

CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO

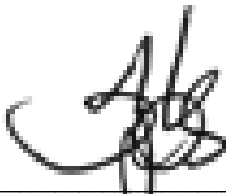


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: JULHO/2026



FL-AGLO-LAB-002 R03

ENSAIOS QUÍMICOS				ENSAIOS FÍSICOS E MECÂNICOS									
ENSAIOS	PERDA AO	RESIDUO	TRIÓXIDO DE	RESISTÊNCIA À COMPRESSÃO			FINURA			EXPANSIB.	TEMPO DE PEGA		CONSIST. NORMAL
	FOGO (PF)	INSOLÚVEL (RI)	ENXOFRE (SO3)	3 DIAS	7 DIAS	28 DIAS	BLAINE	#325	#200	A QUENTE	INÍCIO	FIM	
UNIDADE	(%)	(%)	(%)	(MPa)	(MPa)	(MPa)	(cm²/g)	(%)	(%)	(mm)	(min)	(min)	(%)
LIMITE NORMATIVO (ABNT NBR 16697:2018)	≤ 8,5	≤ 18,5	≤ 4,5	≥ 15,0	≥ 25,0	≥ 40,0	–	–	≤ 10,0	≤ 5	≥ 60	≤ 600	–
01/07/2026	2.63	9.85	3.08	28.8	32.9	43.0	4770	2.5	0.2	0.0	145	240	30.6
02/07/2026	2.14	9.85	3.11	29.4	32.7	43.9	4980	2.1	0.2	0.0	145	240	30.7
03/07/2026	2.64	9.12	2.57	29.6	34.5	43.0	5010	1.9	0.1	0.0	145	240	30.6
04/07/2026	2.31	10.00	3.05	30.1	32.6	43.7	4940	2.0	0.1	0.0	140	240	30.5
06/07/2026	1.98	10.85	3.52	31.0	31.9	44.5	4870	2.1	0.2	0.0	140	245	30.5
07/07/2026	2.35	10.17	3.48	28.9	35.0	44.2	4980	2.3	0.2	0.0	145	245	30.8
08/07/2026	2.38	10.48	3.38	31.0	32.3	44.5	4740	2.7	0.1	0.0	145	240	30.8
09/07/2026	2.40	10.20	3.46	30.6	32.2	42.8	4700	3.0	0.1	0.0	140	235	30.6
10/07/2026	2.36	10.21	3.94	30.6	36.1	42.7	4770	2.2	0.2	0.0	145	240	30.6
11/07/2026	2.32	9.71	3.85	30.8	35.3	42.4	4770	2.2	0.1	0.0	145	240	30.8
13/07/2026	2.29	9.17	3.85	31.0	34.9	42.0	4740	2.3	0.1	0.0	145	245	30.8
14/07/2026	2.13	10.79	3.75	28.9	32.0	41.1	4760	2.2	0.2	0.0	145	250	31.0
15/07/2026	2.42	10.41	3.24	30.8	34.6	42.8	4640	2.3	0.2	0.0	145	240	30.8
16/07/2026	2.70	10.03	3.05	30.6	33.0	43.0	4740	2.3	0.2	0.0	145	245	30.7
17/07/2026	2.54	10.46	3.10	29.0	35.5	42.8	4770	2.3	0.2	0.0	140	245	30.8
18/07/2026	2.48	11.22	3.22	28.0	34.5	43.1	4670	2.2	0.2	0.0	145	240	30.6
20/07/2026	2.49	11.32	3.19	28.6	35.4	43.4	4660	2.2	0.2	0.0	145	240	30.6
21/07/2026	2.50	12.12	3.38	29.1	35.3	42.5	4550	2.5	0.2	0.0	145	245	30.7
22/07/2026	2.53	12.96	3.84	28.4	33.5	43.4	4640	2.2	0.1	0.0	140	245	30.6
23/07/2026	2.57	12.58	3.65	28.5	33.5	43.4	4660	2.3	0.2	0.0	140	245	30.8
24/07/2026	2.56	15.09	3.56	28.0	33.6	43.8	4700	2.3	0.2	0.0	145	245	30.9
25/07/2026	2.60	13.85	3.47	27.9	32.9	43.0	4700	2.1	0.1	0.0	145	245	30.7
27/07/2026	2.65	10.55	3.38	28.6	32.3	43.0	4700	2.1	0.1	0.0	145	240	31.0
28/07/2026	2.57	12.17	3.97	27.4	32.7	42.8	4740	2.1	0.1	0.0	145	240	31.0
29/07/2026	2.36	12.22	3.77	27.1	31.9	43.1	4770	2.3	0.2	0.0	145	245	31.0
30/07/2026	3.13	13.27	3.00	27.4	33.6	43.3	4680	2.2	0.2	0.0	140	245	30.6
31/07/2026	2.40	11.50	3.12	28.1	31.5	43.0	4740	2.4	0.1	0.0	140	205	31.0
MÉDIA	2.50	11.10	3.40	29.2	33.6	43.1	4755	2.3	0.2	0.0	144	241	30.7
DESVIO PADRÃO	0.20	1.50	0.30	1.3	1.3	0.7	112	0.2	0.1	0.0	2	8	0.2
MÍNIMO	1.98	9.12	2.57	27.1	31.5	41.1	4550	1.9	0.1	0.0	140	205	30.5
MÁXIMO	3.13	15.09	3.97	31.0	36.1	44.5	5010	3.0	0.2	0.0	145	250	31.0


Responsável Técnico
GABRIELE OLIVEIRA DA SILVA
CRQ 14200571 - XIV Região

CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO

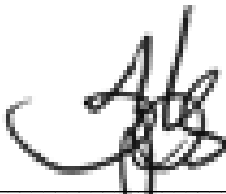


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: AGOSTO/2026



FL-AGLO-LAB-002 R03

ENSAIOS QUÍMICOS				ENSAIOS FÍSICOS E MECÂNICOS									
ENSAIOS	PERDA AO	RESIDUO	TRIÓXIDO DE	RESISTÊNCIA À COMPRESSÃO			FINURA			EXPANSIB.	TEMPO DE PEGA		CONSIST. NORMAL
	FOGO (PF)	INSOLÚVEL (RI)	ENXOFRE (SO3)	3 DIAS	7 DIAS	28 DIAS	BLAINE	#325	#200	A QUENTE	INÍCIO	FIM	
UNIDADE	(%)	(%)	(%)	(MPa)	(MPa)	(MPa)	(cm²/g)	(%)	(%)	(mm)	(min)	(min)	(%)
LIMITE NORMATIVO (ABNT NBR 16697:2018)	≤ 8,5	≤ 18,5	≤ 4,5	≥ 15,0	≥ 25,0	≥ 40,0	–	–	≤ 10,0	≤ 5	≥ 60	≤ 600	–
01/08/2026	2.24	11.15	3.56	32.5	32.5	42.5	4740	2.3	0.1	0.0	145	245	31.0
03/08/2026	2.19	11.95	3.87	28.4	33.5	42.3	4700	2.4	0.1	0.0	145	245	31.0
04/08/2026	2.21	10.94	3.71	27.5	32.0	42.3	4740	2.5	0.1	0.0	140	245	31.0
05/08/2026	2.25	11.03	3.84	27.5	31.2	42.1	4740	2.4	0.1	0.0	145	245	31.0
06/08/2026	2.23	11.21	3.82	27.8	34.5	42.5	4740	2.4	0.1	0.0	145	245	31.0
07/08/2026	2.27	11.03	3.66	26.9	34.3	42.3	4660	2.6	0.1	0.0	140	245	31.0
08/08/2026	2.46	12.54	3.68	25.2	32.0	41.5	4700	2.5	0.1	0.0	145	245	31.0
10/08/2026	2.64	12.76	3.67	23.5	32.1	41.0	4660	2.5	0.1	0.0	140	245	31.0
11/08/2026	2.50	11.32	3.19	27.1	32.5	40.4	4810	2.6	0.1	0.0	140	245	30.8
12/08/2026	2.38	10.85	3.30	23.1	33.0	40.7	4550	2.7	0.1	0.0	145	245	30.8
13/08/2026	2.49	10.39	3.33	22.6	32.4	40.8	4590	2.7	0.1	0.0	145	245	31.0
14/08/2026	2.25	11.58	2.97	23.7	32.0	40.3	4770	2.5	0.1	0.0	145	240	30.9
15/08/2026	2.19	12.10	2.61	26.0	31.8	40.2	4740	2.4	0.1	0.0	145	245	31.0
17/08/2026	2.13	12.61	2.85	28.3	31.9	40.2	4740	2.4	0.1	0.0	140	245	31.8
18/08/2026	2.03	11.17	3.03	25.7	32.4	40.2	4590	2.5	0.1	0.0	145	245	31.0
19/08/2026	2.24	10.64	2.96	24.0	32.3	40.5	4480	2.6	0.1	0.0	160	200	31.0
20/08/2026	1.67	10.17	3.17	24.9	32.4	40.1	4550	2.7	0.1	0.0	160	200	31.0
21/08/2026	1.26	10.97	2.95	24.2	32.5	40.6	4770	2.6	0.1	0.0	155	210	31.0
22/08/2026	1.96	10.68	2.84	24.5	32.3	40.5	4550	2.5	0.1	0.0	155	215	31.0
24/08/2026	2.85	10.30	2.94	24.8	33.0	40.5	4740	2.6	0.1	0.0	140	220	30.4
25/08/2026	2.64	11.23	2.88	24.6	32.8	41.8	4740	2.7	0.1	0.0	170	215	30.5
26/08/2026	2.75	10.94	2.77	24.7	32.3	40.3	4440	3.0	0.2	0.0	180	210	30.7
27/08/2026	2.78	10.25	2.96	24.8	32.8	40.5	4610	2.4	0.2	0.0	175	230	29.5
28/08/2026	2.87	11.14	3.35	24.5	32.5	40.2	4470	2.5	0.2	0.0	180	235	29.2
29/08/2026	2.88	11.33	3.03	23.7	32.9	40.5	4510	2.6	0.2	0.0	170	225	29.0
31/08/2026	2.85	11.41	2.83	24.3	31.9	41.0	4470	2.9	0.2	0.0	195	220	30.2
MÉDIA	2.40	11.20	3.20	25.6	32.5	41.0	4646	2.6	0.1	0.0	154	233	30.7
DESVIO PADRÃO	0.40	0.70	0.40	2.2	0.7	0.8	113	0.2	0.0	0.0	16	16	0.6
MÍNIMO	1.26	10.17	2.61	22.6	31.2	40.1	4440	2.3	0.1	0.0	140	200	29.0
MÁXIMO	2.88	12.76	3.87	32.5	34.5	42.5	4810	3.0	0.2	0.0	195	245	31.8


Responsável Técnico
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CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO

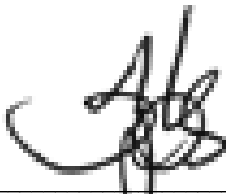


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: SETEMBRO/2026



FL-AGLO-LAB-002 R03

ENSAIOS QUÍMICOS				ENSAIOS FÍSICOS E MECÂNICOS									
ENSAIOS	PERDA AO	RESIDUO	TRIÓXIDO DE	RESISTÊNCIA À COMPRESSÃO			FINURA			EXPANSIB.	TEMPO DE PEGA		CONSIST. NORMAL
	FOGO (PF)	INSOLÚVEL (RI)	ENXOFRE (SO3)	3 DIAS	7 DIAS	28 DIAS	BLAINE	#325	#200	A QUENTE	INÍCIO	FIM	
UNIDADE	(%)	(%)	(%)	(MPa)	(MPa)	(MPa)	(cm²/g)	(%)	(%)	(mm)	(min)	(min)	(%)
LIMITE NORMATIVO (ABNT NBR 16697:2018)	≤ 8,5	≤ 18,5	≤ 4,5	≥ 15,0	≥ 25,0	≥ 40,0	–	–	≤ 10,0	≤ 5	≥ 60	≤ 600	–
01/09/2026	2.27	13.57	3.18	23.4	30.4		4790	1.8	0.2	0.0	130	200	30.6
02/09/2026	2.39	11.87	3.21	23.0	30.0		4820	2.3	0.2	0.0	165	220	30.7
03/09/2026	1.79	13.28	2.69	22.5	30.5		4790	2.2	0.2	0.0	170	230	30.3
04/09/2026	1.64	13.29	2.74	22.8	30.6		4760	2.3	0.2	0.0	175	225	30.8
05/09/2026	1.70	13.30	2.88	22.6	30.6		4790	2.3	0.2	0.0	175	230	30.4
08/09/2026	1.74	12.85	3.00	22.4	30.5		4960	2.0	0.2	0.0	160	230	30.5
09/09/2026	1.81	12.39	2.94	22.3	30.4		4790	2.1	0.1	0.0	180	240	30.9
10/09/2026	1.98	12.53	3.00	22.6	30.5		4760	2.1	0.1	0.0	165	230	30.5
11/09/2026	2.50	11.32	3.19	22.7	30.1		4810	2.6	0.1	0.0	140	245308	0.0
12/09/2026	1.90	12.51	3.00	22.7	30.0		4960	2.6	0.2	0.0	160	225	30.8
14/09/2026	1.81	12.48	2.91	22.7	29.9		4820	2.5	0.2	0.0	185	215	30.3
15/09/2026	1.85	14.72	2.81	22.7	30.1		4922	2.2	0.1	0.0	170	220	30.2
16/09/2026	1.83	14.78	2.99	22.5	29.5		5090	2.3	0.2	0.0	185	220	30.5
17/09/2026	1.87	14.84	3.00	22.0	29.3		4960	2.4	0.2	0.0	180	215	30.7
18/09/2026	1.85	14.12	2.91	22.7	29.2		4890	1.7	0.1	0.0	185	220	30.7
19/09/2026	1.78	12.89	2.90	22.8	29.3		4890	1.8	0.1	0.0	150	220	30.6
21/09/2026	1.75	12.56	2.96	22.8	29.5		4860	2.1	0.1	0.0	140	220	30.6
22/09/2026	1.68	12.26	2.98	23.0	30.0		4920	2.0	0.1	0.0	140	220	30.6
MÉDIA	1.90	13.10	3.00	22.7	30.0		4866	2.2	0.2	0.0	164	13838	28.9
DESVIO PADRÃO	0.20	1.00	0.10	0.3	0.5		90	0.3	0.1	0.0	18	57767	7.2
MÍNIMO	1.64	11.32	2.69	22.0	29.2		4760	1.7	0.1	0.0	130	200	0.0
MÁXIMO	2.50	14.84	3.21	23.4	30.6		5090	2.6	0.2	0.0	185	245308	30.9


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