

# CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO



TIPO/CLASSE: CII-Z 40



FÁBRICA: FBE - FÁBRICA DE BELÉM - PA

MÊS/ANO: JANEIRO-2026

ENSAIOS QUÍMICOS				ENSAIOS FÍSICOS E MECÂNICOS									
ENSAIOS	PERDA AO	RESIDUO	TRIOXIDO DE	RESISTÊNCIA A COMPRESSÃO			FINURA			EXPANSIB. A QUENTE	TEMPO DE PEGA		CONSIST. NORMAL
	FOGO (PF)	INSOLÚVEL (RI)	ENXOFRE (SO3)	3 DIAS	7 DIAS	28 DIAS	BLAINE	#325	#200		INICIO	FIM	
UNIDADE	(%)	(%)	(%)	(MPa)	(MPa)	(MPa)	(g/cm <sup>2</sup> )	(%)	(%)	(mm)	(mim)	(mim)	(%)
LIMITE NORMATIVO (ABNT NBR 16697:2018)	≤ 8,5	≤ 18,5	≤ 4,5	≥ 10,0	≥ 20,0	≥ 32,0	-	-	≤ 12,0	≤ 5	≥ 60	≤ 600	-
01/01/2026	2.09	10.11	2.56	29.4	37.4	45.1	5104	2.0	0.1	0.5	140	160	30.0
02/01/2026	2.45	8.11	3.44	27.5	33.5	44.3	5028	2.1	0.1	0.5	140	160	30.0
03/01/2026	2.60	10.24	3.22	26.6	34.1	43.0	5103	2.0	0.1	0.5	130	150	30.0
04/01/2026	2.53	9.27	3.58	27.0	34.5	44.4	4958	2.1	0.1	0.5	140	170	30.0
05/01/2026	3.11	8.35	3.12	26.0	34.1	44.0	4958	2.0	0.1	0.5	140	170	30.0
06/01/2026	2.56	7.05	3.64	25.0	34.0	43.5	5083	2.1	0.1	0.5	140	170	30.0
07/01/2026	2.12	8.36	3.57	25.0	34.0	43.7	5123	2.1	0.1	0.5	130	160	30.0
08/01/2026	2.29	10.50	3.39	26.0	34.9	43.6	4847	2.1	0.1	0.5	135	170	30.0
09/01/2026	2.58	9.08	2.95	29.0	35.4	45.3	5099	1.9	0.1	0.5	130	170	30.0
10/01/2026	2.12	10.13	2.58	26.1	34.5	44.0	4914	2.5	0.1	0.5	140	180	30.0
12/01/2026	2.11	10.55	3.12	27.4	35.6	44.5	4912	1.9	0.1	0.5	140	170	30.0
13/01/2026	2.51	10.23	2.95	29.4	36.1	45.1	5078	2.0	0.1	0.5	140	170	30.0
14/01/2026	2.11	10.55	3.55	28.0	35.4	44.5	5090	1.9	0.1	0.5	140	170	30.0
15/01/2026	2.01	10.72	2.95	28.6	35.3	44.5	5012	1.9	0.1	0.5	135	165	30.0
16/01/2026	1.98	11.51	3.55	27.9	34.5	44.9	4981	2.3	0.1	0.5	140	190	30.0
17/01/2026	1.50	11.23	3.34	28.8	34.4	44.2	4971	2.1	0.1	0.5	130	170	30.0
19/01/2026	1.49	11.40	3.22	28.0	34.5	45.5	5122	2.1	0.1	0.5	130	170	30.0
20/01/2026	1.41	10.14	3.11	27.8	34.9	43.9	5057	1.9	0.1	0.5	130	170	30.0
21/01/2026	1.95	10.34	2.40	26.9	34.5	43.6	5085	2.0	0.1	0.5	120	180	30.0
23/01/2026	1.88	10.22	2.59	25.8	33.2	43.2	5015	2.0	0.1	0.5	120	180	30.0
24/01/2026	1.59	9.44	2.55	26.1	34.2	43.6	5012	2.0	0.1	0.5	140	180	30.0
25/01/2026							5268	2.2					
26/01/2026	1.66	10.00	2.11	25.1	32.5	43.1	5134	1.8	0.1	0.5	140	170	30.0
27/01/2026	1.44	9.15	3.10	25.6	34.1	44.6	5122	2.0	0.1	0.5	140	180	30.0
29/01/2026	1.88	11.22	2.44	25.9	32.4	43.1	5224	1.8	0.1	0.5	140	180	30.0
30/01/2026	2.11	12.11	3.15	24.5	34.6	44.1	5111	2.0	0.1	0.5	140	180	30.0
31/01/2026	1.75	11.08	2.85	25.8	33.8	43.8	4948	1.8	0.1	0.5	135	175	30.0
MÉDIA	2.07	10.04	3.04	26.9	34.5	44.1	5050	2.0	0.1	0.5	136	172	30.0
DESVIO PADRÃO	0.43	1.18	0.42	1.5	1.1	0.7	96	0.2	0.0	0.0	6	8	0.0
MAXIMO	3.11	12.11	3.64	29.4	37.4	45.5	5268	2.5	0.1	0.5	140	190	30.0
MINIMO	1.41	7.05	2.11	24.5	32.4	43.0	4847	1.8	0.1	0.5	120	150	30.0

*Eric Yueh Nim*

Responsável Técnico  
ERIC YUEH NIM  
CRQ:CP 14300278 - Região XV

# CERTIFICADO DE CONTROLE DA QUALIDADE DO CIMENTO



TIPO/CLASSE: **CPII-Z 40**  
 FÁBRICA: **FBE - FÁBRICA DE BELÉM - PA**  
 MÊS/ANO: **FEVEREIRO-2026**



ENSAIOS QUÍMICOS				ENSAIOS FÍSICOS E MECÂNICOS									
ENSAIOS	PERDA AO	RESIDUO	TRIOXIDO DE	RESISTÊNCIA A 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	INICIO	FIM	
UNIDADE	(%)	(%)	(%)	(MPa)	(MPa)	(MPa)	(g/cm <sup>2</sup> )	(%)	(%)	(mm)	(mim)	(mim)	(%)
LIMITE NORMATIVO (ABNT NBR 16697:2018)	≤ 8,5	≤ 18,5	≤ 4,5	≥ 10,0	≥ 20,0	≥ 32,0	-	-	≤ 12,0	≤ 5	≥ 60	≤ 600	-
02/02/2026	2.71	10.11	3.11	26.6	34.1	43.4	4898	2.1	0.1	0.5	140	180	30.0
03/02/2026	2.55	10.34	2.91	27.1	34.6	43.2	4718	2.0	0.1	0.5	150	190	30.0
04/02/2026	3.11	11.23	2.91	26.9	34.4		5031	1.9	0.1	0.5	140	170	30.0
05/02/2026	1.98	10.12	3.10	26.5	34.0		4878	2.0	0.1	0.5	140	170	30.0
06/02/2026	1.94	10.33	3.13	25.6	33.0		4976	2.0	0.1	0.5	130	170	30.0
07/02/2026	2.43	10.05	2.84	25.6	33.9		5063	2.0	0.1	0.5	135	175	30.0
09/02/2026	2.11	9.55	2.59	25.1	34.1		4991	2.0	0.1	0.5	140	190	30.0
10/02/2026	2.10	11.51	2.59	25.5	34.5		5200	2.0	0.1	0.5	130	170	30.0
11/02/2026	1.49	10.55	2.59	25.1	34.2		4914	2.1	0.1	0.5	130	170	30.0
12/02/2026	2.48	9.49	2.44	25.1	32.9		5292	2.3	0.1	0.5	140	170	30.0
13/02/2026	2.11	10.55	2.59	26.5	34.1		5111	1.9	0.1	0.5	130	170	30.0
14/02/2026	1.95	10.23	3.11	26.8	34.4		5022	2.1	0.1	0.5	130	170	30.0
15/02/2026							4903	2.0					
16/02/2026	2.11	10.55	2.49	24.1	34.9		5135	2.0	0.1	0.5	130	170	30.0
17/02/2026	2.75	9.34	2.31	28.2	34.1		4878	1.9	0.1	0.5	130	170	30.0
18/02/2026	2.01	10.33	3.12	27.1	34.1		5069	2.3	0.1	0.5	130	170	30.0
19/02/2026	2.01	10.22	2.59	27.5	34.2		5240	2.1	0.1	0.5	130	170	30.0
20/02/2026	1.98	10.55	2.95	28.1	34.8		4911	2.1	0.1	0.5	130	170	30.0
21/02/2026	2.99	9.51	2.95	27.5	34.5		5145	1.9	0.1	0.5	130	170	30.0
23/02/2026	2.01	10.58	2.55	27.5	34.2		5241	1.8	0.1	0.5	130	170	30.0
24/02/2026	1.89	9.55	2.98	25.9	34.1		4920	2.3	0.1	0.5	130	170	30.0
25/02/2026	1.59	10.40	2.94	27.2	34.0		4941	2.0	0.1	0.5	130	170	30.0
26/02/2026	2.14	10.55	2.56	25.9			5111	2.0	0.1	0.5	130	170	30.0
27/02/2026	1.65	11.45	3.19	26.7			4960	2.0	0.1	0.5	130	170	30.0
28/02/2026	2.10	10.22	2.14	27.3			4891	1.9	0.1	0.5	130	170	30.0
MÉDIA	2.17	10.30	2.78	26.5	34.2	43.3	5018	2.0	0.1	0.5	133	172	30.0
DESVIO PADRÃO	0.41	0.57	0.29	1.1	0.5	0.1	141	0.1	0.0	0.0	5	6	0.0
MAXIMO	3.11	11.51	3.19	28.2	34.9	43.4	5292	2.3	0.1	0.5	150	190	30.0
MINIMO	1.49	9.34	2.14	24.1	32.9	43.2	4718	1.8	0.1	0.5	130	170	30.0

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