

**CERTIFICADO DA QUALIDADE - FMN**

**ENSAIOS QUÍMICOS E FÍSICOS DO CIMENTO CP II Z 40**

**Outubro-2024**

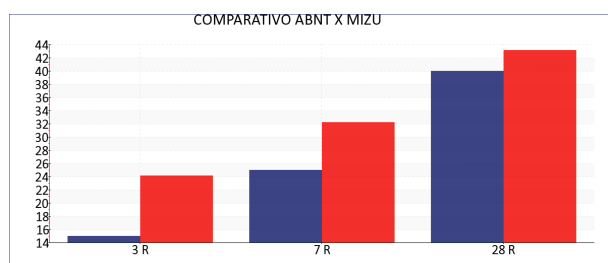
DATA	COMPOSIÇÃO QUÍMICA					RESISTÊNCIA A COMPRESSÃO			MASSA	FINURA			EXP.	PEGA		CONSIST.	
	Parâmetros	PF	RI	SO3	CO2	CaO L.	3 DIAS	7 DIA	28 DIAS	ESPEC.	BLAINE	#325	#200	QUENTE	INICIO	FIM	NORMAL
	Unidades	%	%	%	%	%	MPa	MPa	MPa	g/cm³	cm²/g	%	%	mm	min	min	%
01/10/2024	1.52	8.72	3.34	0.00	1.93	24.80	33.00	43.30	3.10	4415.00	1.90	0.11	0.00	125.00	230.00	32.90	
02/10/2024	1.78	9.85	3.65	0.00	1.76	23.00	33.80	42.80	3.10	4475.00	1.85	0.15	0.00	130.00	225.00	33.10	
03/10/2024	1.70	9.74	3.81	0.00	1.70	25.90	35.00	43.30	3.10	4356.00	1.92	0.20	0.00	115.00	220.00	33.20	
04/10/2024	1.56	9.85	3.75	0.00	1.65	25.20	34.00	42.90	3.10	4412.00	1.85	0.17	0.00	120.00	225.00	33.50	
05/10/2024	1.65	9.61	3.66	0.00	1.78	25.00	32.80	43.00	3.10	4385.00	1.90	0.18	0.00	130.00	230.00	32.90	
07/10/2024	1.85	10.05	3.60	0.00	1.75	26.00	33.20	41.70	3.10	4371.00	1.65	0.21	0.00	125.00	215.00	33.00	
08/10/2024	1.28	8.92	3.52	0.00	1.65	24.00	30.50	42.30	3.10	4385.00	1.50	0.11	0.00	130.00	230.00	33.60	
09/10/2024	1.46	11.20	3.10	0.00	1.70	25.60	33.40	41.50	3.10	4290.00	1.90	0.15	0.00	120.00	215.00	33.50	
10/10/2024	1.49	11.00	3.28	0.00	1.65	25.00	33.90	43.80	3.10	4325.00	1.65	0.31	0.00	115.00	220.00	33.20	
11/10/2024	1.56	10.20	3.45	0.00	1.67	26.00	33.70	45.60	3.10	4412.00	1.53	0.25	0.00	125.00	225.00	33.00	
14/10/2024	1.73	5.95	3.34	0.00	0.67	24.70	33.00	44.10	3.10	4405.00	1.80	0.13	0.00	130.00	225.00	32.00	
15/10/2024	1.71	9.66	3.34	0.00	0.67	25.60	35.00	44.30	3.10	4612.00	1.70	0.15	0.00	130.00	225.00	32.30	
16/10/2024	1.60	8.00	3.20	0.00	1.31	25.00	32.90		3.10	4340.00	1.40	0.11	0.00	120.00	210.00	33.00	
17/10/2024	1.95	7.70	3.80	0.00	1.40	24.20	31.60		3.10	4455.00	1.45	0.16	0.00	130.00	210.00	32.80	
18/10/2024	2.83	12.82	4.40	0.00	1.70	23.50	30.50		3.10	4289.00	1.65	0.14	0.00	115.00	195.00	33.00	
19/10/2024	1.79	8.53	3.37	0.00	1.56	24.70	30.80		3.10	4340.00	1.50	0.15	0.00	125.00	210.00	32.80	
21/10/2024	2.27	9.79	3.78	0.00	1.87	22.90	29.90		3.10	4652.00	1.70	0.18	0.00	125.00	220.00	33.00	
22/10/2024	2.16	12.26	3.62	0.00	1.81	23.10	30.80		3.10	4722.00	1.85	0.20	0.00	130.00	215.00	32.80	
23/10/2024	2.35	12.40	3.70	0.00	1.84	22.00	30.50		3.10	4578.00	1.90	0.15	0.00	125.00	210.00	32.50	
24/10/2024	2.44	12.59	3.62	0.00	1.87	22.90	30.10		3.10	4755.00	1.80	0.25	0.00	120.00	230.00	33.30	
25/10/2024	2.21	10.48	3.62	0.00	1.73	22.80	29.40		3.10	4667.00	1.65	0.20	0.00	120.00	225.00	32.50	
26/10/2024	2.33	11.54	3.51	0.00	1.80	23.10	30.90		3.10	4922.00	1.60	0.18	0.00	125.00	215.00	32.80	
28/10/2024	2.33	12.36	3.37	0.00	1.17	23.50	32.50		3.10	4856.00	1.78	0.16	0.00	120.00	215.00	33.50	
29/10/2024	2.28	6.74	3.34	0.00	1.65	23.00	33.60		3.10	4914.00	1.70	0.21	0.00	130.00	235.00	31.90	
30/10/2024	2.12	8.43	3.81	0.00	1.68	23.60	32.80		3.10	4620.00	130.00	225.00	0.00	130.00	225.00	32.00	
31/10/2024	2.22	10.36	3.13	0.00	1.70	24.00			3.10	4756.00	1.75	0.22	0.00	135.00	220.00	32.50	

**Controle Estatístico**

		R3	R7	R28													
Média	1.90	10.00	3.50	0.00	1.60	24.20	32.30	43.20	3.10	4527.30	6.60	8.80	0.00	124.80	220.00	32.90	
Desvio (P)	0.40	1.80	0.30	0.00	0.30	1.20	1.70	1.10	0.00	198.90	25.20	44.10	0.00	5.60	8.80	0.50	
NBR 16697:2018	<8,5	<18,5	<4,5	<5,5	-	>15,0	>25,0	>40,0	-	>2800	-	<10,0	<5,0	<60	-	-	

**Comparativo ABNT x MIZU**

	ABNT	MIZU
R3	15	24.20
R7	25	32.30
R28	40	43.20



• ABNT • MIZU

*[Handwritten Signature]*  
Responsável Técnico

Gabriele Oliveira da Silva  
CRQ 14200571 - XIV Região

**CERTIFICADO DA QUALIDADE - FMN**

**ENSAIOS QUÍMICOS E FÍSICOS DO CIMENTO CP II Z 40**

**Novembro-2024**

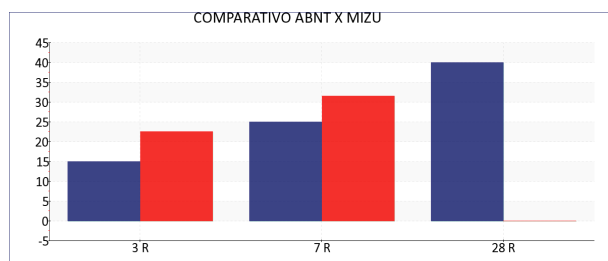
DATA	COMPOSIÇÃO QUÍMICA					RESISTÊNCIA A COMPRESSÃO			MASSA	FINURA			EXP.	PEGA		CONSIST.	
	Parâmetros	PF	RI	SO3	CO2	CaO L.	3 DIAS	7 DIA	28 DIAS	ESPEC.	BLAINE	#325	#200	QUENTE	INICIO	FIM	NORMAL
	Unidades	%	%	%	%	%	MPa	MPa	MPa	g/cm³	cm²/g	%	%	mm	min	min	%
01/11/2024	2.19	9.77	3.93	0.00	1.68	25.70	33.10		3.10	4896.00	1.89	0.20	0.00	145.00	230.00	30.10	
04/11/2024	2.29	13.61	3.00	0.00	1.59	23.00	30.90		3.10	4658.00	1.80	0.15	0.00	140.00	235.00	30.10	
05/11/2024	2.21	14.00	3.70	0.00	1.59	22.20	30.80		3.10	4740.00	1.60	0.17	0.00	125.00	230.00	30.80	
06/11/2024	2.12	13.96	3.65	0.00	1.48	23.00	32.10		3.10	4675.00	1.40	0.13	0.00	120.00	240.00	30.30	
07/11/2024	2.11	13.00	3.58	0.00	1.49	22.90	31.00		3.10	4705.00	1.50	0.14	0.00	125.00	240.00	30.10	
08/11/2024	1.94	11.94	3.36	0.00	1.48	23.10	31.50		3.10	4615.00	1.60	0.11	0.00	135.00	235.00	30.80	
09/11/2024	1.92	10.33	3.46	0.00	1.43	22.80			3.10	4785.00	1.60	0.15	0.00	130.00	220.00	30.30	
11/11/2024	1.90	8.72	3.56	0.00	1.37	22.70			3.10	4721.00	1.30	0.12	0.00	135.00	220.00	31.70	
12/11/2024	2.00	9.32	2.64	0.00	1.37	20.20			3.10	4490.00	1.40	0.11	0.00	140.00	215.00	31.90	
13/11/2024	2.15	5.73	3.10	0.00	1.62	20.30			3.10	4525.00	1.65	0.12	0.00	120.00	190.00	32.70	

**Controle Estatístico**

						R3	R7	R28								
Média	2.10	11.00	3.40	0.00	1.50	22.60	31.60		3.10	4681.00	1.60	0.10	0.00	131.50	225.50	30.90
Desvio (P)	0.10	2.70	0.40	0.00	0.10	1.50	0.90		0.00	119.50	0.20	0.00	0.00	8.80	15.20	0.90
NBR 16697:2018	<8,5	<18,5	<4,5	<5,5	-	>15,0	>25,0	>40,0	-	>2800	-	<10,0	<5,0	<60	-	-

**Comparativo ABNT x MIZU**

	ABNT	MIZU
R3	15	22.60
R7	25	31.60
R28	40	



• ABNT • MIZU

**Responsável Técnico**  
**Gabriele Oliveira da Silva**  
CRQ 14200571 - XIV Região