

CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO

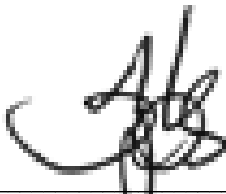


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: MAIO/2026



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.
	FOGO	INSOLÚVEL	ENXOFRE	3 DIAS	7 DIAS	28 DIAS	BLAINE	#325	#200	A QUENTE	INÍCIO	FIM	NORMAL
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	–
02/05/2026	1.52	11.11	2.85	26.3	33.5	43.8	5360	2.9	0.5	0.0	140	230	28.8
04/05/2026	1.46	10.62	2.68	26.5	34.8	42.7	5460	2.8	0.5	0.0	145	235	29.1
05/05/2026	1.33	11.18	2.48	26.0	34.4	43.5	5550	3.2	0.5	0.0	145	230	29.3
06/05/2026	1.28	10.79	2.62	26.3	33.9	42.9	5520	3.1	0.3	0.0	135	215	29.1
07/05/2026	1.14	11.58	2.90	26.9	34.2	42.4	5400	2.5	0.3	0.0	120	210	29.2
08/05/2026	1.50	10.93	2.67	26.7	35.1	43.7	5490	2.1	0.1	0.0	130	240	29.2
09/05/2026	1.62	11.56	2.74	26.3	34.3	43.1	5360	2.0	0.2	0.0	135	230	29.6
11/05/2026	1.67	11.94	2.77	26.6	34.1	43.4	5300	2.1	0.2	0.0	125	225	29.9
12/05/2026	1.28	11.52	2.56	26.4	33.7	43.1	5400	2.0	0.2	0.0	130	220	29.5
13/05/2026	1.76	10.29	2.65	26.9	33.2	43.2	5110	1.7	0.2	0.0	135	230	29.4
14/05/2026	1.41	11.57	2.36	26.5	33.6	43.4	5400	2.3	0.2	0.0	140	235	29.8
15/05/2026	2.00	13.11	2.35	26.3	34.2	43.1	5420	1.4	0.2	0.0	140	230	31.0
16/05/2026	1.78	11.80	2.41	26.7	34.6	42.9	5300	1.8	0.2	0.0	145	235	31.2
18/05/2026	1.53	10.58	2.49	28.3	35.1	43.0	5240	2.2	0.2	0.0	150	230	30.9
19/05/2026	1.67	10.17	2.53	27.1	35.9	43.1	5240	1.3	0.1	0.0	145	235	31.4
20/05/2026	1.26	10.97	2.41	24.9	35.4	43.2	5240	1.7	0.2	0.0	150	240	31.0
21/05/2026	1.36	10.76	2.46	25.4	34.9	43.1	4910	1.0	0.2	0.0	140	230	30.8
22/05/2026	1.68	9.04	2.37	26.3	33.3	43.0	4770	1.2	0.2	0.0	130	240	29.6
23/05/2026	1.38	9.75	2.39	26.7	34.0	43.2	4910	1.7	0.2	0.0	135	230	29.3
25/05/2026	1.02	10.39	2.33	26.0	34.3	43.1	5040	2.2	0.2	0.0	130	220	30.6
26/05/2026	1.98	11.93	2.79	27.3	34.8	43.0	5300	2.5	0.3	0.0	135	230	30.3
28/05/2026	1.39	12.47	2.56	26.5	34.1	43.0	5840	2.6	0.8	0.0	135	230	31.0
29/05/2026	1.55	11.21	2.74	26.0	34.5	43.1	5330	1.2	0.2	0.0	130	225	31.2
30/05/2026	1.62	11.33	2.68	25.8	34.2	43.5	5490	1.4	0.3	0.0	125	220	31.3
MÉDIA	1.50	11.10	2.60	26.4	34.3	43.1	5308	2.0	0.3	0.0	136	229	30.1
DESVIO PADRÃO	0.20	0.90	0.20	0.7	0.7	0.3	233	0.6	0.2	0.0	8	8	0.9
MÍNIMO	1.02	9.04	2.33	24.9	33.2	42.4	4770	1.0	0.1	0.0	120	210	28.8
MÁXIMO	2.00	13.11	2.90	28.3	35.9	43.8	5840	3.2	0.8	0.0	150	240	31.4


Responsável Técnico
GABRIELE OLIVEIRA DA SILVA
CRQ 14200571 - XIV Região

CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO

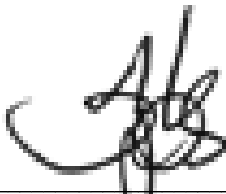


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: JUNHO/2026



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	–
01/06/2026	1.70	11.09	2.44	26.0	34.8	43.2	5490	1.4	0.3	0.0	140	230	29.3
02/06/2026	1.89	9.79	2.50	26.2	35.8	43.8	5400	1.5	0.3	0.0	130	240	29.6
03/06/2026	1.74	11.26	2.47	26.7	32.7	42.1	5360	1.2	0.5	0.0	135	230	29.3
05/06/2026	1.85	10.98	2.47	25.9	33.4	42.9	5330	1.8	0.4	0.0	130	230	29.5
06/06/2026	2.36	11.26	2.63	26.1	32.8	43.6	5210	1.7	0.2	0.0	135	235	29.0
08/06/2026	1.96	10.68	2.84	26.0	33.3	43.0	5210	2.7	0.2	0.0	140	240	30.2
09/06/2026	1.84	10.30	2.48	27.3	32.4	43.1	4940	1.6	0.3	0.0	145	240	29.9
10/06/2026	2.63	10.44	2.12	27.9	35.5	43.1	4980	1.7	0.2	0.0	135	245	30.0
11/06/2026	2.63	10.44	2.12	27.9	35.5	44.2	4980	1.7	0.2	0.0	135	245	30.0
12/06/2026	2.03	11.17	1.90	27.2	34.6	44.7	5010	1.3	0.2	0.0	140	235	29.6
13/06/2026	2.24	10.64	2.02	27.4	34.3	43.7	5870	1.0	0.2	0.0	145	235	29.7
15/06/2026	2.45	10.06	1.90	27.6	34.0	42.8	5870	1.0	0.2	0.0	145	235	30.6
16/06/2026	1.86	10.93	2.20	27.8	32.1	46.6	4480	1.0	0.2	0.0	145	240	30.5
17/06/2026	1.10	10.48	2.11	28.0	34.6	45.2	4330	1.9	0.2	0.0	145	235	30.6
18/06/2026	1.48	14.97	2.22	29.5	30.4	44.7	4940	2.2	0.2	0.0	135	225	30.6
19/06/2026	1.71	11.32	2.48	28.9	32.8	44.7	4630	2.4	0.3	0.0	145	245	30.9
20/06/2026	1.77	12.12	2.39	28.8	32.7	44.7	4590	2.1	0.2	0.0	145	245	30.7
22/06/2026	1.66	12.96	2.52	28.5	33.0	44.7	4630	2.2	0.3	0.0	150	240	30.6
23/06/2026	1.81	9.84	1.87	29.8	32.9	44.1	4840	2.1	0.2	0.0	140	245	30.8
24/06/2026	2.32	9.72	2.30	28.6	33.7	44.8	4630	1.9	0.1	0.0	140	240	31.0
25/06/2026	2.31	11.57	2.73	27.2	35.3	44.5	4770	2.1	0.1	0.0	135	240	29.6
26/06/2026	2.70	9.00	2.69	27.6	34.8	44.0	4700	2.4	0.1	0.0	140	240	30.8
27/06/2026	2.36	9.95	2.72	27.5	34.7	44.6	4570	2.2	0.2	0.0	140	240	30.8
29/06/2026	2.05	10.80	2.76	27.8	34.8	44.7	4570	2.2	0.1	0.0	145	240	30.6
30/06/2026	2.06	9.46	2.83	29.0	36.4	44.9	4770	2.2	0.1	0.0	150	245	30.2
MÉDIA	2.00	10.80	2.40	27.6	33.9	44.1	4964	1.8	0.2	0.0	140	238	30.2
DESVIO PADRÃO	0.40	1.20	0.30	1.1	1.4	1.0	414	0.5	0.1	0.0	6	6	0.6
MÍNIMO	1.10	9.00	1.87	25.9	30.4	42.1	4330	1.0	0.1	0.0	130	225	29.0
MÁXIMO	2.70	14.97	2.84	29.8	36.4	46.6	5870	2.7	0.5	0.0	150	245	31.0


Responsável Técnico
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CRQ 14200571 - XIV Região

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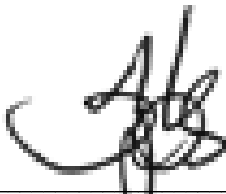


TIPO/CLASSE: CII-Z 40
FÁBRICA: FMN - FÁBRICA DE MANAUS - AM
MÊS/ANO: JULHO/2026



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		4700	3.0	0.1	0.0	140	235	30.6
10/07/2026	2.36	10.21	3.94	30.6	36.1		4770	2.2	0.2	0.0	145	240	30.6
11/07/2026	2.32	9.71	3.85	30.8	35.3		4770	2.2	0.1	0.0	145	240	30.8
13/07/2026	2.29	9.17	4.00	31.0	34.9		4740	2.3	0.1	0.0	145	245	30.8
14/07/2026	2.13	10.79	3.75	28.9	32.0		4760	2.2	0.2	0.0	145	250	31.0
15/07/2026	2.42	10.41	3.24	30.8	34.6		4640	2.3	0.2	0.0	145	240	30.8
16/07/2026	2.70	10.03	3.05	30.6	33.0		4740	2.3	0.2	0.0	145	245	30.7
17/07/2026	2.54	10.46	3.10	29.0	35.5		4770	2.3	0.2	0.0	140	245	30.8
18/07/2026	2.48	11.22	3.22	28.0	34.5		4670	2.2	0.2	0.0	145	240	30.6
20/07/2026	2.49	11.32	3.19	28.6	35.4		4660	2.2	0.2	0.0	145	240	30.6
21/07/2026	2.50	12.12	3.38	29.1	35.3		4550	2.5	0.2	0.0	145	245	30.7
22/07/2026	2.53	12.96	3.84	28.4	33.5		4640	2.2	0.1	0.0	140	245	30.6
23/07/2026	2.57	12.58	3.65	28.5	33.5		4660	2.3	0.2	0.0	140	245	30.8
24/07/2026	2.56	15.09	3.56	28.0	33.6		4700	2.3	0.2	0.0	145	245	30.9
25/07/2026	2.60	13.85	3.47	27.9	32.9		4700	2.1	0.1		145	245	30.7
27/07/2026	2.65	10.55	3.38	28.6	32.3		4700	2.1	0.1		145	240	31.0
28/07/2026	2.57	12.17	3.97	27.4	32.7		4740	2.1	0.1	0.0	145	240	31.0
29/07/2026	2.36	12.22	3.77	27.1			4770	2.3	0.2	0.0	145	245	31.0
30/07/2026	3.13	13.27	3.00	27.4			4680	2.2	0.2	0.0	140	245	30.6
31/07/2026	2.40	11.50	3.12	28.1			4740	2.4	0.1	0.0	140	205	31.0
MÉDIA	2.50	11.10	3.40	29.2	33.7	43.8	4755	2.3	0.2	0.0	144	241	30.7
DESVIO PADRÃO	0.20	1.50	0.40	1.3	1.3	0.6	112	0.2	0.1	0.0	2	8	0.2
MÍNIMO	1.98	9.12	2.57	27.1	31.9	43.0	4550	1.9	0.1	0.0	140	205	30.5
MÁXIMO	3.13	15.09	4.00	31.0	36.1	44.5	5010	3.0	0.2	0.0	145	250	31.0


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