



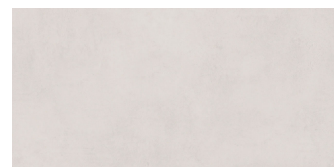
# PRODUCT CERTIFICATE

## LABORATORY OF FINISHED PRODUCT

ISO 13006-10545  
 Equivalent Brazilian Norm ABNT NBR ISO 13006 - NBR ISO 10545  
 Brazilian Performance Norm ABNT - NBR 15575

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Product:	MUNARI BRANCO AC 30X60*	Manufacturing Process:	Wet ceramic process
Code:	8036194	Manufacturing Size:	300,0 x 600,0 mm
Class:	Bla	Nominal Size:	30X60 cm
Typology:	Porcelain tile	Thickness:	9,5 mm
Shade Variation:	V2	Coverage Area:	1,26m <sup>2</sup> /box
Grout Joint:	3 mm	Pieces per box:	7,00
Edge finish:	Bold	Surface:	GL ( Glazed )



	CHARACTERISTICS		TESTING METHOD	SPECIFICATION	RESULTS
USAGE RECOMMENDATION	<b>FIR</b>	Indoor dry residential floors	Manufacturer's recommendation	According to the manufacturer's criteria	FMC FWI WFA
	<b>FLC</b>	Indoor light commercial floors, including the areas FIR			
	<b>FMC</b>	Indoor medium commercial floors, including the areas FLC and FIR			
	<b>FHC</b>	Indoor heavy commercial floors, including the areas FMC, FLC, FIR			
	<b>WID</b>	Indoor dry residential and commercial walls			
	<b>FWI</b>	Indoor wet residential and commercial floors			
	<b>WRC</b>	Indoor and outdoor, wet or dry, residential and commercial walls, including the areas WID. For regions reaching below freezing temperatures, non frost resistant tiles are indoor only.			
	<b>WWS</b>	Swimming pool interior walls, including the areas WRC and WID			
	<b>WFA</b>	External facades, including the areas WRC and WID			
	<b>FHO</b>	Floor - Very Heavy Outdoor Commercial and Outdoor Residential			
	<b>FMO</b>	Floor - Light to Heavy Outdoor Commercial and Outdoor Residential			
	<b>FRH</b>	Floor - Ramp Very Heavy Outdoor Commercial and Outdoor Residential			
	<b>FRM</b>	Floor - Ramp Light to Heavy Outdoor Commercial and Outdoor Residential			
DIMENSIONAL AND SURFACE PROPERTIES	<b>Deviation of W/N:</b>	W - Work size (mm) N - Nominal Size (mm)	ISO 10545-2	ISO 13006: ± 5,00 ± 5,00	± 5,00 ± 5,00
	<b>Deviation of r/W:</b>	r - Average tile size (mm) W - Work size (mm)	ISO 10545-2	ISO 13006: ± 1,80 ± 2,00	± 1,80 ± 2,00
	<b>Deviation of e/eW:</b>	e - Average tile thickness (mm) eW - Fabrication thickness (mm)	ISO 10545-2	ISO 13006: 9,02 - 9,98	9,02 - 9,98
	<b>Rectangularity:</b>	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 2,00 ± 1,50	± 2,00 ± 1,50
	<b>Straightness of sides:</b>	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 1,50 ± 1,50	± 1,50 ± 1,50
	<b>Edge curvature:</b>	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 1,50 ± 2,00	± 1,50 ± 2,00
	<b>Centre Curvature:</b>	Deviation from dW (mm)	ISO 10545-2	ISO 13006: ± 2,00 ± 2,00	± 2,00 ± 2,00
	<b>Warpage:</b>	Deviation from dW (mm)	ISO 10545-2	ISO 13006: ± 2,00 ± 2,00	± 2,00 ± 2,00
PHYSICAL PROPERTIES	<b>Water Absorption:</b>	(%)	ISO 10545-3	ISO 13006: ≤ 0,5	≤ 0,50
	<b>Modulus of Rupture:</b>	(MPa)	ISO 10545-4	ISO 13006: ≥ 35	≥ 40
	<b>Breaking Strength:</b>	(N)	ISO 10545-4	ISO 13006: ≥ 1300	≥ 1900
	<b>Resistance to Cracking:</b>	(Cycles)	ISO 10545-11	ISO 13006: 1	5
	<b>Moisture Expansion:</b>	(mm/m)	ISO 10545-10	ISO 13006: ≤ 0,6	≤ 0,2
	<b>Coefficient of Restitution</b>		ISO 10545-5	ISO 13006: ≥ 0,55	≥ 0,60



	CHARACTERISTICS		TESTING METHOD	SPECIFICATION	RESULTS	
CHEMICAL PROPERTIES	Stain Resistance					
	Penetrating Agent	Green Chrome (40% oil)	ISO 10545-14	ISO 13006:	≥ 3	
	Layer Forming Agent	Olive Oil				
	Oxidizing Agent	Alcoholic Iodine				
	Chemical Resistance					
	Domestic product	Ammonium Chloride 100g/L	ISO 10545-13	ISO 13006:	≥ GB	GA
	Pool water treatment	Sodium hypochlorite 20mg			≥ GB	GA
	Low concentration alkali	Potassium Hydroxide 30g / L			A declarar	GLB
	Low concentration acid	Chloridric acid 3% (v/v)			A declarar	GLB
Low concentration acid	Citric Acid 100g/L	A declarar			GLB	
DYNAMIC FRICTION COEFFICIENT	Wet Dynamic Friction Coefficient		NBR 16919-	NBR 16919:	≥ 0,40	≥ 0,40
PERFORMANCE	Solar Absorbance - α*		NBR 15575 - 3-	NBR 15575:	To declare	0.4 - 0.5
	Solar Deflection - ε*		NBR 15575 - 3-	NBR 15575:	To declare	0.75 - 0.85
	Impact of Hard Object		NBR 15575 - 3-	NBR 15575:	Ruptura (5J)	Ruptura (5J)
	Flammability		NBR 15575 - 3-	NBR 15575:	Yes/Clo	Yes/Clo
	Solar Reflectance - ρ*		NBR 15575 - 3-	NBR 15575:	To declare	0.6 - 0.5
	Moisture Resistance		NBR 15575 - 3-	NBR 15575:	To declare	Resistant
	Useful life:	(years)	NBR 15575 - 3-	NBR 15575:	20 fachada e 13 outros	20 fachada e 13 outros
Solar Reflectance Index - SRI H = 5 (W / m <sup>2</sup> K)*		NBR 15575 - 3-	NBR 15575:	To declare	80 - 65	

**Note:**

Check if the product is suitable for the intended use.

Sand may cause scratches in any type of covering (stone, wood, vinyl or ceramic). For this reason, ceramic tile are not warranted against scratches, specially products with glossy finish. It is recommended special care during its installation and its use. In residential areas, we recommend to protect the base of furniture and appliances. Several performance characteristics required in the ABNT NBR 15575 norm refer to the prescriptive ABNT NBR 13818 norm, which is contained in this report.

Negligence towards the recommended use specified in this report, abnormal environmental and climate factors, changes in the work surroundings, will reduce the useful lifetime of the product, which may be shorter than the period declared by the manufacturer.

\* According to information in the ANFACER sectorial performance manual



QR WARRANTY CODE:

Validate this certificate in:



COCAL DO SUL ( SC ), May 08th, 2023

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