

TEST REPORT

No. : SHHL2001500220FL

Date : JUL. 03, 2020

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THIS TEST RESULT IS COPIED FROM THE TEST REPORT No.: SHIN2001004904CM,
DATE: JUN. 17, 2020

NANJING XUHUA SUNDI NEW BUILDING MATERIALS CO., LTD
NO.65, XIUSHAN ROAD, ECONOMIC DEVELOPMENT ZONE OF GAOCHUN DISTRICT, NANJING
CITY, CHINA

Sample Name : CO-EXTRUSION WPC DECKING (G SERIES)
Style No. : SLD138x23
Manufacturer : NANJING XUHUA SUNDI NEW BUILDING MATERIALS CO., LTD.
Country of Origin : CHINA

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

Test Required : Please see the next page(s)
Ref. Standard : Please see the next page(s)
Date of Receipt : Jan 21, 2020
Testing Start Date : Jan 21, 2020
Testing End Date : May 28, 2020
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

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



Erin Huang
Authorized signatory



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Summary of Result(s):

No.	Test Item	Test Method	Result
1	Density	EN 15534-1:2014+A1:2017 Clause 6.2 & EN ISO 1183-1:2019 Method A	1.420 g/cm ³
2	Pendulum Test	EN 15534-1:2014+A1:2017 Clause 6.4.2 & CEN/TS 15676:2007	55
3	Falling Mass Impact Resistance	EN 15534-1:2014+A1:2017 Clause 7.1.2.1 & EN 477:2018	No cracks Maximum depth of residual indentation: 0.1mm
4	Flexural Properties	With reference to EN 15534-1:2014+A1:2017 Clause 7.3.2 & Annex A	Breaking Load : Front View 4278N Back View 4393N Bending Strength : Front View 33.8MPa Back View 34.3MPa Modulus of Elasticity : Front View 4280MPa Back View 4280MPa
5	Resistance to Indentation	EN 15534-1:2014+A1:2017 Clause 7.5	Hardness Brinell : 71MPa Rate of Elastic Recovery : 71%
6	Swelling and Water Absorption	EN 15534-1:2014+A1:2017 Clause 8.3.1 & EN 317:1993	Water Absorption: 24h 0.50% 28d 1.54% Swelling: See Result
7	Moisture Resistance-Boiling test	EN 15534-1:2014+A1:2017 Clause 8.3.3	1.1 %
8	Thermal Conductivity	EN 12664:2001 Heat flow meter method	0.221 W/(m·K)
9	Resistance to Salt Spray	EN 15534-1:2014+A1:2017	No visible change



SGS-CSTC (Shanghai) Technical Services Co., Ltd.
Testing Center Harbin

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		Clause 8.6 & EN ISO 9227:2017	Grade of chalking: 0
10	RoHS	With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 & IEC 62321-7-2:2017	ND
11	Formaldehyde Emission	With reference to EN 717-1:2004	ND
12	Creep Behaviour	EN 15534-1:2014+A1:2017 Section 7.4.1 and EN 477-1995	Deflection (ΔS): 2.522mm
			Residual deflection (ΔS_r): 1.615mm
13	Antimicrobial activity test	ASTM G21-15	Rating observed growth on specimens after 28 days): 0

Note: Pass: Meet the requirements;
Fail: Does not meet the requirements;
/: Not Apply to the judgment.



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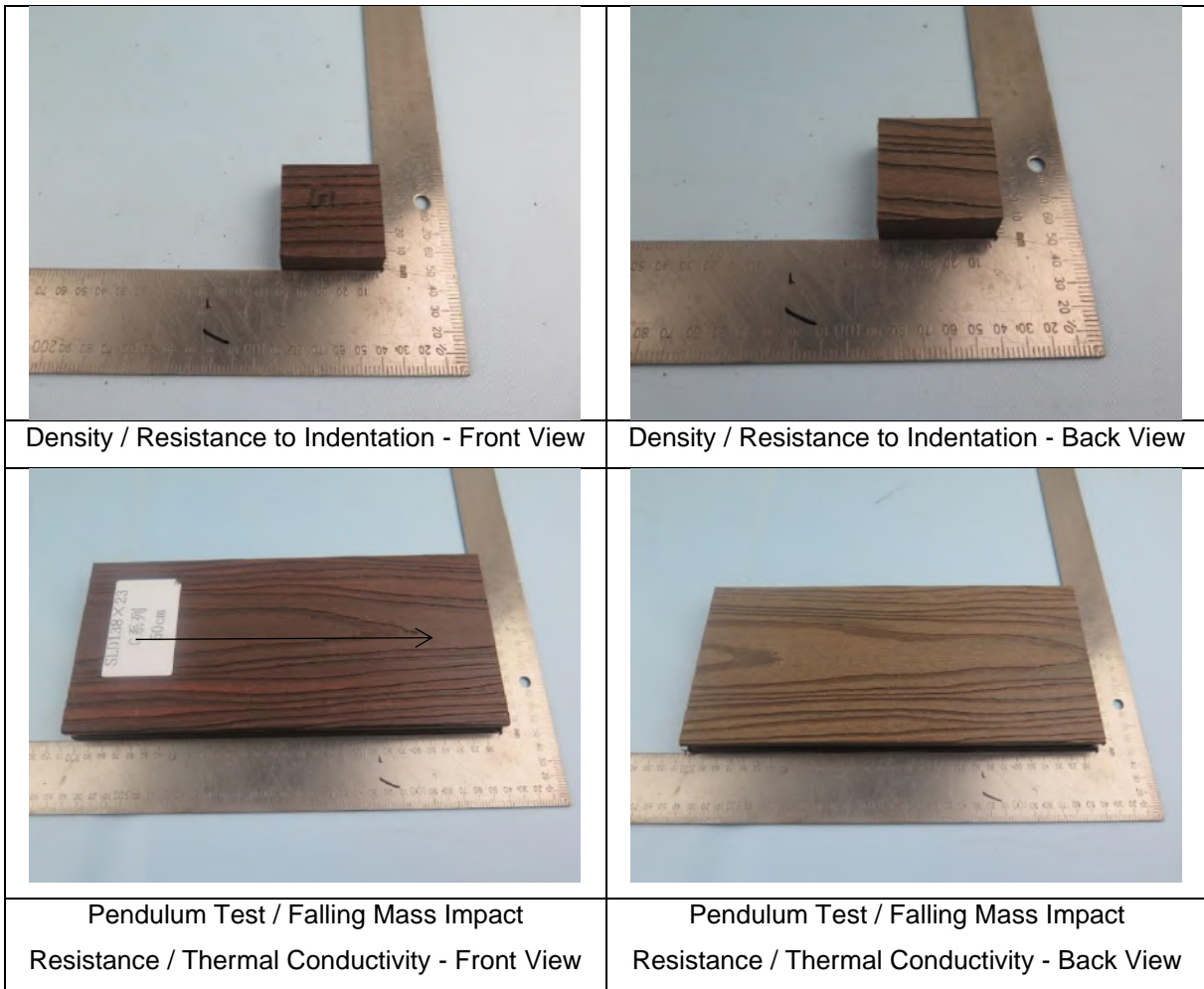
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Original sample photo(s):



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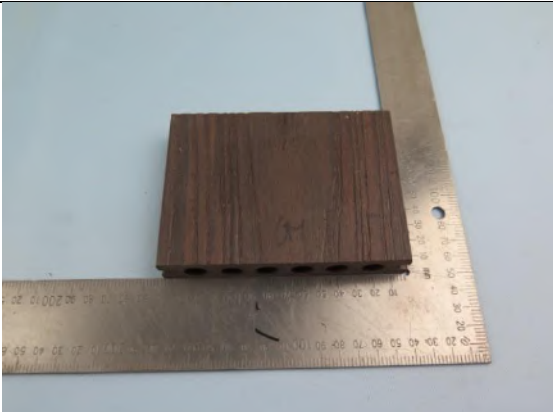
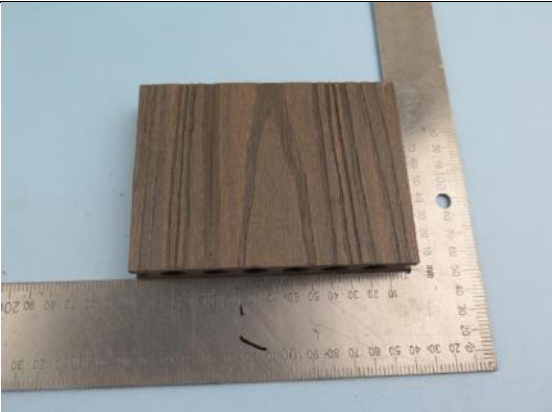
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<p>Flexural Properties – Front View</p>	<p>Flexural Properties – Front View</p>
	
<p>Swelling and Water Absorption / Moisture Resistance-Boiling test – Front View</p>	<p>Swelling and Water Absorption / Moisture Resistance-Boiling test – Back View</p>



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Creep Behaviour



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1. Test item: Density

Test method: EN 15534-1:2014+A1:2017 Clause 6.2 & EN ISO 1183-1:2019 Method A

Test condition:

Specimen: 50mmx50mmx23mm, 3pcs

Immersion liquid: Distilled water

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result			
	Individual Value			Average Value
Density (g/cm ³)	1.421	1.408	1.421	1.420

2. Test item: Pendulum Test

Test method: EN 15534-1:2014+A1:2017 Clause 6.4.2 & CEN/TS 15676:2007

Test condition:

Specimen: 300mmx138mmx23mm, 10pcs

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result										
	Individual Value										Average Value
Pendulum Test	57	55	56	56	55	55	53	53	55	58	55



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3. Test item: Falling Mass Impact Resistance

Test method: EN 15534-1:2014+A1:2017 Clause 7.1.2.1 & EN 477:2018

Test condition:

Specimen: 300mm×138mm×23mm, 10pcs

Striker: 1000g, Φ50mm

Falling height: 700mm

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Falling mass impact resistance	No cracks Maximum depth of residual indentation: 0.1mm

4. Test item: Flexural Properties

Test method: With reference to EN 15534-1:2014+A1:2017 Clause 7.3.2 & Annex A

Test condition:

Specimen: 500mm×138mm×23mm, 5pcs

Test span: 350mm

Test rate: 10mm/min

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item		Test Result					Average Value
		Individual Value					
Breaking Load (N)	Front View	4228	4274	4380	4212	4295	4278
	Back View	4382	4346	4440	4364	4433	4393
Bending Strength (MPa)	Front View	33.3	34.0	34.8	33.4	33.6	33.8
	Back View	34.5	33.7	34.2	34.2	34.8	34.3
Modulus of Elasticity (MPa)	Front View	4260	4280	4160	4200	4500	4280
	Back View	4410	4150	4160	4300	4400	4280



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5. Test item: Resistance to Indentation

Test method: EN 15534-1:2014+A1:2017 Clause 7.5

Test condition:

Specimen: 50mmx50mmx23mm, 5pcs

Preload: 20N

Total Load: 2000N

Test time: 25s

Diameter of indenter: 10mm

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result			
	Individual Value			Average Value
Hardness Brinell (MPa)	66	76	72	71
Rate of Elastic Recovery (%)	71	69	74	71



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6. Test item: Swelling and Water Absorption

Test method: EN 15534-1:2014+A1:2017 Clause 8.3.1 & EN 317:1993

Test condition:

Specimen: 138mm×100mm×23mm, 6pcs

Immersion condition: Immerse in water at 20±2°C for 24h and 28d

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item		Test Result	
Swelling and Water Absorption	Swelling in Thickness (%)	24h	0.08
		28d	2.98
	Swelling in Width (%)	24h	0.01
		28d	0.20
	Swelling in Length (%)	24h	0.02
		28d	0.08
	Water Absorption (%)	24h	0.50
		28d	1.54



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7. Test item: Moisture Resistance-Boiling test

Test method: EN 15534-1:2014+A1:2017 Clause 8.3.3

Test condition:

Specimen: 138mm×100mm×23mm, 10pcs

Test condition: immersed in boiling water for 5h→immersed in cold water (20±2)°C during 15 min

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result					
	Individual Value					Average Value
Moisture Resistance-Boiling test - Water Absorption (%)	1.1	1.2	1.0	1.1	1.2	1.1



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8. Test item: Thermal Conductivity

Test method: EN 12664:2001 Heat flow meter method

Test condition:

Specimen: 300mm×275mm×23mm, 1pc

Mean temperature: 23°C

Temperature difference: 10°C

Lab environmental condition: 23±2°C, 50±5%RH

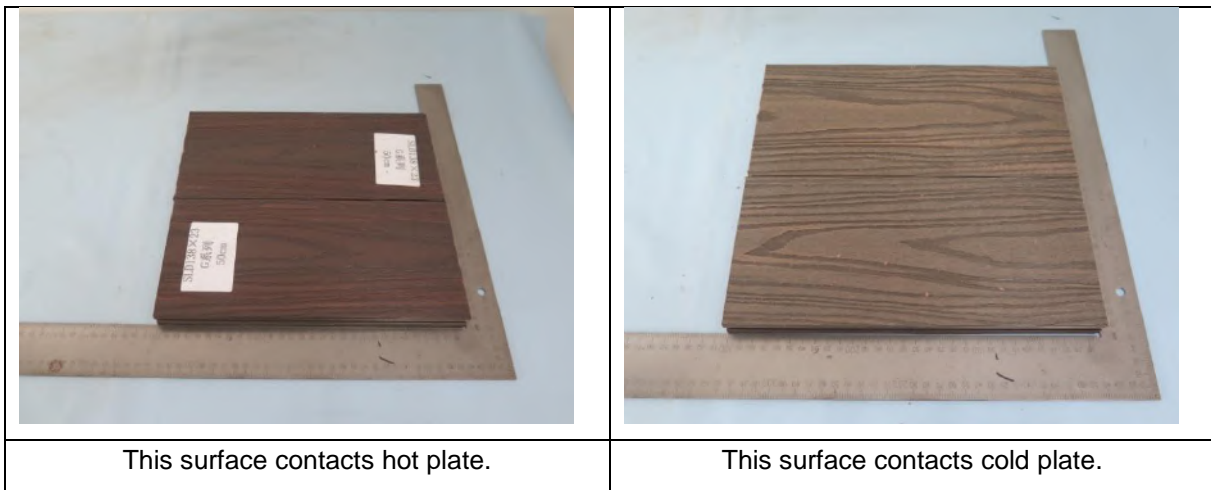
Test Result:

Test Item	Test Result
Thermal Conductivity	0.221 W/(m·K)

Note:

- 1) The test result cannot be compared with other results obtained from different test conditions and should not be cited to the use condition directly.
- 2) Test specimen was jointed by two pieces.

Test specimen photo(s):



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9. Test Item: Resistance to Salt Spray

Sample Description: Floor board

Test Method: EN 15534-1:2014+A1:2017 Clause 8.6 & EN ISO 9227:2017

Test Condition:

Concentration of solution collected: (50±5) g/l NaCl

Chamber temperature: (35±2) °C

Volume of salt solution collected: (1.5±0.5) ml/(80cm²·h)

pH of collected solution at (25±2) °C: 6.5~7.2

Exposure period: 96h

Test Result:

Sample	Appearance	Grade of chalking (see note 2)
1	No visible change.	0
2	No visible change.	0
3	No visible change.	0

Sample	Before salt spray test			After salt spray test			ΔE* _{ab} (see note 1)
	L*	a*	b*	L*	a*	b*	
1	47.17	9.06	12.59	47.76	9.36	12.76	0.70
2	46.33	9.73	13.16	47.32	9.96	13.19	1.01
3	46.31	9.67	13.14	47.13	9.90	13.13	0.84

Note:

1) Color difference according to EN 15534-1:2014+A1:2017 Clause 8.1.3, L*, a*, b* and ΔE*_{ab} values were measured by d/8 sphere spectrophotometer. Use D65 standard light source with 10° observer, 25mm aperture. Test mode: include specular reflection condition.

2) Grade of chalking refers to ISO 4628-6: 2011, rating 0 is the best and rating 5 is the worst. Tape: 3M@600.



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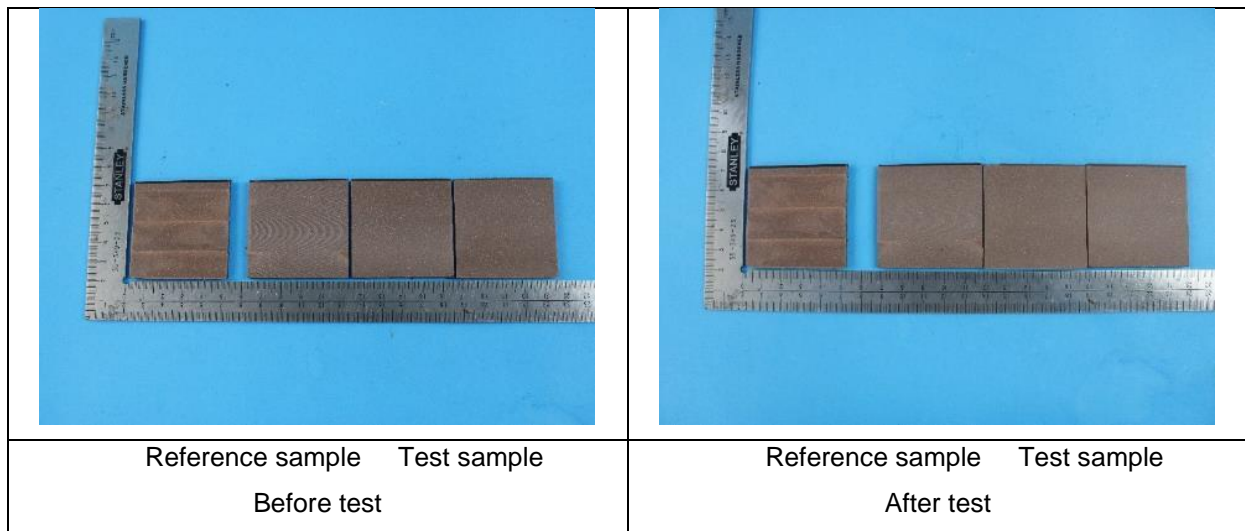
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Test Photos:



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10. Test Item: RoHS

Test Part Description: Brown coffee/light brown color

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 and IEC 62321-7-2:2017, analyzed by ICP-OES, AAS and UV-Vis.

Test Item(s)	Limit	Unit	MDL	Results
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND

Remarks:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

Notes: The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

Sample photo:



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11. Test Item: Formaldehyde Emission

Test Part Description: Brown coffee/light brown color

Test Method: With reference to EN 717-1:2004, analysis was performed by UV-Vis.

Test Results

Test Item(s)	Unit	MDL	Results
Formaldehyde Emission (In air)	mg/m ³	0.080	ND

Remarks:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

Notes:

- (1) Reference Limit: EN 13986:2004(E)
- (2) Formaldehyde class E1: ≤0.124 mg/m³ air
Formaldehyde class E2: >0.124 mg/m³ air
- (3) The reported result is for reference only.

Sample photo:



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12. Test Item: Creep Behaviour

Sample Description: See photo

Test Method: EN 15534-1:2014+A1:2017 Section 7.4.1 and EN 477-1995

Test Condition:

Specimen: 450mm×138mm×22.3mm, 1 piece

Span: 350mm (supplied by client)

Applied load: 1000N

The test specimens are loaded for 504h, removal the load, and allowed to recover with no load for 24h.

Test Result:

Deflection (ΔS): 2.522mm

Residual deflection (ΔS_r): 1.615mm

Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center.



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13. Test Item: Antimicrobial activity test

Sample Description: sample in bag

Test Method: ASTM G21-15 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

Test Result(s):

Test organism	Concentration of spores (spores/mL)	Rating observed growth on specimens (after 28 days)
*Test organism	1.0x10 ⁶	0** Grade

Notes:

*Test organism

Aspergillus brasiliensis ATCC 9642, Penicillium funiculosum ATCC 11797, Chaetomium globosum ATCC 6205, Trichoderma virens ATCC 9645, Aureobasidium pullulans ATCC 15233

History name of test organism

Aspergillus brasiliensis historically known as A.niger.

Penicillium funiculosum historically known as P.pinophilum.

Trichoderma virens historically known as Gliocladium virens.

According to ASTM G21-15 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)

** The microscope (50 X) was used to confirm the observation.

Test flat surface

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

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