شماره مدرک: LA-F-023-02

تاریخ: اردیبهشت ۹۹ صفحه ۱ از ۴

گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

نوع سیمان: پرتلند تیپ ۲

Day		Chemical Compositions & Phases %																	Physical Test												Lab.Code
																			Fineness		Setting time		Soundness		Compressive Strength (kg/cm²)					Bend Strength (kg/cm²)			
		IR	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	K_2O	Na_2O	Cl	LOSS	C3S	C2S	C3A	C4AF	C4AF +2C3A	F.CaO	Sieve 90 mic	Blaine (cm²/gr)	INIT (min)	FINAL (min)	LEACHTELIER (mm)	Auto Clave (%)	1 DAY	2 DAYS	3 DAYS	7 DAYS	28 DAYS	2 DAYS	7 DAYS	28 DAYS	
1	M	0.59	21.11	4.56	3.64	63.79	1.27	2.67	0.60	0.61	0.017	2.19	55.8	18.4	5.9	11.1	22.9	1.70	0.9	3080	135	190	1.2	0.14	-	208	252	339	456	39	59	76	I-CE-99-32
2	S	0.51	20.76	4.50	3.59	63.36	1.26	2.76	0.60	0.60	0.017	2.17	56.9	16.6	5.9	10.9	22.6	1.85	0.7	3340	130	185	1.3	0.17	-	224	286	364	467	47	61	74	I-CE-99-33
4	M	0.61	21.08	4.51	3.61	63.77	1.23	2.71	0.60	0.61	0.017	2.19	56.2	18.0	5.8	11.0	22.7	1.80	0.8	3110	135	185	1.3	0.17	-	224	267	353	461	40	58	77	I-CE-99-38
5	S	0.41	20.96	4.53	3.59	63.37	1.24	2.72	0.59	0.59	0.017	1.88	55.4	18.3	5.9	10.9	22.8	1.75	0.5	3200	130	180	1.3	0.17	-	223	289	367	475	43	61	75	I-CE-99-39
7	M	0.49	21.13	4.55	3.63	63.72	1.27	2.58	0.59	0.61	0.017	2.21	55.7	18.6	5.9	11.0	22.9	1.25	0.9	3050	135	185	1.0	0.11	-	219	276	363	473	42	64	74	I-CE-99-43
8	S	0.31	21.02	4.51	3.67	63.79	1.25	2.64	0.59	0.61	0.017	2.11	56.9	17.4	5.7	11.2	22.7	1.65	0.9	3230	130	180	1.2	0.14	-	230	292	379	481	43	68	82	I-CE-99-44
8	M	0.56	21.02	4.48	3.56	63.44	1.24	2.65	0.60	0.60	0.018	1.50	55.8	18.2	5.8	10.8	22.5	1.80	0.8	3080	135	185	1.3	0.17	-	225	276	361	474	39	63	80	I-CE-99-45
9	S	0.51	21.02	4.51	3.61	63.78	1.26	2.69	0.61	0.60	0.018	2.17	56.8	17.4	5.8	11.0	22.7	1.80	0.7	3140	125	175	1.3	0.17	-	233	306	392	483	47	66	84	I-CE-99-46
9	M	0.54	21.10	4.50	3.63	63.89	1.25	2.57	0.62	0.61	0.018	2.10	57.0	17.5	5.8	11.0	22.6	1.70	0.8	3110	130	180	1.2	0.14	-	228	284	358	462	44	61	75	I-CE-99-47
10	M	0.55	20.79	4.47	3.57	63.23	1.25	2.78	0.59	0.59	0.017	2.08	56.3	17.1	5.8	10.9	22.5	1.75	0.7	3110	135	185	1.1	0.14	-	220	283	357	474	41	62	77	I-CE-99-49
11	M	0.59	20.83	4.47	3.61	63.32	1.22	2.63	0.58	0.58	0.018	2.00	56.8	16.9	5.7	11.0	22.5	1.50	0.8	3080	135	185	1.1	0.11	-	229	294	378	476	41	61	82	I-CE-99-51
12	M	0.54	20.77	4.44	3.60	63.38	1.22	2.78	0.60	0.60	0.018	2.18	57.3	16.3	5.7	11.0	22.3	1.75	0.8	3110	140	190	1.3	0.17	-	232	283	377	482	43	62	76	I-CE-99-53
13	M	0.58	20.84	4.49	3.60	63.39	1.22	2.75	0.59	0.59	0.018	1.98	56.5	17.1	5.8	11.0	22.6	1.82	0.7	3110	140	190	1.2	0.17	-	221	268	361	463	42	63	74	I-CE-99-54
14	M	0.47	20.87	4.52	3.58	63.37	1.23	2.55	0.60	0.59	0.017	2.12	56.6	17.1	5.9	10.9	22.7	2.02	0.8	3010	125	175	1.4	0.20	-	208	257	347	458	40	61	76	I-CE-99-56
15	M	0.49	20.84	4.51	3.59	63.42	1.23	2.61	0.59	0.60	0.017	2.31	56.9	16.8	5.9	10.9	22.7	1.85	0.7	3080	140	190	1.2	0.17	-	213	261	347	462	43	60	73	I-CE-99-58
16	M	0.63	20.90	4.45	3.61	63.70	1.23	2.61	0.60	0.60	0.018	2.05	58.0	16.2	5.7	11.0	22.4	1.90	0.9	3010	130	180	1.3	0.17	-	210	271	359	464	40	65	79	I-CE-99-60
17	S	0.50	20.83	4.50	3.61	63.69	1.23	2.72	0.60	0.60	0.018	2.29	57.8	16.1	5.8	11.0	22.6	1.85	0.7	3140	125	175	1.3	0.17	-	231	294	372	473	37	63	75	I-CE-99-61
17	M	0.55	20.95	4.54	3.59	63.34	1.25	2.66	0.59	0.60	0.017	1.62	55.4	18.3	6.0	10.9	22.8	1.75	0.6	3050	130	180	1.2	0.14	-	219	273	354	461	38	56	72	I-CE-99-62
18	M	0.60	20.91	4.50	3.58	63.27	1.27	2.86	0.61	0.60	0.018	2.19	55.1	18.3	5.9	10.9	22.6	1.55	0.7	3170	135	185	1.1	0.14	-	206	257	346	462	39	58	79	I-CE-99-64
19	M	0.62	21.04	4.56	3.60	63.63	1.26	2.66	0.61	0.60	0.017	2.03	55.8	18.3	6.0	11.0	22.9	1.60	0.9	2980	135	190	1.2	0.14	-	221	295	364	487	44	65	79	I-CE-99-66
20	M	0.46	20.94	4.51	3.52	63.23	1.27	2.71	0.60	0.59	0.017	2.02	55.2	18.4	6.0	10.7	22.7	1.85	0.8	3080	135	185	1.3	0.17	-	228	280	367	469	43	61	75	I-CE-99-67
21	S	0.57	20.87	4.48	3.56	63.31	1.25	2.69	0.60	0.59	0.017	1.94	56.3	17.4	5.8	10.8	22.5	1.70	0.6	3110	130	180	1.2	0.14	-	234	298	377	476	43	62	74	I-CE-99-68
22	M	0.62	21.05	4.52	3.66	63.39	1.29	2.66	0.60	0.59	0.017	1.55	54.9	18.9	5.8	11.1	22.7	1.75	0.6	3080	140	190	1.3	0.17	-	227	271	373	472	42	59	73	I-CE-99-71
23	M	0.63	21.06	4.56	3.53	63.45	1.26	2.72	0.60	0.59	0.017	1.94	54.8	19.0	6.1	10.7	23.0	1.70	0.6	3050	135	185	1.2	0.14	-	212	269	352	463	41	53	72	I-CE-99-73
24	S	0.59	20.97	4.54	3.56	63.49	1.27	2.79	0.60	0.59	0.017	2.14	55.5	18.2	6.0	10.8	22.8	1.90	0.8	3050	130	180	1.3	0.17	-	223	274	356	467	37	49	75	I-CE-99-74
24	M	0.44	21.13	4.54	3.56	63.62	1.26	2.70	0.61	0.61	0.017	2.02	55.1	19.0	6.0	10.8	22.8	1.85	0.7	3010	145	195	1.3	0.17	-	229	283	367	473	42	61	73	I-CE-99-75
25	M	0.46	21.06	4.53	3.59	63.57	1.28	2.56	0.59	0.59	0.017	1.70	55.9	18.2	5.9	10.9	22.8	1.90	0.8	2980	130	180	1.3	0.17	-	224	271	365	480	44	59	74	I-CE-99-77
26	S	0.55	20.90	4.51	3.55	63.20	1.25	2.63	0.59	0.59	0.017	2.09	55.6	18.0	5.9	10.8	22.7	1.70	0.7	3080	135	185	1.2	0.14	-	227	296	378	483	41	58	80	I-CE-99-78
26	M	0.62	21.03	4.59	3.57	63.37	1.29	2.70	0.61	0.59	0.017	2.04	54.5	19.2	6.1	10.9	23.1	1.75	0.9	3010	130	180	1.2	0.14	-	231	282	371	479	43	56	78	I-CE-99-79
28	S	0.55	20.82	4.52	3.56	63.22	1.26	2.69	0.60	0.60	0.017	1.88	56.0	17.4	6.0	10.8	22.7	1.60	0.8	3050	125	175	1.2	0.14	-	231	295	378	486	40	63	79	I-CE-99-81
29	S	0.57	20.90	4.56	3.59	63.42	1.25	2.69	0.61	0.59	0.017	1.66	55.9	17.7	6.0	10.9	22.9	1.75	0.9	3010	125	175	1.2	0.14	-	229	298	376	489	47	62	78	I-CE-99-83
29	M	0.58	21.11	4.61	3.66	63.72	1.32	2.76	0.61	0.60	0.017	1.81	54.9	19.1	6.0	11.1	23.2	1.95	0.7	3080	135	185	1.0	0.11	-	223	291	357	482	44	61	77	I-CE-99-84
30	S	0.62	20.93	4.58	3.69	63.36	1.29	2.67	0.60	0.59	0.017	1.77	55.2	18.4	5.9	11.2	23.0	1.85	0.9	3110	130	180	1.3	0.17	-	241	308	393	486	45	64	79	I-CE-99-85
30	M	0.58	21.00	4.59	3.62	63.46	1.30	2.69	0.60	0.60	0.017	1.93	55.1	18.7	6.0	11.0	23.1	1.75	0.7	3050	140	190	1.2	0.14	-	225	283	371	466	42	56	77	I-CE-99-86
31	M	0.50	21.03	4.60	3.60	63.43	1.30	2.71	0.60	0.60	0.017	1.50	54.6	19.1	6.1	11.0	23.2	1.70	0.8	3110	135	185	1.1	0.14	-	227	279	352	458	41	63	76	I-CE-99-88
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Avg		0.54	20.96	4.52	3.60	63.48	1.26	2.68	0.60	0.60	0.017	1.98	56.0	17.9	5.9	10.9	22.8	1.75	0.8	3087	133	183	1.2	0.15	-	224	281	365	472	42	61	77	-
Min		0.31	20.76	4.44	3.52	63.20	1.22	2.55	0.58	0.58	0.017	1.50	54.5	16.1	5.7	10.7	22.3	1.25	0.5	2980	125	175	1.0	0.11	-	206	252	339	456	37	49	72	-
Max		0.63	21.13	4.61	3.69	63.89	1.32	2.86	0.62	0.61	0.018	2.31	58.0	19.2	6.1	11.2	23.2	2.02	0.9	3340	145	195	1.4	0.20	-	241	308	393	489	47	68	84	-
S.D		0.07	0.11	0.04	0.04	0.19	0.02	0.07	0.01	0.01	0.000	0.22	0.90	0.88	0.11	0.12	0.22	0.14	0.11	71.77	5.03	5.25	0.09	0.02	-	8.11	13.92	12.65	9.56	2.55	3.71	2.96	-

S : Silo M : Mill

کارشناس آزمایشگاه: رئیس آزمایشگاهها: مدیرکنترل کیفی و آزمایشگاهها: مدیر کارخانه:

گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

نوع سیمان: پرتلند پوزولانی ویژه

شماره مدرک: LA-F-023-02

تاریخ: اردیبهشت ۹۹

Day		Chemical Compositions & Phases %																Physical Test															Lab.Code
																		Fineness		Setting time		Soundness		Compressive Strength (kg/cm^2)					Bend Strength (kg/cm^2)			
		IR	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	K_2O	Na_2O	Cl	LOSS	C3S	C2S	C3A	C4AF	C4AF +2C3A	F.CaO	Sieve 90 mic	Blaine (cm^2/gr)	INIT (min)	FINAL (min)	LEACHTELIER (mm)	Auto Clave (%)	1 DAY	2 DAYS	3 DAYS	7 DAYS	28 DAYS	2 DAYS	7 DAYS	28 DAYS	
1	S	-	25.16	6.82	3.89	56.20	1.21	2.31	0.89	1.13	0.017	2.08	-	-	-	-	-	-	1.1	3790	135	190	1.4	0.17	-	189	243	313	419	40	56	70	I-CE-99-31
2	M	-	28.56	8.58	4.06	51.75	1.14	1.88	0.96	1.14	0.017	1.87	-	-	-	-	-	1.45	1.1	4100	140	195	1.1	0.11	-	171	219	316	421	40	53	72	I-CE-99-34
3	M	-	28.40	8.56	4.09	51.53	1.14	2.09	0.95	1.14	0.017	2.04	-	-	-	-	-	1.65	0.7	4030	140	190	1.2	0.14	-	165	206	294	389	37	56	70	I-CE-99-36
4	S	-	27.71	8.21	4.02	52.50	1.16	2.18	0.95	1.14	0.017	2.07	-	-	-	-	-	1.75	1.1	4010	135	185	1.2	0.14	-	187	242	317	423	41	62	76	I-CE-99-37
10	S	-	28.08	8.43	4.03	52.00	1.17	2.14	0.95	1.14	0.017	2.01	-	-	-	-	-	1.90	1.0	3960	135	190	1.3	0.17	-	181	222	318	423	39	56	74	I-CE-99-48
16	S	-	24.85	6.62	3.82	57.10	1.21	2.41	0.88	1.12	0.017	1.93	-	-	-	-	-	1.85	1.1	3640	140	195	1.3	0.14	-	209	243	326	433	39	63	78	I-CE-99-59
18	S	-	26.72	7.60	4.00	54.05	1.20	2.25	0.92	1.14	0.017	2.04	-	-	-	-	-	1.75	0.9	3840	145	195	1.3	0.17	-	173	225	307	411	36	55	76	I-CE-99-63
25	S	-	27.19	7.92	3.98	53.45	1.16	2.20	0.93	1.12	0.017	2.00	-	-	-	-	-	1.80	0.9	3870	140	190	1.2	0.14	-	182	233	312	428	34	60	73	I-CE-99-76
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Avg		-	27.11	7.84	3.99	53.57	1.17	2.18	0.93	1.13	0.017	2.01	-	-	-	-	-	1.74	1.0	3905	139	191	1.3	0.15	-	182	229	313	418	38	58	74	-
Min		-	24.85	6.62	3.82	51.53	1.14	1.88	0.88	1.12	0.017	1.87	-	-	-	-	-	1.45	0.7	3640	135	185	1.1	0.11	-	165	206	294	389	34	53	70	-
Max		-	28.56	8.58	4.09	57.10	1.21	2.41	0.96	1.14	0.017	2.08	-	-	-	-	-	1.90	1.1	4100	145	195	1.4	0.17	-	209	243	326	433	41	63	78	-
S.D		-	1.38	0.77	0.09	2.09	0.03	0.16	0.03	0.01	0.000	0.07	-	-	-	-	-	0.15	0.15	149.57	3.54	3.54	0.09	0.02	-	13.60	13.47	9.39	13.49	2.38	3.58	2.92	-

S : Silo M : Mill

کارشناس آزمایشگاه: رئیس آزمایشگاهها: مدیر کنترل کیفی و آزمایشگاهها: مرتضی نیکخواه مدیر کارخانه:

گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان نوع سیمان: پرتلند تیپ ۵		شماره مدرک: LA-F-023-02 تاریخ: اردیبهشت ۹۹ صفحه ۳ از ۴

Day		Chemical Compositions & Phases %																	Physical Test												Lab.Code
		IR	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	K_2O	Na_2O	Cl	LOSS	C3S	C2S	C3A	C4AF	C4AF+2C3A	F.CaO	Fineness		Setting time		Soundness		Compressive Strength (kg/cm²)					Bend Strength (kg/cm²)			
																			Sieve 90 mic	Blaine (cm²/gr)	INIT (min)	FINAL (min)	LEACHTELIER (mm)	Auto Clave (%)	1 DAY	2 DAYS	3 DAYS	7 DAYS	28 DAYS	2 DAYS	7 DAYS	28 DAYS	
5	M	0.41	21.23	4.51	4.57	63.66	1.40	2.07	0.62	0.59	0.019	1.65	55.1	19.3	4.2	13.9	22.3	1.75	0.3	3280	135	185	1.2	0.14		189	231	329	457	38	60	78	I-CE-99-40
6	M	0.49	21.28	4.48	4.60	63.57	1.41	1.99	0.62	0.59	0.019	1.34	54.7	19.7	4.1	14.0	22.2	1.65	0.5	3230	125	175	1.2	0.14		178	224	317	448	37	53	77	I-CE-99-41
7	S	0.44	21.28	4.51	4.63	63.77	1.41	1.97	0.62	0.59	0.018	0.90	55.3	19.3	4.1	14.1	22.3	1.50	0.4	3230	125	170	1.0	0.11		182	219	324	462	37	62	73	I-CE-99-42
11	S	0.37	21.33	4.51	4.60	63.65	1.41	1.92	0.62	0.59	0.018	1.18	54.7	19.9	4.2	14.0	22.3	1.65	0.5	3200	130	180	1.1	0.14		179	233	332	465	36	60	76	I-CE-99-50
14	S	0.35	21.30	4.52	4.61	63.73	1.41	1.92	0.62	0.59	0.019	1.15	55.1	19.5	4.2	14.0	22.4	1.85	0.6	3260	120	165	1.3	0.17		182	209	319	460	36	56	78	I-CE-99-55
19	S	0.48	21.52	4.62	4.59	63.52	1.41	1.95	0.63	0.59	0.019	1.20	51.9	22.6	4.5	14.0	22.9	1.65	0.6	3230	130	180	1.2	0.14		178	215	319	456	38	58	77	I-CE-99-65
21	M	0.55	21.44	4.53	4.58	63.74	1.43	1.81	0.63	0.58	0.019	1.29	54.4	20.4	4.3	13.9	22.4	1.70	0.4	3230	130	180	1.2	0.14		145	197	314	457	29	56	72	I-CE-99-69
23	S	0.38	21.31	4.55	4.58	63.64	1.41	1.90	0.63	0.59	0.019	0.88	54.6	19.9	4.3	13.9	22.6	1.30	0.5	3280	130	180	1.0	0.11		174	219	313	456	39	54	78	I-CE-99-72
27	M	0.47	21.47	4.57	4.58	63.96	1.42	1.94	0.63	0.59	0.019	0.90	54.4	20.5	4.4	13.9	22.7	1.75	0.4	3110	125	175	1.1	0.17		159	203	314	453	33	57	78	I-CE-99-80
28	M	0.31	21.31	4.54	4.57	63.56	1.42	1.97	0.62	0.58	0.019	0.64	54.1	20.2	4.3	13.9	22.5	1.00	0.6	3010	130	180	0.8	0.07		170	213	321	450	36	57	73	I-CE-99-82
31	S	0.59	20.95	4.47	4.47	63.30	1.37	1.78	0.60	0.58	0.019	1.03	57.0	17.1	4.3	13.6	22.2	1.50	0.3	3230	135	185	1.1	0.14		175	211	316	452	37	54	72	I-CE-99-87
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Avg		0.44	21.31	4.53	4.58	63.65	1.41	1.93	0.62	0.59	0.019	1.11	54.7	19.9	4.3	13.9	22.4	1.57	0.5	3208	129	178	1.1	0.13	-	174	216	320	456	36	57	76	-
Min		0.31	20.95	4.47	4.47	63.30	1.37	1.78	0.60	0.58	0.018	0.64	51.9	17.1	4.1	13.6	22.2	1.00	0.3	3010	120	165	0.8	0.07	-	145	197	313	448	29	53	72	-
Max		0.59	21.52	4.62	4.63	63.96	1.43	2.07	0.63	0.59	0.019	1.65	57.0	22.6	4.5	14.1	22.9	1.85	0.6	3280	135	185	1.3	0.17	-	189	233	332	465	39	62	78	-
S.D		0.09	0.15	0.04	0.04	0.17	0.02	0.08	0.01	0.00	0.000	0.27	1.20	1.29	0.11	0.12	0.22	0.24	0.11	80.23	4.52	6.07	0.14	0.03	-	12.22	11.00	6.24	5.10	2.79	2.83	2.58	-

S : Silo M : Mill

کارشناس آزمایشگاه: رئیس آزمایشگاهها: مدیرکنترل کیفی و آزمایشگاهها: مدیر کارخانه:

مرتضی نیکخواه

گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

نوع سیمان: پرتلند تیپ ۴۲۵-۱

شماره مدرک: LA-F-023-02

تاریخ: اردیبهشت ۹۹ صفحه ۴ از ۴

Day		Chemical Compositions & Phases %																	Physical Test												Lab.Code
																			Fineness		Setting time		Soundness		Compressive Strength (kg/cm^2)					Bend Strength (kg/cm^2)			
		IR	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	K_2O	Na_2O	Cl	LOSS	C3S	C2S	C3A	C4AF	C4AF+2C3A	F.CaO	Sieve 90 mic	Blaine (cm^2/gr)	INIT (min)	FINAL (min)	LEACHTELIER (mm)	Auto Clave (%)	1 DAY	2 DAYS	3 DAYS	7 DAYS	28 DAYS	2 DAYS	7 DAYS	28 DAYS	
3	S	0.48	20.80	4.50	3.61	63.44	1.24	2.70	0.59	0.60	0.017	3.23	57.1	16.6	5.8	11.0	22.6	1.70	0.9	3260	125	175	1.2	0.14		221	284	353	454	42	65	78	I-CE-99-35
12	S	0.54	20.86	4.47	3.62	63.48	1.23	2.66	0.59	0.60	0.018	1.94	57.1	16.7	5.7	11.0	22.5	1.80	0.9	3140	130	180	1.3	0.17		233	292	381	479	47	63	77	I-CE-99-52
15	S	0.34	20.81	4.51	3.59	63.44	1.23	2.74	0.60	0.60	0.018	2.02	56.9	16.8	5.9	10.9	22.7	1.90	0.8	3110	125	180	1.3	0.17		227	296	379	481	40	56	81	I-CE-99-57
22	S	0.55	20.90	4.53	3.58	63.50	1.25	2.78	0.61	0.60	0.017	1.98	56.2	17.5	5.9	10.9	22.8	1.50	0.9	3200	135	185	1.1	0.14		239	301	385	486	47	63	74	I-CE-99-70
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Ave		0.48	20.84	4.50	3.60	63.47	1.24	2.72	0.60	0.60	0.018	2.29	56.8	16.9	5.8	11.0	22.6	1.73	0.9	3178	129	180	1.2	0.16		230	293	375	475	44	62	78	-
Min		0.34	20.80	4.47	3.58	63.44	1.23	2.66	0.59	0.60	0.017	1.94	56.2	16.6	5.7	10.9	22.5	1.50	0.8	3110	125	175	1.1	0.14		221	284	353	454	40	56	74	-
Max		0.55	20.90	4.53	3.62	63.50	1.25	2.78	0.61	0.60	0.018	3.23	57.1	17.5	5.9	11.0	22.8	1.90	0.9	3260	135	185	1.3	0.17		239	301	385	486	47	65	81	-
S.D.		0.10	0.05	0.03	0.02	0.03	0.01	0.05	0.01	0.00	0.001	0.63	0.43	0.43	0.10	0.06	0.14	0.17	0.05	66.52	4.79	4.08	0.10	0.02		7.75	7.18	14.55	14.31	3.56	3.95	2.89	-

S : Silo M : Mill

کارشناس آزمایشگاه: رئیس آزمایشگاهها: مدیرکنترل کیفی و آزمایشگاهها: مدیر کارخانه:

مرتضی نیکخواه