

**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 1-325**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	2955	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.17	—	—	1692
2	Autoclave expansion	0.064	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.45	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	3.94	—	—	
3-1	Initial Time (min)	145	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.65	—	—	
3-2	Final time (hr)	3:40	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.56	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	2.57	Max 2.9	Max 3	
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.34	—	—	1695
4-2	2 Day	—	—	—	393	8	$\text{K}_2\text{O}(\%)$	0.54	—	—	
4-3	3 Days	240	Min 150	Min 120	393	9	L.O.I($\%$)	2.45	Max 2.5	Max 3	
4-4	7 Days	305	Min 220	Min 200	393	10	IR($\%$)	0.38	Max0.7	Max0.75	1692
4-5	28 Days	402	Min 350 Max 510	Min 325 Max 525	393	11	F.CaO($\%$)	1.62	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	52.7	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	21.4	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	5.1	—	—	



**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 1-425**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	3300	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.23	—	—	1692
2	Autoclave expansion	0.018	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.44	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	4.01	—	—	
3-1	Initial Time (min)	140	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.47	—	—	
3-2	Final time (hr)	3:45	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.53	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	2.52	Max 2.9	Max 3	
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.31	—	—	1695
4-2	2 Day	202	Min 120	Min 100	393	8	$\text{K}_2\text{O}(\%)$	0.53	—	—	
4-3	3 Days	—	—	—	393	9	L.O.I($\%$)	2.25	Max 2.9	Max 3	
4-4	7 Days	—	—	—	393	10	IR($\%$)	0.36	Max0.7	Max0.75	1692
4-5	28 Days	480	Min 425 Max 625	Min 425 Max 625	393	11	F.CaO($\%$)	1.48	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	52.8	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	21.3	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	5.0	—	—	



**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 1-525**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	3500	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.14	—	—	1692
2	Autoclave expansion	0.043	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.46	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	3.94	—	—	
3-1	Initial Time (min)	135	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.34	—	—	
3-2	Final time (hr)	3:35	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.55	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	2.36	Max 2.9	Max 3	
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.33	—	—	1695
4-2	2 Day	239	Min 200	Min 200	393	8	$\text{K}_2\text{O}(\%)$	0.51	—	—	
4-3	3 Days	—	—	—	393	9	L.O.I($\%$)	2.27	Max 2.9	Max 3	
4-4	7 Days	—	—	—	393	10	IR($\%$)	0.22	Max0.7	Max0.75	1692
4-5	28 Days	548	Min 525	Min 525	393	11	F.CaO($\%$)	1.46	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	52.8	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	21.2	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	5.2	—	—	





**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 3**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	3696	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.08	—	—	1692
2	Autoclave expansion	0.018	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.44	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	3.98	—	—	
3-1	Initial Time (min)	135	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.37	—	—	
3-2	Final time (hr)	3:35	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.54	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	2.86	Max 3.2	Max 3.5	
4-1	1 Day	166	Min 130	Min 125	393	7	$\text{Na}_2\text{O}(\%)$	0.33	—	—	1695
4-2	2 Day	—	—	—	393	8	$\text{K}_2\text{O}(\%)$	0.51	—	—	
4-3	3 Days	290	Min 250	Min 240	393	9	L.O.I($\%$)	2.17	Max 2.9	Max 3	1692
4-4	7 Days	—	—	—	393	10	IR($\%$)	0.21	Max0.7	Max0.75	
4-5	28 Days	—	—	—	393	11	F.CaO($\%$)	1.29	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	53.0	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	20.7	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	5.0	Max 10	Max 15	



**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 5**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	2932	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.30	—	—	1692
2	Autoclave expansion	0.014	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.34	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	4.35	—	—	
3-1	Initial Time (min)	140	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.31	—	—	
3-2	Final time (hr)	3:45	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.55	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	1.92	Max 2.2	Max 2.3	
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.36	—	—	1695
4-2	2 Day	—	—	—	393	8	$\text{K}_2\text{O}(\%)$	0.53	—	—	
4-3	3 Days	212	Min 150	Min 85	393	9	L.O.I($\%$)	2.25	Max 2.9	Max 3	1692
4-4	7 Days	301	Min 200	Min 150	393	10	IR($\%$)	0.34	Max0.7	Max0.75	
4-5	28 Days	398	Min 300	Min 270	393	11	F.CaO($\%$)	1.40	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	53.8	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	20.7	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	4.1	Max 4.5	Max 5	



**QUALITY CONTROL REPORT
PORTLAND COMPOSITE CEMENT TYPE A-32.5**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 11571-1	Test Method	NO.	Component	Result	Factory standard	ISIRI 11571-1	Test Method
1	Fineness by Blaine(cm^2/gr)	3096	Min 3000	Min3000	390	1	$\text{SiO}_2(\%)$	21.15	—	—	1692
2	Autoclave expansion	0.038	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.42	—	—	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	4.04	—	—	
3-1	Initial Time (min)	145	Min 80	Min 75	392	4	$\text{CaO}(\%)$	63.42	—	—	
3-2	Final time (hr)				392	5	$\text{MgO}(\%)$	1.52	Max 2.5	Max 5	
4	Compressive Strength(N/mm^2)					6	$\text{SO}_3(\%)$	2.67	Max 3.2	Max 3.5	1695
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.31	—	—	
4-2	2 Day	—	—	—	393	8	$\text{K}_2\text{O}(\%)$	0.53	—	—	
4-3	3 Days	—	—	—	393	9	$(\text{Cl}^-)(\%)$	0.015	Max0.1	Max0.1	
4-4	7 Days	28.5	Min 22	Min 16	393	10	IR($\%$)	0.40	—	—	
4-5	28 Days	37.5	Min 35	Min 32.5	393	11	F.CaO($\%$)	1.51	—	—	1692
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	52.2	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	21.6	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	4.9	—	—	



**QUALITY CONTROL REPORT
PORTLAND CEMENT TYPE 2**

PHYSICAL SPECIFICATION						CHEMICAL SPECIFICATION					
NO.	Test	Result	Factory standard	ISIRI 389	Test Method	NO.	Component	Result	Factory standard	ISIRI 389	Test Method
1	Fineness by Blaine(cm^2/gr)	3055	Min 2900	Min2800	390	1	$\text{SiO}_2(\%)$	21.11	Min 20.5	Min 20	1692
2	Autoclave expansion	0.036	Max 0.6	Max 0.8	391	2	$\text{Al}_2\text{O}_3(\%)$	4.42	Max 5	Max 6	
3	Setting time					3	$\text{Fe}_2\text{O}_3(\%)$	3.96	Max 5	Max 6	
3-1	Initial Time (min)	145	Min 70	Min 45	392	4	$\text{CaO}(\%)$	63.36	—	—	
3-2	Final time (hr)	3:45	Max 5	Max 6	392	5	$\text{MgO}(\%)$	1.51	Max 2.5	Max 5	
4	Compressive Strength(Kg/cm^2)					6	$\text{SO}_3(\%)$	2.70	Max 2.9	Max 3	
4-1	1 Day	—	—	—	393	7	$\text{Na}_2\text{O}(\%)$	0.32	—	—	1695
4-2	2 Day	—	—	—	393	8	$\text{K}_2\text{O}(\%)$	0.51	—	—	
4-3	3 Days	245	Min 170	Min 100	393	9	L.O.I($\%$)	2.02	Max 2.9	Max 3	1692
4-4	7 Days	310	Min 250	Min 175	393	10	IR($\%$)	0.32	Max0.7	Max0.75	
4-5	28 Days	411	Min 350	Min 315	393	11	F.CaO($\%$)	1.23	—	—	
5	Heat of hydration (cal/gr)					12	$\text{C}_3\text{S}(\%)$	53.0	—	—	
5-1	3 Days	—	—	—	394	13	$\text{C}_2\text{S}(\%)$	20.8	—	—	
5-2	28 Day	—	—	—	394	14	$\text{C}_3\text{A}(\%)$	5.0	Max 6.5	Max 8	

