

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

Report Reference No.....: 150104015GZU-001

Tested by (name and signature).....: Jones Zhong

Jones Zhong

Approved by (name and signature) ...: Jeff Deng

Jeff Deng

Date of issue.....: December 21, 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.....: Niro Ceramic(M) Sdn Bhd

Rating(s).....: Dry-pressed ceramic tiles with glazed finish, water absorption not more than 0,5%, Group BI_a, for internal and external wall & floor finishes.


TTRF EN 14411:2012 (E) C

Originator: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Copy of marking plate and summary of test results (information/comments):
Only example for specified model: e.g. GEL02 (600*600*10mm, Lappato)

Marking on the package

Niro Ceramic Sales & Services(M) Sdn Bhd
Made in Malaysia
First Quality
Glazed Floor and Wall Tile (Annex G, BI _a)
600mm x 600mm(W600mm x 600mm x 10mm)
Weight: kg/ carton
Coefficient of friction: CEN/ TS 16165: 2012 Annex C, Slider 57, PTV: Dry 52, Wet 31.

	
Niro Ceramic Sales & Services(M) Sdn Bhd Lot 2, Persiaran Sultan, Seksyen 15, 40200 Shah Alam, Selangor, Malaysia 15 XXXXX-CPR-2015/12/21	
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	N/A
- Lead	N/A
Breaking strength	3004N
Bond strength	N/A
Slipperiness	CEN/ TS 16165: 2012 Annex C Slider 57, PTV: Dry 52, Wet 31.
Thermal shock resistance	Pass
Durability for:	
- internal uses	Pass
- external uses: freeze-thaw resistance	Pass
Tactility	N/A

Note:

- If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.
- The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.
- CE marking and label shall be affixed visibly, legibly and indelibly.
- “XXXXX-CPR-2015/12/21” 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 : July 17, 2015
Date (s) of performance of tests : July 17, 2015 to December 18, 2015
General remarks:
<p>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.</p> <p>"(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.</p> <p>When determining the test result, measurement uncertainty has been considered.</p> <p>The clause which indicated with * is the subcontract test item.</p>

General product information:							
<p>This report included 13 models, the client claimed all of those models were the same in material, method of manufacture (dry-pressed), water absorption ($E \leq 0, 5\%$), surface finish (glazed), size and usage (for wall & floor finishes), except for the colour design. The report data were mainly based on model GEL02 (600*600*10mm, Lappato). Besides, the abrasion resistance and slipperiness of model GEL01(Lappato), GEL03(Lappato), GEL04(Lappato), GEL01(Structured), GEL02(Structured), GEL03(Structured), GEL04(Structured), GSK01(Matt), GSK02(Matt), GSK03(Matt), GSK04(Matt), GPP01(Lappato), GPP02(Lappato), GPP03(Lappato), GPP04(Lappato), GPP05(Lappato), GPP01(Structured), GPP02(Structured), GPP03(Structured), GPP04(Structured) and GPP05(Structured) were tested, test data was listed in Appendix A. Detail product information refers to below table.</p>							
Series	Model No.	Surface code	Wall or Floor	Glazed or not	Internal or external	Nominal size, mm	Work size, mm
Elmina	GEL01	Lappato Structured	Wall & floor	Glazed	Internal & external	600x1200x12 600x600x10 300x600x10	597x1197x12 597x597x10 297x597x10
	GEL02						
	GEL03						
	GEL04						
Stockholm	GSK01	Matt	Wall & floor	Glazed	Internal & external	600x1200x12 600x600x10	597x1197x12 597x597x10
	GSK02						
	GSK03						
	GSK04						
Pietra Piasentina	GPP01	Lappato Structured	Wall & floor	Glazed	Internal & external	600x1200x12 600x600x10	597x1197x12 597x597x10
	GPP02						
	GPP03						
	GPP04						
	GPP05						
Detail photos refer to Appendix C.							

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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: E ≤0,5% (Group BI _a)	—
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 G.	—
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
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

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
6.3.4	<p>Inspection and test records</p> <p>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.</p>	The manufacturer was qualified according to ISO 9001 (Detail refers to Appendix B)	P
7	Designation		—
8	<p>Marking</p> <p>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:</p> <p>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;</p> <p>b) indication of quality designation, when relevant (see 5.1);</p> <p>c) reference to the appropriate annex of this European Standard, i.e. EN 14411:2012, and classification ("Precision" or "Natural"), where applicable;</p> <p>d) nominal and work sizes;</p> <p>e) nature of the surface, i.e. glazed (GL) or unglazed (UGL);</p> <p>f) surface treatment applied after firing, if any;</p> <p>g) maximum total dry weight of a packaging of ceramic tiles.</p>	Complied, See 'Marking on the package' and Appendix C.3~C.4.	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
Annex G	<p>Length and width</p> <p>a) for modular tiles in order to allow a nominal joint width of between 2 mm and 5 mm;</p> <p>b) for non-modular tiles so that the difference between the work size and the nominal size is not more than $\pm 2\%$ (max. ± 5 mm).</p> <p>The permissible deviation of the average size for each tile (2 or 4 sides) from the work size (W): $7\text{ cm} \leq \text{Nominal size } N < 15\text{ cm}$: shall be within $\pm 0,9\text{mm}$</p> <p>Nominal size $N \geq 15\text{ cm}$: shall be within $\pm 0,6\%$ and $\pm 2,0\text{mm}$</p>	<p>Work size: 597*597mm</p> <p>Average length: 597,39mm The deviation of the average size from the work size: 0,07% and 0,39mm</p> <p>Average width: 597,08mm The deviation of the average size from the work size: 0,01% and 0,08mm</p>	P
	<p>Thickness</p> <p>a) The thickness shall be specified.</p> <p>b) The permissible deviation, of the average thickness of each tile from the work size thickness: $7\text{ cm} \leq \text{Nominal size } N < 15\text{ cm}$: shall be within $\pm 0,5\text{mm}$</p> <p>Nominal size $N \geq 15\text{ cm}$: shall be within $\pm 5\%$ and $\pm 0,5\text{mm}$</p>	<p>Nominal thickness: 10mm Average: 10,19mm The deviation of the average size from the work size: 1,85% and 0,19mm</p>	P
	<p>Straightness of sides</p> <p>The maximum permissible deviation from straightness, related to the corresponding work sizes: $7\text{ cm} \leq \text{Nominal size } N < 15\text{ cm}$: shall be within $\pm 0,75\text{mm}$</p> <p>Nominal size $N \geq 15\text{ cm}$: shall be within $\pm 0,5\%$ and $\pm 1,5\text{mm}$</p>	<p>Specimen size: 597*597mm Maximum: 0,04% and 0,26mm</p>	P
	<p>Rectangularity</p> <p>The maximum permissible deviation from rectangularity related to the corresponding work sizes: $7\text{ cm} \leq \text{Nominal size } N < 15\text{ cm}$: shall be within $\pm 0,75\text{mm}$</p> <p>Nominal size $N \geq 15\text{ cm}$: shall be within $\pm 0,5\%$ and $\pm 2,0\text{mm}$</p>	<p>Specimen size: 597*597mm Maximum: 0,05% and 0,27mm</p>	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
Annex G	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: 597*597mm Maximum: 0,03% and 0,26mm	P
	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: 597*597mm Maximum: 0,05% and 0,31mm	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: 597*597mm Maximum: 0,06% and 0,53mm	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 Average ≤ 0,5%. Individual maximum 0,6%:	Average: 0,03% Maximum: 0,04%	P
	Breaking strength Thickness ≥ 7,5mm, Breaking strength shall be not less than 1300 N; Thickness < 7,5mm, Breaking strength shall be not less than 700 N:	Average: 3004 N Minimum: 2939 N	P
	Modulus of rupture Average ≥ 35 N/mm ² . Individual minimum 32 N/mm ² :	Average: 54,9 N/mm ² Minimum: 53,8 N/mm ²	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
Annex G	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
	Coefficient of linear thermal expansion Declared value:	$3,6 \times 10^{-6} \text{K}^{-1}$	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 : 0,03% E ₂ : 0,03% 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: 0,60 mm/m Maximum: 0,89 mm/m	—
	Small color differences a) Glazed tiles: $\Delta E_{cmc} < 0,75$ b) Unglazed tiles: $\Delta E_{cmc} < 1,0$	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:	$\varepsilon=0,65$	—
	Reaction to fire	A1 _{fl} , without testing.	P

EN 14411			
Clause	Requirement - Test	Result - Remark	Verdict
Annex G	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	—
	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

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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	GEL01(Lappato)	1500	3	51	30	CEN/TS 16165: 2012 Annex C, Slider 57, PTV
2	GEL02(Lappato)	2100	4	52	31	
3	GEL03(Lappato)	2100	4	52	31	
4	GEL04(Lappato)	6000	4	52	30	
5	GEL01(Structured)	2100	4	56	39	
6	GEL02(Structured)	2100	4	56	39	
7	GEL03(Structured)	6000	4	56	39	
8	GEL04(Structured)	6000	4	56	40	
9	GSK01(Matt)	1500	3	40	26	
10	GSK02(Matt)	1500	3	39	26	
11	GSK03(Matt)	6000	4	40	27	
12	GSK04(Matt)	6000	4	40	26	

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Appendix A**Table 1 Test Data for Abrasion Resistance and COF (Continued)**

NO.	Model No.	Abrasion Resistance		Coefficient of Friction (COF)		
		Visible failure	Final class	Dry	Wet	Test Method
13	GPP01(Lappato)	1500	3	61	29	CEN/TS 16165: 2012 Annex C, Slider 57, PTV
14	GPP02(Lappato)	1500	3	59	30	
15	GPP03(Lappato)	1500	3	58	32	
16	GPP04(Lappato)	1500	3	62	30	
17	GPP05(Lappato)	1500	3	60	28	
18	GPP01(Structured)	2100	4	85	49	
19	GPP02(Structured)	2100	4	83	48	
20	GPP03(Structured)	2100	4	85	50	
21	GPP04(Structured)	2100	4	81	49	
22	GPP05(Structured)	2100	4	80	48	

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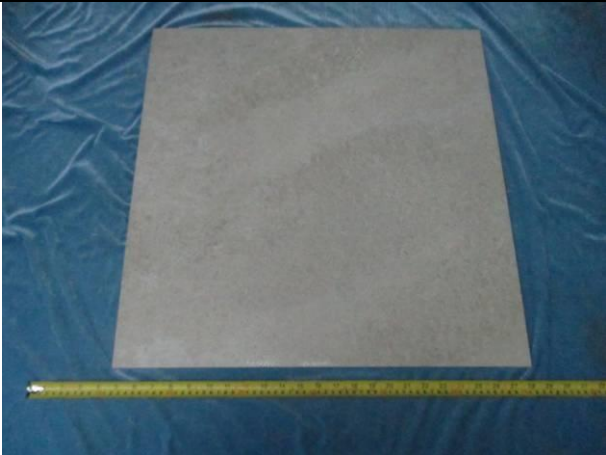
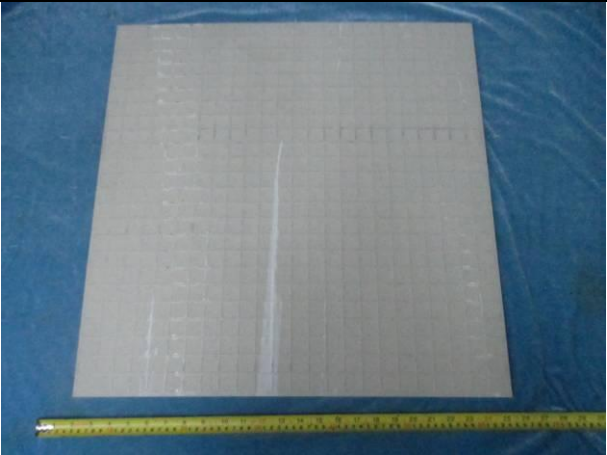


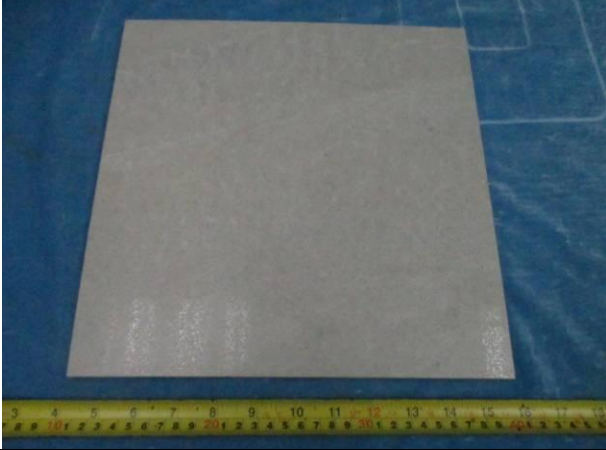
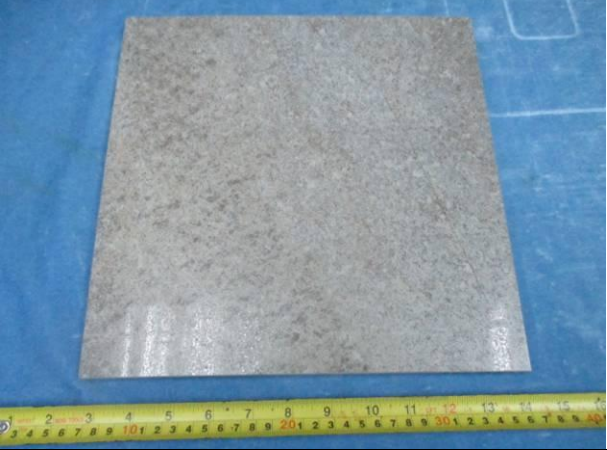
Appendix B

Manufacturer's ISO 9001 certification

	
<h2>CERTIFICATE</h2>	
	<p>SIRIM QAS International hereby certifies that</p> <p>NIRO CERAMIC (M) SDN. BHD. PLO 316, JALAN PERAK 4 81700 PASIR GUDANG JOHOR DARUL TAKZIM MALAYSIA</p>
	<p>has implemented a Quality Management System complying with</p> <p>ISO 9001 : 2008 QUALITY MANAGEMENT SYSTEMS - Requirements</p>
	<p>Scope of Certification</p> <p>1. DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES; 2. PROVISION OF SALES SERVICES TO DESIGN AND MANUFACTURE OF VITRIFIED HOMOGENEOUS CERAMIC TILES.</p>
	
	<p>Issue date : 14 October 2014</p> <p>Validity period : 08 November 2014 - 07 November 2017</p> <p>Certification No. : AR 0698</p>
<p>SIRIM QAS International Sdn. Bhd. (Company No. 410334-X) 1, Persiaran Dato' Menteri Section 2, P. O. Box 7035 40700 Shah Alam Selangor Darul Ehsan MALAYSIA</p> <p>Tel : 60-3-5544 6404 Fax : 60-3-5544 6787</p> <p>http://www.sirim-qas.com.my http://www.malaysiancertified.com.my</p>	<p></p> <p>Khalidah Mustafa Managing Director SIRIM QAS International Sdn. Bhd.</p>
<p><small>This certificate is granted subject to the terms and conditions as stated in the Certification Agreement.</small></p>	
<p>B.1: Manufacturer's ISO 9001 certification</p>	





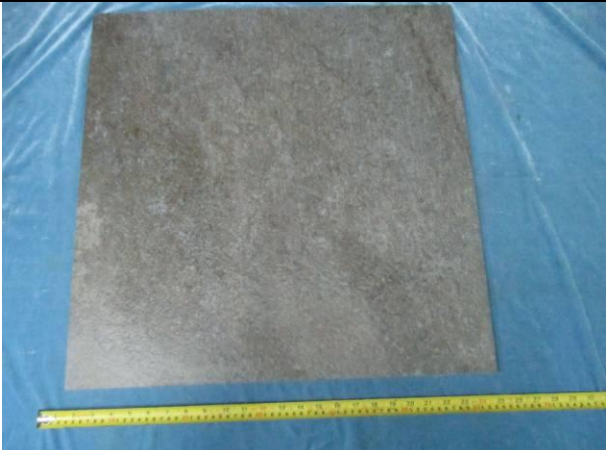
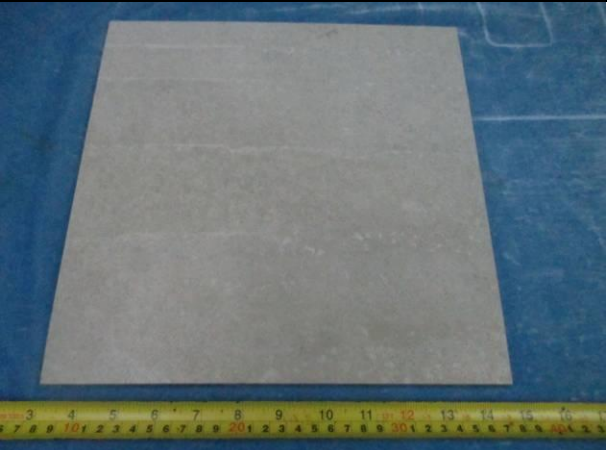
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Appendix C
Product photos

	
C.1: Front view of sample (Model GEL02, Lappato, 600x600mm)	C.2: Back view of sample (Model GEL02, Lappato, 600x600mm)
	
C.3: Trade mark on product	C.4: Country of origin on product
	
C.5: Front view of sample (Model GEL01, Lappato)	C.6: Front view of sample (Model GEL03, Lappato)

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

Appendix C
Product photos

	
C.7: Front view of sample (Model GEL04, Lappato)	C.8: Front view of sample (Model GEL01, Structured)
	
C.9: Front view of sample (Model GEL02, Structured)	C.10: Front view of sample (Model GEL03, Structured)
	
C.11: Front view of sample (Model GEL04, Structured)	C.12: Front view of sample (Model GSK01, Matt)

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

Appendix C
Product photos

<p>A photograph of a rectangular, light gray matte sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>	<p>A photograph of a rectangular, light gray matte sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>
C.13: Front view of sample (Model GSK02, Matt)	C.14: Front view of sample (Model GSK03, Matt)
<p>A photograph of a rectangular, light gray matte sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>	<p>A photograph of a rectangular, light gray lapped sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>
C.15: Front view of sample (Model GSK04, Matt)	C.16: Front view of sample (Model GPP01, Lappato)
<p>A photograph of a rectangular, light gray lapped sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>	<p>A photograph of a rectangular, light gray lapped sample placed on a blue background. A yellow ruler is positioned horizontally below the sample, showing measurements from approximately 3 to 17 cm.</p>
C.17: Front view of sample (Model GPP02, Lappato)	C.18: Front view of sample (Model GPP03, Lappato)


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Appendix C
Product photos

<p>A photograph of a rectangular, dark brown sample with a fine, uniform texture. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>	<p>A photograph of a rectangular, dark brown sample with a fine, uniform texture, similar to GPP04. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>
C.19: Front view of sample (Model GPP04, Lappato)	C.20: Front view of sample (Model GPP05, Lappato)
<p>A photograph of a rectangular, light gray sample with a smooth, uniform surface. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>	<p>A photograph of a rectangular, light gray sample with a smooth, uniform surface, similar to GPP01. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>
C.21: Front view of sample (Model GPP01, Structured)	C.22: Front view of sample (Model GPP02, Structured)
<p>A photograph of a rectangular, light gray sample with a smooth, uniform surface, similar to GPP01. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>	<p>A photograph of a rectangular, dark brown sample with a fine, uniform texture, similar to GPP04. It is placed on a blue fabric background. A white folding ruler is positioned horizontally below the sample, showing measurements in centimeters.</p>
C.23: Front view of sample (Model GPP03, Structured)	C.24: Front view of sample (Model GPP04, Structured)

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Appendix C
Product photos

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<p>C.25: Front view of sample (Model GPP05, Structured)</p>	

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Appendix D**Revision history**

Revision No.	Date	Author	Reviewer
Original	December 21, 2015	Jones Zhong	Jeff Deng

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