Pre-Qualified Products List, and meets the requirements of CALTRANS Standard Specification 90-1.02B (cementitious materials).

Riverside Cement Company is warranted to conform at the time of shipment with the specifications designated above. No other warranty is made or to be implied.


 Bob Sylvia, Chief Chemist