



TEST REPORT

No. : SHCCM150802712

Date : Sep. 09, 2015

Page: 1 of 3

LG HAUSYS, LTD.

ONE IFC, 10, GOOKJEGEUMYOONG-RO, YEONGDEUNGPO-GU, SEOUL, 150-876, KOREA

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name : LG DIRECTIONAL MARBLE VINYL
Sample Number : SHCCM150802712
Test Required : Wear resistance
Test Method : EN 660-2:1999+ A1:2003 and EN 649:2011
Material and Mark : PVC
Others : SGS KR File No.; AYAA15-43138
Date of Receipt : Aug. 26, 2015
Test Period : Aug. 26, 2015 to Sep. 09 , 2015
Test result(s) : For further details, please refer to the following page(s)

***** To be continued*****

Signed for SGS-CSTC Standards
Technical Services (Shanghai) Co., Ltd.

Erin Huang
Authorized signatory



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Deccheck@sgs.com

No.89, Block 1159, East Kang Qiao Road, Pudong District, Shanghai, China. 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 www.sgsgroup.com.cn
中国·上海·浦东康桥东路1159弄69号 邮编: 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 e sgs.china@sgs.com

TEST REPORT

No. : SHCCM150802712

Date : Sep. 09, 2015

Page: 2 of 3

Test item: Wear resistance

Sample description: See photo

Test condition: Weigh the specimens to an accuracy of $\pm 0.1\text{mg}$ after conditioning. Load each wheel with a weight of $(1 \pm 0.01)\text{ kg}$. The flow of abrasive is $(21 \pm 3)\text{g/min}$. Abrade one specimen during 5000 revolutions, with a break for weighing after each cycle of 1000 revolutions, and then test the two remaining specimens. If, however, the first specimen is abraded through before 5000 revolutions, discard it and test the two remaining specimen in cycles of 200 revolutions stopping the test after 2000 revolutions or when the specimen is abraded through.

Calculate the average mass loss. F_m , in milligrams per 100 revolutions for each specimen as follows:

$$F_m = \frac{F_{tot}}{n} \times 100$$

Calculate the loss of volume for each specimen for 100 revolutions as follows:

$$F_v = \frac{F_m}{\rho}$$

Requirement of EN 649:2011:

Characteristic	Requirements for wear group			
	T	P	M	F
Volume loss $F_v(\text{mm}^3)/100\text{revolutions}$	$F_v \leq 2.0$	$2.0 < F_v \leq 4.0$	$4.0 < F_v \leq 7.5$	$7.5 < F_v \leq 15.0$

Test result:

Test result	Wear group
$F_v = 0.5\text{mm}^3/100\text{revolutions}$	T

Note: The test was performed by SGS other internal laboratory.

Statement: Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.

***** To be continued*****



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Deccheck@sgs.com

No.69, Block 1159, East Kang Qiao Road, Pudong District, Shanghai, China. 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 www.sgsgroup.com.cn
中国·上海·浦东康桥东路1159弄69号 邮编: 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 e sgs.china@sgs.com



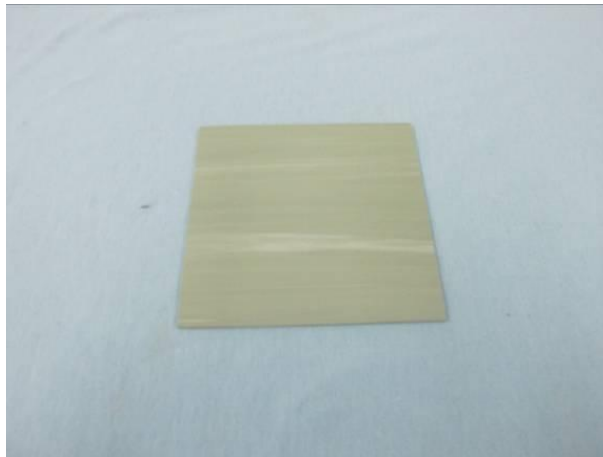
TEST REPORT

No. : SHCCM150802712

Date : Sep. 09, 2015

Page: 3 of 3

Sample Photo:



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



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Deccheck@sgs.com

No.69, Block 1159, East Kang Qiao Road, Pudong District, Shanghai, China. 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 www.sgsgroup.com.cn
中国·上海·浦东康桥东路1159弄69号 邮编: 201319 t(86-21) 61196300 f(86-21) 61191853/68183920 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)