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检测
TESTING
CNAS L4743

Test Report

No. AJFS1908008430FF

Date: SEP.06, 2019

Page 1 of 7

DONGGUAN GUANGMAI ELECTRONIC TECHNOLOGY CO., LTD

16B, INTERNATIONAL FINANCE IT RESEARCH AND DEVELOPMENT CENTER, NO.5 KEJI TEN ROAD,
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The following sample(s) 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. results apply to the sample as received.

Sample Name: CELLULAR SILICONE FOAM

SGS Ref No.: GZAT1908014138NM

Color: BLACK

Thickness: 12.70mm

Parts No.: GK-260

Addition Information: Product Thickness Range: 0.8-20mm

Test Requested:

EN 45545-2:2013+A1:2015 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 (R22)

Test Results: -- See attached sheet --

Test Period:

Sample Receiving Date : AUG.26, 2019

Test Performing Date : AUG.26, 2019 TO SEP.03, 2019

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

Allen Zou
Lab Manager



AJFS1908008430FF



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I. Description of Test specimens

| | |
|------------------------|---|
| Sample Description | Cellular silicone foam |
| Color | Black |
| Exposed (test) surface | Any surface |
| Size of specimens | T01 EN ISO 4589-2: 150mm×10mm×13.1mm |
| | T10.03 EN ISO 5659-2: 75mm×75mm×13.1mm |
| | T12 NF X70-100-1&-2: 1, 1.0015g 2, 1.0002g 3, 1.0005g |

II. Summary of test results

| Requirement set (used for) | Test method reference | Parameter Unit | Test results * |
|---------------------------------------|--|-------------------------------------|----------------|
| R22 (IN16; EL2; EL6A; EL7A; M2) | T01 EN ISO 4589-2: OI | Oxygen content % | 37.7 |
| | T10.03 EN ISO 5659-2: 25 kW/m ² | Ds max. dimensionless | 67.6 |
| | T12 NF X 70-100-1 and -2 600°C | CIT _{NLP} dimensionless | 0.04 |

* 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 R22 (detailed in Table 5 of EN 45545-2:2013+A1:2015) for **HL3**Hazard Level Classification.

To be continued...



Test Criteria for EN 45545-2:2013+A1:2015 Table 5 Material requirement sets (R22)

| Requirement set (used for) | Test method reference | Parameter Unit | Requirement Definition | HL1 | HL2 | HL3 |
|--|--|----------------------------------|------------------------|-----|-----|------|
| R22 (IN16; EL2; EL6A; EL7A; M2) | T01 EN ISO 4589-2: OI | Oxygen content % | Minimum | 28 | 28 | 32 |
| | T10.03 EN ISO 5659-2: 25 kW/m ² | Ds max. dimensionless | Maximum | 600 | 300 | 150 |
| | T12 NF X 70-100-1 and -2 600°C | CIT _{NLP} dimensionless | Maximum | 1.2 | 0.9 | 0.75 |

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.

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

To be continued...



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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%, at least 88 h.

2. Test results

- a) Select initial oxygen concentration (in accordance with 8.2.3): 30%
- 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) | 30 | 35 | 36 | 37 | 38 | - | |
| Length burnt, mm | <50 | <50 | <50 | <50 | >50 | - | |
| Response, ("X" or "O") | O | O | O | O | X | - | |

Oxygen concentration of the "O" response for the pair = 37.0% (this is the concentration to be used again for the first measurement in section below)

- c) 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 | | | | | | | | | | |
|-------------------------------|--|------|------|------|----|----|--------------------------|------|------|------|------|
| | NL series measurements (8.7.1 and 8.7.2) | | | | | | (According to the 8.7.3) | | | | |
| Oxygen concentration, % (V/V) | 37.0 | 37.2 | 37.4 | 37.6 | -- | -- | 37.6 | 37.4 | 37.6 | 37.8 | 37.6 |
| Length burnt, mm | <50 | <50 | <50 | >50 | -- | -- | >50 | <50 | <50 | >50 | <50 |
| Response ("X" or "O") | O | O | O | X | → | → | X | O | O | X | O |
| | Column (2, 3, 4 or 5): 4 | | | | | | Row (1 to 16): 3 | | | | |
| | k value from EN ISO 4589-2 table 4: 0.38 | | | | | | | | | | |
| | Hence k= 0.38 | | | | | | | | | | |

$$\begin{aligned}
 OI &= Cf + kd = 37.6 + (0.38 \times 0.2) \\
 &= \underline{37.7\%} \text{ (to one decimal place)} \\
 &= \underline{37.68\%} \text{ (to two decimal places)}
 \end{aligned}$$

To be continued...



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APPENDIX 2: T10.03 EN ISO 5659-2:2017 Plastics—Smoke generation — Part 2: Determination of optical density by a single- chamber test. Heat flux 25kW/m² with pilot flame, test duration is 10min.

1. Conditioning

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

2. Test Results

| Parameters | 1 | 2 | 3 | Avg |
|--------------------------|-------|-------|-------|-------|
| Mass(g) | 14.3 | 14.0 | 14.1 | 14.1 |
| D _s (1.5) | 32.5 | 30.7 | 29.4 | 30.9 |
| D _s (4) | 42.4 | 43.2 | 41.6 | 42.4 |
| D _s (10) | 51.4 | 69.9 | 66.4 | 65.9 |
| VOF ₄ min | 112.9 | 124.7 | 109.3 | 115.6 |
| D _s max | 62.6 | 71.4 | 68.7 | 67.6 |
| T (D _s max) s | 594 | 585 | 593 | 590.7 |

NOTE:

D_s (n) is the specific optical density at nth min;

VOF₄ is the cumulative value of specific optical densities in the first 4 min of the test;

D_s max is the maximum optical density in the test chamber.

To be continued...



APPENDIX 3: T12 NF X70-100-1:2006 Fire tests—Analysis of gaseous effluents—Part 1: Methods for analysing gases stemming from thermal degradation & NF X70-100-2:2006 Fire tests—Analysis of gaseous effluents—Part 2: Tubular furnace thermal degradation method. Furnace Temperature: 600°C, Toxic for non-listed products.

1. Conditioning

T: 23±2°C and R.H 50±5%, at least 48h and until the test sample was conditioned to constant mass.

2. Test results

| Gas component [mg/g] | 1 | 2 | 3 | Avg | Reference concentration [mg/m ³] |
|----------------------|--------|--------|--------|--------|--|
| CO | 46.53 | 48.75 | 44.76 | 46.68 | 1380 |
| CO ₂ | 470.09 | 484.02 | 504.91 | 486.34 | 72000 |
| HF | ND | ND | ND | -- | 25 |
| HCl | ND | ND | ND | -- | 75 |
| HBr | ND | ND | ND | -- | 99 |
| HCN | ND | ND | ND | -- | 55 |
| NO, NO _x | ND | ND | ND | -- | 38 |
| SO ₂ | ND | ND | ND | -- | 262 |

ND indicates Non-detected.

Calculations of CIT_{NLP}

$$CIT_{NLP} = 1 \frac{g}{m^3} \sum_{i=1}^{i=8} \frac{Y_i}{C_i}$$

Y_i : is the yield of ith gas in mg/g in the NF X70-100-1 tube furnace;

C_i : is the reference concentration of the ith gas in mg/m³.

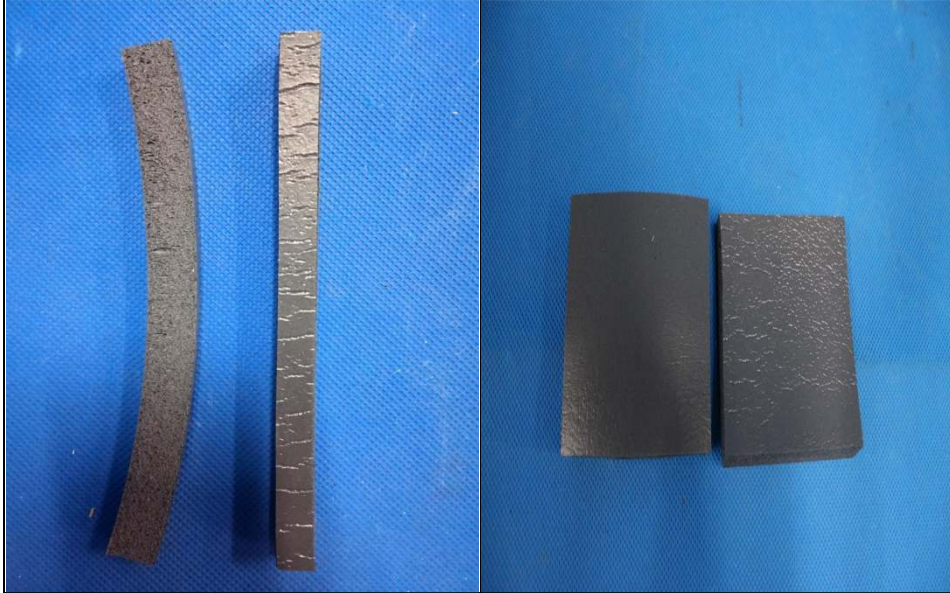
CIT_{NLP} = 0.04

To be continued...



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Photo Appendix:



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End of Report



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