



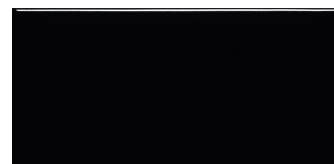
PRODUCT CERTIFICATE

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:	METRO BLACK 10X20	Manufacturing Process:	Wet ceramic process
Code:	190420	Manufacturing Size:	100,0 x 200,0 mm
Class:	Bill	Nominal Size:	10x20 cm
Typology:	Ceramic wall tile	Thickness:	7,7 mm
Shade Variation:	V1	Coverage Area:	1,00m ² /box
Grout Joint:	2 mm	Pieces per box:	50,00
Edge finish:	Bold	Surface:	GL (Glazed)



	CHARACTERISTICS		TESTING METHOD	SPECIFICATION	RESULTS
USAGE RECOMMENDATION	FIR	Indoor dry residential floors	Manufacturer's recommendation	According to the manufacturer's criteria	WRC WWS
	FLC	Indoor light commercial floors, including the areas FIR			
	FMC	Indoor medium commercial floors, including the areas FLC and FIR			
	FHC	Indoor heavy commercial floors, including the areas FMC, FLC, FIR			
	WID	Indoor dry residential and commercial walls			
	FWI	Indoor wet residential and commercial floors			
	WRC	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.			
	WWS	Swimming pool interior walls, including the areas WRC and WID			
	WFA	External facades, including the areas WRC and WID			
	FHO	Floor - Very Heavy Outdoor Commercial and Outdoor Residential			
	FMO	Floor - Light to Heavy Outdoor Commercial and Outdoor Residential			
	FRH	Floor - Ramp Very Heavy Outdoor Commercial and Outdoor Residential			
	FRM	Floor - Ramp Light to Heavy Outdoor Commercial and Outdoor Residential			
DIMENSIONAL AND SURFACE PROPERTIES	Deviation of W/N:	W - Work size (mm) N - Nominal Size (mm)	ISO 10545-2	ISO 13006: ± 2,00 ± 4,00	± 2,00 ± 4,00
	Deviation of r/W:	r - Average tile size (mm) W - Work size (mm)	ISO 10545-2	ISO 13006: ± 0,90 ± 1,20	± 0,90 ± 1,20
	Rectangularity:	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 0,80 ± 0,50	± 0,80 ± 0,50
	Straightness of sides:	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 0,80 ± 1,00	± 0,80 ± 1,00
	Edge curvature:	Deviation from W (mm)	ISO 10545-2	ISO 13006: ± 0,80 ± 1,00	± 0,80 ± 1,00
	Centre Curvature:	Deviation from dW (mm)	ISO 10545-2	ISO 13006: ± 1,12 ± 1,12	± 1,12 ± 1,12
	Warpage:	Deviation from dW (mm)	ISO 10545-2	ISO 13006: ± 1,12 ± 1,12	± 1,12 ± 1,12
	Deviation of e/eW:	e - Average tile thickness (mm) eW - Fabrication thickness (mm)	ISO 10545-2	ISO 13006: 7,20 - 8,20	7,20 - 8,20

	CHARACTERISTICS		TESTING METHOD	SPECIFICATION		RESULTS	
PHYSICAL PROPERTIES	Water Absorption:	(%)	ISO 10545-3	ISO 13006:	> 10,0	≤ 20,00	
	Breaking Strength:	(N)	ISO 10545-4	ISO 13006:	≥ 600	≥ 600	
	Modulus of Rupture:	(MPa)	ISO 10545-4	ISO 13006:	≥ 12	≥ 15	
	Moisture Expansion:	(mm/m)	ISO 10545-10	ISO 13006:	≤ 0,6	≤ 0,3	
	Resistance to Cracking:	(Cycles)	ISO 10545-11	ISO 13006:	1	5	
CHEMICAL PROPERTIES	Stain Resistance						
	Penetrating Agent	Green Chrome (40% oil)	ISO 10545-14	ISO 13006:	≥ 3	5	
	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		
PERFORMANCE	Solar Absortance - α^*		NBR 15575 - 3-	NBR 15575:	To declare	0.8 - 0.9	
	Solar Reflectance - ρ^*		NBR 15575 - 3-	NBR 15575:	To declare	0.2 - 0.1	
	Solar Deflection - ϵ^*		NBR 15575 - 3-	NBR 15575:	To declare	0.75 - 0.85	
	Solar Reflectance Index - $SRI H = 5 (W / m^2K)^*$		NBR 15575 - 3-	NBR 15575:	To declare	20 - 1	
	Moisture Resistance		NBR 15575 - 3-	NBR 15575:	To declare	Resistant	
	Useful life:	(years)	NBR 15575 - 3-	NBR 15575:	20	20	
	Flammability		NBR 15575 - 3-	NBR 15575:	Class I	Class I	

Note:

Check if the product is suitable for the intended use. When it has the WFA use specification, it can be used in facade, provided that its indication is included in the constructive and executive project, which is the responsibility of the designer, according to the ABNT NBR 13755 standard.

The characteristics defined by the performance standard ABNT NBR 15575 are only applicable to residential areas and are directly related to the performance of the installed product. Therefore, the statements are valid when the installation guidelines described by the manufacturer are followed.

*According to information in the ANFACER sectorial performance manual



COCAL DO SUL (SC), June 13th, 2023

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