

WÜRTH ELEKTRONIK GMBH & CO. KG
SALZSTRASSE 21 74676 NIEDERNHALL GERMANY

Sample Description : PCB
BM Type : SHENGYI S1000H
SM Type : TAIYO PSR4000MH
CONFORMAL COATING Type : ELPEGUARD SL 1301 ECO-FLZ/20

The above sample(s) data and information was / were submitted and identified on behalf of the client. SGS is not responsible for the authenticity, integrity and results of the data and information and / or the validity of the conclusion arising therefrom. Results apply to the sample as received.

SGS Ref. No. : SZIN2511003070PL01
Sample Receiving Date : Nov 20,2025
Testing Period : Nov 20,2025 to Dec 02,2025
Test Required : EN 45545-2:2020+A1:2023 Railway applications—Fire protection on railway vehicles Part 2: Requirements for fire behaviour of materials and components, and testing according to Table 5 — Material requirement sets (R24) (R25) (R26)
Test result(s) : See attached sheet

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Shunde Branch

Ada

Ada Liu
Approved signatory



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300

t (86-757) 22805888

www.sgsgroup.com.cn

中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888

sgs.china@sgs.com

I. Description of Test specimens

Sample Description	PCB
Size of specimens	T01 EN ISO 4589-2: 100 mm×10.1 mm ×1.6 mm T16 EN60695-2-11: 60mm×60mm T17 EN 60695-11-10: 125mm×13.0mm×1.60mm

II. Summary of test results

Requirement set (used for)	Test method reference	Parameter Unit	Test results *
R24 (EL9)	T01 EN ISO 4589-2: OI	Oxygen content %	>60.0
R25 (EL9)	T16 EN 60695-2-11	Glow Wire Temperature, °C	850
R26 (EL10)	T17 EN 60695-11-10	Vertical small flame test; Classification	V0

* For the test details, please see the appendix of this test report.

III. Conclusion

According to the test results, the submitted sample **meets** the requirements of **R24&R25&R26** (detailed in Table 5 of EN 45545-2:2020+A1:2023) for a **HL1, HL2, HL3** Hazard Level Classification.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgs.com.cn
t (86-757) 22805888 sgs.china@sgs.com

Test Criteria for EN 45545-2:2020+A1:2023 Table 5 Material requirement sets (R24) (R25) (R26)

Requirement set (used for)	Test method reference	Parameter Unit	Requirement Definition	HL1	HL2	HL3
R24 (EL9)	T01 EN ISO 4589-2: OI	Oxygen content %	Minimum	28	28	32
R25 (EL9)	T16 EN 60695-2-11	Glow Wire Temperature °C	Minimum	850	850	850
R26 (EL10)	T17 EN 60695-11-10	Vertical small flame test; Classification	Minimum	V0	V0	V0

Statements:

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which were tested.

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

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
 中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgs.com.cn
 t (86-757) 22805888 sgs.china@sgs.com



APPENDIX 1: T01 EN ISO 4589-2:2017 Determination of burning behaviour by oxygen Index Part 2:

Ambient temperature test

1. Conditioning

T: (23±2) °C, R.H: (50±5)%, until the test sample was conditioned to constant mass.

2. Test results

Ignition method: Procedure A-Top surface ignition

- a) Select initial oxygen concentration(in accordance with 8.2.3): 25%
- b) Determining the Preliminary Oxygen Concentration(Till pair of oxygen concentrations which gives opposite response differs by ≤1%, in accordance with 8.6)

Oxygen concentration, % (V/V)	25.0	30.0	60.0	60.0	60.0			
Burning period(s)	<180	<180	<180	<180	<180			
Length burnt (mm)	<50	<50	<50	<50	<50			
Response, ("X" or "O")	O	O	O	O	O			

OI >60.0%

Burning behavior: Charring

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
 中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgs.com.cn
 t (86-757) 22805888 sgs.china@sgs.com



APPENDIX 2: T16 EN 60695-2-11: 2014 Fire hazard testing—Part 2-11:Glowing/hot-wire based test methods Glow-wire flammability test method for end-products

1. Conditioning

Prior to testing, the sample was conditioned 24 hours at temperatures of 15~35°C and at a relative humidity of 45~75%.

At time to testing, Temperature between 15°C ~ 35°C and Relative humidity less than or equal to 75 %.

2. Test results

Temperature of the glow-wire (°C)	850
Duration (t _i) from the beginning of tip application up to the time at which the test specimen or the specified layer placed below it ignites (s)	NI
Duration (t _e) from the beginning of tip application up to the time when flames extinguish during or after the period of application (s)	NI
Whether the test specimen extinguishes by virtue of most of the flaming material being withdrawn with the glow-wire	NA
Whether ignite the specified layer placed underneath the test specimen or not	No
Whether the test specimen is totally burned	No
Observations: NI	

Remark: NI--- Not ignition; NA---Not applicable

In accordance with test results, the submitted sample: **GWEPT: 850**



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300

t (86-757) 22805888

www.sgs.com.cn

中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888

sgs.china@sgs.com

Appendix 3: T17 EN 60695-11-10:2013 Fire hazard testing—Part 11-10: 50W horizontal and vertical flame test methods. Test method B Vertical burning

Sample condition

As received conditioned:	Temperature: (23±2) °C; Relative humidity: (50±10) %; Duration: 170h.
Oven conditioned:	Aged in the air-circulating oven for 166 h at (70±2) °C, and cooled in the desiccator chamber ≥4 h.

Test results:

Specimen no.	t ₁ (s)	t ₂ (s)	t ₃ (s)	SUM(t ₂ + t ₃)	Whether the specimen up to the holding clamp	Whether the cotton indicator ignited by flaming particles or drops	
As received conditioned	1	0	10	0	10	No	No
	2	0	9	0	9	No	No
	3	0	6	0	6	No	No
	4	0	8	0	8	No	No
	5	0	11	0	11	No	No
	SUM	0	44	t _f = Σt ₁ + Σt ₂ : 44		---	
Oven conditioned	1	0	9	0	9	No	No
	2	0	8	0	8	No	No
	3	0	10	0	10	No	No
	4	0	8	0	8	No	No
	5	0	6	0	6	No	No
	SUM	0	41	t _f = Σt ₁ + Σt ₂ : 41		---	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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-CS Standards Technical Service Co., Ltd.
Shunde Branch Inspection & Testing Services

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgsgroup.com.cn
t (86-757) 22805888 sgs.china@sgs.com

Retest

Specimen no.	t ₁ (s)	t ₂ (s)	t ₃ (s)	SUM(t ₂ + t ₃)	Whether the specimen up to the holding clamp	Whether the cotton indicator ignited by flaming particles or drops	
As received conditioned	1	0	10	0	10	No	No
	2	0	8	0	8	No	No
	3	0	10	0	10	No	No
	4	0	9	0	9	No	No
	5	0	7	0	7	No	No
	SUM	0	44	t _f = Σt ₁ + Σt ₂ : 44		---	
Oven conditioned	1	0	10	0	10	No	No
	2	0	9	0	9	No	No
	3	0	8	0	8	No	No
	4	0	8	0	8	No	No
	5	0	6	0	6	No	No
	SUM	0	41	t _f = Σt ₁ + Σt ₂ : 41		---	

Where,

t_f is the total afterflame time, in seconds;

t₁ is the first afterflame time, in seconds;

t₂ is the second afterflame time, in seconds;

t₃ is the second afterglow time, in seconds.

Classification

Criteria	Category and requirement		
	V-0	V-1	V-2
Individual test specimen afterflame time (t ₁ and t ₂)	≤ 10s	≤ 30s	≤ 30s
Total set afterflame time t _f for any conditioning	≤ 50s	≤ 250s	≤ 250s
Individual test specimen afterflame plus afterglow time after the second application (t ₂ + t ₃)	≤ 30s	≤ 60s	≤ 60s
Afterflame or afterglow of any specimen progress up to the holding clamp	No	No	No
Cotton indicator ignited by flaming particles or drops	No	No	Yes

Comment: V-0@1.6mm



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300

t (86-757) 22805888

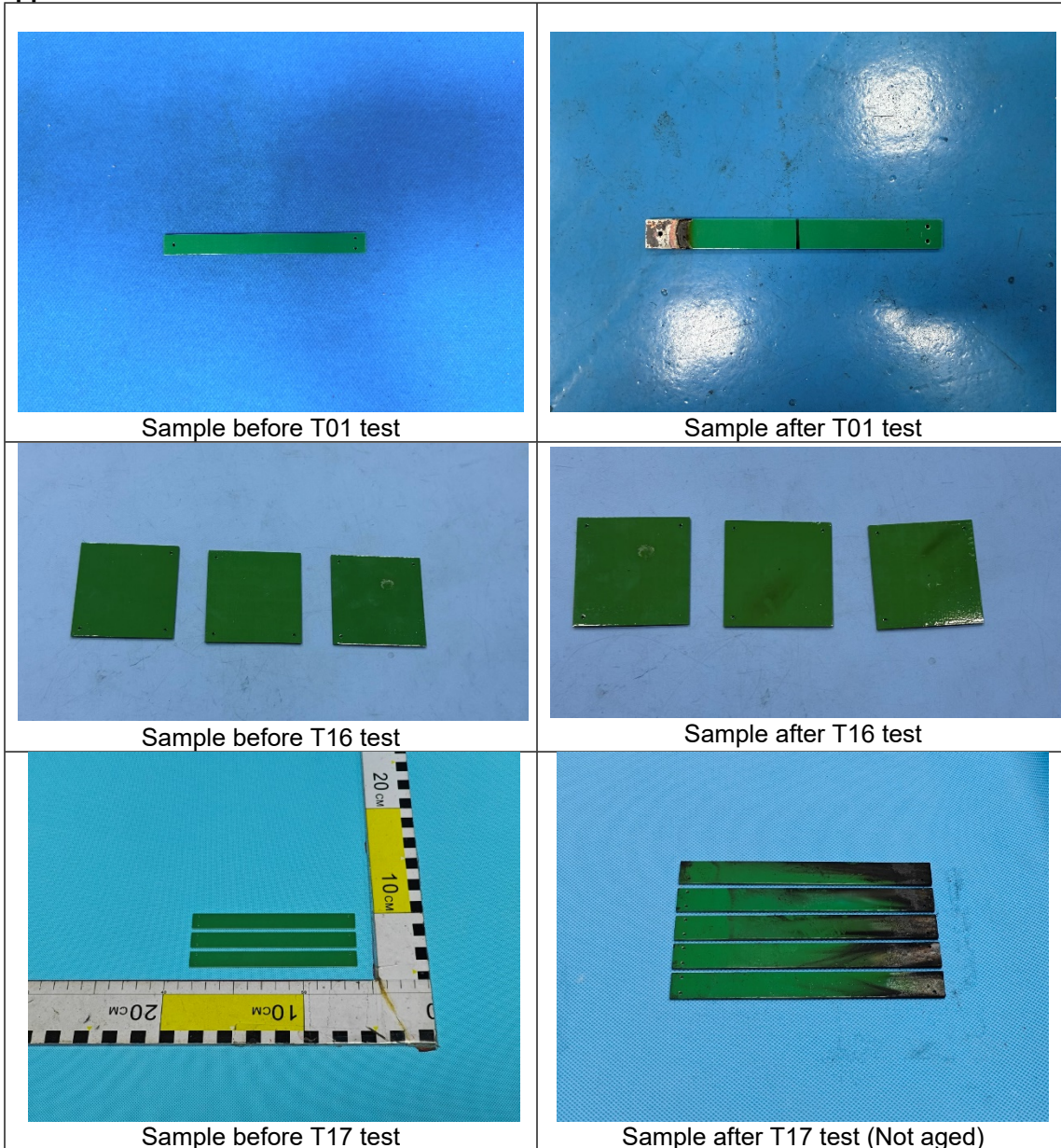
www.sgs.com.cn

中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888

sgs.china@sgs.com

Photo Appendix:



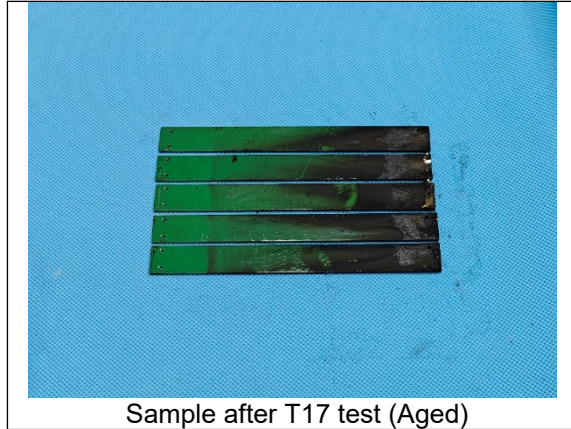
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. Attention is drawn to the limitation of liability, indemnification and jurisdiction 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-CS (Shunde) Technical Services Co., Ltd.
Shunde Branch

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgs.com.cn
t (86-757) 22805888 sgs.china@sgs.com



Sample after T17 test (Aged)

SGS authenticate the photo on original report only

Remark:

This test report is issued based on the modification of the original No. SDFTS25007257R01_EN test report issued on Dec 04,2025. And the original test reports (paper and electronic) are invalid.

According to applicant's requirements, following changes are included:

- a. R25 of this test report is extracted from the test report number SDFTS25007258R01_EN. The Sample Receiving Date was Nov 20,2025, The Performing Date was Nov 20,2025 to Dec 02,2025.
- b. R26 of this test report is extracted from the test report number SDFTS25007259R01_EN. The Sample Receiving Date was Nov 20,2025, The Performing Date was Nov 20,2025 to Dec 02,2025.

End of Report



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. 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

1-2/F, Building 1, European Industrial Park, No.1, Shunhe South Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China 528300
 中国·广东·佛山市顺德区大良街道办事处五沙社区居民委员会顺和南路1号欧洲工业园一号厂房首层、二层 邮编: 528300

t (86-757) 22805888 www.sgsgroup.com.cn
 t (86-757) 22805888 sgs.china@sgs.com