

TEST REPORT

Application No... : S202105117223

Applicant's name : Arctic (HK) Ltd.

Applicant's address : Unit 1302-05, The Octagon, 6 Sha Tsui Road, Tsuen Wan, Hong Kong

Sample description : Thermal Pad

Model : APT2012 series, 0.5mm; APT2012 series, 1.0mm; APT2012 series, 1.5mm;
APT2560 series, 0.5mm; APT2560 series, 1.0mm; APT2560 series, 1.5mm

Date of receipt of test item : 2021.05.21

Test location : Fanguang Inspection & Testing Co., Ltd (Guangzhou Branch)
Room 02, The 2nd floor No.201, GRG Technological Building, 163 Ping Yun Rd,
Tianhe District, Guangzhou, China

Test standard : UL 94, Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, Sixth Edition including revisions through February 17, 2017

Test date(s) : 2021.05.24 to 2021.05.31

Test result : The test results are in compliance with the above mentioned standards.

Date of issue : 2021.06.07

Tested by:

Alvin Zhang

Alvin Zhang

Reviewed by:

Bill Luo

Bill Luo

Approved by:

Jinjin Teng (Manager)

Jinjin Teng



Other aspects: N/A

Abbreviations: P = passed; F = failed; N/A = not applicable

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced, except in full, without the written approval of FGTEST.

In China, this test report is only used for scientific research, teaching or internal quality control if there is no China Metrology Accreditation (CMA) mark.



Test item description...:

Trade mark.....: Arctic

Manufacturer: Arctic (HK) Ltd.

Manufacturer's address

.....: Unit 1302-05, The Octagon, 6 Sha Tsui Road, Tsuen Wan, Hong Kong

Factory: Arctic (HK) Ltd.

Factory's address: Unit 1302-05, The Octagon, 6 Sha Tsui Road, Tsuen Wan, Hong Kong

Ratings: V-0

General product information:

Product: Thermal Pad.

Test samples: Plastic material supplied by the applicant

Colour: APT2012 series: Pink.

APT2560 series: Blue.

Copy of marking plate:

N/A

50W (20 mm) Vertical Burning Test; V-0, V-1, or V-2

Conditioning:

Conditioning of clause 6.1:

- The test specimens 1#~5#, 11#~15#, 21#~25#, 31#~35#, 41#~45#, 51#~55# were conditioned for 48 hours at 24°C and 50% relative humidity.
- The laboratory atmosphere was 24.1°C and 50% relative humidity.

Conditioning of clause 6.2:

- The test specimens 6#~10#, 16#~20#, 26#~30#, 36#~40#, 46#~50#, 56#~60# for certain tests were to be preconditioned in an air-circulating oven for 168 hours at 70°C and then cooled in the desiccators for 4 hours at room temperature.
- The laboratory atmosphere was 24.1°C and 50% relative humidity.

Test result:

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|---|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2560 series, 0.5mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 1# | 1.1 | 1.1 | 10.7 | 1.4 | 2.5 | No | No | No |
| | 2# | 0 | 1.0 | | 1.2 | 2.2 | No | No | No |
| | 3# | 0 | 1.4 | | 1.9 | 3.3 | No | No | No |
| | 4# | 1.0 | 1.9 | | 1.7 | 3.6 | No | No | No |
| | 5# | 1.1 | 2.1 | | 1.8 | 3.9 | No | No | No |
| Conditioning 6.2 | 6# | 1.6 | 1.9 | 17.5 | 1.3 | 3.2 | No | No | No |
| | 7# | 2.5 | 1.8 | | 1.1 | 2.9 | No | No | No |
| | 8# | 1.1 | 1.5 | | 1.0 | 2.5 | No | No | No |
| | 9# | 1.4 | 2.1 | | 1.1 | 3.2 | No | No | No |
| | 10# | 1.2 | 2.4 | | 1.2 | 3.6 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: | | | | | | | | | |
| t ₁ : afterflame time after first flame application | | | | | | | | | |
| t ₂ : afterflame time after second flame application | | | | | | | | | |
| t ₃ : afterglow time after second flame application. | | | | | | | | | |

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|--|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2560 series, 1.0mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 11# | 1.0 | 1.9 | 14.3 | 1.6 | 3.5 | No | No | No |
| | 12# | 2.0 | 2.1 | | 1.9 | 4.0 | No | No | No |
| | 13# | 1.0 | 1.7 | | 1.9 | 3.6 | No | No | No |
| | 14# | 1.1 | 2.1 | | 2.1 | 4.2 | No | No | No |
| | 15# | 0 | 1.4 | | 2.1 | 2.5 | No | No | No |
| Conditioning 6.2 | 16# | 1.2 | 2.1 | 15.7 | 1.7 | 3.8 | No | No | No |
| | 17# | 1.1 | 2.4 | | 1.5 | 3.9 | No | No | No |
| | 18# | 1.3 | 2.0 | | 1.8 | 3.8 | No | No | No |
| | 19# | 1.1 | 1.9 | | 1.0 | 2.9 | No | No | No |
| | 20# | 1.0 | 1.6 | | 1.3 | 2.9 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: t ₁ : afterflame time after first flame application t ₂ : afterflame time after second flame application t ₃ : afterglow time after second flame application. | | | | | | | | | |

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|---|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2560 series, 1.5mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 21# | 0 | 1.6 | 10.0 | 1.7 | 3.3 | No | No | No |
| | 22# | 0 | 1.8 | | 1.3 | 3.1 | No | No | No |
| | 23# | 0 | 1.6 | | 2.1 | 3.7 | No | No | No |
| | 24# | 0 | 2.2 | | 3.1 | 5.3 | No | No | No |
| | 25# | 0 | 2.8 | | 2.9 | 5.7 | No | No | No |
| Conditioning 6.2 | 26# | 1.1 | 1.7 | 11.0 | 1.5 | 3.2 | No | No | No |
| | 27# | 0 | 1.2 | | 1.0 | 2.2 | No | No | No |
| | 28# | 1.2 | 1.9 | | 1.4 | 3.3 | No | No | No |
| | 29# | 1.1 | 1.7 | | 1.3 | 3.0 | No | No | No |
| | 30# | 0 | 1.1 | | 1.7 | 2.8 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: | | | | | | | | | |
| t ₁ : afterflame time after first flame application | | | | | | | | | |
| t ₂ : afterflame time after second flame application | | | | | | | | | |
| t ₃ : afterglow time after second flame application. | | | | | | | | | |

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|---|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2012 series, 0.5mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 31# | 1.1 | 1.4 | 10.5 | 1.3 | 2.7 | No | No | No |
| | 32# | 0 | 1.2 | | 1.5 | 2.7 | No | No | No |
| | 33# | 1.3 | 2.1 | | 1.6 | 3.7 | No | No | No |
| | 34# | 0 | 1.3 | | 1.4 | 2.7 | No | No | No |
| | 35# | 1.0 | 1.1 | | 1.5 | 2.6 | No | No | No |
| Conditioning 6.2 | 36# | 0 | 1.2 | 6.9 | 0 | 1.2 | No | No | No |
| | 37# | 0 | 1.8 | | 1.1 | 2.9 | No | No | No |
| | 38# | 0 | 1.5 | | 0 | 1.5 | No | No | No |
| | 39# | 0 | 1.0 | | 0 | 1.0 | No | No | No |
| | 40# | 0 | 1.4 | | 0 | 1.4 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: | | | | | | | | | |
| t ₁ : afterflame time after first flame application | | | | | | | | | |
| t ₂ : afterflame time after second flame application | | | | | | | | | |
| t ₃ : afterglow time after second flame application. | | | | | | | | | |

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|---|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2012 series, 1.0mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 41# | 0 | 0 | 0 | 1.0 | 1.0 | No | No | No |
| | 42# | 0 | 0 | | 1.0 | 1.0 | No | No | No |
| | 43# | 0 | 0 | | 1.1 | 1.1 | No | No | No |
| | 44# | 0 | 0 | | 1.1 | 1.1 | No | No | No |
| | 45# | 0 | 0 | | 0 | 0 | No | No | No |
| Conditioning 6.2 | 46# | 0 | 1.1 | 2.2 | 0 | 1.1 | No | No | No |
| | 47# | 0 | 0 | | 0 | 0 | No | No | No |
| | 48# | 0 | 0 | | 1.0 | 1.0 | No | No | No |
| | 49# | 0 | 1.1 | | 1.4 | 2.5 | No | No | No |
| | 50# | 0 | 0 | | 0 | 0 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: | | | | | | | | | |
| t ₁ : afterflame time after first flame application | | | | | | | | | |
| t ₂ : afterflame time after second flame application | | | | | | | | | |
| t ₃ : afterglow time after second flame application. | | | | | | | | | |

| Result of Vertical Burning Test | | | | | | | | Verdict: | Pass |
|---|----------|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|---|----------------------------|--|
| Test model: APT2012 series, 1.5mm | | | | | | | | Classification: | V-0 |
| Conditioning | Test No. | t ₁ (s) | t ₂ (s) | t ₁ +t ₂ (s) | t ₃ (s) | t ₂ +t ₃ (s) | Afterflame or afterglow of any specimen up to the holding clamp | Flaming particles or drops | Cotton indicator ignited by flaming particles or drops |
| Conditioning 6.1 | 51# | 0 | 0 | 1.1 | 0 | 0 | No | No | No |
| | 52# | 0 | 0 | | 0 | 0 | No | No | No |
| | 53# | 0 | 0 | | 1.0 | 1.0 | No | No | No |
| | 54# | 0 | 0 | | 0 | 0 | No | No | No |
| | 55# | 0 | 1.1 | | 0 | 1.1 | No | No | No |
| Conditioning 6.2 | 56# | 0 | 0 | 1.0 | 0 | 0 | No | No | No |
| | 57# | 0 | 1.0 | | 0 | 1.0 | No | No | No |
| | 58# | 0 | 0 | | 0 | 0 | No | No | No |
| | 59# | 0 | 0 | | 0 | 0 | No | No | No |
| | 60# | 0 | 0 | | 0 | 0 | No | No | No |
| A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively: | | | | | | | | | |
| Materials classification conditions | V-0 | ≤10s | ≤10s | ≤50s | -- | ≤30s | No | -- | No |
| | V-1 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | No |
| | V-2 | ≤30s | ≤30s | ≤250s | -- | ≤60s | No | -- | Yes |
| Supplementary information: | | | | | | | | | |
| t ₁ : afterflame time after first flame application | | | | | | | | | |
| t ₂ : afterflame time after second flame application | | | | | | | | | |
| t ₃ : afterglow time after second flame application. | | | | | | | | | |

List of test equipment used

| No. | Equipment name | Model | Equipment No. | Due date of calibration |
|-----|--|------------|-----------------|-------------------------|
| 1. | Horizontal-vertical flame chamber tester | JPY-1195 | FTJGDB-2016-055 | 2021-11-30 |
| 2. | Digital caliper | 150×0.01mm | FGZDA-2016-302 | 2021-08-11 |
| 3. | Stopwatch | JD-100 | FGZDA-2016-423 | 2021-11-12 |
| 4. | Hygro/thermograph | RJ900 | FGZDA-2016-090 | 2021-08-06 |
| 5. | Oven | LC-213 | FGZGDB-2016-054 | 2021-09-03 |
| 6. | Temperature & Humidity test chamber | HSL-10KA | FGZGDA-2016-088 | 2022-05-17 |

Annex: Photos of Product

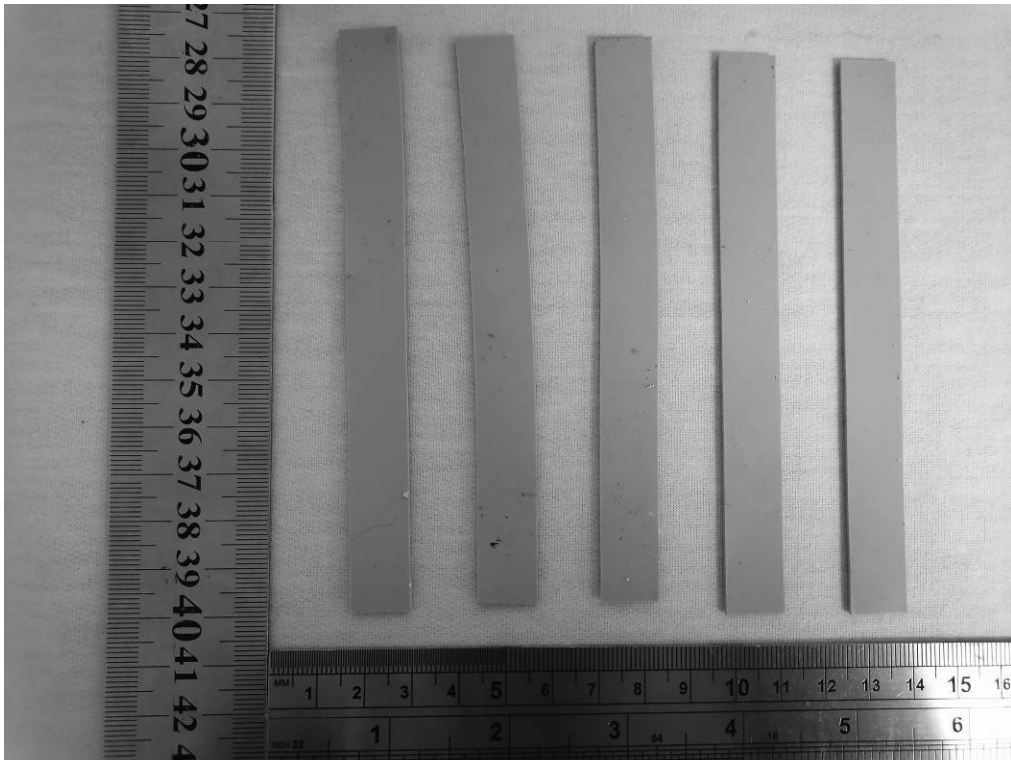


Photo 1: Test specimens for APT2012 series

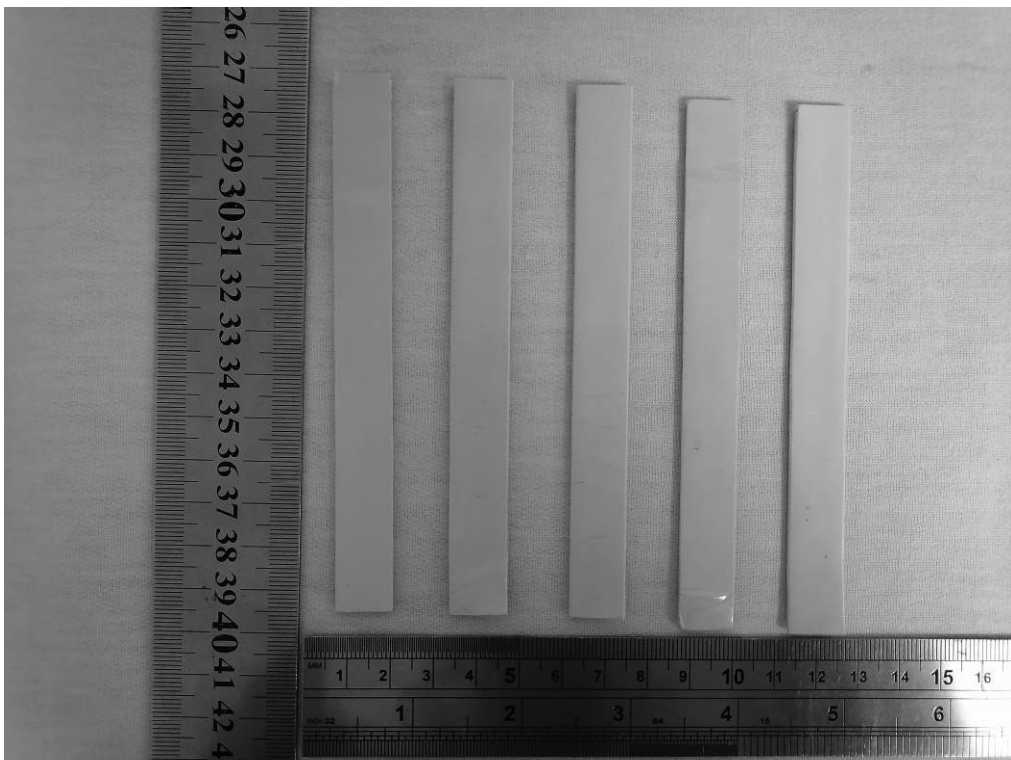


Photo 2: Test specimens for APT2560 series