

STONIA®

ستونيا

**Stonia solid surface
Submittal**

الأسطح المصممة من ستونيا
عرض فني



ستاركو هاردوير
STARCO HARDWARE

INDEX

Starco Hardware
Stonia Solid Surface

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Starco Hardware
Stonia Solid Surface

SNOGEN ISO Certification



01



Certificate of Registration

QUALITY

MANAGEMENT SYSTEM



SNOGEN Co., Ltd.

4162, Sejong-ro, Gwangdeok-myeon,
Dongnam-gu, Cheonan-si, Chungcheongnam-do, Korea

ISO 9001:2015 / KS Q ISO 9001:2015

Scope :

Design & Development, Production of Surfactants (Cationic, Anionic, Non-Ionic), Ester Compounds, Silicone Emulsion, Water-Soluble Resin (Urethane, Acryl), Solid Surface, Textile and Industrial Products

TRA Certification International Co.,Ltd.(TRACI) hereby declares that this facility has been audited in accordance with the requirements of ISO 9001:2015 and meets the accreditation criteria defined in the certification scheme of TRA Certification International Co.,Ltd.(TRACI)

Certification No : KQ-0322

Issued : 18 Jul 2008

Revised : 16 Jul 2020

Validity : 18 Jul 2020 ~ 17 Jul 2023

Authroized By :

Jaehyun CHO

President

TRA Certification International Co., Ltd.

* TRA Certificaion International Co.,Ltd.(TRACI) has been accredited by Korea Accreditation Board (KAB) as a Quality Management System certification body. (Accreditation number: KAB-QC-52)

* TRACI Add. : #1106, Ace Twin Tower 1, 285, Digital-ro, Guro-gu, Seoul, Republic of Korea.

* This certifiacate is the property of TRACI and shall be returned upon request by TRACI.

**Starco Hardware
Stonia Solid Surface**

Warranty



RESIDENTIAL 10-YEAR LIMITED WARRANTY

Permanently installed **STONIA®** Solid Surfaces sheets and shapes (the “Product”) are warranted by Snogen Corporation to the original owner. **STONIA®** Solid Surfaces must be fabricated and installed by **STONIA®** certified Fabricator/Installer, used and maintained in accordance with instructions provided by Snogen Corporation

Snogen Corporation at its sole option will repair or replace, without charge, such Product if it fails due to a manufacture defect during the first ten (10) years after the date of initial installation. This includes necessary real cost charges needed to repair or replace the Product. Although Snogen Corporation shall make its best effort to repair or replace with the best possible color match to the original as possible, Snogen Corporation cannot guarantee the exact color in the event of repair or replacement. All instructions for filling a claim under this limited warranty are available from your dealer and fabrication/installation source or by contacting Snogen Corporation directly.

This limited warranty is transferable during the 10-year period following initial installation only when the new owner notifies Snogen Corporation in writing.

This warranty excludes the following:

01. Minor conditions such as stains, scratches, water spots and burns;
02. Failure to comply with Snogen Corporation’s instructions including fabrication, installation, care, maintenance, etc;
03. Any products moved from their original place of installation;
04. Seam appearance of any adhesive, caulk or other accessory items;
05. Color variation from the sample;
06. Color variation within different lots;
07. Exact color match as a result of Product replacement or repair is not guaranteed;
08. Failure caused by other substructure support;
09. Misuse, abuse (including impact damage and contact with chemical reagents not intended for use with Product);
10. Improper fabrication, installation, handling or maintenance;
11. Damage caused by excessive heat; or by an act of nature;
12. Workmanship of Fabricators or Installers;
13. Damages from other than manufacturing defect;
14. Any Product installed or located outdoors, such as outdoor, kitchens, BBQ work surfaces, or in heated areas
such as saunas, steam rooms, and shower pans;

15. In-Carton products including components made from STONIA®
16. Any Product installed in recreational vehicles;
17. Any Product fabricated and installed in commercial applications;
18. Fabrication, Installation, Modification or Repairs made by other than STONIA® Certified Fabricator Installer;

Snogen Corporation's obligation hereunder is limited solely to the repair or replacement including necessary reasonable real cost charges of the Products purchased hereunder. Except as to what is stated in this limited warranty herein, Snogen Corporation makes no warranties, express or implied, in respect to the Product, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, and all such warranties hereby are expressly disclaimed. Snogen Corporation does not warrant that the Product will meet the end users' requirements. Snogen Corporation shall not be liable for incidental, consequential, indirect, special, punitive, or exemplary damages of any kind, including lost good will, lost profits, lost business, or other indirect economic damages, and further including injury to property, whether such claim is based on theories of contract, negligence, tort (including strict liability) or otherwise, as a result of breach of any warranty regardless of whether Snogen Corporation was advised, had other reason to know, or in fact knew of the possibility of such damages.

SOME COUNTRIES, STATES AND PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION STATED ABOVE, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS, WHICH WILL VARY FROM COUNTRY TO COUNTRY, STATE TO STATE OR PROVINCE TO PROVINCE.

Warranty Service:

To request warranty service, contact your original fabricator/installer. You must present the original sales receipt or produce proof of purchase and installation of STONIA® Solid Surfaces, which clearly proves the Product purchase and date of installation, in order to obtain service under this limited warranty. For more information about this warranty, please contact to Snogen Corporation at the address below:

Starco Hardware
Stonia Solid Surface

Intact Supply Chain



SGEN International Inc

Ref : SG-202201-A

Date : February 14, 2025

ASIA STAR EST.

AL RAI INDUSTRIAL AREA, BLOCK 1, STREET 24, KUWAIT

Tel: +965 949 46331

LETTER OF AUTHORIZATION

We, SGEN International Inc., the export division of SNOGEN Corporation hereby authorize ASIA STAR EST. to conduct as our sole distributor for Acrylic Solid Surface under the brand name "STONIA" in Kuwait, UAE, and Oman for 3 years (01/2025~12/2027) as long as the following sales quantities are maintained and payments are wired within the agreed upon payment terms. We also confirm that all the STONIA products are made in Korea.

We are very proud of being associated with ASIA STAR EST and we will do our very best to support technically ASIA STAR EST in your project to achieve quality, security and durability works with STONIA acrylic solid surfaces.

The Letter of Authorization takes effect upon signing and remains valid for three years from January 1, 2025. Upon expiration, the contract may be extended if both parties are in good standing and mutually agree to an extension.

SGEN International Inc

1. Seller **SGEN International, Inc**
3845 E Miraloma Ave Unit B,
Anaheim , CA 92806, USA
Phone: 714-463-6320

Signature

Chin Kim (CEO)

SGEN INTERATIONAL INC
3845 E Miraloma Ave unit B
Anaheim, CA 92806



2. Buyer **ASIA STAR EST.**
AL RAI INDUSTRIAL AREA,
BLOCK 1, STREET 24, KUWAIT
Tel: +965 949 46331

Signature

Dr. Aladdin Hosa (CEO)



SGEN International Inc

03.2

Starco Hardware
Stonia Solid Surface

Sale Record of Stonia



Sales Record of STONIA

Date	Customer	Con.	Construction Com.	Construction Site	Color	Size	Q'ty
August 16	e-KCC	Korea	Taechu	Anyang Suksu	General White	12X760X3680	160
October 16	e-KCC	Korea	Woolim	Samsungdong Woolim 1st	Moon Snow	12X760X3680	330
January 17	e-KCC	Korea	KDC	Jungkyedong Apt.	Sun Iron	12X760X3680	100
April 17	e-KCC	Korea	KDC	Jungkyedong Apt.	Moon River	12X760X3680	300
May 17	e-KCC	Korea	KDC	Jungkyedong Apt.	Moon Snow	12X760X3680	600
October 17	e-KCC	Korea	Samwhan	Kochukdong Rose Apt.	General White	12X760X3680	873
February 18	e-KCC	Korea	Kolon E&C	Dangsandong Kolon	Moon River	12X760X3680	200
March 18	e-KCC	Korea	Dongmoon	Sarihyundong Dongmoon	General White	12X760X3680	958
July 18	e-KCC	Korea	Alfome	Jongro Officetel	General White	12X760X3680	100
August 18	e-KCC	Korea	Woolim	Jungdong Classic 1st	General White	12X760X etc	150
January 19	e-KCC	Korea	Joongang	Jungang Hights Apt.	Moon River	12X760X3680	760
March 19	e-KCC	Korea	Dongmoon	Goodmorning Tower	Pearl Steller	12X760X3680	921
June 19	e-KCC	Korea	Dongyang E&C	Bundang 2nd Officetel	General White	12X760X3680	146
September 19	e-KCC	Korea	Dongbu E&C		Moon Snow	12X760X etc	310
May 17	Enex	Korea	Kumsung Baekjoe	Techno Velly Apt.	Sun Night	12X760X etc	919
May 16	Hanssem	Korea	Taewang	Taewang Honors	Moon River	12X760X etc	691
July 16	Hanssem	Korea	Vicon	Vicon Dreamhill Apt.	Moon River	12X760X etc	148
August 16	Hanssem	Korea	Saewoon	Osan Saewoon	Moon River	12X760X etc	336
September 16	Hanssem	Korea	Kumkwang	Kwangju Kumkwang	Moon River	12X760X etc	895
October 16	Hanssem	Korea	Human Touch	Human Starville Apt.	Moon River	12X760X etc	181
January 17	Hanssem	Korea	Daewoo Motor Sales	Daewoo Officetel	Moon River	12X760X etc	326
March 17	Hanssem	Korea	Samjung	Samjung Greenville Apt.	Moon River	12X760X etc	470
June 17	Hanssem	Korea	ELD E&C	ELD Sumokto Apt.	Moon River	12X760X etc	370
August 17	Hanssem	Korea	Bokook	Bokook Wellrich Apt.	Moon River	12X760X etc	937
September 17	Hanssem	Korea	I-Park	I-Park Apt.	Moon River	12X760X etc	594
December 17	Hanssem	Korea	Youngnam	Neoville Vista	Moon River	12X760X2900	272
February 18	Hanssem	Korea	LIG E&C	Kijang KessVille Apt.	Moon Snow	12X760X etc	466
June 18	Hanssem	Korea	Daewoo E&C	Daewoo Miraesarang Apt.	Moon River	12X760X etc	431
September 18	Hanssem	Korea	Daewoo Motor Sales	Daewoo Myville sweety	General White	12X760X etc	425
February 19	Hanssem	Korea	Daewoo Motor Sales	Inkye Jukong Apt.	Moon River	12X760X3680	103
March 19	Hanssem	Korea	Daewoo E&C	Seokyo Apt. rebulding	Moon River	12X760X etc	238
June 19	Hanssem	Korea	Sambu	Inkye Officetel	Moon River	12X760X etc	156
August 17	KCC	Korea	Korea National Housing	Bucheon Modelhouse	Sun Clay	12X760X etc	672
July 18	KCC	Korea	Korea National Housing	Daegu Daehyun Modelhouse	Sun Arabica	12X760X etc	751
November 16	Keangnam	Korea	Keangnam	Sinsudong 2nd Apt.	Sun White	12X760X etc	160
December 19	Keangnam	Korea	Keangnam	Mapo Sinsu 3rd Apt.	Sun White	12X760X etc	299
August 17	Kyeryong	Korea	Kyeryong	Daejeon Southwest Modelhouse	Sun Iron	12X760X etc	1,240
August 19	Kyeryong	Korea	Kyeryong	Daejeon Hakha Samplehouse	Sun Iron	12X760X etc	704
January 19	Kyeryong	Korea	Chuan Backsuk	Chuan Backsuk Samplehouse	Sun Savana	12X760X etc	980
August 18	P 社	Korea	Hyosung	Osan Samplelhouse	Sand Night	12X760X etc	380
August 19	P 社	Korea	Hyosung	Wonju Samplehouse	Sun Iron	12X760X etc	652
July 19	US Surfaces	USA	-	Clear Springs Assisted Living	Home Gemstone	12X760X etc	200
July 19	US Surfaces	USA	-	Simon Properties	Home Point	12X760X etc	150
July 19	US Surfaces	USA	-	Lone Star Lofts	General White	12X760X etc	750
August 19	US Surfaces	USA	-	Denali Village Military family	Home Point	12X760X etc	1,600
August 19	US Surfaces	USA	-	Whidbey Island Military housing	General White	12X760X etc	1,000
August 19	US Surfaces	USA	-	Washington University	Sand Storm	12X760X etc	200
October 19	US Surfaces	USA	-	Texas Road house Restaurant	Sand Storm	12X760X etc	200
August 18	US Surfaces	USA	-	Fort Leonard Wood	Sand Night	12X760X etc	200

Starco Hardware
Stonia Solid Surface

Thermofforming



Thermoforming of STONIA[®] Solid Surfaces

One of the many availabilities with STONIA[®] Solid Surfaces is that it can be thermoformed to create a variety of different

shapes to meet your needs.

Thermoforming is the process of heating and bending flat sections of STONIA[®] sheets to create curved tops and down stands. This process involves placing STONIA[®] materials into an industrial oven, designed specifically for this purpose, at a temperatures generally between 145~ 152°C. The formability of STONIA[®] allows the material to be crafted in to sculptures, artistic vanities, innovative furniture, and various other interior applications where curves and shapes are desired.

Thermoforming is a learned technique that requires practice and experience in order to achieve optimal results. Oven preparation and calibration is the most crucial skill in thermoforming – Heating temperature and dwell time will vary depending upon the thickness and color group of STONIA[®] products to be formed. Recommended oven temperature / dwell time and minimum radius allowances are listed below.

Sheet Thickness	Recommended OvenTemp'/Time	Minimum Inside Radius	ColorGroup
6mm	165°C/ 25~55 min	27 mm	Unicolor,
		105 mm	Small, medium Chip
12mm	165°C/ 40~70 min	75mm	Unicolor
		125mm	Small, medium Chip
		200 mm	Pearl

- Temperature and dwell time may vary depending on oven design and the size of the piece to be formed. It is highly recommended to test a scrap piece to find the best temperature/dwell time for the oven. STONIA[®] does not express or imply any warranty or suitability of equipment that may be used in the thermoforming process.
- Titan, Home color group are not recommended for thermoforming due to its unique properties.
- Failure to comply with the above recommendations may result in popped chips or cracks.

STONIA[®] does not warrant the condition of STONIA[®] Solid Surfaces while being thermoformed or such material that is unsuccessfully thermoformed. However, when the material is successfully thermoformed and subsequently incorporated into a finished assembly, it carries the same warranty as other STONIA[®] Solid Surface products. If you have any questions, please contact our technical team.

DATE:	21- 12- 2022	JOB ID:	ORA-MTL-98A /2022	REPORT No.:	ORA 98A/2022
CENTRE:	Energy and Building Research Centre / Construction and Building Material			SAMPLE RECEIVED DATE:	19 - 07 - 2022
LABORATORY:	Material Testing Laboratory, CBM/KISR	LOCATION ID:	Building No.44; Room No. 1719	SAMPLE TYPE :	Solid Surface Stonia Material
CLIENT / PROJECT SAMPLE ID:	Asia Star for Construction Materials	START DATE OF ANALYSIS:	20 - 12 - 2022	CLIENT NAME / PROJECT CODE:	Asia Star for Construction Materials / Solid Surface Stonia Material
LAB SAMPLE ID:	98A /2022- Others	END DATE OF ANALYSIS:	20 - 12 - 2022		

Sl. No.	PARAMETERS / TESTS	Chemical Formula	SAMPLE CONDITION	UNITS	AVERAGE RESULTS	REFERENCE TEST METHOD	REMARKS / LIMITS
1.	Trace Metal Analysis using handheld X-ray Fluorescence Spectrometry (XRF)	Cu	Good	ppm	25 ± 4	handheld X-ray Fluorescence	Instrument elemental analysis detection range: Magnesium (Mg) - Uranium (U)
		Ca	Good	ppm	1092 ± 6		

PREPARED BY:

NAME: Eng. Amer Al-Arbeed

DESIGNATION: Research Associate

SIGNATURE:



DATE:

21 / 12 / 2022

VERIFIED BY:

NAME: Dr. Mohammed Abdulsalam

DESIGNATION: Associate Research Scientist

SIGNATURE:



DATE:

21 / 12 / 2022

AUTHORIZED BY:

NAME: Eng. Suad Al-Bahar

DESIGNATION: PM / CBM / EBRC

SIGNATURE:



DATE:

21 / 12 / 2022

Liability of Kuwait Institute for Scientific Research (KISR) and its employees is limited to the accuracy of analyses results of the submitted samples as received from the client. The results contained herein relate only to items tested. This report shall not be reproduced, except in full, without the expressed written consent of the laboratory.



DATE:	01-12-2022	JOB ID:	ORA-MTL-97/2022	REPORT No.:	ORA 97/2022
CENTRE:	Energy and Building Research Centre / Construction and Building Material			SAMPLE RECEIVED DATE:	19-07-2022
LABORATORY:	Material Testing Laboratory, CBM/KISR	LOCATION ID:	Building No.44; Room No. 1719	SAMPLE TYPE :	Solid Surface Stonia Material
CLIENT / PROJECT SAMPLE ID:	Asia Star for Construction Materials	START DATE OF ANALYSIS:	01-08-2022	CLIENT NAME / PROJECT CODE:	Asia Star for Construction Materials / Solid Surface Stonia Material
LAB SAMPLE ID:	97/2022- Others	END DATE OF ANALYSIS:	29-09-2022		

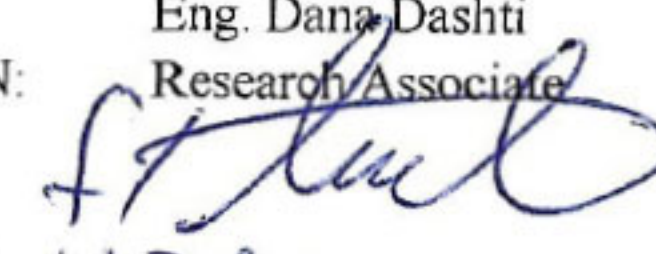
Sl. No.	PARAMETERS / TESTS	SAMPLE CONDITION	UNITS	AVERAGE RESULTS				REFERENCE TEST METHOD	REMARKS / LIMITS
				ΔL^*	Δa^*	Δb^*	ΔE^*		
1	Effect of heat in oven on colour	Good	-	-1.97	3.41	7.12	8.14	KSS 37	Samples were heated in oven at 100 °C for 100 hours
2	Effect of hot water immersion on colour	Good	-	0.10	0.34	1.68	1.71	Lab test method	Samples were immersed in water at 60 °C for 24 hours

Note : When specimens were visually inspected, there was no appreciable change in colour.

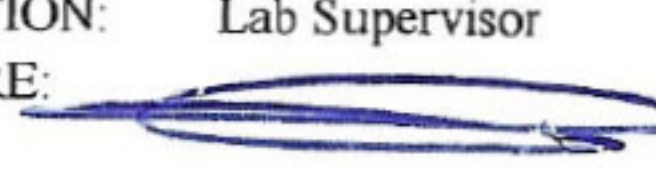
According to CIE-Lab system:

- ΔL^* value states the position change on the white/black axis.
- Δa^* value states the position change on the red/green axis.
- Δb^* value states the position change on the blue/yellow axis.


PREPARED BY:

NAME: Eng. Dana Dashti
DESIGNATION: Research Associate
SIGNATURE: 
DATE: 1/12/2022

CHECKED AND VERIFIED BY:

NAME: Eng. Amer Al-Arbeed
DESIGNATION: Lab Supervisor
SIGNATURE: 
DATE: 1/12/2022

AUTHORIZED BY:

NAME: Eng. Suad Al Bahar
DESIGNATION: PM/ CBM/ EBRC
SIGNATURE: 
DATE: 1/12/2022



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04. Seam appearance of any adhesive, caulk or other accessory items;
05. Color variation from the sample;
06. Color variation within different lots;
07. Exact color match as a result of Product replacement or repair is not guaranteed;
08. Failure caused by other substructure support;
09. Misuse, abuse (including impact damage and contact with chemical reagents not intended for use with Product);
10. Improper fabrication, installation, handling or maintenance;
11. Damage caused by excessive heat; or by an act of nature;
12. Workmanship of Fabricators or Installers;
13. Damages from other than manufacturing defect;
14. Any Product installed or located outdoors, such as outdoor, kitchens, BBQ work surfaces, or in heated areas
such as saunas, steam rooms, and shower pans;

15. In-Carton products including components made from STONIA®
16. Any Product installed in recreational vehicles;
17. Any Product fabricated and installed in commercial applications;
18. Fabrication, Installation, Modification or Repairs made by other than STONIA® Certified Fabricator Installer;

Snogen Corporation's obligation hereunder is limited solely to the repair or replacement including necessary reasonable real cost charges of the Products purchased hereunder. Except as to what is stated in this limited warranty herein, Snogen Corporation makes no warranties, express or implied, in respect to the Product, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, and all such warranties hereby are expressly disclaimed. Snogen Corporation does not warrant that the Product will meet the end users' requirements. Snogen Corporation shall not be liable for incidental, consequential, indirect, special, punitive, or exemplary damages of any kind, including lost good will, lost profits, lost business, or other indirect economic damages, and further including injury to property, whether such claim is based on theories of contract, negligence, tort (including strict liability) or otherwise, as a result of breach of any warranty regardless of whether Snogen Corporation was advised, had other reason to know, or in fact knew of the possibility of such damages.

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Starco Hardware
Stonia Solid Surface

Stonia Solid Surface Components



STONIA Solid Surface

STONIA solid surface materials combine two main ingredients the filler and a resin(PMMA+MMA), along with various additives. These are combined and then cast on the belt using a curing process that results in a solid sheet.

[Main components]

#	CAS #	Chemical Name	Supplier	Trade Name	MIN use level (%)
1	9011-14-7	Poly(Methyl Methacrylate)	LG MMA	PMMA	7.5
2	80-62-5	Methyl Methacrylate	LG Chem	MMA	23.0
3	97-90-5	Ethylene Glycol Dimethacrylate	EVONIK	EGDMA	0.5
4	21645-51-2	Aluminium Trihydrate	ZHONGZHOU BRANCH CHINA ALUMINIUM CO.	ATH	62.0
5	3006-82-4	t-Butyl Peroxy 2-Ethyl Hexanoate	DONGSUNG	BO	0.100
6	Mixture	Colourant	SUNWOO CHEM-TECH	White 101	0.200
11	Mixture	Chip	SNOGEN Corp.	SN-WH-10	6.700

Resin

The STONIA Physical-chemical level is a material formed by different components, in particular from about 60% of aluminum hydroxide (trihydrate) e 30% of acrylic resin (PMMA(Poly Methyl Meta Acrylate)) with eventual addition of colored pigments.

PMMA & MMA used in STONIA Solid surface is manufactured by Lg Chemicals.

The sheets has resistance, acrylic resin has water resistance and flexibility. Given his undoubted features relating to ease of processing, It can be treated with the traditional machines for woodworking and for processing plastics, such as thermoformed, allowing to realize with it really any form. STONIA being extremely flexible, It is a very suitable material to the creativity and imagination of designers, with it you can really design around.

ATH

The filler of choice in Stonia is alumina tri-hydrate, or "ATH." (Made by China)

ATH has great physical properties. It has excellent chemical and stain resistance; excellent water-resistance; nice translucency; hard enough to give superb impact-resistance but "soft"

enough to be machinable; and one last almost magical property: not only will it not burn, but because it has "water in hydration," when attacked by heat ATH actually releases steam. This makes it a natural fire-retardant.

Additives

Every solid surface product contains numerous additives. These include pigments, but also a host of additives that improve or enhance chemical and performance properties : cross-linking agents, stabilizers, the list goes on.

We continually change additives with improvements in technology, carefully tweaking their products in a process of "continuous improvement."

Starco Hardware
Stonia Solid Surface

Acid Test Report



07



TEST REPORT

68, Gajaeul-ro, Seo-gu, Incheon, 22829, Korea

TEL 82-41-589-0010

FAX 82-41-589-0012

Report No : TAK-2023-123578

Receipt Date : 2023.09.01.

Representative : Hong Seonggil, Hong Jeonggu

Test Completion Date : 2023.09.18.

Company name : SNOGEN CO., LTD.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do, 31223, Rep. of KOREA

Sample name : Acrylic Solid Surface (A-106 Ultra White)

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Chemicals Resistance Test (HCl,3%)	-	-	No Defects	applied KS F 4739 : 2022

- Usage of Report : QUALITY CONTROL

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website (www.ktr.or.kr) or QR code to verify the authenticity of the certificate.
 2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
 3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

Kim Donghee

Prepared by Kim Donghee

Tel : 032-570-9647

Lee Seong-gyu

Reviewed by Lee Seong-gyu

Tel : 1577-0091(ARS ①→④)

2023.09.18

Korea Testing & Research Institute

President



QR Code for forgery

Registered copy date : Sep.26.2023

Page : 1 of 1

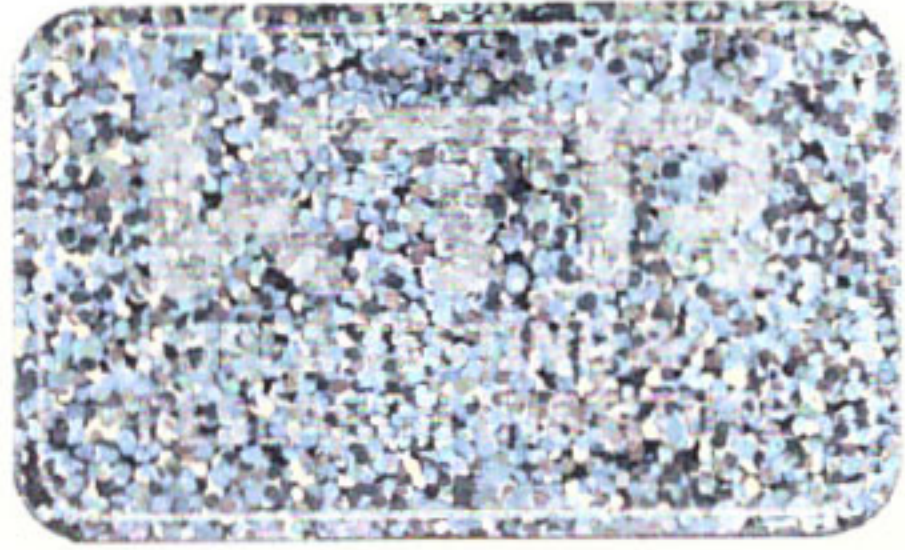
전자문서본은 시험결과에 대한 참고용입니다.

전자문서본(Electronic Copy)

Starco Hardware
Stonia Solid Surface

Certification Moon Terran





TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-41-589-0010

FAX 82-41-589-0012

Report No : TAK-2018-056862

Receipt Date : 2018.04.04.

Representative : Hong Seonggil, Hong Jeonggu

Test Completion Date : 2018.04.24.

Company name : SNOGEN CO., LTD.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do, 31223, Rep. of KOREA

Sample name : Acrylic Solid Surface - Moon Terran

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Specific Gravity((23/23) °C)	-	-	1.71	ASTM D792-13(Method A)
Rockwell Hardness(HRM)	-	-	84	ASTM D785-08(2015)(Procedure A)
Barcol Hardness	-	-	61	ASTM D2583-13a
Tensile Strength	MPa	-	42.2	ASTM D638-14(*)
Tensile Modulus of Elasticity	GPa	-	8.86	ASTM D638-14(*)
Flexural Strength	MPa	-	64.9	ASTM D790-17(**)
Flexural Modulus of Elasticity	GPa	-	9.27	ASTM D790-17(**)
Izod Impact Strength	J/m	-	20	ASTM D256-10e1(Method A)
Water Absorption(24 h Immersion)	%	-	0.05	ASTM D570-98(2010)e1
Heat Resistance(Crack)	-	-	No Defects	JIS K 6902 : 2007(Method B)
Heat Water Resistance(Crack)	-	-	No Defects	JIS K 6902 : 2007(Method B)
Deflection Temperature Under Load(1.82 MPa)	°C	-	104	ASTM D648-16(Method B)
Accelerate Weathering Test(***) Color Difference	-	-	No Defects	KS M ISO 4892-2 : 2012, Method by Client
DEHP	%	-	Not detected	US EPA 8061A : 1996 (GC/MS)
DBP	%	-	Not detected	US EPA 8061A : 1996 (GC/MS)
BBP	%	-	Not detected	US EPA 8061A : 1996 (GC/MS)

- Next Page -

Jung yu seok

Prepared by Jung yu seok

E-mail:jys1064@ktr.or.kr

You Seok

Reviewed by You Seok

Tel : 1577-0091(ARS ①→④)

2018.04.24

Korea Testing & Research Institute

President *Byun, Jong-Rip*



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Page : 1 of 2



TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-41-589-0010

FAX 82-41-589-0012

Report No : TAK-2018-056862

Receipt Date : 2018.04.04.

Representative : Hong Seonggil, Hong Jeonggu

Test Completion Date : 2018.04.24.

Company name : SNOGEN CO., LTD.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do, 31223, Rep. of KOREA

Sample name : Acrylic Solid Surface - Moon Terran

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

* Speed of Testing: 5 mm/min(Modulus: 1 mm/min), Specimen Type: Type I

** Speed of Testing: 5.1 mm/min, Support Span: 190 mm

*** 촉진내후성시험 조건

Light Source : 12000W Xenon Arc, Irradiance : 0.51 W/m²

B.P.T. : 63 °C ± 3 °C, Humidity : 50 % ± 5 % RH,

Inner/Outer Filter : Borosilicate/Borosilicate,

Spray Cycle : 18 min / 102 min (120 min), Exposure Time : 4 h

- Method Detection Limit -

Bis(2-ethylhexyl) phthalate (DEHP) : 0.005 %

Dibutyl phthalate (DBP) : 0.005 %

Butyl benzyl phthalate (BBP) : 0.005 %

- Usage of Report : QUALITY CONTROL

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website (www.ktr.or.kr) or QR code to verify the authenticity of the certificate.
 2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
 3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

Jung yu seok

Prepared by Jung yu seok

E-mail: jys1064@ktr.or.kr

You Seok

Reviewed by You Seok

Tel : 1577-0091(ARS ①→④)

2018.04.24

Korea Testing & Research Institute

President *Byun, Jong-Rip*



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Page : 2 of 2

Starco Hardware
Stonia Solid Surface

Anti-Bacterial Test Report





TEST REPORT

1. NO : CT22-092467E

2. Client

○ Name : Snogen CO., LTD.

○ Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongsam-gu, Cheonan-si, Chungcheongnam-do, Republic of Korea

3. Date of Test : 2022.09.30 ~ 2022.11.02

4. Use of Report : Quality Control

5. Test Sample : Acrylic Solid Surface

6. Test Method

(1) KS M ISO 22196:2011 Mod.

7. Test Results

1) Acrylic Solid Surface

Test Item(s)	Unit	Test Method	Test Results	Remark	Loc.
Anti-bacterial Test(<i>Escherichia coli</i>)-antibacterial activity	Log value	(1)	5.7	(35.0 ± 1.0) °C over 90 % R.H.	A
Anti-bacterial Test(<i>Staphylococcus aureus</i>)-antibacterial activity	Log value	(1)	5.7		
Anti-bacterial Test(<i>Staphylococcus aureus</i> subsp. <i>aureus</i>)-antibacterial activity	Log value	(1)	5.9		

* Test bacteria : *Escherichia coli* ATCC 8739, *Staphylococcus aureus* ATCC 6538P, *Staphylococcus aureus* subsp. *aureus* ATCC 33591

* Sample : (50 ± 2) mm (within 10 mm thickness), Blank : Stomacher film : (50 ± 2) mm (within 10 mm thickness)

* Covering film : 16 cm²

* reaction time : 24 hours

* Location

A : unit108, Industry-Academic Cooperation Foundation, Hankyong National University, 327, Jungang-ro, Anseong-si, Gyeonggi-do, 17579, Korea

—— End of Report ——

Affirmation	Tested By Name : SONG JAE EUN	<i>Jaeeun</i>	Technical Manager Name : BIN SUNG IL	<i>B. Sungil</i>
This report is not accredited by KOLAS and KS Q ISO/IEC 17025. Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products. The results of using only a portion of this report cannot be guaranteed. The authenticity of this test report can be checked on KCL website(www.kcl.re.kr).				

2022.11.02

Korea Conformity Laboratories President Jo, Yung Tae

Jo Yung Tae

Result Inquiry : unit108, Industry-Academic Cooperation Foundation, Hankyong National University, 327, Jungang-ro, Anseong-si, Gyeonggi-do, 17579, Korea (82-31-389-9197)

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 전자문서지갑(wallet.utradehub.or.kr/kcl)에서 확인할 수 있습니다.



09.1

Starco Hardware
Stonia Solid Surface

Anti Micro- Biological Test Report





Date : 08/11/2023

التاريخ :

Ref. No. : ELSRC/598/384


مرجع رقم :

Asia Star Est.
For Construction Materials

Subject: Request for Sample Analysis

Reference to your letter dated 10/10/2023 requesting analysis for one Micro Biological for Solid Surface Sample, we are pleased to attach the results here with. We trust that these results will meet with your satisfaction, and look forward for more cooperation between us.

Yours sincerely,


Dr. Afaf Al-Nasser
Division Director of Operations
Environment and Life Sciences Research Center



Encl: Analysis Report

ENVIRONMENT & LIFE SCIENCE
RESEARCH CENTER
Biotechnology Program

Attn: Asia Star Est. for construction materials

MICROBIOLOGICAL EXAMINATION REPORT

Client: Asia Star Est. for construction materials
Sample: STONIA Acrylic Solid Surface
Receipt conditions : Satisfactory
Sample ID : ELSRC384_16102023_01
Number of Samples 1 Sample
Received : 15/10/2023
Analyzed : 22/10/2023
Report Date : 31/10/2023

Approval :

Section Head
Mohamed Ali

QC/QA unit Head

Eng. Hamad Al-Mansour

Experimental Conditions:

Test Method:	ISO 22196 - Measurement of antibacterial activity on plastics and other non-porous surfaces		
Sample Size:	50 mm x 50 mm	Inoculum Volume:	0.4 ml
Method of Sterilization:	Ethanol 70% & UV radiation	Contact Time:	24 hours
Cover Film Used:	PE (Stomacher B.) / 0,10 mm	Test Strains:	<i>Staphylococcus aureus</i> ATCC 6538P <i>Escherichia coli</i> ATCC 8739
Cover film size :	40 x 40 mm		

The Results Obtained:

Strain	Contact Time	Specimen	Geometric mean (cfu/cm ²)	Log cfu/cm ²	Log Reduction	Percentage Reduction
<i>E. coli</i> ATCC 8739	t0	Untreated (U _{t0})	1.70E+05	5.23	NA	NA
	t24	Untreated (U _{t24h})	1.89E+05	5.28		
		Treated (A _{t24h})	1.79E+05	5.25	0.02	0%
<i>S. aureus</i> ATCC 6538P	t0	Untreated (U _{t0})	2.50E+05	5.40	NA	NA
	t24	Untreated (U _{t24h})	3.00E+05	5.48		
		Treated (A _{t24h})	2.90E+04	4.46	1.01	90 %

Remarks:

Based on the Results, it can be ascertained that the test item "STONIA Acrylic Solid Surface" tested at 24 hours of contact time, lacks antimicrobial activity against *Escherichia coli* ATCC 8739, while it exhibits a modest antimicrobial activity (Log reduction > 1, 90% Reduction) against *Staphylococcus aureus* ATCC 6538P under the adopted experimental conditions.

Eng. Hamad Al-Mansour

Lab Focal Point

Environmental and Life Sciences Research Center

* The results specified in this report pertain exclusively to the sample(s) submitted for testing.

* Liability of Kuwait Institute for Scientific Research (KISR) and its employees is limited to the accuracy of analyses results for the submitted samples, as received from the client

Starco Hardware
Stonia Solid Surface

Flammability



Flammability of STONIA[®] Solid Surfaces

STONIA[®] Solid Surface Products ASTM E-84 Flammability Ratings

Purpose

While only a small percentage of residential construction is currently regulated, fire codes and/or specifications are very important to the commercial building market. The top rating given to **STONIA[®]** solid surface products is, therefore, most significant.

In light of this ever-increasing emphasis on fire performance, the purpose of this bulletin is to summarize the test method used to measure the flammability of **STONIA[®]**, to report results obtained, and to compare the data with other selected building materials.

Test result

Flammability	All Colors
Flame Spread	<15
Smoke Developed	<15
Class	I

Sample Preparation and Conditioning:

Three (3) panels (1/2" thick measuring 2' X 8') were fitted end-to-end to form a 24" X 24" sample. Sample required no further preparation as it was self-supporting. Sample was conditioned at 73°F (plus minus 5°F) and 50% RH

Test procedure:

Natural gas was used to thoroughly pre-heat tunnel. Once the brick temperature was sensed to be 105°F (plus or minus 5°F) as prescribed by a floor thermocouple, the sample was inserted into the tunnel and the test conducted in accordance with the standard ASTM E-84 procedures. Proper operation of the tunnel was verified by performing a 10 minute test with an inorganic board on the day of the test.

Fire ratings used by regulatory code agencies relate primarily to the performance of materials when used in high-density building areas such as schools, healthcare facilities for the elderly, hospitals, high-rise apartments, motels, hotels, etc. The flame spread is the primary criterion as tabulated below.

Flame Smoke

Spread Range	Developed	Rating
0-25	450	Class I
26-75	450	Class II
76-225	450	Class III

Reference

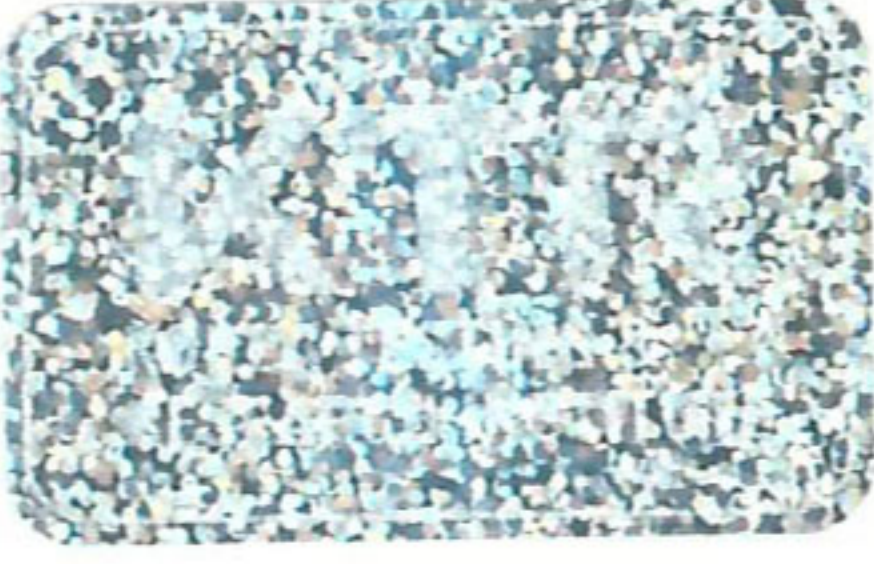
ITEM	FLAME	SMOKE
	SPREAD	DEVELOPED
Wallboard, Gypsum	15	0
Wood Particle Board	155	200
Fiberglass Reinforced Panels	70	500+
Laminates, Plastic	70	35
Wall Covering, Interior	25	15
Hardboard	150	400

STONIA[®]
Solid Surfaces

Starco Hardware
Stonia Solid Surface

Heavy Metal Analysis





TEST REPORT

136, Jiksan-ro, Jiksan-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do, TEL 82-41-589-0010 FAX 82-41-589-0012
31035 Rep. of KOREA

Report No : TAN-001849
Representative : Hong Seonggil, Hong Jeonggu
Company name: SNOGEN CO., LTD.

Receipt Date : 2017.03.13.
Test Completion Date : 2017.03.27.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do,
31223, Rep. of KOREA

Sample name : Acrylic Solid Surface - Moon Terran

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Pb	mg/kg	-	Not Detected	IEC 62321-5 Ed. 1.0 : 2013 (AAS)
Cd	mg/kg	-	Not Detected	IEC 62321-5 Ed. 1.0 : 2013 (AAS)
Hg	mg/kg	-	Not Detected	IEC 62321-4 Ed. 1.0 : 2013 (AAS)
Cr(VI)	mg/kg	-	Not Detected	IEC 62321 Ed. 1.0 : 2008 (UV/Vis)
Total-PBBs	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Mono-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Di-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Tri-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Tetra-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Penta-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Hexa-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)

- Next Page -

Jang Moonseok

Tested by Jang Moonseok
E-mail: jmoonseok1213@ktr.or.kr

Kim Sun-il

Technical Manager: Kim Sun-il
Tel: 1577-0091(ARS ①→④)

2017.03.27.

Korea Testing & Research Institute

President

Byun, Jong-Rip



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TEST REPORT

136, Jiksan-ro, Jiksan-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do, TEL 82-41-589-0010 FAX 82-41-589-0012
31035 Rep. of KOREA

Report No : TAN-001849
Representative : Hong Seonggil, Hong Jeonggu
Company name: SNOGEN CO., LTD.
Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do,
31223, Rep. of KOREA

Receipt Date : 2017.03.13.
Test Completion Date : 2017.03.27.

Sample name : Acrylic Solid Surface – Moon Terran

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Hepta-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Octa-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Nona-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Deca-BB	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Total-PBDEs	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Mono-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Di-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Tri-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Tetra-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Penta-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Hexa-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)

- Next Page -

Jang Moonseok

Tested by Jang Moonseok
E-mail: jmoonseok1213@ktr.or.kr

Kim Sun-il

Technical Manager: Kim Sun-il
Tel: 1577-0091(ARS ①→④)

2017.03.27.

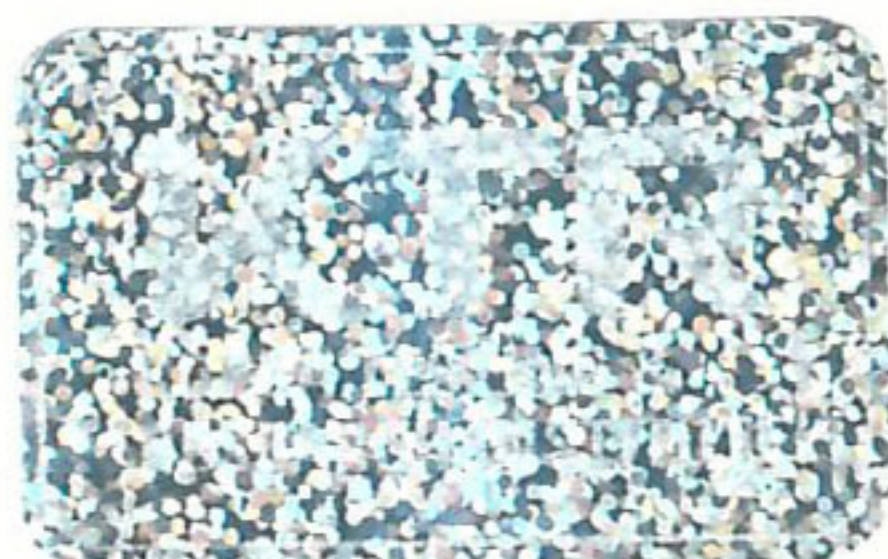
Korea Testing & Research Institute

President

Byun, Jong-Rip



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TEST REPORT

136, Jiksan-ro, Jiksan-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do, TEL 82-41-589-0010 FAX 82-41-589-0012
31035 Rep. of KOREA

Report No : TAN-001849

Receipt Date : 2017.03.13.

Representative : Hong Seonggil, Hong Jeonggu

Test Completion Date : 2017.03.27.

Company name: SNOGEN CO., LTD.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do,
31223, Rep. of KOREA

Sample name : Acrylic Solid Surface – Moon Terran

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Hepta-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Octa-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Nona-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)
Deca-BDE	mg/kg	-	Not Detected	IEC 62321-6 Ed. 1.0 : 2015 (GC/MS)

- Usage of Report: QUALITY CONTROL

NOTE : 1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You can check website (www.ktr.or.kr) or QR code to verify the authenticity of the certificate.
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3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

Jang Moonseok

Tested by Jang Moonseok
E-mail: jmoonseok1213@ktr.or.kr

Kim Sun-il

Technical Manager: Kim Sun-il
Tel: 1577-0091(ARS ①→④)

2017.03.27.

Korea Testing & Research Institute

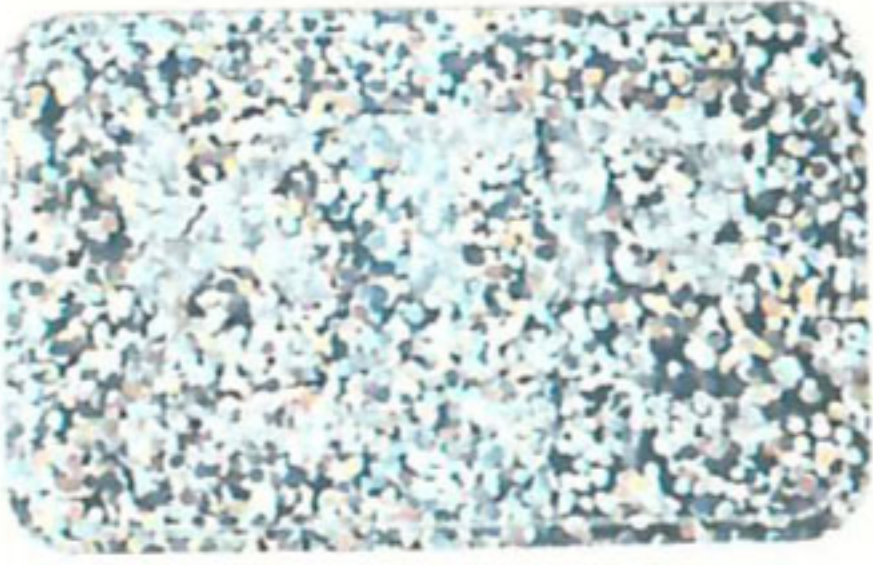
President

Byun, Jong-Rip



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Page: 3 of 3



TEST REPORT

136, Jiksan-ro, Jiksan-eup, Seobuk-gu, Cheonan-si,
Chungcheongnam-do, 31035 Rep. of KOREA

TEL 82-41-589-0010 FAX 82-41-589-0012

Report No : TAN-001849

Receipt Date : 2017.03.13.

Representative : Hong Seonggil, Hong Jeonggu

Test Completion Date : 2017.03.27.

Company name: SNOGEN CO., LTD.

Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu,
Cheonan-si, Chungcheongnam-do, 31223, Rep. of KOREA

Sample name : Acrylic Solid Surface - Moon Terran

Sample Photo



Starco Hardware
Stonia Solid Surface

Stain Test Report



TEST REPORT

1. NO : CT23-079867E

2. Client

○ Name : Snogen CO., LTD.

○ Address : 4162, Sejong-ro, Gwangdeok-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do, Republic of Korea

3. Date of Test : 2023.09.01 ~ 2023.09.19

4. Use of Report :

5. Test Sample : Acrylic Soild Suface (A-106 Ultra White)

6. Test Method


(1) SPS-F KSSC 001-7159:2019

7. Test Results

1) Acrylic Soild Suface (A-106 Ultra White)

Test Item(s)	Unit	Test Method	Test Results	Remark
Fouling resistant : coffee	-	(1)	No visible change	-
Fouling resistant : white milk	-	(1)	No visible change	-
Fouling resistant : acetic acid	-	(1)	No visible change	-
Fouling resistant : 10 % ammonia water	-	(1)	No visible change	-
Fouling resistant : thick soy	-	(1)	No visible change	-
Fouling resistant : kimchi liquid	-	(1)	No visible change	-
Fouling resistant : Coke	-	(1)	No visible change	-
Fouling resistant : tomato ketchup	-	(1)	No visible change	-
Fouling resistant : mustard	-	(1)	No visible change	-

----- End of Report -----

Affirmation	Tested By Name : Park Jang Won		Technical Manager Name : Park Dong Hyup	
<p>1. Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified.</p> <p>2. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products.</p> <p>3. The results of using only a portion of this report cannot be guaranteed.</p> <p>4. The authenticity of this test report can be checked on KCL website(www.kcl.re.kr)</p>				

2023.09.19

Korea Conformity Laboratories President Jo, Yung Tae



Result Inquiry : 628, Sorae-ro, Namdong-gu, Incheon, 21594, Korea (82-32-460-5161)

Page 1 of 1

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13.1

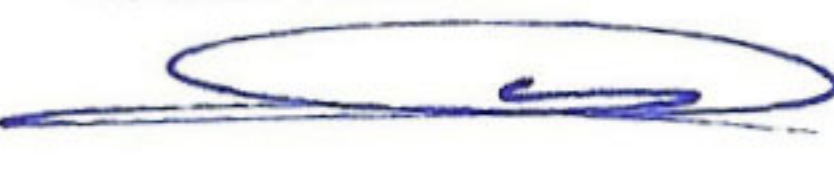
Starco Hardware
Stonia Solid Surface


KISR Test Report




DATE:	21- 12- 2022	JOB ID:	ORA-MTL-98A /2022	REPORT No.:	ORA 98A/2022
CENTRE:	Energy and Building Research Centre / Construction and Building Material			SAMPLE RECEIVED DATE:	19 - 07 - 2022
LABORATORY:	Material Testing Laboratory, CBM/KISR	LOCATION ID:	Building No.44; Room No. 1719	SAMPLE TYPE :	Solid Surface Stonia Material
CLIENT / PROJECT SAMPLE ID:	Asia Star for Construction Materials	START DATE OF ANALYSIS:	20 - 12 - 2022	CLIENT NAME / PROJECT CODE:	Asia Star for Construction Materials / Solid Surface Stonia Material
LAB SAMPLE ID:	98A /2022- Others	END DATE OF ANALYSIS:	20 - 12 - 2022		

SI. No.	PARAMETERS / TESTS	Chemical Formula	SAMPLE CONDITION	UNITS	AVERAGE RESULTS	REFERENCE TEST METHOD	REMARKS / LIMITS
1.	Trace Metal Analysis using handheld X-ray Fluorescence Spectrometry (XRF)	Cu	Good	ppm	25 ± 4	handheld X-ray Fluorescence	Instrument elemental analysis detection range: Magnesium (Mg) - Uranium (U)
		Ca	Good	ppm	1092 ± 6		

PREPARED BY:
NAME: Eng. Amer Al-Arbeed
DESIGNATION: Research Associate
SIGNATURE: 
DATE: 21 /12/2022

VERIFIED BY:
NAME: Dr. Mohammed Abdulsalam
DESIGNATION: Associate Research Scientist
SIGNATURE: 
DATE: 21/12/2022

AUTHORIZED BY:
NAME: Eng. Suad Al-Bahar
DESIGNATION: PM / CBM / EBRC
SIGNATURE: 
DATE: 21/12/2022

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DATE:	01-12-2022	JOB ID:	ORA-MTL-97/2022	REPORT No.:	ORA 97/2022
CENTRE:	Energy and Building Research Centre / Construction and Building Material			SAMPLE RECEIVED DATE:	19-07-2022
LABORATORY:	Material Testing Laboratory, CBM/KISR	LOCATION ID:	Building No.44; Room No. 1719	SAMPLE TYPE :	Solid Surface Stonia Material
CLIENT / PROJECT SAMPLE ID:	Asia Star for Construction Materials	START DATE OF ANALYSIS:	01-08-2022	CLIENT NAME / PROJECT CODE:	Asia Star for Construction Materials / Solid Surface Stonia Material
LAB SAMPLE ID:	97/2022- Others	END DATE OF ANALYSIS:	29-09-2022		

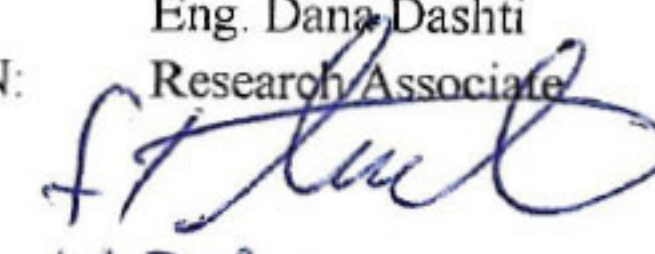
Sl. No.	PARAMETERS / TESTS	SAMPLE CONDITION	UNITS	AVERAGE RESULTS				REFERENCE TEST METHOD	REMARKS / LIMITS
				ΔL^*	Δa^*	Δb^*	ΔE^*		
1	Effect of heat in oven on colour	Good	—	-1.97	3.41	7.12	8.14	KSS 37	Samples were heated in oven at 100 °C for 100 hours
2	Effect of hot water immersion on colour	Good	-	0.10	0.34	1.68	1.71	Lab test method	Samples were immersed in water at 60 °C for 24 hours

Note : When specimens were visually inspected, there was no appreciable change in colour.

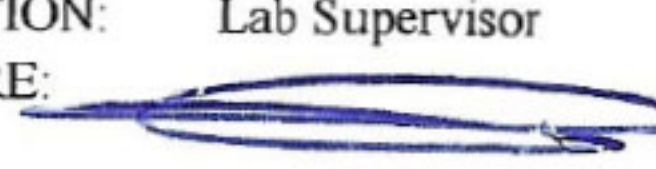
According to CIE-Lab system:

- ΔL^* value states the position change on the white/black axis.
- Δa^* value states the position change on the red/green axis.
- Δb^* value states the position change on the blue/yellow axis.


PREPARED BY:

NAME: Eng. Dana Dashti
DESIGNATION: Research Associate
SIGNATURE: 
DATE: 1/12/2022

CHECKED AND VERIFIED BY:

NAME: Eng. Amer Al-Arbeed
DESIGNATION: Lab Supervisor
SIGNATURE: 
DATE: 1/12/2022

AUTHORIZED BY:

NAME: Eng. Suad Al Bahar
DESIGNATION: PM/ CBM/ EBRC
SIGNATURE: 
DATE: 1/12/2022



Liability of Kuwait Institute for Scientific Research (KISR) and its employees is limited to the accuracy of analyses results of the submitted samples as received from the client. The results contained herein relate only to items tested. This report shall not be reproduced, except in full, without the expressed written consent of the laboratory.

DATE:	01- 12- 2022	JOB ID:	ORA-MTL-98 /2022	REPORT No.:	ORA 98/2022
CENTRE:	Energy and Building Research Centre / Construction and Building Material			SAMPLE RECEIVED DATE:	19 - 07 - 2022
LABORATORY:	Material Testing Laboratory, CBM/KISR	LOCATION ID:	Building No.44; Room No. 1719	SAMPLE TYPE :	Solid Surface Stonia Material
CLIENT / PROJECT SAMPLE ID:	Asia Star for Construction Materials	START DATE OF ANALYSIS:	01 - 08 - 2022	CLIENT NAME / PROJECT CODE:	Asia Star for Construction Materials / Solid Surface Stonia Material
LAB SAMPLE ID:	98 /2022- Others	END DATE OF ANALYSIS:	03 - 08 - 2022		

Sl. No.	PARAMETERS / TESTS	SAMPLE CONDITION	UNITS	AVERAGE RESULTS	REFERENCE TEST METHOD	REMARKS / LIMITS
1	Specific Gravity	Good	-	1.76	ASTM D792	Water displacement method
2	Tensile Strength	Good	MPa	36.7	ASTM D 638	-
3	Elongation	Good	%	2.5	ASTM D 638	-
4	Flexural Strength	Good	MPa	68.52	ASTM D790	-
5	Resistance to Burning	Good	-	Not catching fire, no debris separation	BS 476 part 12	Specimen exposed to direct flame for 60 seconds
6	Heat Deflection Test	Good	°C	89.6	ASTM D648 Method B	Stress 455 KPa, Set deflection 0.25mm
7	Barcol Hardness	Good	-	80	ASTM D2583	Type 934-1
8	Impact Strength	Good	KJ/m ²	37.9	ISO 179	Charpy Impact
9	Water Absorption	Good	%	0.013	ASTM D570	Sample immersed for 24 hours

PREPARED BY:

NAME: Eng. Dana Dashti
DESIGNATION: Research Associate
SIGNATURE:

DATE: 21/12/2022

CHECKED AND VERIFIED BY:

NAME: Eng. Amer Al-Arbeed
DESIGNATION: Lab Supervisor
SIGNATURE:

DATE: 21/12/2022

AUTHORIZED BY:

NAME: Eng. Staid Al-Bahar
DESIGNATION: PM / CBM/EBRC
SIGNATURE:

DATE: 21/12/2022

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Starco Hardware
Stonia Solid Surface

NSF Certificate



NSF International

789 N. Dixboro Road, Ann Arbor, MI 48105 USA

RECOGNIZES

Snogen Corp.

Republic of Korea

AS COMPLYING WITH NSF/ANSI 51 AND ALL APPLICABLE REQUIREMENTS.
PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE
AUTHORIZED TO BEAR THE NSF MARK.



Certification Program
Accredited by the
American National
Standards Institute



Certification Program
Accredited by the
Standards Council
of Canada

This certificate is the property of NSF International and must be returned upon request. This certificate remains valid as long as this client has products in Listing for the referenced standards. For the most current and complete Listing information, please access NSF's website (www.nsf.org).

A handwritten signature in black ink, appearing to read "S Krol", is written over a horizontal line.

June 23, 2016

Certificate# C0254849 - 01

Sarah Krol

Global Managing Director, Food Safety Product Certification



The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Thursday, September 15, 2022** at 12:15 a.m. Eastern Time. Please contact NSF to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:

<http://info.nsf.org/Certified/food/Listings.asp?Standard=051&Company=C0254849&>

NSF/ANSI 51 Food Equipment Materials

Snogen Corp.

4162, Sejongno, Gwangduck-myun
Dongnam-gu, Cheonan-si, Chungnam

330-922

Korea, Republic of

82 41 553 8001

Visit this company's website

(<http://www.snogen.com>)

Facility : Chungcheongnam-do, South Korea

Trade Designation	Color	Type of Food	Maximum Temperature of Use in °F
Solid Surfacing for Food Zone[1]			
STONIA A-100	Super White	All food contact types	200°
STONIA A-102	General White	All food contact types	200°
STONIA A-103	Ivory	All food contact types	200°
STONIA A-105	Black	All food contact types	200°
STONIA A-122	Light Grey	All food contact types	200°
STONIA A101	Vivid White	All food contact types	200°
STONIA A104	Dark Grey	All food contact types	200°

<https://info.nsf.org/Certified/Food/Listings.asp?Company=C0254849&Standard=051>

STONIA A106	Ultra White	All food contact types	200°
STONIA A107	Banana Yellow	All food contact types	200°
STONIA A108	Rose Red	All food contact types	200°
STONIA A109	Espresso	All food contact types	200°
STONIA A110	Pecan	All food contact types	200°
STONIA A112	Lotus White	All food contact types	200°
STONIA A113	Navel Orange	All food contact types	200°
STONIA A115	Apricot	All food contact types	200°
STONIA A116	Green Tea	All food contact types	200°
STONIA A117	Pink	All food contact types	200°
STONIA A118	Grape	All food contact types	200°
STONIA A120	Cream	All food contact types	200°
STONIA A121	Valencia	All food contact types	200°
STONIA A125	Olive Green	All food contact types	200°
STONIA A127	Steel Grey	All food contact types	200°
STONIA A130	Yogurt Cream	All food contact types	200°
STONIA A134	Black Coffee	All food contact types	200°
STONIA A135	Metal Grey	All food contact types	200°
STONIA A136	Aqua	All food contact types	200°
STONIA A138	Violet	All food contact types	200°
STONIA A139	Pure White(S/W)	All food contact types	200°
STONIA A140	Jade Green	All food contact types	200°
STONIA A143	Cotton White	All food contact types	200°
STONIA A900	Luna white	All food contact types	200°
STONIA A901	Black Hole	All food contact types	200°
STONIA A902	Essence White	All food contact types	200°
STONIA A903	White House	All food contact types	200°
STONIA A904	Zebra White	All food contact types	200°
STONIA A905	Off White	All food contact types	200°
STONIA A906	Radius	All food contact types	200°
STONIA A907	Snow Field	All food contact types	200°
STONIA A908	Extreme Black	All food contact types	200°
STONIA H001	Home Point	All food contact types	200°
STONIA H006	Home Charcoal	All food contact types	200°
STONIA H007	Home Queen	All food contact types	200°
STONIA H008	Home Port	All food contact types	200°
STONIA H015	Home Himalaya	All food contact types	200°
STONIA H016	Home Odin	All food contact types	200°
STONIA H019	Home Gemstone	All food contact types	200°
STONIA H970	Gunmetal	All food contact types	200°
STONIA H971	Pearl Night	All food contact types	200°
STONIA H973	Cherry	All food contact types	200°
STONIA H974	Rice Cake	All food contact types	200°

STONIA H975	Ambonite	All food contact types	200°
STONIA H976	Buckthorn	All food contact types	200°
STONIA H977	Home Uluru	All food contact types	200°
STONIA H978	Rabat	All food contact types	200°
STONIA H979	Home Tuscan	All food contact types	200°
STONIA L-101	Sun White	All food contact types	200°
STONIA L-102	Sun Savana	All food contact types	200°
STONIA L103	Sun Blackpoint	All food contact types	200°
STONIA L104	Sun Gold	All food contact types	200°
STONIA L106	Sun Cake	All food contact types	200°
STONIA L107	Sun Clay	All food contact types	200°
STONIA L108	Sun Light	All food contact types	200°
STONIA L109	Sun Edge	All food contact types	200°
STONIA L110	Sun Coffee	All food contact types	200°
STONIA L111	Sun Rose	All food contact types	200°
STONIA L112	Sun Fresco	All food contact types	200°
STONIA L113	Sun Magic	All food contact types	200°
STONIA L114	Sun Rise	All food contact types	200°
STONIA L115	Sun Tour	All food contact types	200°
STONIA L116	Sun Mark	All food contact types	200°
STONIA L117	Sun Tundra	All food contact types	200°
STONIA L118	Sun Mocha	All food contact types	200°
STONIA L119	Sun Onyx	All food contact types	200°
STONIA L120	Sun Mosk	All food contact types	200°
STONIA L121	Sun Crema	All food contact types	200°
STONIA L122	Sun Saturn	All food contact types	200°
STONIA L123	Sun Mosaic	All food contact types	200°
STONIA L125	Sun Arctic	All food contact types	200°
STONIA L126	Sun Peanut	All food contact types	200°
STONIA L127	Sun Birch	All food contact types	200°
STONIA L130	Sun Arabica	All food contact types	200°
STONIA L132	Sun Nuts	All food contact types	200°
STONIA L134	Sun Mine	All food contact types	200°
STONIA L135	Sun Trip	All food contact types	200°
STONIA L136	Sun Cement	All food contact types	200°
STONIA L137	Sun Crunch	All food contact types	200°
STONIA L139	Sun Scape	All food contact types	200°
STONIA L141	Sun Marron	All food contact types	200°
STONIA L142	Sun Himalaya	All food contact types	200°
STONIA L143	Sun Seastar	All food contact types	200°
STONIA L147	Sun Gemstone	All food contact types	200°
STONIA L148	Sun Iron	All food contact types	200°
STONIA L149	Sun Pontus	All food contact types	200°

STONIA L150	Sun Tigris	All food contact types	200°
STONIA L151	Sun Volga	All food contact types	200°
STONIA L153	Sun Nebula	All food contact types	200°
STONIA L156	Sun Wales	All food contact types	200°
STONIA L159	Sun Rain	All food contact types	200°
STONIA L160	Sun Glacier	All food contact types	200°
STONIA L162	Sun Almond	All food contact types	200°
STONIA L163	Sun Rice	All food contact types	200°
STONIA L950	Chamomile	All food contact types	200°
STONIA L951	Gravel Path	All food contact types	200°
STONIA L953	Whitewash	All food contact types	200°
STONIA L954	Chestnut	All food contact types	200°
STONIA L955	Fog Land	All food contact types	200°
STONIA L956	Arctic Sparkle	All food contact types	200°
STONIA L957	Daylight	All food contact types	200°
STONIA L958	Iowa Field	All food contact types	200°
STONIA L959	Sun Particle	All food contact types	200°
STONIA L960	Greyscale	All food contact types	200°
STONIA L961	Idol	All food contact types	200°
STONIA L962	Graystone	All food contact types	200°
STONIA L963	Mace	All food contact types	200°
STONIA L964	Orion	All food contact types	200°
STONIA L965	Neptune	All food contact types	200°
STONIA L966	Honey Oat	All food contact types	200°
STONIA L967	Robusta	All food contact types	200°
STONIA L968	Mars	All food contact types	200°
STONIA L969	Ayers Rock	All food contact types	200°
STONIA M-102	Moon Snow	All food contact types	200°
STONIA M-104	Moon Stone	All food contact types	200°
STONIA M101	Moon Cubic	All food contact types	200°
STONIA M103	Moon Grey	All food contact types	200°
STONIA M105	Moon River	All food contact types	200°
STONIA M106	Moon Glow	All food contact types	200°
STONIA M107	Moon Beige	All food contact types	200°
STONIA M109	Moon Wood	All food contact types	200°
STONIA M110	Moon Galaxy	All food contact types	200°
STONIA M111	Moon Spice	All food contact types	200°
STONIA M112	Moon Silver	All food contact types	200°
STONIA M117	Moon Alps	All food contact types	200°
STONIA M118	Moon Soil	All food contact types	200°
STONIA M119	Moon Corona	All food contact types	200°
STONIA M120	Moon Carabid	All food contact types	200°
STONIA M122	Moon Grain	All food contact types	200°

STONIA M128	Moon Terran	All food contact types	200°
STONIA M129	Moon Snowman	All food contact types	200°
STONIA M130	Moon Winter	All food contact types	200°
STONIA M132	Moon Mortar	All food contact types	200°
STONIA M133	Moon Folia	All food contact types	200°
STONIA M134	Moon Candy	All food contact types	200°
STONIA M135	Moon Oat	All food contact types	200°
STONIA M136	Moon Iris	All food contact types	200°
STONIA M139	Moon Sugal	All food contact types	200°
STONIA M140	Moon Mistletoe	All food contact types	200°
STONIA M141	Moon Icicle	All food contact types	200°
STONIA M142	Moon Porridge	All food contact types	200°
STONIA M143	Moon Crystal	All food contact types	200°
STONIA M145	Moon Roast	All food contact types	200°
STONIA M146	Moon Clay	All food contact types	200°
STONIA M147	Moon Mud	All food contact types	200°
STONIA M930	Lily	All food contact types	200°
STONIA M931	Pepper chip	All food contact types	200°
STONIA M932	Icons	All food contact types	200°
STONIA M933	Buckwheat	All food contact types	200°
STONIA M934	Mohair	All food contact types	200°
STONIA M936	Klimt	All food contact types	200°
STONIA M937	Leopard	All food contact types	200°
STONIA M938	Sunset Field	All food contact types	200°
STONIA M939	Serpentine	All food contact types	200°
STONIA M940	Rice Gruel	All food contact types	200°
STONIA M941	Extreme Night	All food contact types	200°
STONIA P101	Pearl White	All food contact types	200°
STONIA P102	Pearl Black	All food contact types	200°
STONIA P104	Pearl Grey	All food contact types	200°
STONIA P105	Pearl Dove	All food contact types	200°
STONIA P108	Pearl Stellar	All food contact types	200°
STONIA S-101	Sand Grey	All food contact types	200°
STONIA S102	Sand Night	All food contact types	200°
STONIA S104	Sand Storm	All food contact types	200°
STONIA S105	Sand Acre	All food contact types	200°
STONIA S106	Sand Cookie	All food contact types	200°
STONIA S108	Sand Ramentum	All food contact types	200°
STONIA S109	Sand Sky	All food contact types	200°
STONIA S109	Sand Sky	All food contact types	200°
STONIA S110	Sand Rocky	All food contact types	200°
STONIA S111	Sand Resort	All food contact types	200°
STONIA S113	Sand Desert	All food contact types	200°

STONIA S114	Sand Heron	All food contact types	200°
STONIA S115	Sand Hill	All food contact types	200°
STONIA S116	Sand Beach	All food contact types	200°
STONIA S117	Sand Meal	All food contact types	200°
STONIA S119	Sand Salt	All food contact types	200°
STONIA S120	Sand Pepper	All food contact types	200°
STONIA S121	Sand Lily	All food contact types	200°
STONIA S122	Sand Milk	All food contact types	200°
STONIA S126	Sand Master	All food contact types	200°
STONIA S129	Sand Crumble	All food contact types	200°
STONIA S130	Sand Cream	All food contact types	200°
STONIA S131	Sand Haze	All food contact types	200°
STONIA S133	Sand Gold	All food contact types	200°
STONIA S134	Sand Aurora	All food contact types	200°
STONIA S910	Sand Charade	All food contact types	200°
STONIA S912	Ivory paper	All food contact types	200°
STONIA S913	Salt Lake	All food contact types	200°
STONIA S914	Sand Night	All food contact types	200°
STONIA S915	Solid sands	All food contact types	200°
STONIA S916	Shoal	All food contact types	200°
STONIA S917	Grey light	All food contact types	200°
STONIA S918	Pearl White	All food contact types	200°
STONIA S919	Clove	All food contact types	200°
STONIA S920	Pearl Metal	All food contact types	200°
STONIA S921	Snowball	All food contact types	200°
STONIA S922	Cosmic Dust	All food contact types	200°
STONIA S923	Scallop	All food contact types	200°
STONIA S924	Black Sand	All food contact types	200°
STONIA S925	Exterem Medea	All food contact types	200°
STONIA T001	Titan White	All food contact types	200°
STONIA T002	Titan Sole	All food contact types	200°
STONIA T003	Titan Way	All food contact types	200°
STONIA T004	Titan Stone	All food contact types	200°
STONIA T005	Titan Gold	All food contact types	200°
STONIA T006	Titan Fire	All food contact types	200°
STONIA T007	Titan Sonoma	All food contact types	200°
STONIA T009	Titan Solar	All food contact types	200°
STONIA T010	Titan Silk	All food contact types	200°
STONIA T011	Titan Zenith	All food contact types	200°
STONIA T013	Titan Typhoon	All food contact types	200°
STONIA T018	Titan Leto	All food contact types	200°
STONIA T020	Titan Grey	All food contact types	200°
STONIA T021	Titan Asteria	All food contact types	200°

STONIA T023	Titan Grise	All food contact types	200°
STONIA T025	Titan Daisy	All food contact types	200°
STONIA T026	Titan Mirror	All food contact types	200°
STONIA T028	Titan Moon	All food contact types	200°
STONIA T032	Titan Meteor	All food contact types	200°
STONIA T033	Titan Odin	All food contact types	200°
STONIA T034	Titan Tahiti	All food contact types	200°
STONIA T035	Titan Charlotte	All food contact types	200°
STONIA T980	Titan cookie	All food contact types	200°
STONIA T981	Titan Hole	All food contact types	200°
STONIA T982	Titan Gift	All food contact types	200°
STONIA T983	Titan Stannum	All food contact types	200°
STONIA T984	Titan Carbon	All food contact types	200°
STONIA T985	Titan Pinnacle	All food contact types	200°
STONIA T986	Titan Coral	All food contact types	200°
STONIA T987	Titan Cluster	All food contact types	200°
STONIA T988	Titan Castle	All food contact types	200°
STONIA T989	Titan Cloud	All food contact types	200°
STONIA V008	Opal White	All food contact types	200°
STONIA V009	Sylvia	All food contact types	200°
STONIA V016	Cirrus	All food contact types	200°
STONIA V018	Gobi	All food contact types	200°
STONIA V019	Garni	All food contact types	200°
STONIA V022	Lime	All food contact types	200°
STONIA V032	Pallas	All food contact types	200°
STONIA V890	Martian	All food contact types	200°
STONIA V891	Mottle	All food contact types	200°
STONIA V892	River Bank	All food contact types	200°
STONIA V893	Twist Brown	All food contact types	200°
STONIA V894	Ground	All food contact types	200°
STONIA V898	Wild Concrete	All food contact types	200°
STONIA V990	Lavish Rock	All food contact types	200°
STONIA V991	Terrace	All food contact types	200°
STONIA V992	Sierra	All food contact types	200°
STONIA V993	Clare	All food contact types	200°
STONIA V995	Killdeer	All food contact types	200°
STONIA V996	Milk Pearl	All food contact types	200°
STONIA V997	Beige Brush	All food contact types	200°
STONIA V998	Wood Creek	All food contact types	200°
STONIA V999	Satinwood	All food contact types	200°
STONIAL952	Rampart	All food contact types	200°
STONIAM935	Truffle	All food contact types	200°
STONIAS911	dazzling Cream	All food contact types	200°

[1] Not intended for direct food contact when used in storage applications.

Number of matching Manufacturers is 1

Number of matching Products is 265

Processing time was 0 seconds

Starco Hardware
Stonia Solid Surface

Material Safety Data Sheet MSDS





STONIA TM Solid Surface

1. Product and company identification

1) Product name : STONIA TM(Solid Surface)

- Advisable use : Construction Materials
- Restriction of product using : N/A

3) Manufacturer/Supplier/Distributor information

- Company : SNOGEN CORPORATION
- Address : 35-1, Haengjung-ri, Kwangduk-myun, Cheonan-si, Chungcheongnam-do, Korea
- Emergency response number : 82-41-553-8001
- Respondent: R&D Team Manager : June Hyung Lee

2. Hazard identification

1) GHS classification of the substance:

2) GHS label elements, including precautionary statements

- Pictogram and symbol:
- Signal word: N/A
- Hazard statements:
- Precautionary statements:
 - Precaution:
 - Treatment:
 - Storage :
 - Disposal :

3) Other hazard information not included in hazard classification

- NFPA : - Health: 0, Fire: 0, Reactive: 0

3. Composition/information on ingredients

Chemical name	Common name synonyms	CAS No.	Content (%)
Polymethyl Methacrylate		9011-14-7	40-45
Aluminum Hydroxide		21645-51-2	55~60
Other Additives			0.5~1.0

4. First aid measures

1) Eye contact :

- Flush eyes Immediately with large amounts of water for a minimum of 15minutes. Medical treatment should be done by qualified doctor.

2) Skin contact :

- This would be a problem, but may cause skin sensitization.
- Simply wash the contaminated skin with running water.
- Medical treatment can be consulted, if necessary.

3) Inhalation :

- Remove to fresh air, if necessary, victim should be taken to well ventilated area. Medical treatment should be followed by a case.

4) Ingestion :

- N/A.

5) Notes for Physician :

- No additional information

5. Fire fighting measures

1) Suitable (and unsuitable) extinguishing media

- suitable extinguishing media: CO₂, alcohol-resistant foam or water spray
- extinguishment by smothering : Not available.
- Large fires
 - Vast amount of digestive downwind form of medicine or spray mist on the water.
 - Depending on the proper use of fire protection.

2) Specific hazards arising from the chemical

- Thermal decomposition products
 - Burning may produce the following combustion product: CO₂, Oxides of carbon, Hydrocarbon
- Fires or explosion
 - Not available.

3) Special protective equipment and precautions for fire-fighters

- Necessary to wear safe protective equipment like fireproof clothing, boots, gloves, breathing equipment.
- Extinguish fire keeping safe distance from fire area.

- Do not inhale the substance itself or the burning artifact.
- For disposal of fire fighting water, dig a ditch and store it in the ditch.
- If not dangerous, move the vessel from fire area.

6. Accidental release measures

1) Personal precautions, protective equipment and emergency procedures

- Avoid contact with skin.
- Leak immediately, prevent using proper protective equipment.
- Wear positive pressure clothing that is specifically recommended by the manufacturer.

2) Environmental precautions and protective procedures

- Underwater : Prevent entry into waterways, sewers, basements or confined areas

3) The methods of purification and removal

○ Small spill

- Absorb or cover with sand or other non-combustible material and remove.
- Transfer to appropriate containers for post-treatment.
- Use clean non-sparking tools to collect absorbed material.
- All equipment used when handling the product must be grounded.

○ Large spill

- Make an embankment for further processing.
- Remove all sources of ignition.
- Keep unauthorized personnel away.
- When spilled over limited quantities, inform central government and local self-government.

7. Handling and storage

1) Precautions for safe handling

- Do not eat, drink or smoke in product area.
- Avoid contact with skin, eyes and cloths.
- Do not breathe gas/fumes/ vapour/spray.

2) Conditions for safe storage

- Store at below 50C avoiding direct sunlight.
- Do not eat, drink or smoke in product area.
- Keep away from food and feedstuffs.

8. Exposure controls/personal protection

1) Occupational Exposure limits

- KOREA TWA : N/A
- ACGIH TWA : N/A
- Biological Exposure Index : N/A

2) Appropriate engineering controls

- Provide blaster resistance equipment at ventilation system if when explosive risk.

- 3) Personal protective equipment
 - Respiratory organ protection
 - Use ventilation to keep the good air at fabrication place
 - Eye protection
 - Wear Safety glasses.
 - Hand protection
 - Wear safety gloves.
 - Body protection
 - Wear Safety Clothes.

9. Physical and chemical properties

- 1) Appearance : Solid Sheet
- 2) Odor : No odor
- 3) Threshold of odor : N/A
- 4) pH(10% Sol'n, at 25°C) : N/A
- 5) Melting point/freezing point : N/A
- 6) Initial boiling point and boiling point : N/A
- 7) Flashpoint : N/A
- 8) Evaporation rate : N/A
- 9) Flammability (Solid.Gas) : N/A
- 10) Upper/lower flammability or explosive Limits : Upper exp. Limit: N/A. Lower exp. Limit: N/A
- 11) Vapor pressure : N/A
- 12) Solubility(ies) : Insoluble
- 13) Vapor density : N/A
- 14) Specific gravity : 1.6~1.8
- 15) n-octanol/water partition coefficient : N/A
- 16) Auto ignition temperature : N/A
- 17) Degradation temperature : N/A
- 18) Viscosity : N/A
- 19) Molecular weight : N/A

10. Stability and reactivity

- 1) Chemical stability
 - Stable in high temperature and pressure
- 2) Possibility of hazardous reactions
 - Not available
- 3) Conditions to avoid
 - Avoid Strong acid, Oxidizing accelerator.
- 4) Hazardous decomposition product
 - Burning may produce the following combustion product: Irritative/Toxic gas, Oxides of carbon,

11. Toxicological information

1) Information on the likely routes of exposure

- Through respiratory inhalation
 - Short-term impact : No information is available
 - The long-term effects : No information is available.
- Ingestion
 - Short-term impact : No information is available.
 - The long-term effects : No information is available.
- Skin contact
 - Short-term impact : No information is available t
 - The long-term effects : No information is available.
- Skin contact
 - Short-term impact : No information is available
 - The long-term effects : No information is available.

2) Delay by short term and long term exposures, acute and chronic effect

- Acute toxicity
 - Oral : N/A
 - Dermal : N/A
 - Inhalation : N/A
- Skin Corrosion/ Irritation: No Irritation
- Serious Eye Damage/ Irritation: N/A
- Respiratory sensitizer: N/A
- Skin Sensitization: Not classified
- Carcinogenicity : Not classified
 - KOREAN OCCUPATION SAFTY AND HEALTH ACTS, : Not classified
 - IARC : Not classified
 - OSHA : Not classified
 - ACGIH : Not classified
 - NPT : Not classified
 - EU CLP : Not classified
- Mutagenicity : Not classified
- Reproductive toxicity : Not classified
- Specific target organ toxicity (repeat exposure): Not classified
- Aspiration hazard: N/A

12. Ecological Information

1) Aquatic Ecotoxicity

- Fish : N/A
- Crustacea : N/A
- Algae : N/A
- 2) Persistence and degradability
 - Persistence : N/A
 - Degradability : N/A
- 3) Bioaccumulative potential : N/A
 - Biodegradation : N/A
 - Bioaccumulation : N/A
- 4) Mobility in soil : N/A

13. Disposal considerations

- 1) Disposal method
 - No special remark, but by reasonable way to take care of waste
- 2) Disposal precaution
 - Consider the require attention in accordance with waste treatment management regulation

14. Transport information

- 1) UN Number : Not classified
- 2) UN Proper shipping name : Not classified
- 3) Transport Hazard class : Not classified
- 4) Packing group : Not classified
- 5) Marine pollutant : Not listed
- 6) Special safety response for transportation or transportation measure
 - Emergency schedule for fire : N/A
 - Emergency schedule for spillage : N/A

15. Regulatory information

- Korea
 - Korea Occupational Safety and Health Regulation : Not listed
 - Toxic Chemical Control Act. : Not listed
 - Dangerous Material Safety Management Regulation : Not listed
 - Waste Control Act : Not listed
- EU Classification
 - Classification: Not listed
 - Risk phrases : Not listed
 - Safety phrases : Not listed
- U.S.A. management information
 - OSHA regulation (29CFR1910.119) : Not listed
 - CERCLA 103 regulation (40CFR302.4) : Not listed
 - EPCRA 302 regulation (40CFR355.30) : Not listed

- EPCRA 304 regulation (40CFR355.40) : Not listed
- SARA 313 regulation (40CFR372.65) : Not listed
- Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade : Not listed
- Stockholm Convention on Persistent Organic Pollutants (POPs) : Not listed
- Montreal Protocol on Substances that Deplete the Ozone Layer : Not listed

16. Other information

1) Information source and references:

- Korea Occupational Health & Safety Agency: <http://www.kosha.net>
- Korea dangerous material inventory management system(<http://hazmat.nema.go.kr>)
- EPA(<http://cfpub.epa.gov/ecotox>)
- GHS (Global Harmonized System of classification and labeling of chemical)
- International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>)
- NIOSH (The National Institute for Occupational Safety and Health)
- ACGIH (American Conference of Governmental Industrial Hygienists)
- EINECS (European Inventory of Existing Commercial chemical Substances)

2) Issue date : 2016. 09. 03.

3) Revision number and date :

4) Other material safety data sheet information: N/A

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