

Test Report

No. SHAEC2103727101

Date: 12 Mar 2021

Page 1 of 10

APPLIED POWER MICROELECTRONICS CO., LTD

#206,BUILDING#5, 8 HUASHANZHONGLU, XINBEI DISTRICT, CHANGZHOU, JIANGSU

The following sample(s) was/were submitted and identified on behalf of the clients as : TRANSIENT VOLTAGE SUPPRESSOR(TVS)

SGS Job No. : SP21-005867 - SH
Model No. : ASM712
Client Ref. Information : SEE ATTACHMENT
Date of Sample Received : 08 Mar 2021
Testing Period : 08 Mar 2021 - 12 Mar 2021
Test Requested : Selected test(s) as requested by client.
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jenny Lan

Jenny Lan
Approved Signatory

scan to see the report



SHAEC2103727101



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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	SHA21-037271.001	Black body with silvery metal

Remarks :

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND



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No. SHAEC2103727101

Date: 12 Mar 2021

Page 3 of 10

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

Halogen

Test Method : With reference to EN 14582: 2016 , analysis was performed by IC.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND



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SOD SERIES	SOT SERIES	SOP SERIES	MSOP SERIES	SOD-123FL SERIES		
AR3311D3	AR0511D3	AR0811D3	AR1211D3	AR1511D3	AR2411D3	AR0521D3
AUXX71D3	AUXX81D3	AU3301D3	AU1201D3	AU1201D3	AU2401D3	ASD05-40
ASD05C-40C						
AR0501D5	AR0521D5	AU3301D5	AU3351D5	AU0521D5	AU0531D5	AU0551D5
AU0561D5	AU0701D5	AU1201D5	AU1231D5	AU2401D5	AU3601D5	AU3321D5
AU1221D5	AU1521D5					
AR0501D9	AR0521D9	AU0521D9	AU0531D9	AU0561D9	AU1201D9	
AR0502S2	AR0552S2	AR0534S2	SRV05-4	ASRV05-4	AR3304S2	AR3354S2
AR0551S2	AR8001S2	AU0504S2	AU0505S2	AU0522S2	AU0524S2	AU0524S2-5L
ASL05-36	ASM05-36	ASM05C-36C	ASM712			
AR0502S1	ASR3.3	ASR05	ASR70	ALCDA05C-24C		
ASMF05	ASMF05C	AR0504S3	AR0534S3			
AR0502S5	AR0532S5	AR0571S5	AR0572S5	AU0504S5	AU0504S6	AR0504S6
AR0504MP	AR0544MP	AR0554MP	AR0508MP	AR0506M8	AR0507M8	AU0506M8
AU0508M8	SLVU2.8-4	LC03-3.3	LC03-6	AU2804S8	AU0506S8	AR2502S8
AU2804S8	ASM712H	ASL05C	ASM12H	ASD15CM		
AU0781D1F	AU1271D1F-T	AU1281D1F-T	AU2471D1F-T	AU2481D1F-T		



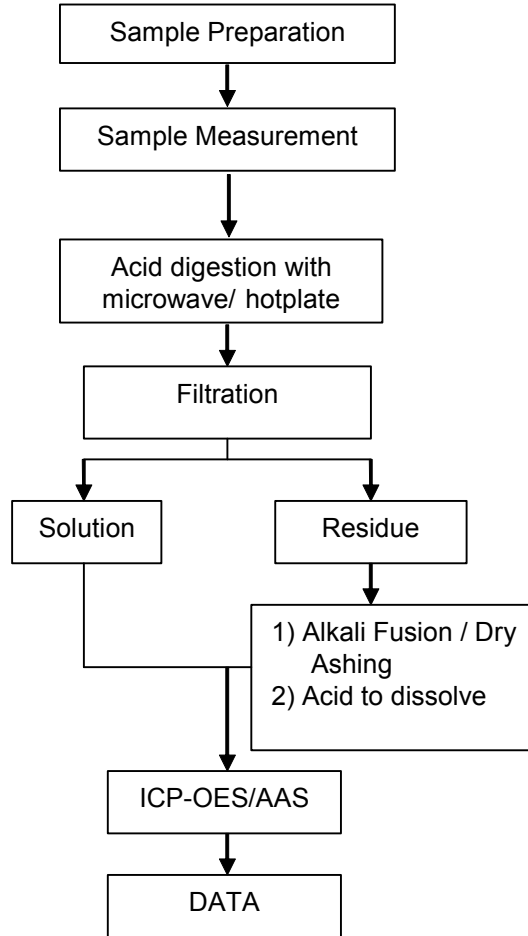
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Elements (IEC62321) Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart.

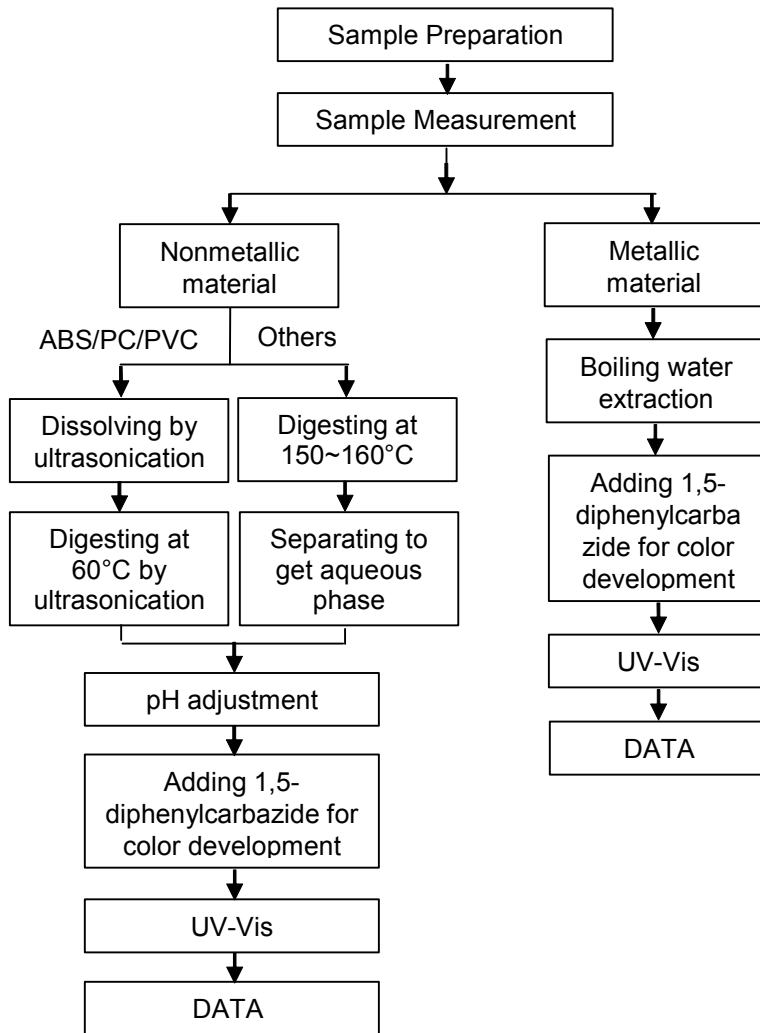


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Hexavalent Chromium (Cr(VI)) Testing Flow Chart

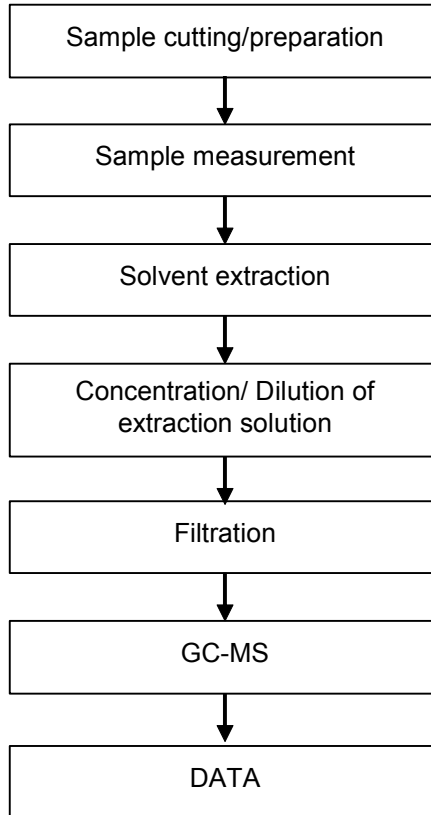


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PBBs/PBDEs Testing Flow Chart

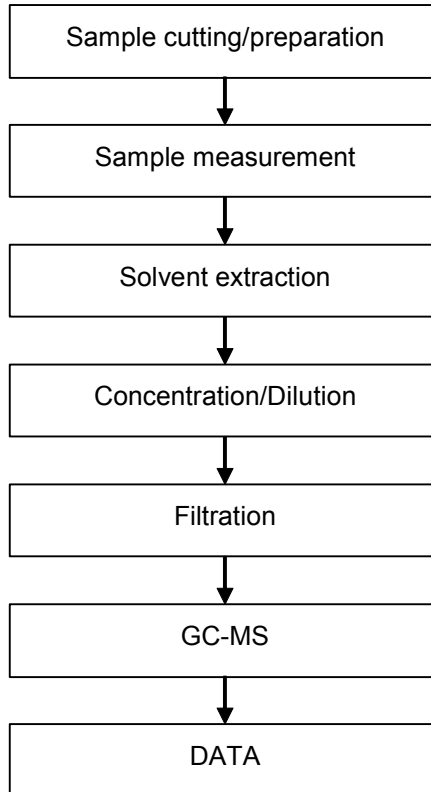


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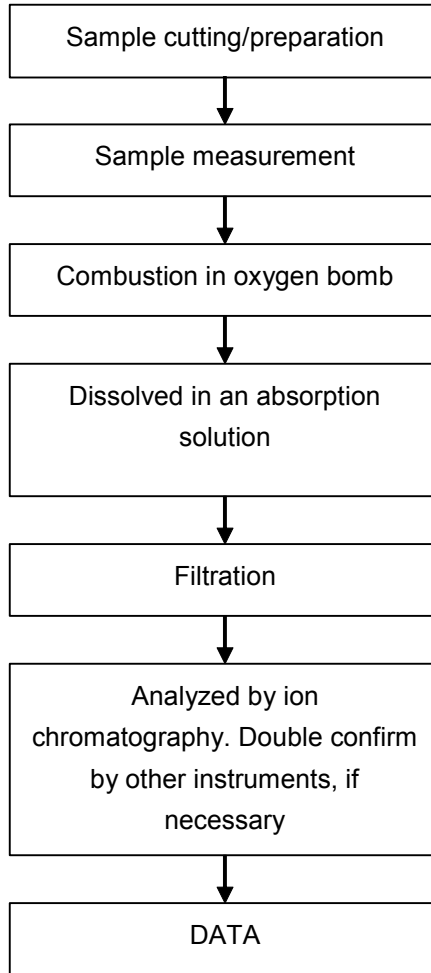
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Phthalates Testing Flow Chart



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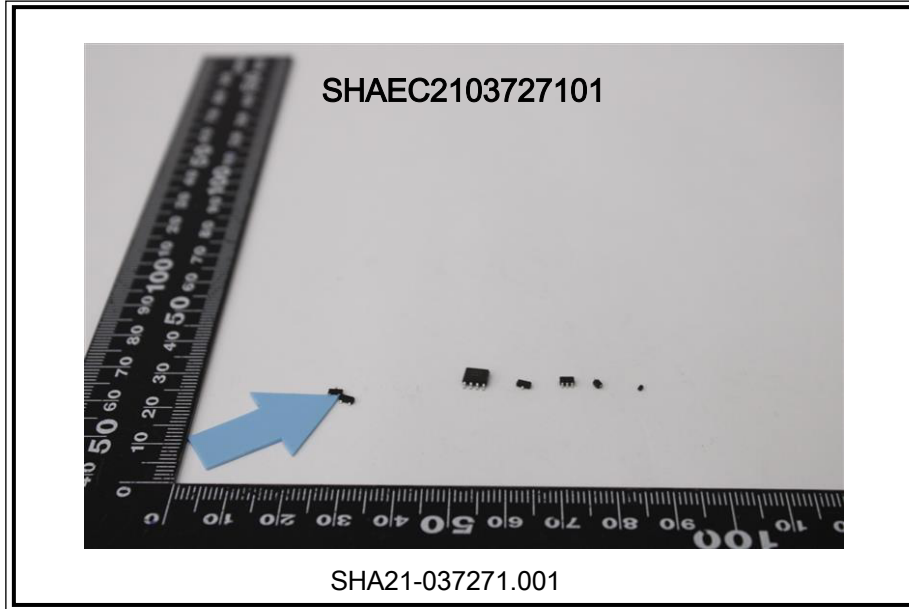
Halogen Testing (oxygen bomb) Flow Chart



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