

Date:

Shcc-EF4-1/1/83.5

Shahroud Cement Company

QUALITY CONTROL REPORT

PORTLAND CEMENT TYPE 1-325

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	21.17	---	---
2	Al ₂ O ₃	4.48	---	---
3	Fe ₂ O ₃	3.98	---	---
4	CaO	63.32	---	---
5	MgO	1.56	Max:2.5	Max:5
6	SO ₃ C ₃ A<=8 C ₃ A>8	2.32	Max:2.9 Max:3.2	Max:3.0 Max:3.5
7	K ₂ O	0.54	---	---
8	Na ₂ O	0.36	---	---
9	LOI	1.32	Max:2.9	Max:3
10	IR	0.33	Max:0.70	Max:0.75
11	F.CaO	1.05	---	---
12	LSF	92.1	---	---
13	SIM	2.50	---	---
14	ALM	1.13	---	---
15	C ₃ S	52.1	---	---
16	C ₂ S	21.8	---	---
17	C ₃ A	5.2	---	---
18	C ₄ AF	12.2	---	---



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QUALITY CONTROL REPORT

PORTLAND CEMENT TYPE 1-325

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3031	Min:2900	Min:2800
2	Autoclave expansion	0.046	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	145	Min:70	Min:45
2-3	Final time (hr)	3:35	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	1 Day	---	---	---
2-4	3 Days	228	Min:150	Min:120
3-4	7 Days	312	Min:220	Min:200
4-4	28 Days	415	Min:350 Max:510	Min:325 Max:525
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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QUALITY CONTROL REPORT

PORTLAND CEMENT TYPE 1-425

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	20.90	---	---
2	Al ₂ O ₃	3.81	---	---
3	Fe ₂ O ₃	3.70	---	---
4	CaO	62.45	---	---
5	MgO	1.54	Max:2.5	Max:5
6	SO ₃ C ₃ A≤8 C ₃ A>8	2.28	Max:2.9 Max:3.2	Max:3.0 Max:3.5
7	K ₂ O	0.55	---	---
8	Na ₂ O	0.26	---	---
9	LOI	2.44	Max:2.9	Max:3
10	IR	0.36	Max:0.70	Max:0.75
11	F.CaO	1.46	---	---
12	LSF	93.2	---	---
13	SIM	2.78	---	---
14	ALM	1.03	---	---
15	C ₃ S	55.0	---	---
16	C ₂ S	20.4	---	---
17	C ₃ A	3.90	---	---
18	C ₄ AF	11.6	---	---



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QUALITY CONTROL REPORT

PORTLAND CEMENT TYPE 1-425

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3493	Min:2900	Min:2800
2	Autoclave expansion	0.039	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	155	Min:70	Min:45
2-3	Final time (hr)	3:45	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	2 Day	169	Min:120	Min:100
2-4	3 Days	---	---	---
3-4	7 Days	---	---	---
4-4	28 Days	480	Min:425 Max:625	Min:425 Max:625
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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QUALITY CONTROL REPORT

PORTLAND CEMENT TYPE 1-525

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	21.26	---	---
2	Al ₂ O ₃	4.45	---	---
3	Fe ₂ O ₃	4.04	---	---
4	CaO	63.35	---	---
5	MgO	1.49	Max:2.5	Max:5
6	SO ₃ C ₃ A≤8 C ₃ A>8	2.58	Max:2.9 Max:3.2	Max:3.0 Max:3.5
7	K ₂ O	0.52	---	---
8	Na ₂ O	0.37	---	---
9	LOI	1.27	Max:2.9	Max:3
10	IR	0.30	Max:0.70	Max:0.75
11	F.CaO	1.35	---	---
12	LSF	91.5	---	---
13	SIM	2.50	---	---
14	ALM	1.10	---	---
15	C ₃ S	51.4	---	---
16	C ₂ S	22.5	---	---
17	C ₃ A	5.0	---	---
18	C ₄ AF	12.4	---	---



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QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 1-525

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3676	Min:2900	Min:2800
2	Autoclave expansion	0.054	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	145	Min:70	Min:45
2-3	Final time (hr)	3:15	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	2 Days	245	Min:200	Min:200
2-4	3 Days	---	---	---
3-4	7 Days	---	---	---
4-4	28 Days	555	Min:525	Min:525
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 2

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	21.20	Min:20.5	Min:20
2	Al ₂ O ₃	4.48	Max:5	Max:6
3	Fe ₂ O ₃	3.96	Max:5	Max:6
4	CaO	63.36	---	---
5	MgO	1.52	Max:2.5	Max:5
6	SO ₃	2.50	Max:2.9	Max:3
7	K ₂ O	0.51	---	---
8	Na ₂ O	0.37	---	---
9	LOI	2.50	Max:2.9	Max:3
10	IR	0.21	Max:0.70	Max:0.75
11	F.CaO	1.12	---	---
12	LSF	91.9	---	---
13	SIM	2.51	---	---
14	ALM	1.13	---	---
15	C ₃ S	51.7	---	---
16	C ₂ S	22.2	---	---
17	C ₃ A	5.2	Max:6.5	Max:8
18	C ₄ AF	12.1	---	---



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Shahroud Cement Company

QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 2

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3309	Min:2900	Min:2800
2	Autoclave expansion	0.039	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	140	Min:70	Min:45
2-3	Final time (hr)	3:30	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	1 Day	---	---	---
2-4	3 Days	275	Min:170	Min:100
3-4	7 Days	372	Min:250	Min:175
4-4	28 Days	469	Min:350	Min:315
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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Shahroud Cement Company

QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 3

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	20.87	---	---
2	Al ₂ O ₃	3.90	---	---
3	Fe ₂ O ₃	3.73	---	---
4	CaO	62.89	---	---
5	MgO	1.54	Max:2.5	Max:5
6	SO ₃ C ₃ A<=8 C ₃ A>8	2.58	Max:3.2 Max:4.2	Max:3.5 Max:4.5
7	K ₂ O	0.56	---	---
8	Na ₂ O	0.24	---	---
9	LOI	2.40	Max:2.9	Max:3
10	IR	0.38	Max:0.70	Max:0.75
11	F.CaO	1.57	---	---
12	LSF	93.5	---	---
13	SIM	2.74	---	---
14	ALM	1.05	---	---
15	C ₃ S	56.1	---	---
16	C ₂ S	19.0	---	---
17	C ₃ A	4.1	Max:8	Max:15
18	C ₄ AF	11.6	---	---



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Shahroud Cement Company

QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 3

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3496	Min:2900	Min:2800
2	Autoclave expansion	0.046	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	150	Min:70	Min:45
2-3	Final time (hr)	3:50	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	1 Day	140	Min:130	Min:125
2-4	3 Days	308	Min:250	Min:240
3-4	7 Days	---	---	---
4-4	28 Days	---	---	---
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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Shahroud Cement Company

QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 5

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value	Factory standard	ISIRI 389
1	SiO ₂	21.76	---	---
2	Al ₂ O ₃	4.00	---	---
3	Fe ₂ O ₃	4.21	---	---
4	CaO	63.27	---	---
5	MgO	1.56	Max:2.5	Max:5
6	SO ₃	2.08	Max:2.2	Max:2.3
7	K ₂ O	0.53	---	---
8	Na ₂ O	0.38	---	---
9	LOI	1.90	Max:2.9	Max:3
10	IR	0.46	Max:0.70	Max:0.75
11	F.CaO	0.89	---	---
12	LSF	90.5	---	---
13	SIM	2.65	---	---
14	ALM	0.95	---	---
15	C ₃ S	46.8	---	---
16	C ₂ S	28.3	---	---
17	C ₃ A	3.5	Max:4.5	Max:5
18	C ₄ AF	13.0	---	---



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Shahroud Cement Company



QUALITY CONTROL REPORT PORTLAND CEMENT TYPE 5

PHYSICAL SPECIFICATION

NO.	Physical Specification	Value	Factory standard	ISIRI 389
1	Fineness by Blain (cm ² /gr)	3386	Min:2900	Min:2800
2	Autoclave expansion	0.067	Max:0.6	Max:0.8
3	Setting time	---	---	---
1-3	Initial Time (min)	125	Min:70	Min:45
2-3	Final time (hr)	2:55	Max:5	Max:6
4	Compressive Strength (kg/cm ²)	---	---	---
1-4	1 Day	---	---	---
2-4	3 Days	258	Min:150	Min:85
3-4	7 Days	346	Min:200	Min:150
4-4	28 Days	450	Min:300	Min:270
5	Heat of hydration (cal/gr)	---	---	---
1-5	3 Days	---	---	---
2-5	28 Days	---	---	---



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Shahroud Cement Company



QUALITY CONTROL REPORT Clinker TYPE 2

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value
1	SiO ₂	22.11
2	Al ₂ O ₃	4.51
3	Fe ₂ O ₃	3.95
4	CaO	64.89
5	MgO	1.52
6	SO ₃	0.27
7	K ₂ O	0.46
8	Na ₂ O	0.33
9	LOI	--
10	IR	--
11	F.CaO	1.28
12	LSF	92.9
13	SIM	2.61
14	ALM	1.14
15	C ₃ S	59.4
16	C ₂ S	18.6
17	C ₃ A	5.3
18	C ₄ AF	12.0



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Shahroud Cement Company



QUALITY CONTROL REPORT Clinker TYPE 5

CHEMICAL SPECIFICATION

NO.	Chemical Specification	Value
1	SiO ₂	22.3
2	Al ₂ O ₃	4.12
3	Fe ₂ O ₃	4.04
4	CaO	64.95
5	MgO	1.54
6	SO ₃	0.40
7	K ₂ O	0.55
8	Na ₂ O	0.25
9	LOI	--
10	IR	--
11	F.CaO	1.1
12	LSF	92.7
13	SIM	2.73
14	ALM	1.02
15	C ₃ S	60.3
16	C ₂ S	18.4
17	C ₃ A	4.1
18	C ₄ AF	12.3

