

TEST REPORT

No. : SC100220106

Date : Mar.31,2018

Page: 1 of 18

SHANGHAI KSTONE INDUSTRIAL CO.,LTD

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

Sample Name : MODIFIED ACRYLIC SOLID SURFACE
Sample No : SC100220106
Test Required : Please see next pages
Test Method : Please see next pages Product specification
: 3680 x760x12MM
Manufacturer : SHANGHAI KSTONE INDUSTRIAL CO.,LTD
Date of Receipt : Feb.05,2018
Test Period : Feb.05,2018 to Mar.31,2018
Test Result : Please see next pages

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

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

Sally Xie
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-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.Doccheck@sgs.com

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center for Textiles and Apparel
Korea Carding & Spinning Laboratory

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)

TEST REPORT

No. : SC100220106

Date : Mar.31,2018

Page: 2 of 18

- I. Abrasion resistance, Barcol hardness, Tensile strength, Flexural strength, Density, Water absorption, High temperature resistance, Boiling water resistance, Coefficient of linear thermal expansion

Test Result:

Test Item	Test Method	Test Condition	Test Result
Abrasion resistance	ASTM D4060-07	Load: 500g/wheel Wheel: CS-10 Total 5000 cycles	Weight loss: 156.8mg
Barcol hardness	ASTM D2583-07	Thickness: 12.15mm	33
Tensile strength	ASTM D638-08	Specimen width: 13.2mm Specimen thickness: 4.0mm Testing speed: 50mm/min	33.9MPa
Flexural strength	ASTM D790-07 ^{e1}	Specimen: 127mm×12.9mm×4.0mm Testing speed: 2mm/min Span: 64mm	51.1MPa
Density	ASTM D792-08	----	1717.5 kg/m ³
Water absorption	ASTM D570-98(2005)	----	0.038%
High temperature resistance	NEMA LD3-2005	Specimen: 200mm×200mm Hot wax method 180℃, 20min	No effect
Boiling water resistance	NEMA LD3-2005	Specimen: 200mm×200mm	No effect
Coefficient of linear thermal expansion	With reference to ASTM D696-08	-30℃~30℃	3.2×10 ⁻⁵ /℃



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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 3 of 18

II. Stain resistance, Chemical resistance, Ball impact resistance

Test Item	Test Method	Test Result
Stain resistance	NEMA LD3-2005	Total Score:13 See Appendix A
Chemical resistance	With reference to ANSI Z124.1-1995	See Appendix B
Ball impact resistance	NEMA LD3-2005	See Appendix C

Test Reagent Number	Stain	Grade	Test Result
1	Distilled water	0	No effect
2	Ethyl alcohol solution	0	No effect
3	Acetone	6	Severe effect
4	Household ammonia	0	No effect
5	10% Citric acid	0	No effect
6	Vegetable oil	0	No effect
7	Fresh coffee	0	No effect
8	Fresh tea	0	No effect
9	Catsup	0	No effect
10	Yellow mustard	0	No effect
11	10% Povidone iodine	3	Moderate effect
12	Black permanent marker	1	Moderate effect
13	#2 pencil	1	Moderate effect
14	Wax crayon	1	Moderate effect
15	Black paste shoe polish	1	Moderate effect
Remark Sample dimension: 400mm×100mm×12mm, 1pcs			

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 4 of 18

Appendix B: Test result of Chemical resistance:

Chemicals Number	Chemicals name	Test Result
1	10% acetic acid	Not affected
2	0.10M nitric acid (HNO ₃)	Not affected
3	0.10M hydrochloric acid (HCl)	Not affected
4	0.10% sodium hydroxide	Not affected
5	Ammonia solution	Not affected
6	10% Sodium hypochlorite solution	Affected
7	10% sodium hydroxide	Affected
8	Carbon tetrachloride (CCl ₄)	Not affected
9	Acetone	Affected
10	Toluene	Not affected
11	1.0M nitric acid	Not affected
12	50% sodium hydroxide	Affected
13	Methyl ethyl ketone	Affected
14	Glacial acetic acid	Affected
15	Chloroform (CHCl ₃)	Affected
16	Methyl methacrylate	Affected
17	Aqua regia	Affected
18	11M nitric acid (HNO ₃)	Affected
19	10M hydrochloric acid (HCl)	Affected
20	Methylene chloride (CH ₂ Cl ₂)	Affected
Remark	The chemicals list was offered by client.	

*****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-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.Doccheck@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.sgs.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. : SC100220106

Date : Mar.31,2018

Page: 5 of 18

Appendix C: Test result of ball impact resistance:

The height of ball	Test result
3.5m	The sample is not broken.
Remark	The sample is bonded to particleboard utilizing a PVAc adhesive.



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.Doccheck@sgs.com

SGS-CTI Standards Technical Services (Shanghai) Co., Ltd.
Testing Center of Shanghai Certification Center for Material Laboratory

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. : SC100220106

Date : Mar.31,2018

Page: 6 of 18

III. Colorfastness test

Test standard: ANSI Z124.3-2005

Xenon-arc exposure in accordance with ASTM D2565-99(2008)

Test Condition: Irradiance: $(0.35 \pm 0.02)W/(m^2 \cdot nm)$ @340nm

Continuous light at $(63 \pm 5)^\circ C$ BPT

Filter: Daylight

Exposure period: 200h

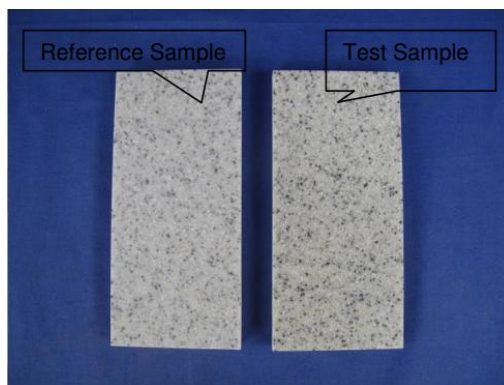
Test Result(s):

Evaluated Item	Ref. Standard	Test Condition	Test Result
Color difference ΔE^*_{ab}	ASTM D2244-09a	D65 standard light source with 10°observer	2.2
Grey scale	ISO105-A02:1993/Cor.2:2005	D65 standard light	3-4
Gloss	ASTM D523-08	60° geometry	Gloss before test: 16.3 Gloss after test: 15.1

Note: According to ISO105-A02:1993/Cor.2:2005, Grey scale is determined under D65 standard light, grade 5 is the best and grade 1 is the worst.

Reference Sample

Test Sample



After Xenon-arc Exposure

*****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.Doccheck@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.sgs.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. : SC100220106

Date : Mar.31,2018

Page: 7 of 18

IV. Resistance of Synthetic Polymeric Materials to Fungi

Test Method(s):

ASTM G21-1996 (Reapproved 2002) Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

Test Organism(s):

Aspergillus niger ATCC9642, Penicillium pinophilum ATCC11797, Aureobasidium pullulans ATCC15233, Chaetomium globosum ATCC6205, Gliocladium virens ATCC9645

Test result(s):

Test Culture	Concentration of spores (spores /mL)	Level (after 28 days)
Aspergillus niger ATCC9642	1.2x10 ⁶	2 Grade
Aureobasidium pullulans ATCC15233		
Penicillium pinophilum ATCC11797		
Chaetomium globosum ATCC6205		
Gliocladium virens ATCC9645		

Note: According to ASTM G 21-1996 (Reapproved 2002) Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi, observed fungi growth rating on the specimens include:

0 –None

1 –Traces of growth (less than 10%)

2 –Light growth (10 to 30%)

3 –Medium growth (30 to 60%)

4 –Heavy growth (60% to complete coverage)

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 8 of 18

V. Fire test

Test Requested:

1. To determine the flame spread index (FSI) and smoke-developed index (SDI) of the sample's surface burning characteristics when it is subjected to the conditions of specified in ASTM E84:2009c "Standard Test Method for Surface Burning Characteristics of Building Materials"
2. To determine the performance of the sample when it is subjected to the conditions of test specified in BS 476 Part 6:1989 + A1:2009 —Fire tests on building materials and structures—Part 6: Method of test for fire propagation for products
3. To determine the performance of the sample when it is subjected to the conditions of test specified in BS 476 Part 7:1997 —Fire tests on building materials and structures Part 7:Method of test to determine the classification of the surface spread of flame of products.

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 9 of 18

Sample Details

The details of the tested specimen given below have been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description	KSTONE Modified Acrylic Solid Surface It is widely used as all kinds of countertops in commercial and home decoration.
Trade Name / Product Reference	Modified Acrylic Solid Surface / KSTONE
Name of Manufacturer	SHANGHAI KSTONE INDUSTRIAL CO.,LTD
Composition details	1). Methyl Methacrylate(MMA):About from 8% to 10% 2). Isophthalic Resin: about 26% 3). Hydrated Aluminum Oxide Powder(ATH):About 64% 4). Anti-ultraviolet Resin: 0.3% 5). Other:About 2%
Color	White color
Thickness	12mm
Bulk Density / Mass per unit area	About 1.75g/cm ³
Brief description of manufacturing process	Our Modified Acrylic Solid Surface product was polymerized (blended) by Methyl Methacrylate, Isophthalic Resin including anti-UV ultraviolet resin and Hydrated Aluminum Oxide Powder in the vacuum-mixer machine.
End use	Our Modified Acrylic Solid Surface product was widely used as countertops in public construction such as luxury hotel, laboratory, airport, school, bank and high-class entertainment place and domestic decoration field.



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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 10 of 18

Test result:

1. ASTM E84:2009c

1) Test Conducted

This test was conducted in accordance with ASTM E84:2009c Standard Test Method for Surface Burning Characteristics of Building Materials.

2) Introduction

The method, designated as ASTM E 84:09c, "Standard Method of Test for Surface Burning Characteristics of Building Materials", is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results are expressed in terms of flame spread index (FSI) and smoke developed index (SDI).

The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke developed index are reported. However, there is not necessarily a relationship between these two measurements.

3) Test Procedure

The tunnel is preheated to 150°F, as measured by the floor-embedded thermocouple located 23.25 feet downstream of the burner ports, and allowed to cool to 105°F, as measured by the floor-embedded thermocouple located 13 feet from the burners. At this time the tunnel lid is raised and the test sample is placed along the ledges of the tunnel so as to form a continuous ceiling 24 feet long, 12 inches above the floor. The lid is then lowered into place.

Upon ignition of the gas burners, the flame spread distance is observed and recorded every 15 seconds. Flame spread distance versus time is plotted ignoring any flame front recessions. If the area under the curve (A) is less than or equal to 97.5 min-ft, $FSI = 0.515 \cdot A$; if greater, $FSI = 4900 / (195 - A)$. Smoke developed is determined by comparing the area under the obscuration curve for the test sample to that of inorganic reinforced cement board and red oak, arbitrarily established as 0 and 100, respectively.

4) Conditioning

Prior to testing, the sample was conditioned,

To a constant weight at a temperature of $73.4 \pm 5^\circ\text{F}$ ($23 \pm 2.8^\circ\text{C}$) and at a relative humidity of $50 \pm 5\%$

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 11 of 18

Exposed Face:

One face of the specimen was exposed to the flame.

Mounting Methods:

The specimen was self-supporting and was placed directly on the inner ledges of the tunnel.

The specimen consisted of 3 pieces of 2470mm×600mm×12mm sections jointed end-to-end.

5) Test Results

Sample	FSI	SDI
"MODIFIED ACRYLIC SOLID SURFACE"	5	100

Rating:

The National Fire Protection Association Life Safety Code 101, Chapter 10, Section 10.2.3 "Interior Wall and Ceiling Finish Classification", has a means of classifying materials with respect to Flame Spread and Smoke Developed when tested in accordance with NFPA 255, ASTM E84, UL 723 "Method of Test of Surface Burning Characteristics of Building Materials".

International Building Code, Chapter 8, Interior Finishes, Section 803 "Wall and Ceiling Finishes", was classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

The classifications are as follows:

	Class A	Class B	Class C
Flame Spread Index	0-25	26-75	76-200
Smoke-developed Index	0-450	0-450	0-450

Since the tested sample received a Flame Spread Index 5 and a Smoke Developed 100, it would meet the requirement of Class A interior Wall & Ceiling Finish Category.

*****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-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.Doccheck@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.sgs.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. : SC100220106

Date : Mar.31,2018

Page: 12 of 18

OBSERVATIONS

Time to ignition (sec)	342
Time to Max. FS (sec)	469
Maximum FS (feet)	3

NOTE: The use of supporting materials on the underside of the test specimen has the ability to lower the flame spread index from those which might be obtained if the specimen could be tested without such support. These test results do not necessarily relate to indices obtained by testing materials without such support.

Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place.

Graphical Results:

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 13 of 18

2. BS 476 Part 6:1989 + A1:2009

1) Test conducted

This test was conducted in accordance with the procedure specified in BS 476 Part 6:1989 + A1:2009 —Fire tests on building materials and structures —Part 6: Method of test for fire propagation for products.

2) Test details

Conditioning:

Prior to testing, the sample was conditioned, to constant mass at a temperature of 23 ± 2 °C, and a relative humidity of 50 ± 10 %, and maintained in this condition until required for testing.

Exposed Face:

One face of the specimen was exposed to the flame.

Form in which the specimens were tested:

Material

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 14 of 18

3) Test results

Throughout the test on each specimen, carefully observe the material's behaviour within the apparatus and take special note of any of the following phenomena listed in clause 9.2 of the standard. None of the listed phenomena was observed and the test results on all three specimens tested were valid.

The index of the performance for the specimen was determined as follows:

$$S_1 = \sum_{t=0.5}^{t=3} \frac{\theta_s - \theta_c}{10t}, S_2 = \sum_{t=4}^{t=10} \frac{\theta_s - \theta_c}{10t}, S_3 = \sum_{t=12}^{t=20} \frac{\theta_s - \theta_c}{10t}, S = S_1 + S_2 + S_3$$

Where:

S = index of performance for each of the specimens tested and S1, S2 and S3 are sub- indices

t = Time in minutes from the origin at which readings are taken

θ_s = Temperature rise in °C for the specimen at time, t

θ_c = Temperature rise in °C for the calibration sheet at time, t

Fire Propagation index $I = i_1 + i_2 + i_3$ Where, i_1, i_2 and i_3 are given by the expressions:

$$i_1 = \frac{1}{3} [(S_1)_A + (S_1)_B + (S_1)_C], i_2 = \frac{1}{3} [(S_2)_A + (S_2)_B + (S_2)_C], i_3 = \frac{1}{3} [(S_3)_A + (S_3)_B + (S_3)_C]$$

The following test results were obtained for each specimen tested:

Specimen No.	Sub - indices			Index of performance
	S ₁	S ₂	S ₃	S
A	0.68	0.63	0.49	1.79
B	0.80	0.65	0.49	1.95
C	0.61	0.78	0.62	2.01

Number of Specimens tested	Sub-index i_1	Sub-index i_2	Sub-index i_3	Fire Propagation index I
3	0.70	0.69	0.54	1.92

Note: If a suffix "R" is included in the above fire propagation index I, this indicates that the results should be treated with caution.

*****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.Doccheck@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.sgs.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. : SC100220106

Date : Mar.31,2018

Page: 15 of 18

3. BS 476 Part 7:1997

1) Test conducted

This test was conducted in accordance with the procedure specified in BS 476 Part 7:1997 —Fire tests on building materials and structures Part 7. Method of test to determine the classification of the surface spread of flame of products.

2) Test details_

Conditioning:

Prior to testing, the sample was conditioned,
to constant mass at a temperature of 23 ± 2 °C, and a relative humidity of 50 ± 10 %, and maintained in this condition until required for testing.

Exposed Face:

One face of the specimen was exposed to the flame.

Specimen mounting:

Each specimen was placed into the specimen holder and backed with a non-combustible insulation board. So that no air gap was provide between the unexposed face of specimen and backing board.

*****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.Doccheck@sgs.com

SGS-CTI Standards Technical Services (Shanghai) Co., Ltd.
Testing Center for Construction Material Laboratory

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. : SC100220106

Date : Mar.31,2018

Page: 16 of 18

3) Test results

SPECIMEN No.	1	2	3	4	5	6
Distance (mm)	Time to travel to indicated distance (minutes :seconds)					
75	1'11"	1'10"	1'10"	1'09"	1'09"	1'11"
165	2'07"	1'51"	1'49"	1'54"	1'54"	2'04"
190	--	--	--	--	--	--
215	--	--	--	--	--	--
240	--	--	--	--	--	--
265	--	--	--	--	--	--
290	--	--	--	--	--	--
375	--	--	--	--	--	--
455	--	--	--	--	--	--
500	--	--	--	--	--	--
520	--	--	--	--	--	--
600	--	--	--	--	--	--
675	--	--	--	--	--	--
710	--	--	--	--	--	--
750	--	--	--	--	--	--
785	--	--	--	--	--	--
825	--	--	--	--	--	--
Maximum distance traveled at 1.5 minutes	110	130	135	140	135	115
Maximum distance traveled during the whole test (mm)	189	182	185	182	180	185
Time to reach maximum distance traveled	2'31"	2'43"	2'29"	2'37"	2'41"	2'51"

Note: Six specimens are usually tested. If the test on any specimen is deemed to be invalid, as defined in the standard, it is permissible for up to a maximum of nine specimens to be tested in order to obtain the six valid test results.

*****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.Doccheck@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.sgs.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. : SC100220106

Date : Mar.31,2018

Page: 17 of 18

The classification limits specified in BS 476-7:1997 are given in Appendix 1.

Observations during test:

In the case of specimen No.1, ignited at 57 sec.

In the case of specimen No.2, ignited at 54 sec.

In the case of specimen No.3, ignited at 54 sec.

In the case of specimen No.4, ignited at 51 sec.

In the case of specimen No.5, ignited at 53 sec.

In the case of specimen No.6, ignited at 57 sec.

Criteria for classification:

If the prefix “D” or suffix “R” or “Y” is included in the classification, this indicates that the results should be treated with caution. An explanation of the reason for prefix and suffixes is given in Appendix 2

Appendix 1 Classification of spread of flame

Classification	Spread of flame at 1.5 min		Final spread of flame	
	Limit (mm)	Limit for one specimen in sample(mm)	Limit (mm)	Limit for one specimen in sample(mm)
Class 1	165	165+25	165	165+25
Class 2	215	215+25	455	455+25
Class 3	265	265+25	710	710+25
Class 4	Exceeding the limits for class 3			

Appendix 2 Explanation of prefix and suffixes which may be added to the classification

- A suffix R is added to the classification if more than six specimens are required in order to obtain six valid test results (e.g. class 2R).
- A prefix D is added to the classification of any product which does not conform to the surface characteristics specified in the standard and has therefore been tested in a modified form (e.g. class D3).
- A suffix Y shall be added to the classification if any softening and/or other behaviour that may affect the flame spread occurs.

*****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.Doccheck@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. : SC100220106

Date : Mar.31,2018

Page: 18 of 18

Classification: In accordance with the class definitions given in BS 476 Part 7:1997, the tested samples are classified as class 1.

WARNING:

The test results relate only to the specimens of the product in the form in which were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

The specimen was supplied by the sponsor and SGS-CSTC ANJI Branch was not involved in any selection or sampling procedure.

Photo Appendix:



*****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