ALASIM OMAR ARCHITECT
F-27-1, Block F, 1st Floor,
Royal Plaza Putatan, KM 11.2, Jalan Putatan,
88200, Kota Kinabalu, Sabah.
email : alasim.architect@gmail.com
Tel : 088 760 752 Fax : 088 761 752

Ruj KPKT : KPKT.600-3/88/1(41)
Ruj Kami: AoA/BBPut/mstiles03
Tarikh: 20 Januari 2022

Kepada : **KEMENTERIAN PERUMAHAN DAN KERAJAAN TEMPATAN**
BAHAGIAN PEMBANGUNAN DAN PERLAKSANAAN PROJEK,
Aras 5-8, No.51,
Persiaran Perdana, Presint 4,
62100, Putrajaya.

U/P : **Ar. Wan Mohammad Norshah Abdul Satar**
Ketua Penolong Pengarah Unit Seni Bina

Tuan,
Tajuk : **BALAI BOMBA DAN KUARTERS PUTATAN, SABAH**

Perkara: **Material Resubmission - Homogenous & Ceramic Tiles**

Merujuk kepada perkara di atas, bersama-sama ini kami kemukakan dokumen berikut untuk kelulusan pihak tuan.

Material : Homogenous & Ceramic Tiles
Brand : Niro Ceramic Sales & Services (M) Sdn Bhd
Dilampirkan sekali dokumen berikut:

1. Borang Kelulusan Bahan
2. Sampel Bahan
3. Ringkasan senarai bahan
4. Cadangan Corak Jubin
5. Test Report
6. Sijil SIRIM

Sila hubungi kami sekiranya tuan memerlukan penjelasan lebih lanjut.

Sekian dan terima kasih,
Yang benar,
ALASIM OMAR ARCHITECT

LEMBAGA ARKITEK MALAYSIA

Ar. IDr. Datu Alasim bin Datu Omar
LAM Reg. Number : A/D 17
LAM Reg. Number : ID/D 17
Mobile : +6 013 - 39 75752

cc : - *Kementerian Perumahan dan Kerajaan Tempatan*
KPPK / KPKT / Wilayah 6
- *MTR Engineering Sdn. Bhd.*

	BK-PEMB-PK(P)-08-07	Pindaan	00
	BORANG KELULUSAN BAHAN/PEMERIKSAAN MOCK-UP	Mukasurat	1 / 1
		Tarikh	19.01.2022

BORANG KELULUSAN BAHAN/PEMERIKSAAN MOCK-UP

Note: *Potong mana yg tidak berkenaan.

PROJEK: MEMBINA BALAI BOMBA DAN KUARTERS PUTATAN, SABAH. No. Kontrak : KPKT/BPEMB/JBPM/6/14/2021		**Kontraktor :** MTR ENGINEERING SDN.BHD.	
BUTIRAN KERJA KELULUSAN BAHAN/MOCK-UP/ DESKRIPSI ITEM SAMPEL: HOMOGENOUS/CERAMIC TILES		**Lokasi Mock-~~up~~/ Bahan/Kerja**: Kota Kinabalu	**Tarikh :** 19.01.2022
Model: **Kod Item:**	**Pengilang:** NIRO CERAMIC SALES& SERVICES SDN BHD	**Negara Asal:** MALAYSIA	**Pengedar Tempatan:** NIRO CERAMIC SALES& SERVICES SDN BHD

PERAKUAN PERUNDING (ARKITEK) (*Jika projek R&B*):

Saya dengan ini mengesahkan bahawa cadangan bahan/peralatan/*mock-up* adalah mematuhi kehendak spesifikasi dan berfungsi seperti kehendak kontrak.

Disertakan

Katalog ☑ Lukisan ☑ Sampel Bahan ☐ Spesifikasi ☑ Sijil ☑

Sampel kerja ☐ *Mock-up* ☐ Please prepare sample board for the colour selected and keep the approved sample at site office.

Tandatangan Perunding Arkitek* Ar. Datu Alasim bin Datu Omar	**Jawatan/Cap Rasmi :** ALASIM OMAR ARCHITECT LABUAN
Nama 721119-12-5661	Tarikh : 20/01/2022.

PERAKUAN KONTRAKTOR:

Saya dengan ini berjanji akan mematuhi kehendak CPP/Perunding* dan memastikan *bahan/peralatan/mock up/kerja yang dicadangkan mengikut spesifikasi dan berfungsi seperti di dalam kontrak.

Tandatangan Wakil Kontraktor	**Jawatan/Cap Rasmi** Pengurus pembinaan
Nama : **Sufian Bin Sutresno**	Tarikh : 19.01.2022

KEPUTUSAN ~~JKR~~ CPP:

Dipersetujui (*concurred*) ☐

Walaupun perkara di atas telah dipersetujui, adalah menjadi tanggungjawab kontraktor bagi memastikan *bahan/peralatan/mock up/kerja mematuhi kehendak spesifikasi dan berfungsi seperti yang telah dinyatakan di dalam kontrak.

Ditolak dan perlu kemukakan semula ☐

Tandatangan KUR*(Arkitek/M&E/C&S)/Wakil PP	Jawatan/Cap Rasmi
Nama :	Tarikh

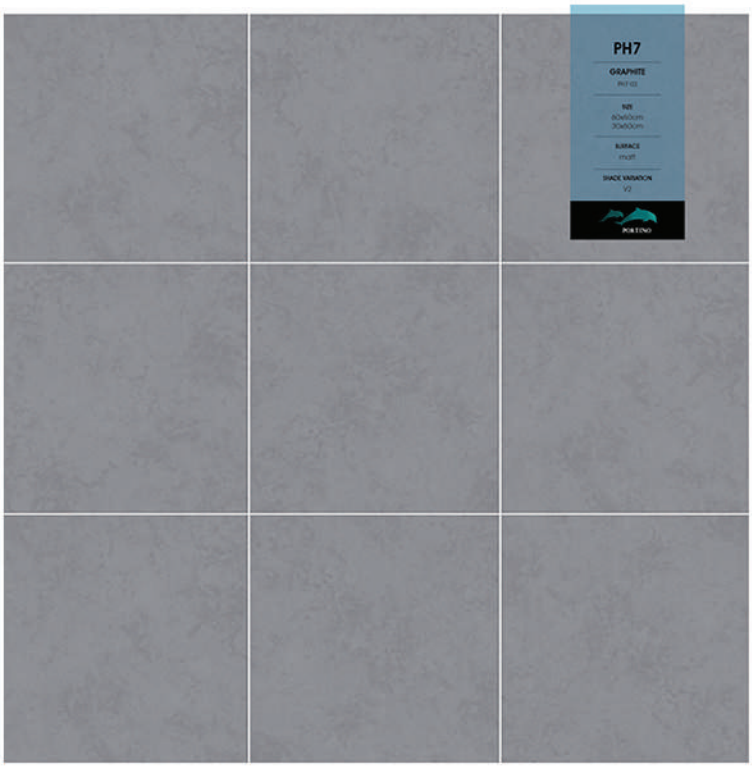
*Nota: Potong mana yang tidak berkenaan.



GG200 Stepnose



PSR02 Serenity



PH7 03-01

PH7

PORTINO



PH7 01 LIGNITE

60 x 60cm
matt

30 x 60cm
matt

PH7 02 GREY


60 x 60cm
matt


30 x 60cm
matt

PH7 03 GRAPHITE


60 x 60cm
matt

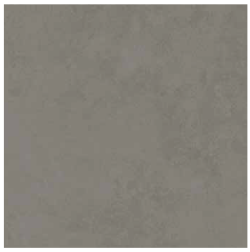

30 x 60cm
matt

PH7 05 BEIGE

60 x 60cm
matt

30 x 60cm
matt

PH7 06 BROWN


60 x 60cm
matt


30 x 60cm
matt

PH7 07 NOIR


60 x 60cm
matt


30 x 60cm
matt

Randomness:
60 x 60cm - 9 faces
30 x 60cm - 12 faces

Type	Nominal (mm)	Working size (mm)	Thickness (mm)	Shade Variation	Rectified	Pcs/ctn	Ctn/Pallet	m2/ctn	m2/pallet	kg/ctn
Wall & Floor Tile	600 x 600	597 x 597	9	V2	Yes	4	40	1.44	57.60	27.20
	300 x 600	297 x 597	8.7	V2	Yes	8	40	1.44	57.60	28.00

Technical Specifications - PH7

DESCRIPTION	STANDARD TEST	MEASUREMENT UNIT	PORCELAIN (Group BI_a)	PORTINO PH7 TEST REPORT
Length	MS 1SO 10545 -2	mm	±0.5% Max	0.00% ~ +0.03%
Width	MS 1SO 10545 -2	mm	±0.5% Max	-0.02% ~ 0.02%
Thickness	MS 1SO 10545 -2	mm	±5.0% Max	-1.11% ~ -1.11%
Sides Straightness	MS 1SO 10545 -2	mm	±0.5% Max	-0.03% ~ +0.04%
Rectangularity	MS 1SO 10545 -2	mm	±0.6% Max	+0.02% ~ +0.07%
Flatness: a) Centre Curvature	MS 1SO 10545 -2	mm	±0.5% Max	-0.03% ~ +0.10%
b) Edge Curvature	MS 1SO 10545 -2	mm	±0.5% Max	-0.05% ~ +0.05%
c) Warpage	MS 1SO 10545 -2	mm	±0.5% Max	+0.01% ~ -0.10%
Surface Quality	MS 1SO 10545 -2	One Major Area of Tiles	⩾ 95% free from visible defect	Comply
Water Absorption	MS 1SO 10545 -3	Mass	≤0.5%	0.01%
Breaking Strength		S(N)	Not less than 1300	2701N
Modulus of Rupture	MS 1SO 10545 -4	N/mm^2	⩾ 35 N/mm^2	42.20N/mm^2
Surface Abrasion PEI	EN 1SO 10545 -7	mm^3	Manuf. To State	PH702 = PEI 3 PH703 = PEI 3 PH705 = PEI 3
Frost Resistance	MS 1SO 10545 -12	Visual Check	Required	No Visible Crack
Chemical Resistance a) Low concentrarions	MS 1SO 10545 -13	Visual Check	Max Visible Change on Cut Side	Matt (MP) = GLA
b) Household / Swimming Pool				Matt (MP) = GHA
Stain Resistance	MS 1SO 10545 -14	Visual Check	Class 3 Min	Matt (MP) = Class 5
Slip Resistance AS/NZS 4586-2013	MS 1SO 10545 -17	Manuf. To State	Manuf. To State	Matt (MP) = P2
Printing Faces				30x60cm / 12 Faces / V2 60x60cm / 09 Faces / V2

**** Refer to test report for specific test result.***



PEMBINAAN PROJEK BALAI BOMBA & KUARTERS PUTATAN, SABAH

THANK YOU FOR YOUR SUPPORT

Thank you for your confidence in our ability to serve and provide you with our Design Proposal for your development.

Niro Granite, the Swiss-quality tile creates beutiful and attractive tile design and products that cater for your various moods, taste and individual preferred lifestyle. Niro Granite offers you flexibility in our wide choices of tile ranges in different sizes, colour tones, textures and designs. Niro Granite tile are available for heavy duty application, high traffic conditions and suitable for residential, both commercial and public applications.

It is our sincere hope that you are completely satisfied with this Design Proposal and Services rendered to you. We feel honoured to be given this opportunity to assist you in this Design Proposal.

For each layout design, we encourage you to comment and feedback to give us your comments and thoughts. We are interested in your comments and feedback for us to improve the Design Proposal and to meet your needs and requirements.

However, if you need any assistance, our sales staff or designer is available to you. Should the need arise, please give them a call.

Niro Granite

OWNER

BAHAGIAN PEMBANGUNAN, IBU PEJABAT,
JABATAN BOMBA DAN PENYELAMAT, MALAYSIA
Tingkat 4, Lebuh Wawasan, Presint 7,
62250 Putrajaya, Malaysia.

DEVELOPER

KEMENTERIAN PERUMAHAN DAN
KERAJAAN TEMPATAN
Bahagian Pembangunan & Pelaksanaan Projek,
Aras 5, No. 51, Persiaran Perdana,
Presint 4, 62100 Putrajaya, Malaysia

ARCHITECT

ALASIM OMAR ARCHITECT
F-27-1, ROYAL PLAZA PUTATAN
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PROJECT TITLE:

CADANGAN PEMBINAAN PROJEK BALAI BOMBA & KUARTERS PUTATAN DI ATAS SEBAHAGIAN LOT N.T 213059771, JALAN SAILAN IMBAAN PUTATAN, DAERAH PUTATAN, SABAH

CONTENT

1) PELAN ARAS BAWAH.....P 01

2) PELAN ARAS SATU.....P 02

3) KUARTERS.....P 03

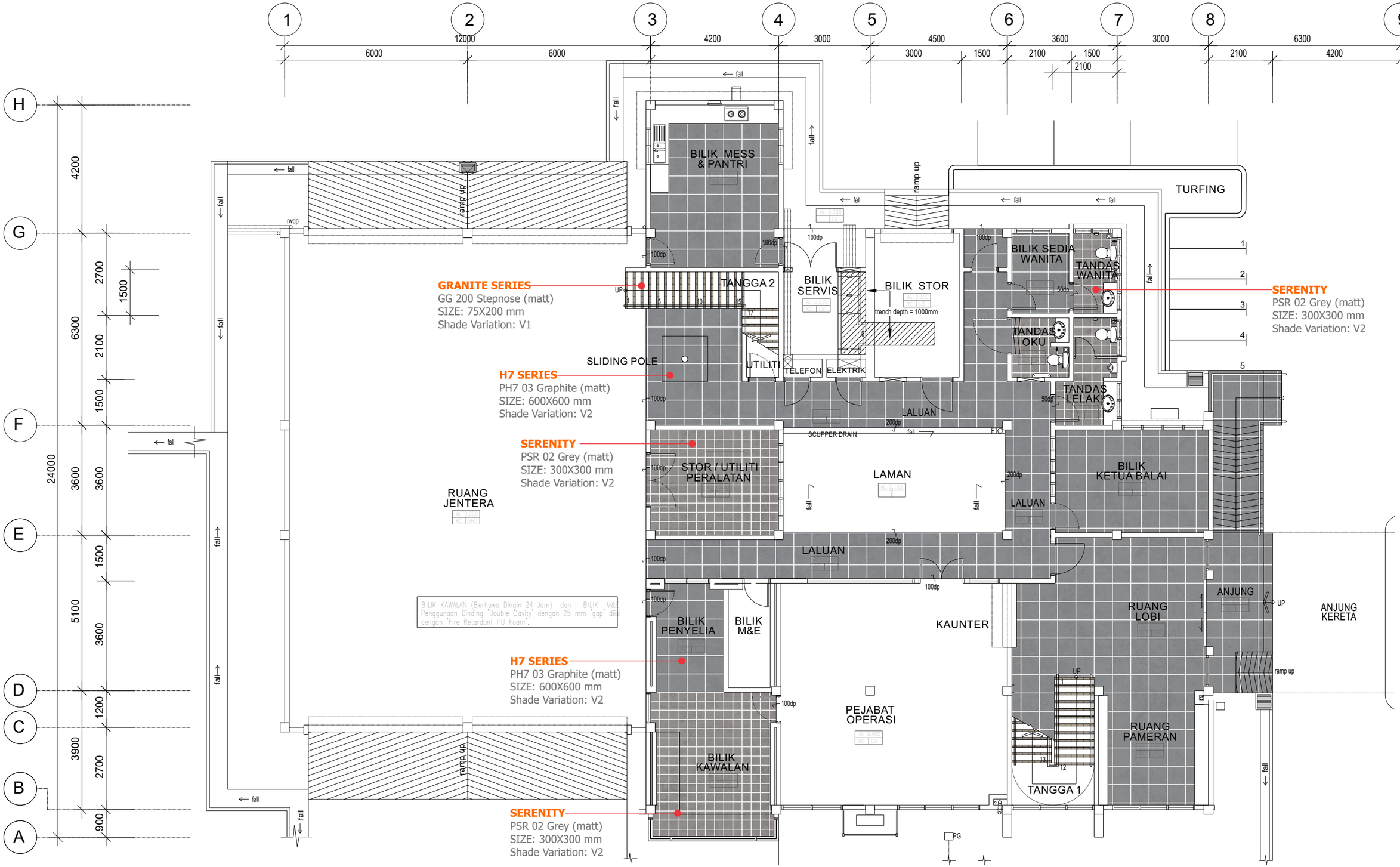
4) TIPIKAL TANDAS (BALAI BOMBA).....P 04

5) TANDAS PENYELIA.....P 05

6) TANDAS KUARTERS.....P 06

DATE	21th.September 2021
DRAWN BY	Sahir
CHECKED BY	Ross
P .I.C	Stepheni Lau
DWG NO	NSA SH 2109388
email	sahir@nirogroup.com

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1 PELAN LANTAI ARAS BAWAH

SKALA 1:120

LEGEND

H7 SERIES
PH7 03 Graphite (matt)
SIZE: 600X600 mm
Shade Variation: V2

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

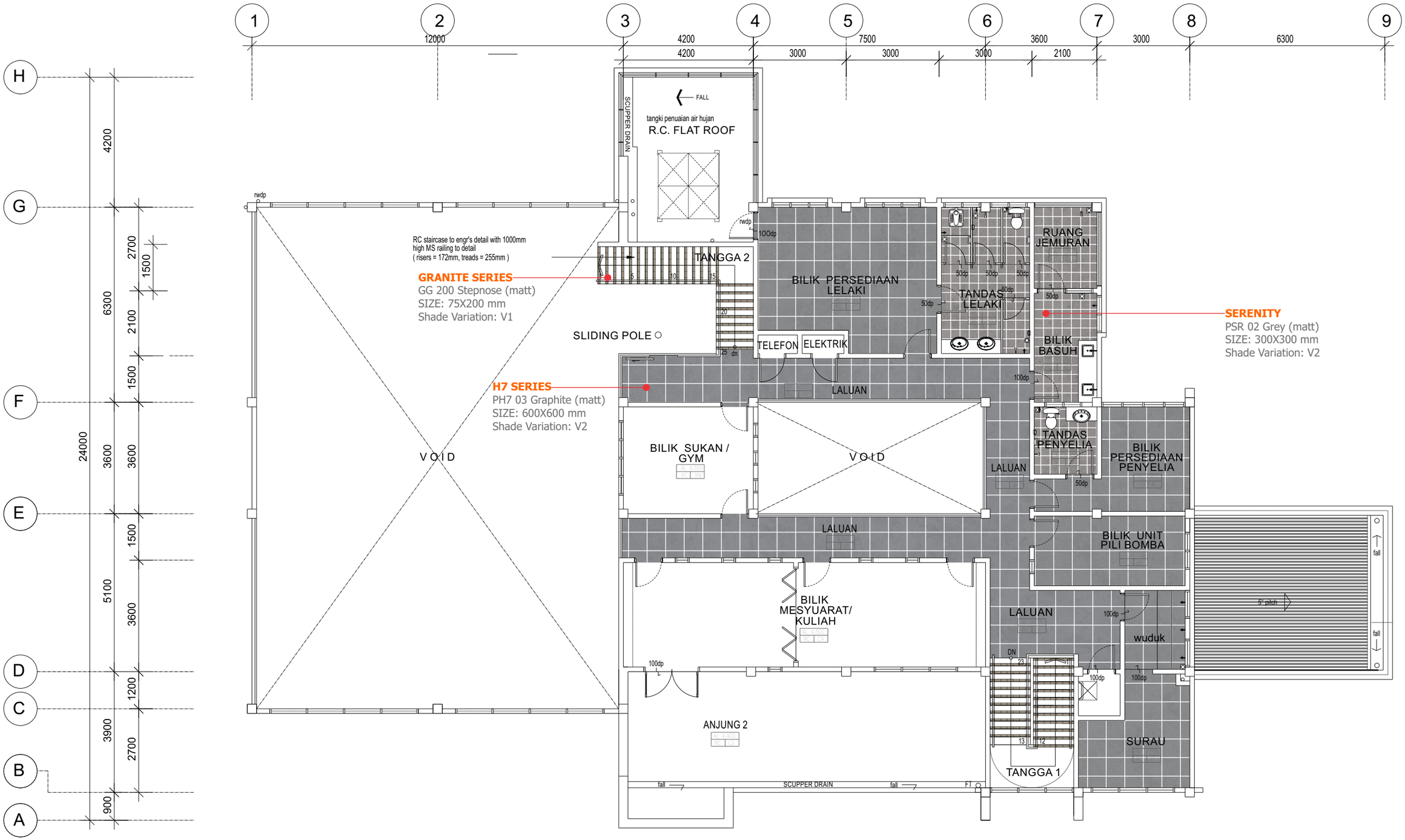
GRANITE SERIES
GG 200 Stepnose (matt)
SIZE: 75X200 mm
Shade Variation: V1

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

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DATE: 05th.Oct. 2021 REV:00



2 PELAN LANTAI ARAS SATU

SKALA 1:120

LEGEND

H7 SERIES
PH7 03 Graphite (matt)
SIZE: 600X600 mm
Shade Variation: V2

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

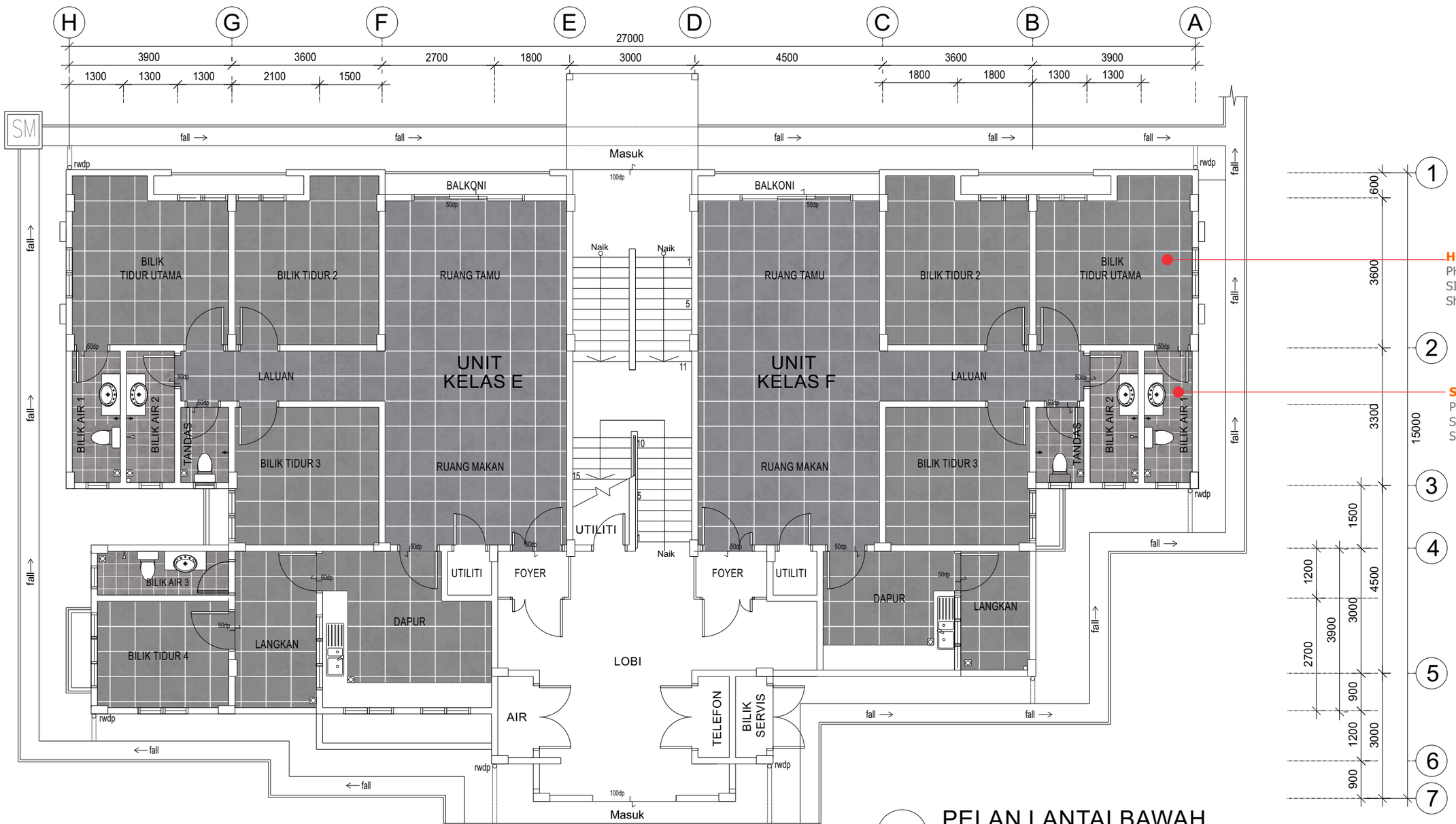
GRANITE SERIES
GG 200 Stepnose (matt)
SIZE: 75X200 mm
Shade Variation: V1

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

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1 PELAN LANTAI BAWAH

SKALA 1:100

H7 SERIES
PH7 03 Graphite (matt)
SIZE: 600X600 mm
Shade Variation: V2

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

LEGEND

H7 SERIES
PH7 03 Graphite (matt)
SIZE: 600X600 mm
Shade Variation: V2

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

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DWG NO: NSA SH 2109388
DATE: 05th.Oct. 2021 REV:00

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1



PERSPECTIVE VIEW



TOP VIEW

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

LEGEND

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

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DWG NO: NSA SH 2109388
DATE: 05th.Oct. 2021 REV:01

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1



PERSPECTIVE VIEW



TOP VIEW

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

LEGEND

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

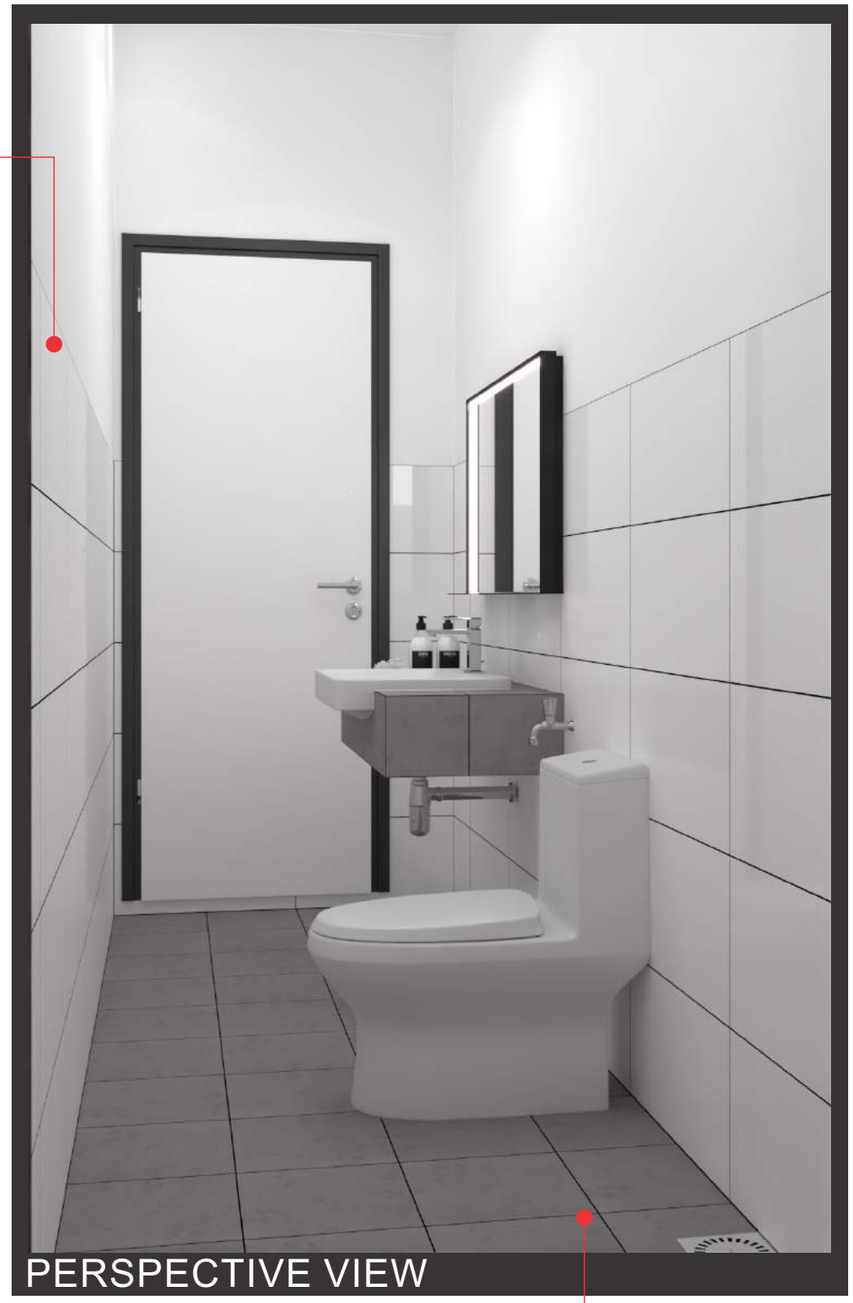
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DWG NO: NSA SH 2109388
DATE: 05th.Oct. 2021 REV:01

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1



TOP VIEW



PERSPECTIVE VIEW

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2



PERSPECTIVE VIEW

LEGEND

SERENITY
PSR 02 Grey (matt)
SIZE: 300X300 mm
Shade Variation: V2

BASIC
PB 401 Blanca (glossy)
SIZE: 300X600 mm
Shade Variation: V1

NIRO GRANITE
THE SWISS QUALITY TILE

***IMPORTANT NOTE:**
***Tile joint between 3-5 mm**
*** Brick lay pattern tile joint min. 5 mm**
*** Adhesive accordance to BS EN12004 and ISO 13007-1**

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PB(Basic)(B型)

中国认可
国际互认
检测
TESTING
CNAS L1978

160000122473

检 测 报 告
TEST REPORT

报 告 编 号:
REPORT NO. : 25201602251

样 品 名 称:
NAME OF SAMPLE: 瓷片 CERAMIC WALL TILE

委 托 单 位:
APPLICANT: 佛山市尼罗建材有限公司 NIRO CERAMIC (M) SDN BHD

检 验 日 期:
DATE OF TEST: 16/06/2016 – 04/07/2016 (dd/mm/yy)

国 家 建 筑 卫 生 陶 瓷 检 测 重 点 实 验 室
STATE KEY TESTING LABORATORY OF BUILDING CERAMICS AND SANITARY WARE
佛山出入境检验检疫局检验检疫综合技术中心
INSPECTION AND QUARANTINE COMPREHENSIVE TECHNOLOGY CENTRE
OF FOSHAN ENTRY-EXIT INSPECTION & QUARANTINE BUREAU

佛山出入境检验检疫局检验检疫综合技术中心
INSPECTION AND QUARANTINE COMPREHENSIVE TECHNOLOGY CENTRE OF FOSHAN ENTRY-EXIT INSPECTION & QUARANTINE BUREAU

检测报告
TEST REPORT

报告编号： 25201602251
Report No:

样品名称 Name of sample	瓷片 CERAMIC WALL TILE	名义尺寸 Nominal size (N)	30cm×60cm
表面特性 Nature of the surface	有釉砖 Glazed (GL)	工作尺寸 Work size (S_w)	300mm×600mm×9.8mm
类别 Group	BIII	样品描述 Description of Samples	样品完好,适合测试 The samples are sound, intact and fit for test.
样品标记 Mark of samples	BASIC/PB	样品数量 Quantity of samples	30 块 30 Pieces
委托单位 Applicant	佛山市尼罗建材有限公司 NIRO CERAMIC (M) SDN BHD	委托单位地址 Address of applicant	广东省佛山市禅城区南庄镇紫南村南北路 53 号 NO53, NAN BEI ROAD, ZI NAN, NANZHUNAG TOWN, CHANCHENG DISTRICT, FOSHAN, GUANGDONG, CHINA
委托单位电话 Telephone of applicant	86-13702564373	委托单位传真 Fax of applicant	/
样品来源 Source of Samples	委托单位自送样品 Samples selected by applicant	接样日期 Received on	15/06/2016
检验依据 Test Standard	1. MS ISO 13006:2014 *Ceramic tiles – Definitions, classification, characteristics and marking* 2. EN 15771:2010 *Vitreous and porcelain enamels - Determination of surface scratch hardness according to the Mohs scale*		
检验结论 Conclusion of Test	1. 样品经检验,所检验项目的检验结果符合 MS ISO 13006:2014 标准的规定。 The results conform to the requirement of standard MS ISO 13006:2014 with respect to the test items. 2. 莫氏硬度的检验结果见报告第 6 页。 The test result of *scratch hardness of surface according to Mohs* see Page 6.		
检验单位盖章 Stamp of Test Unit	日期： 11/07/2016 Date:	检验单位联系方式 Address of Test Unit	地址：广东省佛山市禅城区魁奇一路澜石（国际）金属交易中心十八座二楼 Address : 2/F, Building 18, Lanshi International Metal Exchange Center, Kuiqiyi Road, Chancheng District, Foshan, Guangdong, China (528000) 电话（Tel）: 86-757-83960558 86-757-83827991 传真（Fax）: 86-757-83827971 邮箱（E-mail）: fsiqtc@163.com 网址（url）: http://www.fsiqtc.com/
声明 Notes	1、我们已尽所知所能实施上述检验，不能因签发本报告而免除有关各方根据合同和法律所承担的责任和义务。 All inspections are carried out conscientiously to the best of our knowledge and ability. This report does not in any respect absolve the other related parties from his contractual and legal obligations. 2、未经本实验室书面许可，不得部分复制本报告； This report shall not be reproduced, except in full, without the prior written approval from the issuing laboratory. 3、本报告仅是样品的检测结果。 The results in this report apply to the samples only.		

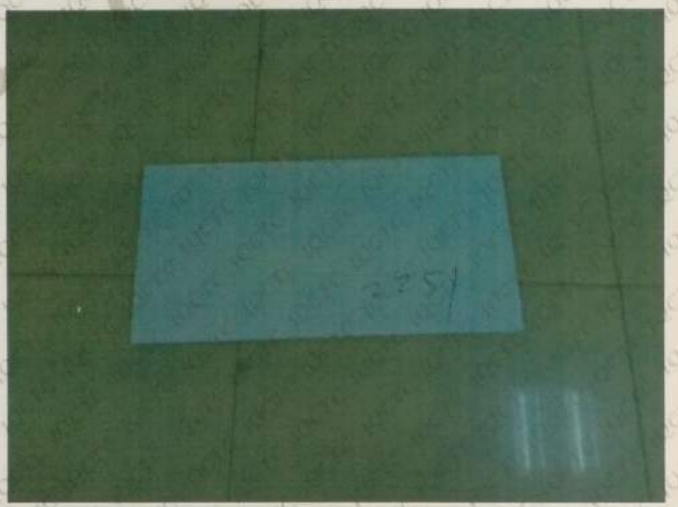
检验 Tested by _____ 审核 Inspected by _____ 批准 Approved by _____

检测报告
TEST REPORT

报告编号： 25201602251
Report No:

样品照片
Photo of Samples





MS ISO 13006:2014 *Ceramic tiles – Definitions, classification, characteristics and marking*

条款 Clause	性能 Properties	检验方法 Test Method	要求 Requirements		检验结果 Results	判定 Verdicts
附录 L 表 L.1 Annex L Table L.1	**尺寸和表面质量** **Dimensions and surface quality**					
	长度 **Length** 每块砖的平均尺寸相对于工作尺寸的允许偏差 The deviation,of the average size for each tile (2 sides) from the work size	MS ISO 10545-2	N≥15cm	±0.5%	+0.05%~+0.08%	P
				±2.0mm	+0.3mm ~+0.5mm	P
	宽度 **Width** 每块砖的平均尺寸相对于工作尺寸的允许偏差 The deviation,of the average size for each tile (2 sides) from the work size	MS ISO 10545-2	N≥15cm	±0.5%	+0.07%~+0.12%	P
				±2.0mm	+0.2mm ~+0.4mm	P
	厚度 **Thickness**					
	制造商应声明厚度 The thickness shall be specified by the manufacturer	—	声明厚度 Declared thickness		9.8mm	—
	每块砖厚度的平均值相对于工作尺寸的最大允许偏差 The deviation of the average thickness of each tile from the work size thickness	MS ISO 10545-2	N≥15cm	±10%	-0.26%~+1.17%	P
				±0.5mm	0~+0.1mm	P
	边直度 **Straightness of sides** 相对于工作尺寸的最大允许偏差 The maximum deviation from straightness related to the corresponding work sizes	MS ISO 10545-2	N≥15cm	±0.3%	-0.01%~+0.01%	P
				±1.5mm	0 ~+0.1mm	P
	直角度 **Rectangularity** 相对于工作尺寸的最大允许偏差 The maximum deviation from Rectangularity related to the corresponding work sizes	MS ISO 10545-2	N≥15cm	±0.5%	-0.06%~+0.06%	P
				±2.0mm	-0.2mm ~+0.4mm	P
	表面平整度: 最大允许偏差 **Surface flatness**: The maximum deviation from flatness					
	a)对于由工作尺寸计算的对角线的中心弯曲度 a) centre curvature, related to diagonal calculated from the work size;	MS ISO 10545-2	N≥15cm	+0.5% -0.3 %	+0.06%	P
				+2.0mm -1.5mm	+0.4mm	P
	b)对于由工作尺寸计算的边弯曲度 b) edge curvature, related to the corresponding work sizes;	MS ISO 10545-2	N≥15cm	+0.5% -0.3 %	+0.05%~+0.08%	P
				+2.0mm -1.5mm	+0.2mm~+0.5mm	P
	c)对于由于工作尺寸计算的对角线的翘曲度 c) warpage, related to diagonal calculated from the work size.	MS ISO 10545-2	N≥15cm	±0.5%	+0.03%~+0.04%	P
				±2.0mm	+0.2mm~+0.3mm	P

MS ISO 13006:2014 *Ceramic tiles – Definitions, classification, characteristics and marking*

条款 Clause	性能 Properties	检验方法 Test Method	要求 Requirements	检验结果 Results	判定 Verdicts
附录 L 表 L.1 Annex L Table L.1	**物理性能 Physical properties**				
	吸水率 质量分数 **Water absorption** Percent mass fraction	MS ISO 10545-3	E_b>10%	15.7%	P
			单个值不小于 9% Individual minimum 9%	15.4%~16.0%	P
	破坏强度/N Breaking strength, in N	MS ISO 10545-4	≥600	1336	P
	断裂模数/(N/mm²) Modulus of rupture, in N/mm² 不适用于破坏强度≥ 3000N 的陶瓷砖 Not applicable to tiles with breaking strength ≥ 3000N	MS ISO 10545-4	≥12	24.3	P
	抗冲击：恢复系数 Impact resistance: Coefficient of restitution (COR)	MS ISO 10545-5	报告检验结果 Test method available	0.76	—
	抗热震性 Thermal shock resistance	MS ISO 10545-9	报告检验结果 Test method available	样品经试验，无炸裂或裂纹 Fully resistance	—
	抗釉裂性：有釉砖 Crazing resistance: glazed tiles	MS ISO 10545-11	应通过此项测试 Required	样品经试验，无裂纹或剥落 Fully resistance	P
	抗冻性 Frost resistance	MS ISO 10545-12	应通过此项测试 Required	所有样品无裂纹或破损 Fully resistance	P
	化学性能 Chemical properties				
	耐污染性 Resistance to staining				
	a)轻油中的铬绿 a) Green staining agent in light oil	MS ISO 10545-14	不低于 3 级 Minimum Class 3	5 级 Class 5	P
	b)轻油中的红色污染物 b) Red staining agent in light oil	MS ISO 10545-14	不低于 3 级 Minimum Class 3	5 级 Class 5	P
	c) 13g/L 碘酒液 c) Iodine, 13g/L solution in alcohol	MS ISO 10545-14	不低于 3 级 Minimum Class 3	5 级 Class 5	P
	d)橄榄油 d) Olive oil	MS ISO 10545-14	不低于 3 级 Minimum Class 3	5 级 Class 5	P

MS ISO 13006:2014 *Ceramic tiles – Definitions, classification, characteristics and marking*

条款 Clause	性能 Properties	检验方法 Test Method	要求 Requirements	检验结果 Results	判定 Verdicts
附录 L 表 L.1 Annex L Table L.1	**耐化学腐蚀性 Resistance to chemicals**				
	耐家庭化学试剂和游泳池盐类 Resistance to household chemicals and swimming pool salts				
	a) 家庭化学试剂：氯化铵溶液，100g/L a) Household chemicals: Ammonium chloride, 100g/L	MS ISO 10545-13	不低于 GB Minimum GB	GA	P
	b) 游泳池盐类：次氯酸钠溶液，20mg/L b) Swimming pool salts: Sodium hypochlorite solution, 20mg/L	MS ISO 10545-13	不低于 GB Minimum GB	GA	P
	耐低浓度酸和碱 Resistance to low concentrations of acids and alkalis				
	a) 3%盐酸溶液(v/v) a) Hydrochloric acid solution, 3% (v/v)	MS ISO 10545-13	制造商应声明等级 Manufacturer to state classification	GLA	—
	b) 柠檬酸溶液，100g/L b) Citric acid solution, 100g/L	MS ISO 10545-13	制造商应声明等级 Manufacturer to state classification	GLA	—
	c) 氢氧化钾溶液，30g/L c) Potassium hydroxide, 30g/L	MS ISO 10545-13	制造商应声明等级 Manufacturer to state classification	GLA	—
	耐高浓度酸和碱 Resistance to high concentrations of acids and alkalis				
	a) 18%盐酸溶液(v/v) a) Hydrochloric acid solution, 18% (v/v)	MS ISO 10545-13	报告检验结果 Test method available	GHA	—
	b) 5 %乳酸溶液(v/v) b) Lactic acid, 5 % (v/v)	MS ISO 10545-13	报告检验结果 Test method available	GHA	—
	c) 氢氧化钾溶液，100g/L c) Potassium hydroxide, 100g/L	MS ISO 10545-13	报告检验结果 Test method available	GHA	—

用语说明 Possible test case verdicts
1. P(ass)：合格 *Test item does meet the requirement.*
2. F(ail)：不合格 *Test item does not meet the requirement.*
3. —：未进行判定 *Verdict was not carried out.*
4. N/A：不适用 *Test case does not apply to the test item.*

EN 15771:2010 *Vitreous and porcelain enamels - Determination of surface scratch hardness according to the Mohs scale*

性能 Properties	检验方法 Method	检验结果 Results
莫氏硬度 Scratch hardness of surface according to Mohs	EN 15771	4

*** ***

报告结束 End of Test Report

Date : 14-Feb-15

NIRO IN-HOUSE TEST REPORT

(This report is subject to the terms & conditions set out below)

Subject : Testing of Glaze Porcelain Tiles

Method of test :

1)	Surface Quality Test	= ISO 10545 - 2
2)	Dimension Test	= ISO 10545 - 2
3)	Straightness of Side Test	= ISO 10545 - 2
4)	Rectangularity Test	= ISO 10545 - 2
5)	Centre Curvature Test	= ISO 10545 - 2
6)	Warpage test	= ISO 10545 - 2
7)	Edge curvature	= ISO 10545 - 2
8)	Water Absorption	= ISO 10545 - 3
9)	Modulus of Rupture Test	= ISO 10545 - 4
10)	Resistance to Surface Abrasion	= ISO 10545 - 7
11)	Chemical resistance	= ISO 10545 - 13
12)	Stain resistance	= ISO 10545 - 14
13)	Slip resistance test (wet pendulum)	= AS/NZS 4586 : 2004

Specification : ISO 13006 : 2003
Annex G : Group bla
AS/NZS 4586 : 2004

Description of Sample : 42pcs of sample tile size 299 mm x 299 mm x 7.8 mm
Series : Granite Un polished Matt GG200
Brand : Niro granite
Made in Malaysia

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www.zirconio.es
www.orin.com.my

Results :-

1) **Surface Quality Test**

10 pieces of the batch of the tile sample inspected were found to be free from cracks, crazing, dry spots, unevenness, holes, faults, chips, blister,spots, decoration rough edges on the surface from 1 M away under normal lighting.

2) **Dimension Test**

Sample Reference		Granite Un polished Matt GG200										ISO 13006 : 2003	Status
		1	2	3	4	5	6	7	8	9	10		
Length (mm)	Measured	299.5	299.4	299.5	299	299.5	299.6	299.5	299	299.4	299		
	Average	299.34											
	Work Size	299											
	Deviation of Measurement size from Average, %	0.17	0.13	0.17	0.00	0.17	0.20	0.17	0.00	0.13	0.00	± 0.5 %	Passed
	Deviation of Measurement size from Work Size, %	0.17	0.13	0.17	0.00	0.17	0.20	0.17	0.00	0.13	0.00	± 0.5 %	Passed
Width (mm)	Measured	299.6	299.5	299.6	299.2	299.5	299.6	299.5	299	299.5	299.2		
	Average	299.42											
	Work Size	299											
	Deviation of Measurement size from Average, %	0.06	0.03	0.06	-0.07	0.03	0.06	0.03	-0.14	0.03	-0.07	± 0.5 %	Passed
	Deviation of Measurement size from Work Size, %	0.20	0.17	0.20	0.07	0.17	0.20	0.17	0.00	0.17	0.07	± 0.5 %	Passed
Thickness (mm)	Measured	7.9	7.9	8	7.9	7.9	7.9	8	7.9	7.9	7.9		
	Average	7.92											
	Work Size	7.8											
	Deviation of Measurement size from Work Size, %	1.28	1.28	2.56	1.28	1.28	1.28	2.56	1.28	1.28	1.28	± 5.0 %	Passed

NIRO CERAMIC (M) SDN BHD (Company No: 169869-M)
NIRO GRANITE THE SWISS QUALITY TILE
ZIRCONIO
ORIN Bathroom Architecture
NIRO THE SWISS

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Results :-

3) Straightness of Side Test

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	-0.05	-0.08	-0.06	-0.04	-0.04	0.02	-0.03	-0.04	-0.09	-0.04	± 0.5 %	Passed

4) Rectangularity Test

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	-0.07	0.05	-0.07	0.04	0.03	-0.05	-0.05	-0.08	-0.09	-0.06	± 0.6%	passed

5) Centre Curvature Test

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Related to diagonal calculated from the work sizes %	-0.07	-0.09	-0.09	-0.08	-0.06	0.08	-0.09	-0.09	0.05	-0.10	± 0.5 %	Passed

6) Warpage test

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	87	9	10		
Related to diagonal calculated from the work sizes %	-0.10	-0.05	-0.07	-0.10	0.08	-0.10	-0.08	-0.10	-0.06	-0.07	± 0.5 %	Passed

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www.zirconio.es
www.orin.com.my

Results :-

7) Edge curvature

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	0.10	-0.12	0.06	-0.07	-0.12	0.09	-0.06	-0.07	-0.06	0.05	± 0.5%	passed

8) Water Absorption

Sample Reference	Granite Un polished Matt GG200										ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10		
Water Absorption By Vacuum (%)	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.03	< ≈ 0.5 %	Passed
Average Water Absorption By Vacuum (%)	0.03											

Classification Group : Group B1a
Remarks :The above result were found under B1a group with water absorbtion ≤ 0.5 % .

9) Modulus of Rupture Test

Sample Reference	Granite Un polished Matt GG200										Average	ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10			
Width b (mm)	299.5	299.5	299.6	299.1	299.5	299.5	299.6	299.0	299.5	299.0	2993.8		passed
Min. Thickness h (mm) along broken edge	6.9	7.0	7.0	6.9	6.7	7.1	7.0	6.8	7.0	6.9	6.93		
Breaking Load F (N)	1816	1819	1981	1868	1702	1892	1610	1797	1689	1679	1785.30		
Breaking Strength S (N) = FL/b	2365	2369	2579	2436	2216	2464	2096	2344	2199	2190	2325.69	Not less than 1300	
MOR R (N/mm^2) = $3S/2h^2$	49.7	48.3	52.6	51.2	49.4	48.9	42.8	50.7	44.9	46.0	48.44	minimum 35 N/mm2	passed

NIRO CERAMIC (M) SDN BHD (Company No: 169869-M)
NIRO GRANITE THE SWISS QUALITY TILES
ZIRCONIO
ORIN Balinese Architecture
NIRO TILE & PAINT

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Results :-

9) Resistance to Surface Abrasion

Sample Reference	Granite Un polished Matt GG200
Abrasion Stage : Failure visible at (Revolutions)	12000
Class	4

Classification

Abrasion Stage : Failure visible at (Revolutions)	Class	Classification
100	0	Not recommended for use in floor
150	1	Areas that are walked on with soft soled footwear/ barefeet without scratching dirt. (Eg. Residential bathrooms & bedrooms).
600	2	Areas that are walked on with soft soled/ normal footwear with ocassional small amounts of scratching dirt. (Eg. Living room. Exception of kitchen + entrances).
750, 1500	3	Areas that are walked on with footwear with small amounts of scratching dirt. (Eg. Residential kitchen, corridors, balconies).
2100, 6000, 12000	4	Areas that are walked on by regular traffic with some sratching dirt. (Eg. Hotel, commercial kitchen, exhibition room)
>12000	5	Areas subjected to severe pedestrian traffic over sustained periods with scratching dirt. (Eg shopping centres, public walkway)

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Results :-

10) Chemical Resistance rest

Sample Reference	Granite Un polished Matt GG200					ISO 13006 : 2003
Specimen Reference	1	2	3	4	5	
Date of Test commencement	14/2 2015					
Ammonium Chlorise Solution (100g/l)	UA	UA	UA	UA	UA	Minimum UB
Sodium Hpochlorite (20mg/l)	UA	UA	UA	UA	UA	
Hydrochloric Acid (3%(v/v)	ULA	ULA	ULA	ULA	ULA	Manufacturer to state classification
Citric acid (100g/l)	ULA	ULA	ULA	ULA	ULA	
Potasssium Hydroxide (30g/l)	ULA	ULA	ULA	ULA	ULA	

CLASSCIFICATION

Test solutions	Classcification	Description
(1) Ammonium Chloride	UA	No visible effects
(2) Sodium Hypochlorite	UB	Visible effectes on cut sides
	UC	Visible effects on cut & non cuts sides & on the proper surface

Low concentration

(3A) Hydrocloric acid	ULA	No visible effects
(3b) Citric acid	ULB	Visible effectes on cut sides
(3c) Potassium Hydroxide	ULC	Visible effects on cut & non cuts sides & on the proper surface

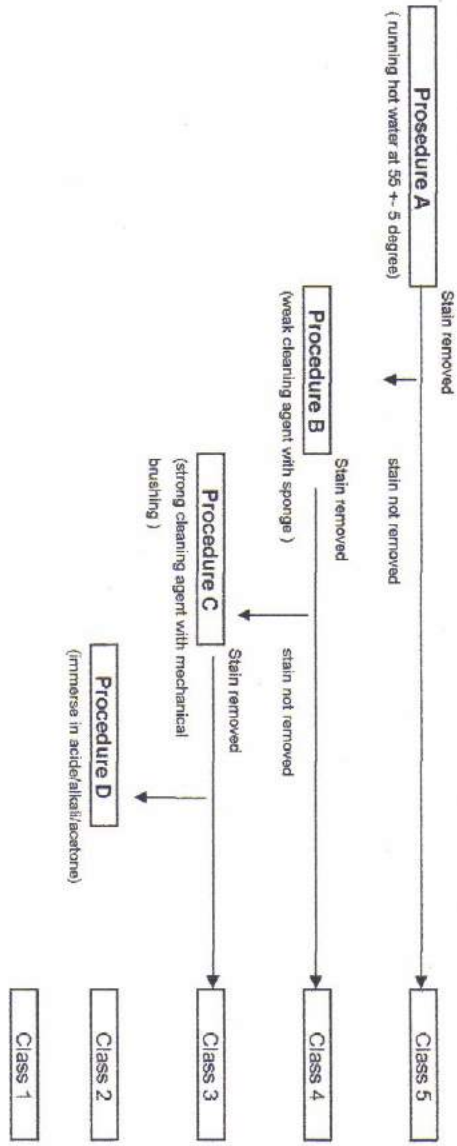
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Result :

11) Stain resistance test

Sample Reference		Granite Un polished Matt GG200					ISO 13006 : 2003	Status
Test solution		1	2	3	4	5		
Iodine solution		Class	Class	Class	Class	Class		
5		5	5	5	5	5	min class 3	Passed

Classification



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Result :

12) Slip resistance by wet pendulum test

Sample Reference	Granite Un polished Matt GG200				
	1	2	3	4	5
Swing 1	45	45	45	51	45
Swing 2	46	46	45	51	48
Swing 3	46	52	44	50	50
Average	46	48	45	50	48
Classification	W	W	W	W	W

Extration - AS / NZ 4586 : 2004
Classification of pedestrian Surface Material According To The Wet Pendulum Test

Classification	Pendulum BPN (British Pendulum Four S Rubber	Contribution of the floor surface to the risk of slipping when wet
V	> 54	Very low
W	45 to 54	Low
X	35 to 44	Moderate
Y	25 to 34	High
Z	< 25	Very High

Classification of pedastrian Flooring Selection Guide - Minimum Pendulum or Ramp Location Recommendation For Sepecific .Extration - Standart Austrlia HB - 197

Location	Pendulum	Ramp
External colonnade,walkways and pedestrian crossings	W	R10
External ramps	V	R11
Entry foyers hotel,office , public buildings - wet	X	R10
Entry foyers hotel,office , public buildings - dry	Z	R9
Shopping centre excluding food court	Z	R9
Shopping centre - food court	Z	R9
Internal ramps slopes (greater then 2 degrees) - dry	X	R10
Lift lobbies above external entrances - entry area	Z	R9
Other separate shops inside shopping centres	X	R10
Fast food outlets,buffet food servery areas	X	R10
Hospitals and aged care facilities - dry areas	Z	R9
Hospitals and aged care facilities - ensuites	X	R10
Supermarket aisles except fresh food areas	Z	R9
Shop and supermarket fresh fruits and vegetable ares	X	R10
Communal changing rooms	X	A
Swimming pool surrounds and communal shower rooms	W	B
Swimming pool ramps and staira leading into water	V	C
Toilet facilities in offices,hotels,shopping centres	X	R10
Under cover concourse areas of sports stadium	X	R10
Accessible internal stair nosings (dry) - handrails present	X	R10
Accessible internal stair nosings (wet) - handrails present	W	B or R11
External stair nosing	W	R11

Note 1 - Appropriate measures need to be taken ro exclude water from dry areas.
Note 2 - All floors with awet pendulum classification of Z should have a dry floor friction of F unless usage dictates that the floor should have a low dry coefficient of friction , e.g dance floor.

Tested by

Palsang Lama
Qc Inspector

Verified by :

Zulkple Rusman
QA- Asst Manager

Date : 12-Aug-15 Page 1 of 8

NIRO IN-HOUSE TEST REPORT

(This report is subject to the terms & conditions set out below)

Subject : Testing of Glaze Porcelain Tiles

Method of test :	1)	Surface Quality Test	= ISO 10545 - 2
	2)	Dimension Test	= ISO 10545 - 2
	3)	Straightness of Side Test	= ISO 10545 - 2
	4)	Rectangularity Test	= ISO 10545 - 2
	5)	Centre Curvature Test	= ISO 10545 - 2
	6)	Warpage test	= ISO 10545 - 2
	7)	Edge curvature	= ISO 10545 - 2
	8)	Water Absorption	= ISO 10545 - 3
	9)	Modulus of Rupture Test	= ISO 10545 - 4
	10)	Resistance to Surface Abrasion	= ISO 10545 - 7
	11)	Chemical resistance	= ISO 10545 - 13
	12)	Stain resistance	= ISO 10545 - 14
	13)	Slip resistance test (wet pendulum)	= AS/NZS 4586 : 2004

Specification : ISO 13006 : 2003
Annex J: Group BIIa
AS/NZS 4586 : 2004

Description of Sample : 10 pcs of sample tile size 300 mm x 300 mm x 7.5 mm
Series : Serenity - PSR02 GREY - Matt Surface (MP)
Brand : Portino
Made in Malaysia

Results :-

1) Surface Quality Test

10 pieces of the batch of the tile sample inspected were found to be free from cracks, crazing, dry spots, unevenness, holes, faults, chips, blister,spots, decoration rough edges on the surface from 1 M away under normal lighting.

2) Dimension Test

Sample Reference		Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
		1	2	3	4	5	6	7	8	9	10		
Length (mm) and width	Measured	301.2	301	301.2	301.3	301.4	301.2	301.7	301.2	301.2	301.2		
	Average	301.26											
	Work Size	301											
	Deviation of Measurement size from Average, %	0.07	0.00	0.07	0.10	0.13	0.07	0.23	0.07	0.07	0.07	± 0.6 %	Passed
Thickness (mm)	Measured	7.3	7.3	7.4	7.3	7.4	7.2	7.5	7.4	7.3	7.4	± 5.0 %	Passed
	Average	7.35											
	Work Size	7.5											
	Deviation of Measurement size from Work Size, %	-2.67	-2.67	-1.33	-2.67	-1.33	-4.00	0.00	-1.33	-2.67	-1.33		

Results :-

3) Straightness of Side Test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	-0.01	-0.09	0.03	0.12	0.16	0.08	0.01	0.15	-0.06	0.11	± 0.5 %	Passed

4) Rectangularity Test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	0.03	-0.03	-0.10	-0.12	-0.13	-0.12	-0.08	0.17	0.07	0.15	± 0.5%	passed

5) Centre Curvature Test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	8	9	10		
Related to diagonal calculated from the work sizes %	-0.05	-0.01	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	± 0.5%	Passed

6) Warpage test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	6	7	87	9	10		
Related to diagonal calculated from the work sizes %	0.12	0.11	0.13	0.17	0.15	0.14	0.16	0.17	0.17	0.16	± 0.5%	Passed

Results :-

7) Edge curvature

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10		
Maximum Deviation, L_{max} (Work Size) %	0.06	0.15	0.03	0.08	0.03	0.05	0.01	0.04	0.09	0.06	± 0.5%	passed

8) Water Absorption

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10		
Water Absorption By Vacuum (%)	3.4	3.4	3.8	3.4	3.5	3.5	3.4	3.6	3.4	3.8	3 % < E ≤ 6 % Individual maximum 6.5 %	Passed
Average Water Absorption By Vacuum (%)	3.52											

Classification Group : Group BIIa
Remarks :The above result were found under BIIa group with water absorbtion 3 % E ≤ 6 % .

9) Modulus of Rupture Test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)										Average	ISO 13006 : 2003	Status
	1	2	3	4	5	5	7	8	9	10			
Width b (mm)	301.2	301.0	301.3	301.3	301.2	301.3	301.3	301.0	301.3	301.5	301.24		passed
Min. Thickness h (mm) along broken edge	6.1	6.2	6.3	6.1	6.2	6.3	6.1	6.2	6.1	6.3	6.19		
Breaking Load F (N)	937	938	922	1029	1033	1026	1013	993	942	1631	1046.40		
Breaking Strength S (N) = FL/b	2365	2369	2579	2436	2216	2464	2096	2344	2199	2190	2325.69	Not less than 1000	
MOR R (N/mm^2) = 3S/2h^2	32.6	31.6	30.1	35.8	34.8	33.5	35.2	33.5	32.8	53.2	35.30	minimum 22 N/mm2 individual minimum 20 N/mm2	passed

Results :-

9) Resistance to Surface Abrasion

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)
Abrasion Stage : Failure visible at (Revolutions)	**12000**
Class	**4**

Classification

Abrasion Stage : Failure visible at (Revolutions)	Class	Classification
100	**0**	Not recommended for use in floor
150	**1**	Areas that are walked on with soft soled footwear/ barefeet without scratching dirt. (Eg. Residential bathrooms & bedrooms).
600	**2**	Areas that are walked on with soft soled/ normal footwear with ocassional small amounts of scratching dirt. (Eg. Living room. Exception of kitchen + entrances).
750, 1500	**3**	Areas that are walked on with footwear with small amounts of scratching dirt. (Eg. Residential kitchen, corridors, balconies).
2100, 6000, 12000	**4**	Areas that are walked on by regular traffic with some sratching dirt. (Eg. Hotel, commercial kitchen, exhibition room)
>12000	**5**	Areas subjected to severe pedestrian traffic over sustained periods with scratching dirt. (Eg shopping centres, public walkway)

Results :-

10) Chemical Resistance rest

Sample Reference	**Serenity - PSR02 GREY - Matt Surface (MP)**					**ISO 13006 : 2003**
Specimen Reference	1	2	3	4	5	
Date of Test commencement	08/12/2015					
Ammonium Chlorise Solution (100g/l)	**GA**	**GA**	**GA**	**GA**	**GA**	Minimum GB
Sodium Hpochlorite (20mg/l)	**GB**	**GB**	**GB**	**GB**	**GB**	
Hydrochloric Acid (3%(v/v)	**GLB**	**GLB**	**GLB**	**GLB**	**GLB**	Manufacturer to state classification
Citric acid (100g/l)	**GLB**	**GLB**	**GLB**	**GLB**	**GLB**	
Potasssium Hydroxide (30g/l)	**GLB**	**GLB**	**GLB**	**GLB**	**GLB**	
Hydrochloric Acid (3%(v/v)	**GHB**	**GHB**	**GHB**	**GHB**	**GHB**	Manufacturer to state classification
Citric acid (100g/l)	**GHB**	**GHB**	**GHB**	**GHB**	**GHB**	
Potasssium Hydroxide (30g/l)	**GHB**	**GHB**	**GHB**	**GHB**	**GHB**	

CLASSCIFICATION

House hold chemical, swimming pool salts

Test solutions	**Classcification**	**Description**
(1) Ammonium Chloride	GA	No visible effects
(2) Sodium Hypochlorite	GB	Definite change in appearance
	GC	Partial or complete loss of the original surface

Low concentration

Hydrocloric acid 3 %	GLA	No visible effects
Citric acid	GLB	Definite change in appearance
Potassium Hydroxide 30G/L	GLC	Partial or complete loss of the original surface

high concentration

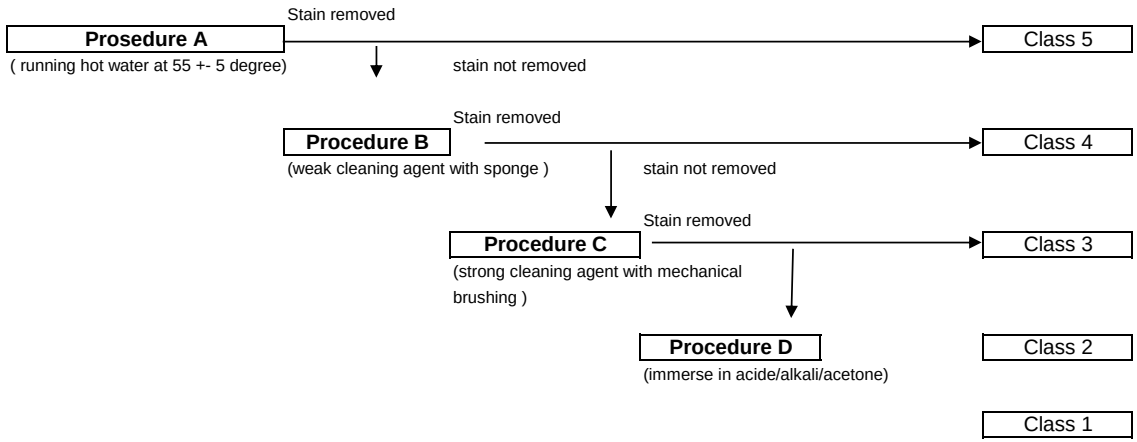
Hydrocloric acid 18 %	GHA	No visible effects
Latic acid 5%	GHB	Definite change in appearance
Potassium Hydroxide 100g/l	GHC	Partial or complete loss of the original surface

Result :

11) Stain resistance test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)					ISO 13006 : 2003	Status
	1	2	3	4	5		
Test solution	**Class**	**Class**	**Class**	**Class**	**Class**		
						min class 3	**Passed**
Iodine solution	**5**	**5**	**5**	**5**	**5**		

Classification



Result :

12) Slip resistance by wet pendulum test

Sample Reference	Serenity - PSR02 GREY - Matt Surface (MP)				
	1	2	3	4	5
Swing 1	45	45	45	51	45
Swing 2	46	46	45	51	48
Swing 3	46	52	44	50	50
Average	**46**	**48**	**45**	**50**	**48**
Classification	**W**	**W**	**W**	**W**	**W**

Extration - AS / NZ 4586 : 2004
Classification of pedestrian Surface Material According To The Wet Pendulum Test

Classification	Pendulum BPN (British Pendulum Number)	Contribution of the floor surface to the risk of slipping
V	> 54	Very low
W	45 to 54	Low
X	35 to 44	Moderate
Y	25 to 34	High
Z	< 25	Very High

Classification of pedastrian Flooring Selection Guide - Minimum Pendulum or Ramp Location Recommendation For Sepecific .Extration - Standart Austrlia HB - 197

Location	Pendulum	Ramp
External colonnade,walkways and pedestrian crossings	W	R10
External ramps	V	R11
Entry foyers hotel,office , public buildings - wet	X	R10
Entry foyers hotel,office , public buildings - dry	Z	R9
Shopping centre excluding food court	Z	R9
Shopping centre - food court	Z	R9
Internal ramps slopes (greater then 2 degrees) - dry	X	R10
Lift lobbies above external entrances - entry area	Z	R9
Other separate shops inside shopping centres	X	R10
Fast food outlets,buffet food servery areas	X	R10
Hospitals and aged care facilities - dry areas	Z	R9
Hospitals and aged care facilities - ensuites	X	R10
Supermarket aisles except fresh food areas	Z	R9
Shop and supermarket fresh fruits and vegetable ares	X	R10
Communal changing rooms	X	A
Swimming pool surrounds and communal shower rooms	W	B
Swimming pool ramps and staira leading into water	V	C
Toilet facilities in offices,hotels,shopping centres	X	R10
Under cover concourse areas of sports stadium	X	R10
Accessible internal stair nosings (dry) - handrails present	X	R10
Accessible internal stair nosings (wet) - handrails present	W	B or R11
External stair nosing	W	R11

Note 1 - Appropriate measures need to be taken ro exclude water from dry areas.
Note 2 - All floors with awet pendulum classification of Z should have a dry floor friction of F unless usage dictates that the floor should have a low dry coefficient of friction , e.g dance floor.

Tested by

Khairudin Abdullah
QA Supervisor

Verified by :

Zulkiple Musman
QA- Asst Manager

TEST REPORT
EN 14411
Ceramic tiles-Definitions, classification, characteristics, evaluation of conformity and marking

Report Reference No……:	151118069GZU-001
Tested by (name and signature) .....:	Jones Zhong
Approved by (name and signature)..:	Jeff Deng
Date of issue.....:	December 18, 2015
Contents……..:	Total test report 18 pages including: Report text: 10 pages Appendix A for test data: 1 page Appendix B for manufacturer ISO9001 certification: 1 page Appendix C for product photos: 5 pages Appendix D for Revision history: 1 page
Testing Laboratory name……..:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address……:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Testing location ……:	Same as above
Applicant's name……:	Niro Ceramic Sales & Services(M) Sdn Bhd
Address……...:	Lot 2, Persiaran Sultan, Seksyen 15, 40200 Shah Alam, Selangor, Malaysia
Test specification:	
Standard……..…..:	EN 14411:2012 (E)
Non-standard test method……:	N/A
Test Report Form No……..:	TTRF EN 14411:2012 (E) C
TTRF Originator……:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Master TTRF……..:	Dated 2013-01
Test item description……:	CERAMIC TILES
Trade Mark……:	Niro Granite
Model and/or type reference……:	See 'General product information'
Manufacturer……..:	PT. NIRO CERAMIC NASIONAL INDONESIA
Rating(s)……:	Dry-pressed ceramic tiles with glazed finish, water absorption more than 0,5% and not more than 3%, Group BI_b, for internal and external wall & floor finishes.

Copy of marking plate and summary of test results (information/comments):
Only example for specified model: e.g. PB501 (600*300*9mm, Matt)

Marking on the package

Niro Ceramic Sales & Services(M) Sdn Bhd
Made in Indonesia
First Quality
Glazed Floor and Wall Tile (Annex G, BI_a)
600mm x 300mm(W600mm x 300mm x 9mm)
Weight: kg/ carton
Coefficient of friction: CEN/ TS 16165: 2012 Annex C, Slider 57, PTV: Dry 62, Wet 37.

CE

Niro Ceramic Sales & Services(M) Sdn Bhd
Lot 2, Persiaran Sultan, Seksyen 15, 40200 Shah Alam, Selangor, Malaysia
15
XXXXX-CPR-2015/12/18

EN14411: 2012
Ceramic tile, dry-pressed, for internal wall & floor finishes

Characteristics	**Declared values**
Reaction to fire	$A1_{fl}$
Release of dangerous substances, for: - Cadmium - Lead	 N/A N/A
Breaking strength	1456N
Bond strength	N/A
Slipperiness	CEN/ TS 16165: 2012 Annex C Slider 57, PTV: Dry 62, Wet 37.
Thermal shock resistance	Pass
Durability for: - internal uses - external uses: freeze-thaw resistance	 Pass Pass
Tactility	N/A

Note:
a) If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.
b) The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.
c) CE marking and label shall be affixed visibly, legibly and indelibly.
d). “XXXXX-CPR-2015/12/18” should be the reference number of the DoP.

Summary of testing:

The submitted samples were tested and found to **COMPLY WITH** applicable requirements of EN 14411: 2012 (E).

Test item particulars

Intended use..... : For internal wall & floor finishes.

Possible test case verdicts:

- test case does not apply to the test object..... : N/A
- test object does meet the requirement..... : P(Pass)
- test object does not meet the requirement..... : F(Fail)

Testing..... :

Date of receipt of test item..... : November 18, 2015

Date (s) of performance of tests..... : November 18, 2015 to December 18 , 2015

General remarks:

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

"(See remark #)" refers to a remark appended to the report.
"(See Appendix #)" refers to an appendix appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

When determining the test result, measurement uncertainty has been considered.

The clause which indicated with * is the subcontract test item.

General product information:

This report included 21 models, the client claimed all of those models were the same in material, method of manufacture (dry-pressed), water absorption (0,5%<E≤3%), surface finish (glazed), size and usage (for wall & floor finishes), except for the colour design. The report data were mainly based on model PB501 (600*300*9mm, Matt). Besides, PB505(Structured), PD501(Matt), PH502(Matt), PI503(Matt) and PR504(Matt) were tested the abrasion resistance and slipperiness, test data was listed in Appendix A. Detail product information refers to below table.

Series	Model No.	Surface code	Wall or Floor	Glazed or not	Internal or external	Nominal size, mm	Work size, mm
Portino Stoneware	PB501	Matt Structured	Wall &floor	Glazed	Internal& external	600x300x9	597x297x9
	PB502						
	PB503						
	PB504						
	PB505						
	PD501	Matt	Wall &floor	Glazed	Internal& external	600x600x10 600x300x9	597x597x9 597x297x9
	PD502						
	PD503						
	PD504						
	PH501						
	PH502						
	PH503						
	PH504						
	PI501						
	PI502						
	PI503						
	PI504						
	PR501						

	PR502 PR503 PR504						

Detail photos refer to Appendix C.

**********End of page**********

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
4	Classification of ceramic tiles	Methods of manufacture: Method B, dry-pressed tiles Water absorption (E) groups: 0,5%<E ≤3% (Group BI_b)	—
5	Requirements		—
5.2	Characteristics The characteristics for different applications of ceramic tiles are given in Table 2:	Used as internal floor and wall finishes, meet the requirement, listed in Annex H.	—
6.1	General The conformity of a family of ceramic tiles with the requirement of this European Standard and with the stated values (Including classes) shall be demonstrated by: Initial type testing and Factory production control:	Refer clause 6.2 and clause 6.3	—
6.2	Initial type testing ITT shall be carried out to confirm that the characteristics of a family of products meet the requirements of the standard:	Meet the requirement, listed in clause 5	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
6.3	Factory Production Control (FPC)		P
6.3.1	General The manufacturer shall establish, document and maintain a factory production control (FPC) system to ensure that the products placed on the market conform to the stated performance characteristics.	The manufacturer was qualified according to ISO 9001 (Detail refers to Appendix B)	P
6.3.2	Equipment The manufacturer shall maintain and apply documented procedures to control, calibrate and maintain inspection, measuring and test equipment, used to demonstrate the conformance of product to the specified requirements.	The manufacturer was qualified according to ISO 9001 (Detail refers to Appendix B)	P
6.3.3	Product testing and evaluation The manufacturer shall carry out all final inspection and testing in accordance with the quality plan or documented procedures to complete the evidence of conformance of the finished product to the specified requirements.	The manufacturer was qualified according to ISO 9001 (Detail refers to Appendix B)	P
6.3.4	Inspection and test records The manufacturer shall maintain records in order to be able to prove that a product or a family in a group of products have been inspected and/or tested.	The manufacturer was qualified according to ISO 9001 (Detail refers to Appendix B)	P
7	Designation		—

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
8	Marking Each ceramic tile covered by this European Standard shall bear on its reverse side or edge, the indication of the country where the tile was manufactured. Furthermore, each packaging of ceramic tiles shall bear the following marking information: a) manufacturer's mark and/or trademark and indication of the country where the tile was manufactured, that is, the country where the tile was first fired; b) indication of quality designation, when relevant (see 5.1); c) reference to the appropriate annex of this European Standard, i.e. EN 14411:2012, and classification ("Precision" or "Natural"), where applicable; d) nominal and work sizes; e) nature of the surface, i.e. glazed (GL) or unglazed (UGL); f) surface treatment applied after firing, if any; g) maximum total dry weight of a packaging of ceramic tiles.	Complied, See 'Marking on the package' and Appendix C.3.	P
Annex H	Length and width a) for modular tiles in order to allow a nominal joint width of between 2 mm and 5 mm; b) for non-modular tiles so that the difference between the work size and the nominal size is not more than ±2 % (max.±5 mm). The permissible deviation of the average size for each tile (2 or 4 sides) from the work size (W): 7 cm ≤Nominal size N < 15 cm: shall be within ±0,9mm Nominal size N≥ 15 cm: shall be within ± 0,6% and ±2,0mm	Work size: 597*297mm Average length: 597,29mm The deviation of the average size from the work size: 0,05% and 0,29mm Average width: 297,30mm The deviation of the average size from the work size: 0,10% and 0,30mm	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
	Thickness a) The thickness shall be specified. b) The permissible deviation, of the average thickness of each tile from the work size thickness: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,5mm Nominal size N≥ 15 cm: shall be within ± 5% and ±0,5mm	Nominal thickness: 9mm Average:8,70mm The deviation of the average size from the work size: -3,33% and -0,30mm	P
	Straightness of sides The maximum permissible deviation from straightness, related to the corresponding work sizes: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,75mm Nominal size N≥ 15 cm: shall be within ± 0,5% and ±1,5mm	Specimen size: 297*297mm Maximum: 0,08% and 0,25mm	P
	Rectangularity The maximum permissible deviation from rectangularity related to the corresponding work sizes: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,75mm Nominal size N≥ 15 cm: shall be within ± 0,5% and ±2,0mm	Specimen size: 297*297mm Maximum: 0,04% and 0,11mm	P
Annex H	Centre curvature, related to diagonal calculated from the work sizes: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,75mm Nominal size N≥ 15 cm: shall be within ± 0,5% and ±2,0mm	Specimen size: 297*297mm Maximum: 0,04% and 0,24mm	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
	Edge curvature, related to the corresponding work sizes: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,75mm Nominal size N≥ 15 cm: shall be within ± 0,5% and ±2,0mm	Specimen size: 297*297mm Maximum: 0,02% and 0,05mm	P
	Warpage, related to diagonal calculated from the work sizes: 7 cm ≤Nominal size N < 15 cm: shall be within ±0,75mm Nominal size N≥ 15 cm: shall be within ± 0,5% and ±2,0mm	Specimen size: 297*297mm Maximum: 0,01% and 0,07mm	P
	Surface quality A minimum of 95 % of the tiles shall be free from visible defects that would impair the appearance of a major area of tiles	No defect was found.	P
	Water absorption 0,5%<Eb ≤ 3,0%. Individual maximum 3,3%:	Average: 0,78% Maximum: 0,94%	P
	Breaking strength Thickness ≥7,5mm, Breaking strength shall be not less than 1100 N; Thickness<7,5mm, Breaking strength shall be not less than 700 N:	Average: 1456 N Minimum: 1298 N	P
	Modulus of rupture Average ≥ 30 N/mm^2. Individual minimum 27 N/mm^2:	Average: 30,5 N/mm^2 Minimum: 27,1 N/mm^2	P
Annex H	Abrasion resistance a) Resistance to deep abrasion of unglazed tiles: removed volume: Maximum 175 mm^3 b) Resistance to surface abrasion of glazed tiles intended for use on floors: Report the abrasion class and cycles passed:	Glazed tiles Refer to Appendix A	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
	Coefficient of linear thermal expansion Declared value:	$4,5\times10^{-6}K^{-1}$	P
	Thermal shock resistance Pass according to EN ISO 10545-1:	No defect was found after being tested.	P
	Crazing resistance For glazed tiles, pass according to EN ISO 10545-1:	No defect was found after being tested.	P
	Frost resistance Pass according to EN ISO 10545-1:	E_1: 0,76% E_2: 0,98% No defect was found after being tested.	P
	Slipperiness Declared value:	CEN/TS 16165: 2012 Annex C, Slider 57, PTV: Refer to Appendix A	—
	Bond strength/adhesion Declared value:	No intend use as wall tiles of transit area.	N/A
	Moisture expansion Declared value:	Average: 0,10 mm/m Maximum: 0,41 mm/m	—
	Small color differences a) Glazed tiles: $\Delta E_{cmc} < 0,75$ b) Unglazed tiles: $\Delta_{Ecmc} < 1,0$	This test is only applicable to plain colour tiles and is considered to be of importance in certain specialized circumstances	N/A
	Impact resistance Declared value:	ε=0,81	—
	Reaction to fire	$A1_{fl}$, without testing.	P
Annex H	Tactility Declare surface description	Not intended use for tactile paving surfaces	N/A
	Resistance to staining For Glazed tiles: Minimum Class 3: For Unglazed tiles: Declare value.	Class 5	—

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
	Resistance to chemicals Resistance to low concentration of acids and alkalis: Declared value	Class GLA	—
	Resistance to chemicals Resistance to high concentration of acids and alkalis: Declared value	Class GHA	—
	Resistance to chemicals Resistance to household chemicals and swimming pool salts Minimum class B:	Class GA	P
	Release of dangerous substances a) Cadmium (in mg/dm^2): Declared value b) Lead (in mg/dm^2): Declared value c) other dangerous substances: Declared value	No this intended use	N/A

**********End of page**********

Appendix A

Table 1 Test Data for Abrasion Resistance and COF

NO.	Model No.	Abrasion Resistance		Coefficient of Friction (COF)		
		Visible failure	Final class	Dry	Wet	Test Method
1	PB501(Matt)	1500	3	62	37	CEN/TS 16165: 2012 Annex C, Slider 57, PTV
2	PB505(Structured)	1500	3	78	58	
3	PD501(Matt)	1500	3	60	37	
4	PH502(Matt)	1500	3	59	37	
5	PI503(Matt)	1500	3	65	40	
6	PR504(Matt)	1500	3	60	37	

**********End of page**********

Appendix B

Manufacturer's ISO 9001 certification



WQA

Certificate of Registration

PT. Niro Ceramic Nasional Indonesia

Jl. Raya Mercedes, Desa Cicadas Kec. Gunung Putri, Kab. Bogor 16964, Jawa Barat, Indonesia

Operate a management system that complies with the requirements of

ISO 9001:2008

With the scope:

Manufacture of porcelain tiles

EA Code: 15

Certificate No. QM 2980

Originally Registered: 08th February 2011

Registered by WQA: 08th February 2011

Re-Certification: 20th November 2016

Latest Issue: 23rd September 2015

Signed on behalf of WQA

Validity of this certificate can be checked by contacting:
Worldwide Quality Assurance Ltd
Derwent House,
Mandale Business Park,
Belmont Industrial Estate,
Durham,
DH1 1TH
www.worldwideqa.com

UKAS MANAGEMENT SYSTEMS
134

This certificate remains the property of Worldwide Quality Assurance Ltd and must be returned on request.

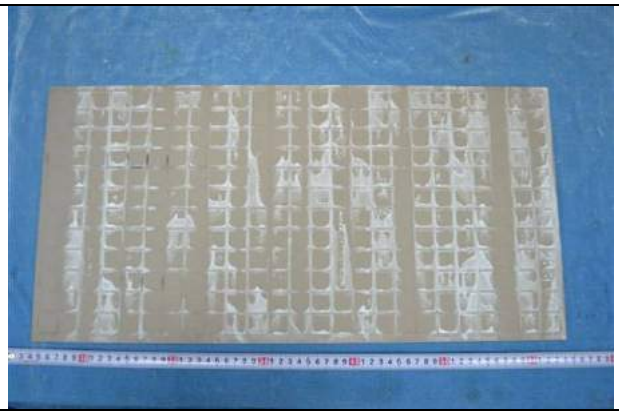
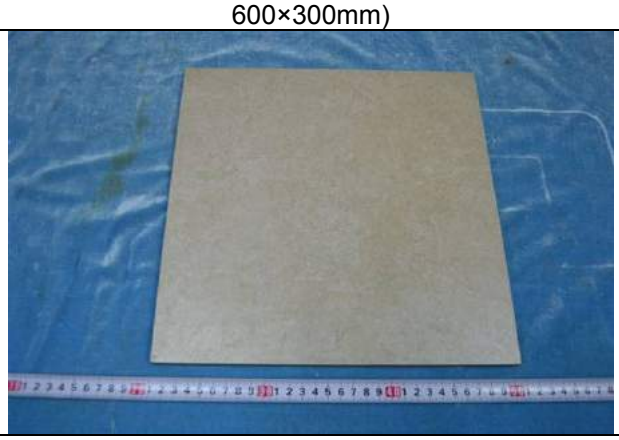
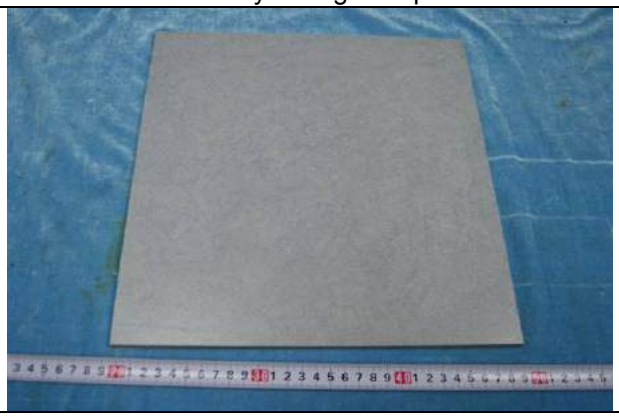
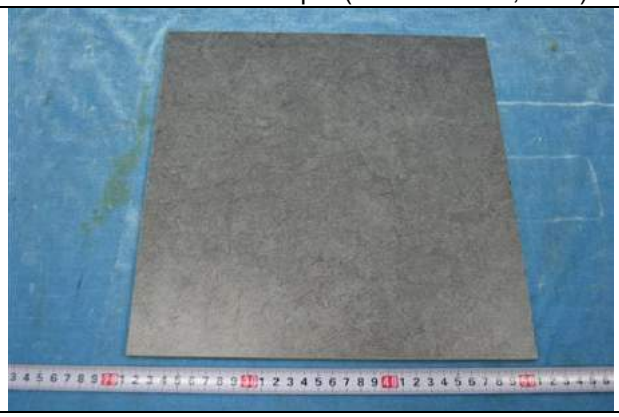
WQA 14C, Issue 7

B.1: Manufacturer's ISO 9001 certification

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Appendix C

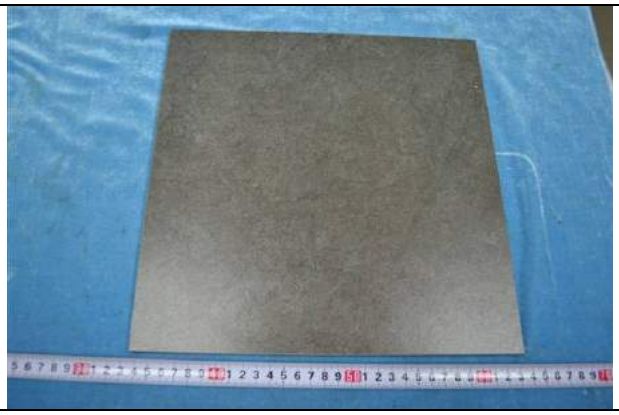
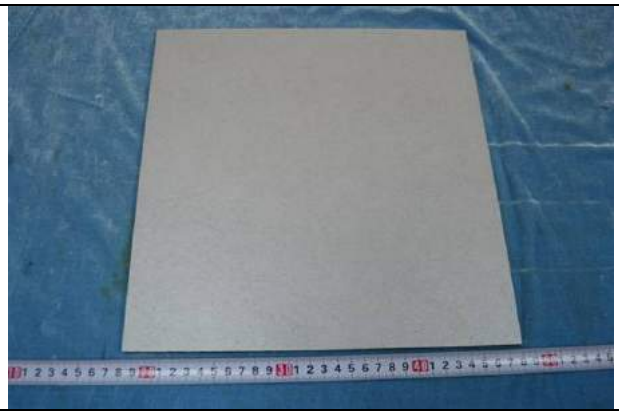
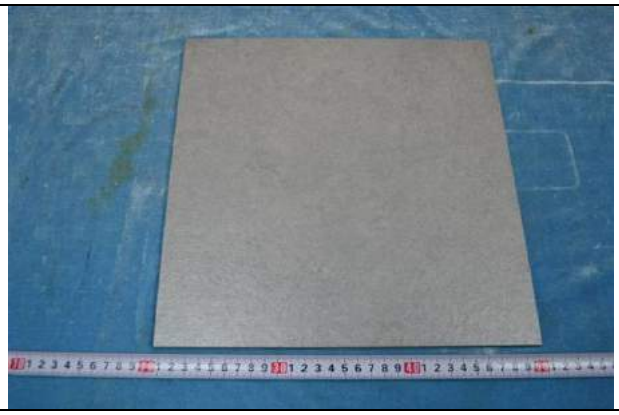
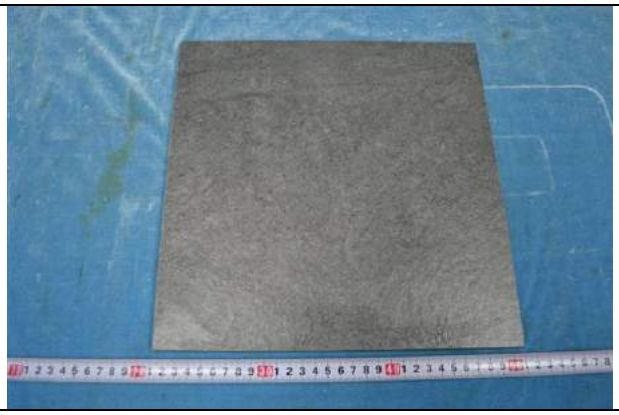
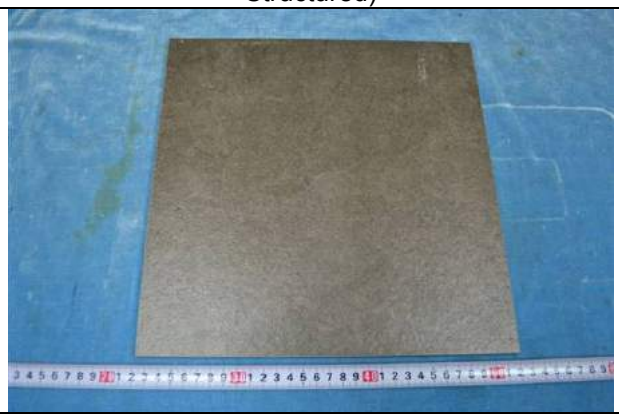
Product photos

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<tr><td></td><td></td></tr>
<tr><td>C.3: Country of origin on product</td><td>C.4: Front view of sample (Model PB502, Matt)</td></tr>
<tr><td></td><td></td></tr>
<tr><td>C.5: Front view of sample (Model PB503, Matt)</td><td>C.6: Front view of sample (Model PB504, Matt)</td></tr>
</table>

**********End of page**********

Appendix C

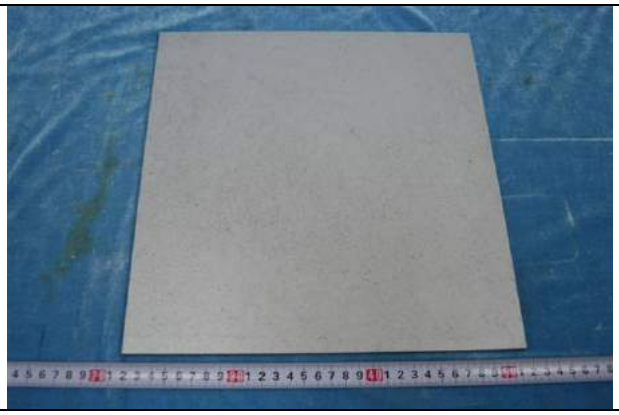
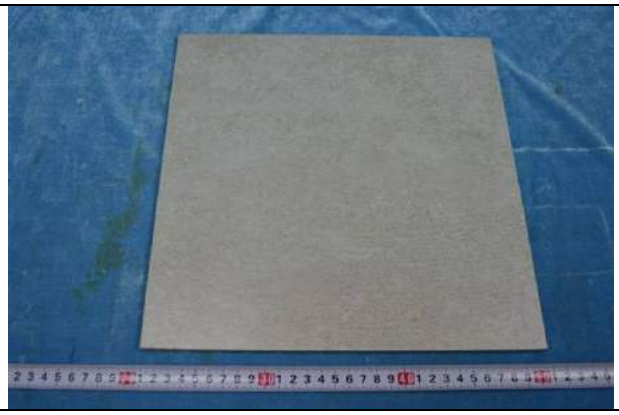
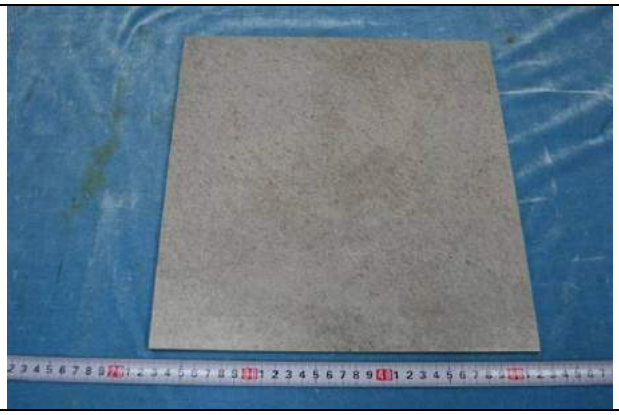
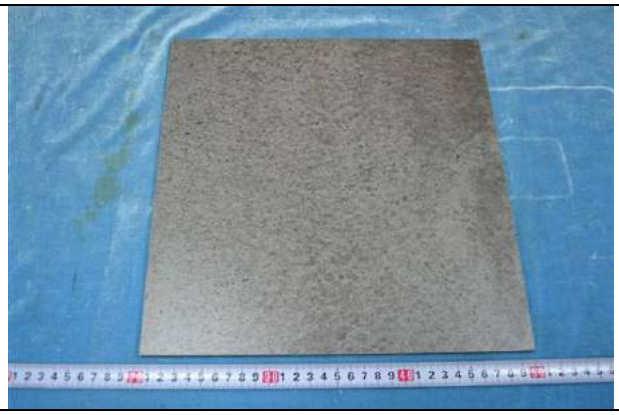
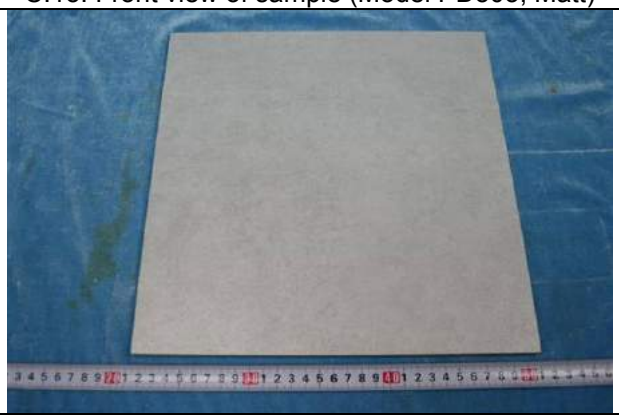
Product photos

	
C.7: Front view of sample (Model PB505, Matt)	C.8: Front view of sample (Model PB501, Structured)
	
C.9: Front view of sample (Model PB502, Structured)	C.10: Front view of sample (Model PB503, Structured)
	
C.11: Front view of sample (Model PB504, Structured)	C.12: Front view of sample (Model PB505, Structured)

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Appendix C

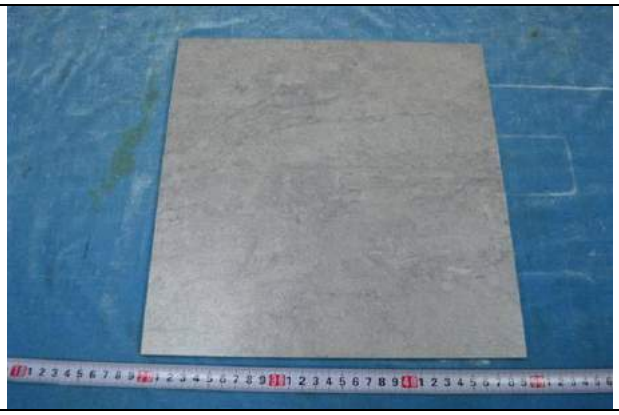
Product photos

	
C.13: Front view of sample (Model PD501, Matt)	C.14: Front view of sample (Model PD502, Matt)
	
C.15: Front view of sample (Model PD503, Matt)	C.16: Front view of sample (Model PD504, Matt)
	
C.17: Front view of sample (Model PH501, Matt)	C.18: Front view of sample (Model PH502, Matt)

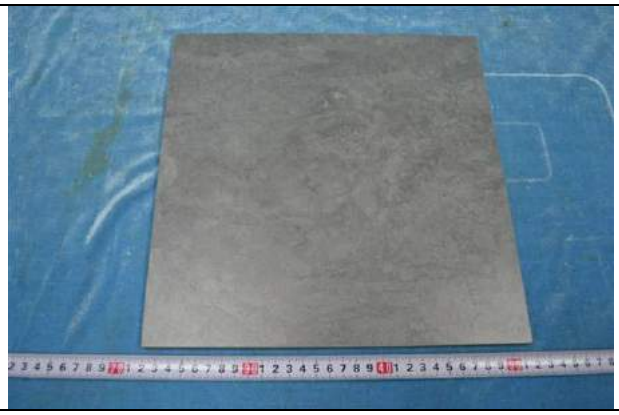
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Appendix C

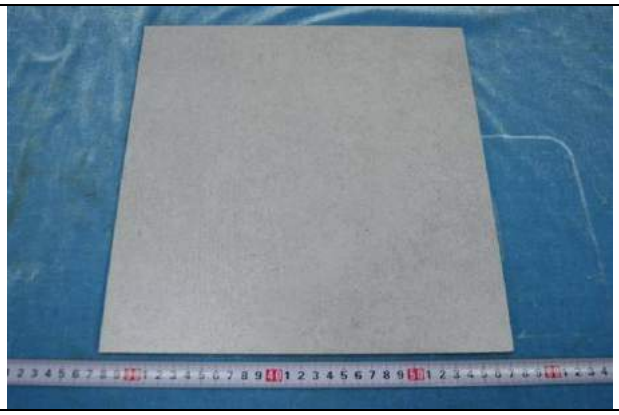
Product photos



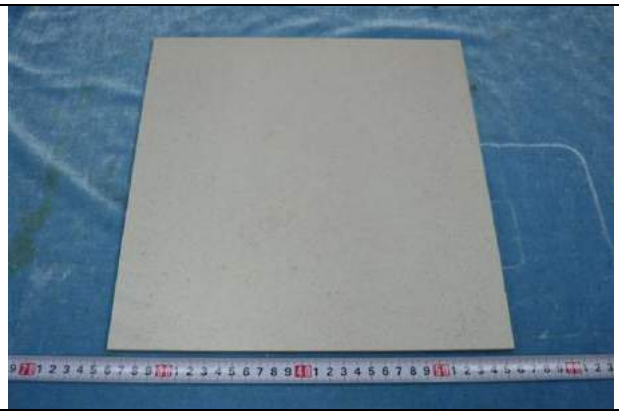
C.19: Front view of sample (Model PH503, Matt)



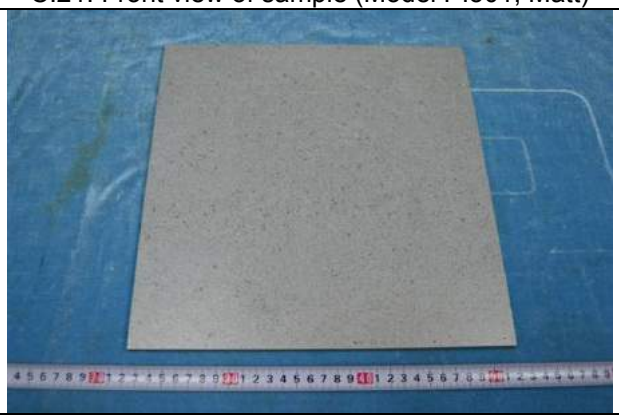
C.20: Front view of sample (Model PH504, Matt)



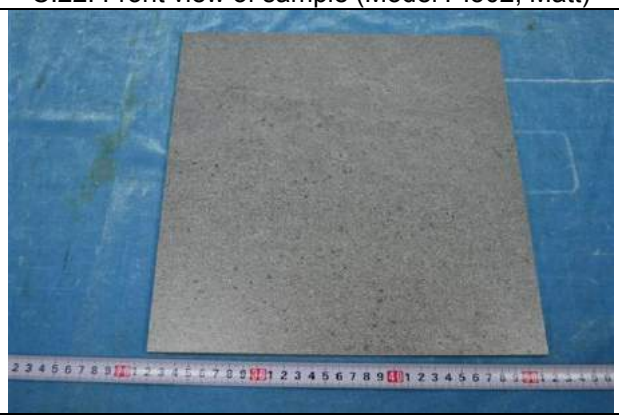
C.21: Front view of sample (Model PI501, Matt)



C.22: Front view of sample (Model PI502, Matt)



C.23: Front view of sample (Model PI503, Matt)

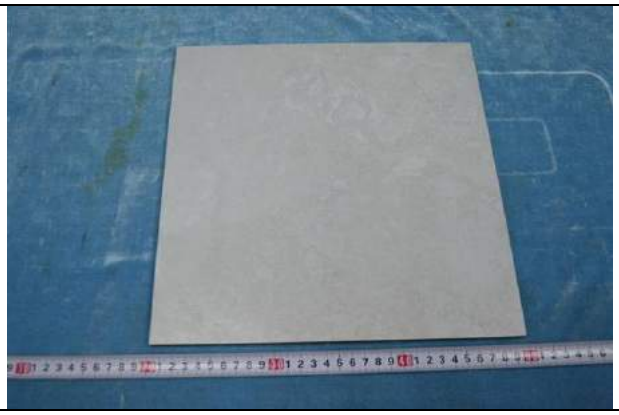


C.24: Front view of sample (Model PI504, Matt)

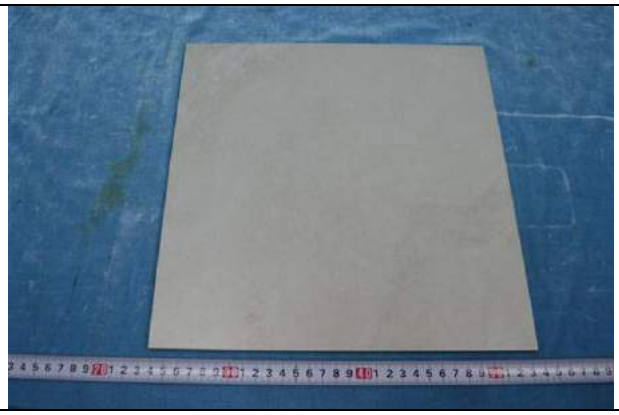
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Appendix C

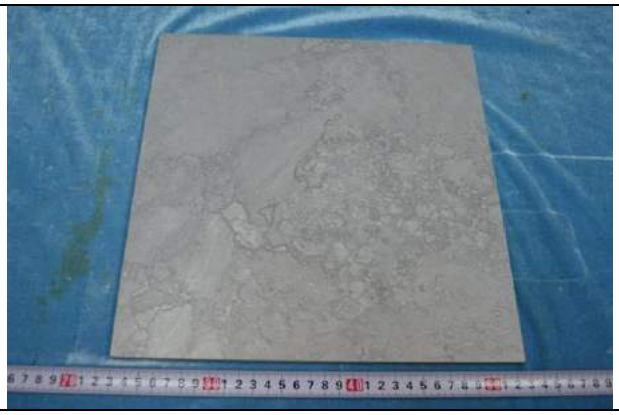
Product photos



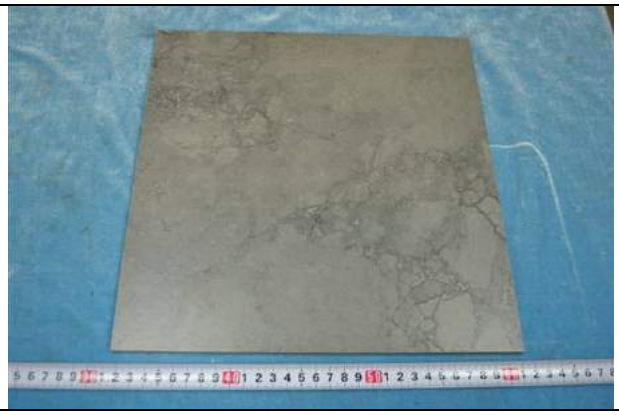
C.25: Front view of sample (Model PR501, Matt)



C.26: Front view of sample (Model PR502, Matt)



C.27: Front view of sample (Model PR503, Matt)



C.28: Front view of sample (Model PR504, Matt)

**********End of page**********

Appendix D

Revision history

Revision No.	Date	Author	Reviewer
Original	December 18, 2015	Jones Zhong	Jeff Deng

**********End of report**********

CERTIFICATE

QUALITY SYSTEM
SIRIM

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF
STANDARDS MALAYSIA ACCREDITED CERTIFICATION BODY
QS 02121999 CB 01

UKAS MANAGEMENT SYSTEMS
0074

IQNet

SIRIM QAS International Sdn. Bhd. hereby certifies that

NIRO CERAMIC (M) SDN. BHD.
PLO 316, JALAN PERAK 4
KAWASAN PERINDUSTRIAN PASIR GUDANG
81700 PASIR GUDANG
JOHOR DARUL TAKZIM
MALAYSIA

has implemented a Quality Management System complying with

ISO 9001 : 2015

QUALITY MANAGEMENT SYSTEMS - REQUIREMENTS

Scope of Certification:

1. **DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES;**
2. **PROVISION OF SALES SERVICES TO DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES.**

Issue Date	:	**10 February 2021**
Original Certification Date	:	**08 November 1995**
Expiry Date	:	**07 November 2023**
Certificate No	:	**QMS 00310**

MOHD AZANUDDIN BIN SALLEH
Chief Executive Officer
SIRIM QAS International Sdn. Bhd.

SIRIM QAS INTERNATIONAL SDN. BHD.
(Co. No. 410334-X)
1, Persiaran Dato' Menteri
Section 2, P.O. Box 7035
40700 Shah Alam
Selangor Darul Ehsan
MALAYSIA
Tel : 60-3-55446404
Fax : 60-3-55446787

http://www.sirim-qas.com.my
hhtp://www.malaysiancertified.com.my

This certificate is granted subject to the terms and conditions as stated in the Certification Agreement.

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SIRIM QAS International Sdn. Bhd. has issued an IQNet recognized certificate that the organization:

NIRO CERAMIC (M) SDN. BHD.
PLO 316, JALAN PERAK 4
KAWASAN PERINDUSTRIAN PASIR GUDANG
81700 PASIR GUDANG
JOHOR DARUL TAKZIM
MALAYSIA

has implemented and maintains a

Quality Management System

for the following scope:

1. DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES;
2. PROVISION OF SALES SERVICES TO DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES.

which fulfils the requirements of the following standard:

ISO 9001 : 2015

Issued on : **10 February 2021**

First issued on : **08 November 1995**

Expires on : **07 November 2023**

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number : **MY – QMS 00310**

Alex Stoichitoiu
President of IQNet

Mohd Azanuddin Salleh
Chief Executive Officer
SIRIM QAS International Sdn Bhd

IQNet Partners*:
AENOR *Spain* AFNOR Certification *France* APCER *Portugal* CCC *Cyprus* CISQ *Italy*
CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS Holding GmbH *Germany* FCAV *Brazil*
FONDONORMA *Venezuela* ICONTEC *Colombia* Inspecta Sertifiointi Oy *Finland* INTECO *Costa Rica*
IRAM *Argentina* JQA *Japan* KFQ *Korea* MIRTEC *Greece* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland*
NYCE-SIGE Mexico PCBC *Poland* Quality Austria *Austria* RR *Russia* SII *Israel* SIQ *Slovenia*
SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* TSE *Turkey* YUQS *Serbia*
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available on www.iqnet-certification.com