

Fangguang Inspection & Testing Co., Ltd.



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Report No.: S20210511722301

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:	Fangguang 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:	Reviewed by: Approve by:									
Alvin Zhang	Bill Luo Jinjin Teng (Manajer)									
Alvin. zhang Brin 140 Jin jin Terreprovedion										
Other aspects: N/A										
Abbreviations: <i>P</i> = pa	ssed; 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.										

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TRF No.:FG.WI-07-UL94-2017(1.0)



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 informa	ition:
Product: Thermal Pad.	
Test samples: Plastic mate	erial supplied by the applicant
Colour: APT2012 series: F	Pink.
APT2560 series: B	Blue.
Copy of marking plate: N/A	



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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.

t₃: afterglow time after second flame application.

Test result:

Result of Vertical Burning TestVerdict:PassTest model: APT2560 series, 0.5mmClassification:V-0										
	Τe	est mod	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	
	1#	1.1	1.1		1.4	2.5	No	No	No	
Conditioning	2#	0	1.0		1.2	2.2	No	No	No	
6.1	3#	0	1.4	10.7	1.9	3.3	No	No	No	
0.1	4#	1.0	1.9		1.7	3.6	No	No	No	
	5#	1.1	2.1		1.8	3.9	No	No	No	
	6#	1.6	1.9	17.5	1.3	3.2	No	No	No	
Conditioning	7#	2.5	1.8		1.1	2.9	No	No	No	
6.2	8#	1.1	1.5		1.0	2.5	No	No	No	
0.2	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	V-0	≤10s	≤10s	≤50s		≤30s	No		No	
classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No	
conditions	conditions V-2 ≤30s ≤250s ≤60s No Yes									
Supplementary information: t ₁ : afterflame time after first flame application t ₂ : afterflame time after second flame application										



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Result of Vertical Burning TestVerdict:PassTest model: APT2560 series, 1.0mmClassification:V-0										
	Τe	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	
	11#	1.0	1.9		1.6	3.5	No	No	No	
Conditioning	12#	2.0	2.1		1.9	4.0	No	No	No	
6.1	13#	1.0	1.7	14.3	1.9	3.6	No	No	No	
0.1	14#	1.1	2.1		2.1	4.2	No	No	No	
	15#	0	1.4		2.1	2.5	No	No	No	
	16#	1.2	2.1	15.7	1.7	3.8	No	No	No	
Conditioning	17#	1.1	2.4		1.5	3.9	No	No	No	
6.2	18#	1.3	2.0		1.8	3.8	No	No	No	
0.2	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 clas	ssed V	-0, V-1	or V-2 s	shall mee	et all ree	quireme	ents as following	respectively:		
Materials	V-0	≤10s	≤10s	≤50s		≤30s	No		No	
classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No	
conditions	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.										



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FUIESI		Result	of Vert	ical Burn	ina Tes	st		Verdict:	Pass
	Τe	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
	21#	0	1.6		1.7	3.3	No	No	No
Conditioning	22#	0	1.8		1.3	3.1	No	No	No
6.1	23#	0	1.6	10.0	2.1	3.7	No	No	No
0.1	24#	0	2.2		3.1	5.3	No	No	No
	25#	0	2.8		2.9	5.7	No	No	No
	26#	1.1	1.7	11.0	1.5	3.2	No	No	No
Conditioning	27#	0	1.2		1.0	2.2	No	No	No
6.2	28#	1.2	1.9		1.4	3.3	No	No	No
0.2	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 clas	ssed V	-0, V-1	or V-2 s	shall mee	et all red	quireme	ents as following	respectively:	ł
Materials	V-0	≤10s	≤10s	≤50s		≤30s	No		No
classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No
conditions	V-2	≤30s	≤30s	≤250s		≤60s	No		Yes
Supplementary information:									
t ₁ : afterflame time after first flame application									
t ₂ : afterflame t									
t ₃ : afterglow tin	me afte	er secor	nd flame	e applicat	tion.				



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FGIESI		Result	of Vert	ical Burn	ing Tes	st		Verdict:	Pass
	Te	Classification:	V-0						
Conditioning	Test No.	t ₁ (s)	t ₂ (s)	t ₁ +t ₂ (s)	t₃ (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
	31#	1.1	1.4		1.3	2.7	No	No	No
Conditioning	32#	0	1.2		1.5	2.7	No	No	No
6.1	33#	1.3	2.1	10.5	1.6	3.7	No	No	No
0.1	34#	0	1.3		1.4	2.7	No	No	No
	35#	1.0	1.1		1.5	2.6	No	No	No
	36#	0	1.2	6.9	0	1.2	No	No	No
O a raditi a rainan	37#	0	1.8		1.1	2.9	No	No	No
Conditioning 6.2	38#	0	1.5		0	1.5	No	No	No
0.2	39#	0	1.0		0	1.0	No	No	No
	40#	0	1.4		0	1.4	No	No	No
A material clas	ssed V	-0, V-1	or V-2 s	shall mee	et all red	quireme	ents as following	respectively:	l
Materials	V-0	≤10s	≤10s	≤50s		≤30s	No		No
classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No
conditions	V-2	≤30s	≤30s	≤250s		≤60s	No		Yes
Supplementary information:									
t1: afterflame t	ime aft	er first f	lame a	oplicatior	l				
t ₂ : afterflame t	ime aft	er seco	nd flam	e applica	ation				
t ₃ : afterglow tir	ne afte	er secor	nd flame	e applicat	tion.				

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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	FGIESI								•	
Conditioning Conditioning $no.$ Test $no.$ $I_1(s)$ $I_2(s)$ I_{1+t_2} (s) $I_3(s)$ I_{1+t_2} (s) $I_3(s)$ I_{1+t_2} I_2+t_3 Afterflame or afterglow of any specimen up to the holding clampFlaming particles or dropsCotion indicator indicator ignited by flaming particles or drops41#00 I_1 1.0NoNoNo42#00 I_1 1.0NoNoNo43#00 I_1 1.11.00NoNo44#00 I_1 1.11.10NoNo44#00 I_1 1.11.10NoNo6.144#00 I_2 I_1 1.1NoNoNo6.247#00 I_2 I_2 I_2 I_2 I_2 I_3 I_4 I_2 I_2 61.1 I_2 I_3 I_4 I_2 I_4 I_2 I_4 I_5 I_6 6.247#00 I_2 I_4 I_2 I_4 I_5 I_6 I_6 I_6 6.2 I_7 I_2 I_2 I_2 I_4 I_5 I_6 I_6 I_6 I_6 I_4 I_5 I_6 I_7 I_6 I_6 I_6 I_6 I_6 I_6				Verdict:	Pass					
Conditioning No.Test No.II		Te	Classification:	V-0						
Conditioning 6.1 42# 0 0 1 1.0 1.0 No No No 6.1 43# 0 0 0 1.1 1.1 No No No 6.1 44# 0 0 0 1.1 1.1 No No No 44# 0 0 0 0 No No No 45# 0 0 0 0 No No No 6.2 46# 0 1.1 1.1 No No No 6.2 46# 0 1.1 No No No 6.2 46# 0 0 1.1 No No No 6.2 48# 0 0 0 1.0 No No No 6.2 49# 0 1.1 1.0 1.0 No No No A material carcial carcial carcial carcial carcial carc	Conditioning		t ₁ (s)	t ₂ (s)		t₃ (s)		afterglow of any specimen up to the	particles or	indicator ignited by flaming particles or
Conditioning 6.1 Image: sector of the sector		41#	0	0		1.0	1.0	No	No	No
4.1 4.3 # 0 0 0 1.1 1.1 No No No 4.4 # 0 0 0 1.1 1.1 1.1 No No No 4.5 # 0 0 0 0 No No No 4.6 # 0 1.1 1.1 1.1 No No No 4.6 # 0 1.1 2.2 0 1.1 No No No 6.2 4.6 # 0 0.1 2.2 0 1.1 No No No 6.2 4.6 # 0 0.1 2.2 0 0.1 0.0 No No 6.2 4.6 # 0 0.1 2.2 1.0 1.0 No No No 6.2 0 0 0 0 0 0 No No No 6.2 0.5 0.5 0.5 0.5 0.5 <t< td=""><td>Conditioning</td><td>42#</td><td>0</td><td>0</td><td></td><td>1.0</td><td>1.0</td><td>No</td><td>No</td><td>No</td></t<>	Conditioning	42#	0	0		1.0	1.0	No	No	No
$ \begin{array}{ c c c c c c c } \hline 44\# & 0 & 0 & \\ \hline 45\# & 0 & 0 & \\ \hline 45\# & 0 & 0 & \\ \hline 45\# & 0 & 1.1 & \\ \hline 47\# & 0 & 0 & \\ \hline 47\# & 0 & 0 & \\ \hline 47\# & 0 & 0 & \\ \hline 48\# & 0 & 0 & \\ \hline 48\# & 0 & 0 & \\ \hline 49\# & 0 & 1.1 & \\ \hline 50\# & 0 & 0 & \\ \hline 1.0 & 1.0 & No & No & No & No \\ \hline 1.0 & 1.0 & No & No & No & No \\ \hline 1.0 & 1.0 & No & No & No & No \\ \hline 1.0 & 1.0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 1.0 & No & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No & No \\ \hline 1.0 & 0 & 0 & No & No & No & No & No & No $	•	43#	0	0	0	1.1	1.1	No	No	No
46# 0 1.1 No No No 6.2 47# 0 0 2.2 0 1.1 No No No 6.2 48# 0 0 2.2 1.0 1.0 No No No 6.2 49# 0 1.1 1.0 No No No 6.2 49# 0 1.1 1.0 No No No 6.2 49# 0 1.1 1.4 2.5 No No No 6.2 50# 0 0 1.4 2.5 No No No 6.2 50# 0 0 1.4 2.5 No No No 6.2 50# 0 0 0 No No No A material classed V-0, V-1 V-2 V-1 41 50s 50s No No Classification V-0 510s 510s 50	0.1	44#	0	0		1.1	1.1	No	No	No
Arr A		45#	0	0		0	0	No	No	No
Conditioning 6.2 48# 0 0 2.2 1.0 1.0 No No No 6.2 49# 0 1.1 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: No No No Materials V-0 ≤10s ≤50s ≤30s No No Idassification V-1 ≤30s ≤30s ≤60s No No		46#	0	1.1	2.2	0	1.1	No	No	No
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Conditioning	47#	0	0		0	0	No	No	No
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	•	48#	0	0		1.0	1.0	No	No	No
A material classed V-0, V-1 or V-2 shall meet all requirements as following respectively:MaterialsV-0 $\leq 10s$ $\leq 50s$ $\leq 30s$ NoNoclassificationV-1 $\leq 30s$ $\leq 250s$ $\leq 60s$ NoNo	0.2	49#	0	1.1		1.4	2.5	No	No	No
Materials V-0 ≤10s ≤50s ≤30s No No classification V-1 ≤30s ≤30s ≤250s ≤60s No No		50#	0	0		0	0	No	No	No
classificationV-1 $\leq 30s$ $\leq 250s$ $\leq 60s$ NoNo	A material clas	ssed V	-0, V-1	or V-2 s	shall mee	et all red	quireme	ents as following	respectively:	-
	Materials	V-0	≤10s	≤10s	≤50s		≤30s	No		No
conditions V-2 ≤30s ≤30s ≤250s ≤60s No Yes	classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No
	conditions	V-2	≤30s	≤30s	≤250s		≤60s	No		Yes
Supplementary information:	Supplementar	y inforr	nation:							
t ₁ : afterflame time after first flame application	t1: afterflame t	ime aft	er first f	lame a	oplicatior	า				
t ₂ : afterflame time after second flame application	t ₂ : afterflame t	ime aft	er seco	nd flam	e applica	ation				
t ₃ : afterglow time after second flame application.	t ₃ : afterglow tir	ne afte	er secor	nd flame	e applicat	tion.				

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FGIESI		Result	of Vert	ical Burn	ing Tes	st st		Verdict:	Pass
	Τe	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
	51#	0	0		0	0	No	No	No
Conditioning	52#	0	0		0	0	No	No	No
6.1	53#	0	0	1.1	1.0	1.0	No	No	No
0.1	54#	0	0		0	0	No	No	No
	55#	0	1.1		0	1.1	No	No	No
	56#	0	0	1.0	0	0	No	No	No
Conditioning	57#	0	1.0		0	1.0	No	No	No
Conditioning 6.2	58#	0	0		0	0	No	No	No
0.2	59#	0	0		0	0	No	No	No
	60#	0	0		0	0	No	No	No
A material clas	ssed V	-0, V-1	or V-2 s	shall mee	et all red	quireme	ents as following	respectively:	1
Materials	V-0	≤10s	≤10s	≤50s		≤30s	No		No
classification	V-1	≤30s	≤30s	≤250s		≤60s	No		No
conditions	V-2	≤30s	≤30s	≤250s		≤60s	No		Yes
Supplementar	y inforr	nation:						ł	
t ₁ : afterflame time after first flame application									
t ₂ : afterflame t	ime aft	er seco	nd flam	e applica	ation				
t ₃ : afterglow tin	ne afte	er secor	nd flame	e applicat	tion.				



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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



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Annex: Photos of Product

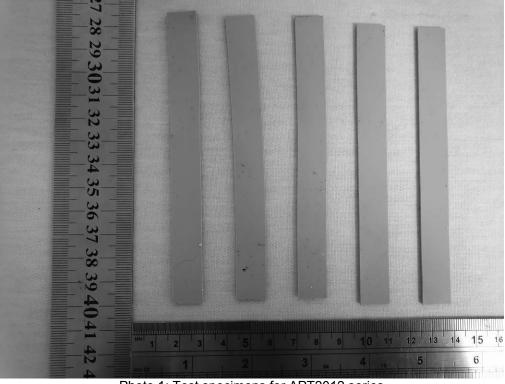


Photo 1: Test specimens for APT2012 series

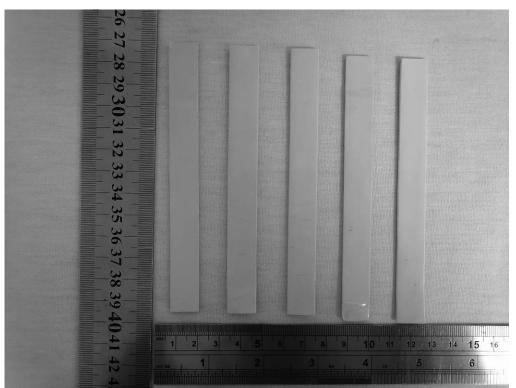


Photo 2: Test specimens for APT2560 series