HANGZHOU HUADING IMPORT AND EXPORT CO., LTD.

UNIT D,WORLD TRADE CENTRE, NO.122 SHUGUANG ROAD ,HANGZHOU CITY， ZHEJIANG PROVINCE,P.R. CHINA

Sample Description	:	PRINTED CIRCUIT BOARDS
Item No.	:	DADTCODE 0925
Style No.	:	TAU-32M rev.B (1v10)
P.O. / Ref No.	:	CONTRACT NUMBER: HDC2502701
Manufacturer	:	HUADING GROUP
Supplier	:	HUADING GROUP

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.

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SGS Ref. No.	:	CZHL2509010448SD
Sample Receiving Date	:	Sep 18,2025
Testing Period	:	Sep 18,2025 to Sep 26,2025
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.
Test result(s)	:	See attached sheet

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

Eva

Eva Zhang
Approved signatory

Scan to see the report
AJFTS25006490R01
Verification:
check.sgsonline.com.cn

I. Description of specimens

Sample Description	PCB
Color	Green
Size of sample	T01 EN ISO 4589-2: 100mm×10mm×1.6mm

II. Summary of test results

Requirement set (used for)	Test method reference	Parameter and unit	Test results *
R24	T01 EN ISO 4589-2: OI	Oxygen content %	56.3

* 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 (detailed in Table 5 of EN 45545-2:2020+A1:2023) for **HL3** Hazard Level Classification.

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Test Criteria, EN 45545-2:2020+A1:2023, Table 5, Material requirement sets, R24

Requirement set (used for)	Test method reference	Parameter and unit	Maximum or Minimum	HL1	HL2	HL3
R24 (EL9)	T01 EN ISO 4589-2: OI	Oxygen content %	Minimum	28	28	32

Statements:

This declaration of conformity is only based on the result of this laboratory activity, the impact of the uncertainty of the results was not included.

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.

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APPENDIX 1: T01 EN ISO 4589-2:2017 Plastics —Determination of burning behaviour by oxygen Index ---Part 2: Ambient temperature test

Conditioning

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

1. Test results

Type: III; Ignition method: Top surface ignition

1) Select initial oxygen concentration (in accordance with 8.2.3): 30%

2) 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*)	30	35	40	50	55	57	56		
Length burnt, (mm)	1	2	3	3	3	>50	5		
Response, (“X” or “O”)	O	O	O	O	O	X	O		

Oxygen concentration of the “O” response for the pair =56.0% (this is the concentration to be used again for the first measurement in section below)

3) Determination of the oxygen index (in accordance with 8.7)

Step size to be used for successive changes d in oxygen concentration = 0.2 % [Initially to be 0.2% (V/V), unless otherwise instructed]

Parameter	N_T series measurements										
	N_L series measurements (8.7.1 and 8.7.2)						(According to the 8.7.3)				*cf*
Oxygen concentration, % (V/V)	56.0	56.2	56.4	--	--	--	56.4	56.2	56.4	56.2	56.4
Length burnt, (mm)	4	5	>50	--	--	--	>50	5	>50	7	>50
Response, (“X” or “O”)	O	O	X	→	→	→	X	O	X	O	X
	Column (2, 3, 4 or 5): 3						Row (1 to 16): 6				
	k value from EN ISO 4589-2 table 4: -0.46										
	Hence k= -0.46										

OI = *C*f + kd = 56.4+ (-0.46) ×0.2

=56.3% (to one decimal place, for reporting OI)

=56.31% (to two decimal places, for calculation of and verification of d)

4) Determination of k value

Table 4-Values of k for calculating the oxygen index concentration from determinations made by Dixon's'up-and-down' method

1	2	3	4	5	6
Responses for the last five measurements	Values of k for which the first NL determinations are				
	a) O	OO	OOO	OOOO	
XOOOO	-0.55	-0.55	-0.55	-0.55	OXXXX
XOOOX	-1.25	-1.25	-1.25	-1.25	OXXXO
XOOXO	0.37	0.38	0.38	0.38	OXXOX
XOOXX	-0.17	-0.14	-0.14	-0.14	OXXOO
XOXOO	0.02	0.04	0.04	0.04	OXOXX
XOXOX	-0.50	-0.46	-0.45	-0.45	OXOXO
XOXXO	1.17	1.24	1.25	1.25	OXOOX
XOXXX	0.61	0.73	0.76	0.76	OXOOO
XXOOO	-0.30	-0.27	-0.26	-0.26	OOXXX
XXOOX	-0.83	-0.76	-0.75	-0.75	OOXXO
XXOXO	0.83	0.94	0.95	0.95	OOXOX
XXOXX	0.30	0.46	0.50	0.50	OOXOO
XXXOO	0.50	0.65	0.68	0.68	OOOXX
XXXOX	-0.04	0.19	0.24	0.25	OOOXO
XXXXO	1.60	1.92	2.00	2.01	OOOOX
XXXXX	0.89	1.33	1.47	1.50	OOOOO
	Values of k for which the first NL determinations are				
	b) X	XX	XXX	XXXX	Responses for the last five measurements
	Are as given in the above table opposite the appropriate response in column 6, but with the sign of k reversed Hence, OI = C_f -kd (see 9.1)				

5) Verification of step size d % oxygen concentration (in accordance with 8.7.4 and 9.3)

Last six results	Oxygen concentration, % (V/V)			
	c_i	*OI*	$c_i - OI$	$(c_i - OI)^2$
1	56.4	56.31	0.09	0.0081
2	56.2		-0.11	0.0121
3	56.4		0.09	0.0081
4	56.2		-0.11	0.0121
5	56.4		0.09	0.0081
6	56.2		-0.11	0.0121
$\sum(c_i - OI)^2$				0.0606
a Column *Ci* contains the oxygen concentrations used for the measurements of C_f and for each of the 5 preceding measurements, for n = 6				

Estimation of standard deviation:

If $2\sigma^*/3<d<3\sigma^*/2$ or $0.2=d>3\sigma^*/2$, the OI is valid.

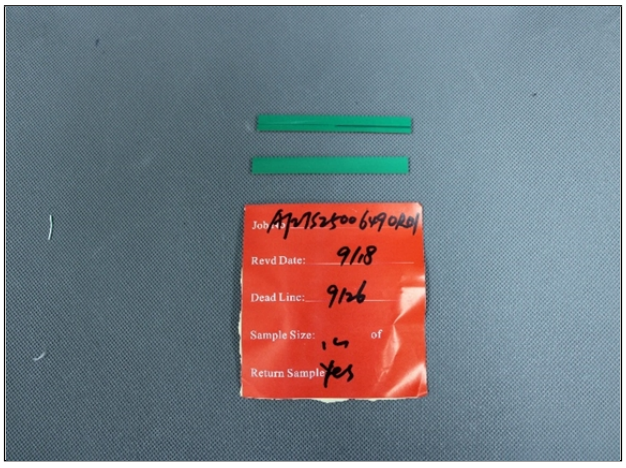
$\sigma^* = [\sum(Ci - OI)^2 / (n-1)]^{(1/2)} = 0.110$

$2\sigma^*/3 = 0.073$

$3\sigma^*/2 = 0.165$

OI is 56.3% (V/V).

Photo Appendix:



SGS authenticate the photo on original report only

End of Report

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