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Your Ref: LXL/87/05/167

Our Ref: B 121/2/THC

Date: 04/07/87

TEST REPORT

Page 1 of 2

(This Report is issued subject to the conditions set out overleaf)

Subject :

Acid and alkali resistance test on unglazed extruded tiles, submitted by M/s Palazzo Pte Ltd on 6 May 1987.

Tested for :

M/S PALAZZO PTE LTD
114 Hock Seng Building
Lavender Street
Singapore 1233

Attn : Mr Lau Moon Luan

Description of Sample :

57 pieces of 210 x 100 x 15mm 'Kenzai' brand unglazed extruded tiles, Code : R201 White, made in Thailand.

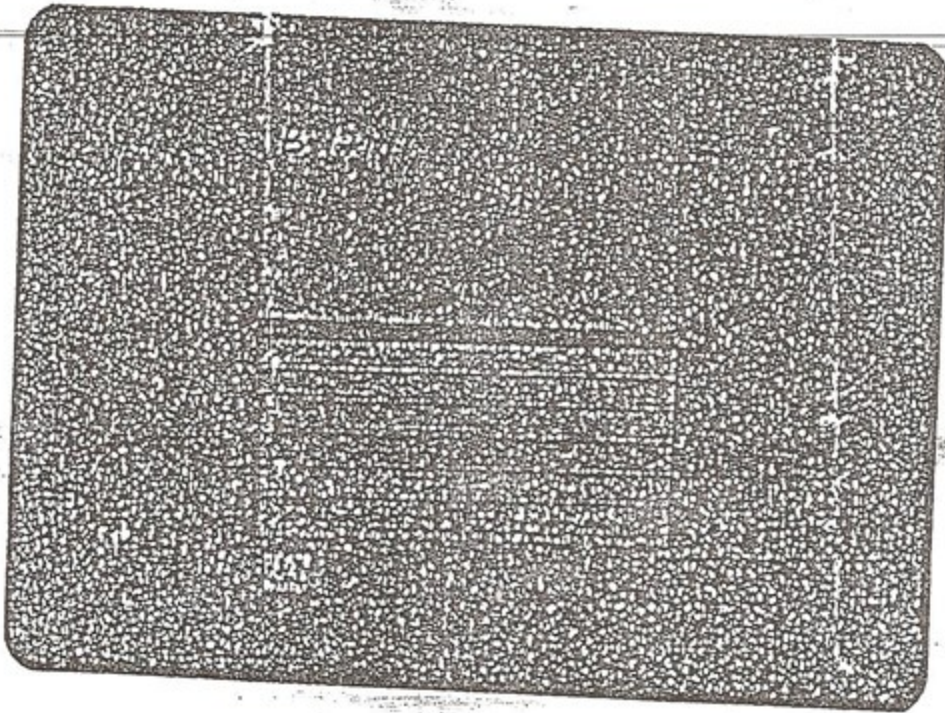
Method of Test :

DIN 18166 : 1974 "Ceramic Split Tiles".

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B 121/1/THC



210 x 100 x 15mm 'Kenjai' brand unglazed extruded tiles, Code : R-201,
White, made in Thailand.

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Results:

1) Dimension Test

Sample Reference		210 x 100 x 15mm 'Kenzi' brand unglazed extruded tiles, Code R201 White, made in Thailand										DIN 18166 : 1974 Requirements
		1	2	3	4	5	6	7	8	9	10	
Length (mm)	Nominal	210										<u>Length & Width</u> Length and Width deviations from the nominal dimensions are permissible up to $\pm 1\%$.
	Measured	209.7	209.6	208.9	208.9	209.7	209.5	209.0	209.4	207.9	208.0	
Width (mm)	Nominal	100										
	Measured	100.0	99.8	98.6*	99.3	99.9	99.0	99.0	98.9*	98.6*	99.0	
Thickness (mm)	Measured	16.0	15.9	15.7	15.9	16.0	16.0	15.9	15.9	15.7	15.8	<u>Thickness</u> Within a consignment, deviations from the average thickness of the tiles delivered are permissible up to $\pm 10\%$.
	Average	15.9										

Note : '*' Indicates result did not comply with DIN 18166 : 1974 Requirements.

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units:

2) Modulus of Rupture Test

Sample Reference	210 x 100 x 15mm 'Kenzi' brand unglazed extruded tiles, Code R201 White, made in Thailand										DIN 18166; 1974 Requirements
	1	2	3	4	5	6	7	8	9	10	
measured Width, b (mm)	100.0	99.8	98.6	99.3	99.9	99.0	99.0	98.9	98.6	99.0	
measured Thickness, h (mm)	13.64	13.44	13.22	14.72	13.83	14.91	13.33	13.64	13.23	13.49	
effective Span, l (mm)	190										
circum Load (N)	930	1700	1930	2060	1770	1720	1700	1720	2010	1700	
measured Strength (N/mm ²)	14.2 *	26.9	30.3	27.3	26.4	22.3	27.5	26.6	33.2	26.9	Shall not be less than 17 N/mm ²
average Flexural strength (N/mm ²)	26.2										Shall not be less than 20 N/mm ²

** Indicates result did not comply with DIN 18166 : 1974 Requirement.

Handwritten initials: *U*

Results:


3) Water Absorption Test

Sample Reference	210 x 100 x 15mm 'Kenzai' brand unglazed extruded tiles, Code R201 White, made in Thailand										DIN 18166 : 1974 Requirements	
	1	2	3	4	5	6	7	8	9	10	Grey-white or light-coloured body	Coloured body or Colour-shaded body surface
Water Absorption (%)	5.5	0.4	3.4	4.5	6.0	0.9	5.2	0.5	0.8	1.4	—	—
Average Water Absorption (%)	2.9										shall not exceed 3% by weight	shall not exceed 6% by weight

4) Moh's Hardness Test

Sample Reference	210 x 100 x 15mm 'Kenzai' brand unglazed extruded tiles, Code R201 White, made in Thailand					DIN 18166 : 1974 Requirements	
	1	2	3	4	5	Glazed	Unglazed
Scratch Hardness (Moh's Scale)	7	7	7	7	7	Not less than 5 (apatite)	Not less than 6 (feldspar)

Note: Please refer to test report No. B 121/2/TH for the results of the Resistance to acids and alkaline tests and _____ for the results of the colour fastness and lightfastness tests.


 ABAS BIN YUSOFF
 TESTING OFFICER


 TAN HONG CHOON
 for TECHNICAL MANAGER
 BUILDING & CONSTRUCTION MATERIALS DEPT.

ES PTE LTD

Results :

Characteristics	Sample	DIN 18166 Requirements for unglazed ceramic tiles
Immersion in 70% w/w of sulphuric acid solution at 28 degree C for 28 days	Passed	The macroscopic surface examination shall not reveal any visible changes apart from staining and discolouration
Immersion in 20% w/w of potassium hydroxide solution at 28 degree C for 28 days	Passed	

A.Y.H.
ABAS BIN YUSOFF
TESTING OFFICER

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