



**BUREAU
VERITAS**

TEST REPORT

LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 1 OF 10

APPLICANT : **PARTICLE INDUSTRIES, INC**
126 POST ST, 4TH FLOOR, SAN FRANCISCO, CA 94108
USA

DATE OF SUBMISSION : OCT 10, 2018

TEST PERIOD : OCT 10, 2018 TO JUN 27, 2019

SAMPLE DESCRIPTION : ARGON

Style No. : ARGN

Sample Size: 1

BUREAU VERITAS SHENZHEN CO.,LTD
DONGGUAN BRANCH

Harvey Xue
Manager, Analytical Lab

RT/Carmen Xiong/Joe Ye

REMARK

If there are questions or concerns on this report, please contact the following persons:

Report Enquiry: (86) 0769 89952999 Ext. 8175 CPSAnalytical.DG@cn.bureauveritas.com

Business Contact: (86) 0769 85893595

This report shall not be reproduced except in full, without the written approval of our laboratory.



LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 2 OF 10

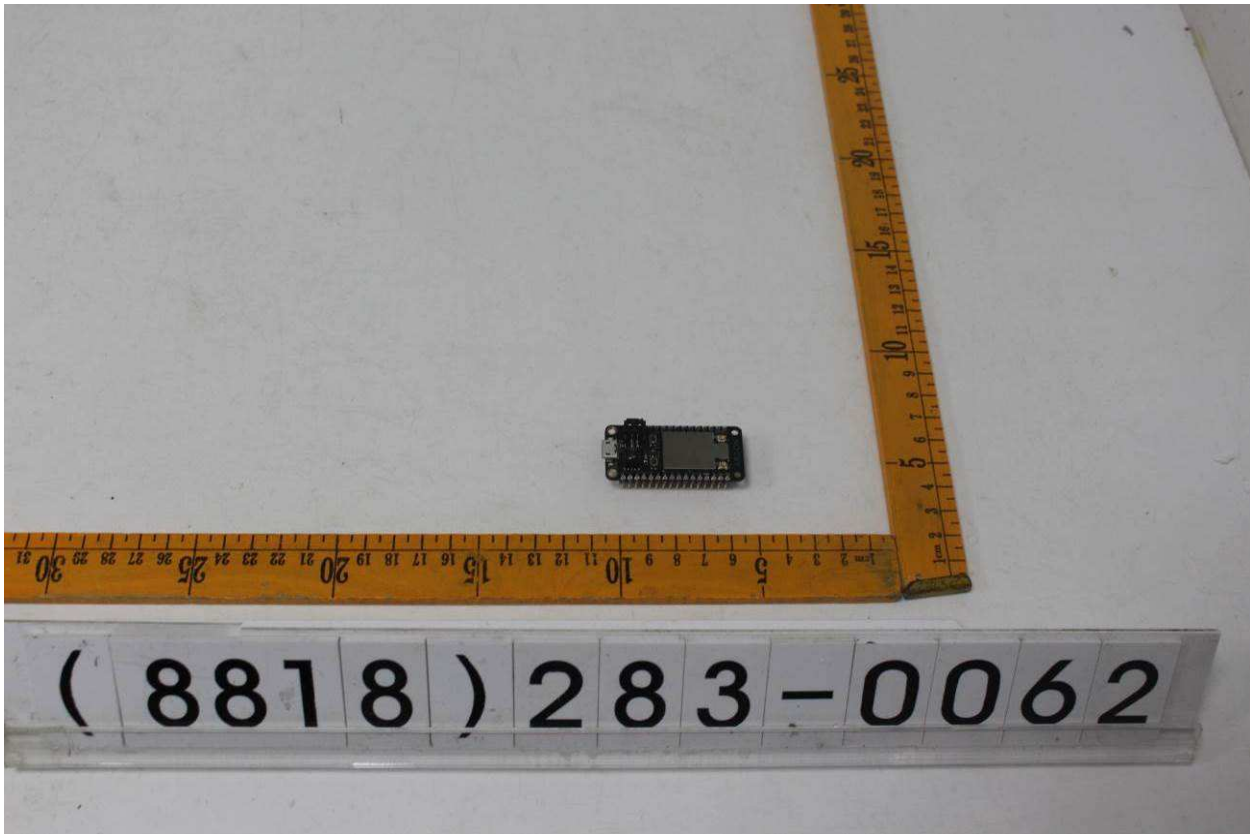
SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION	REMARK
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU	PASS	-
The BBP/DBP/DEHP/DIBP content requirements of the European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU	PASS	-




LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 3 OF 10

Photo of the Submitted Sample



Test Item Description and Photo List

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I001		Silvery metal	Cover, PCB	-
I002		Silvery metal	Contact plate, micro USB plug, PCB	-
I003		Silvery metal	Pin, micro USB plug, PCB	-
I004		Black plastic	Pin holder, micro USB plug, PCB	-
I005		Black plastic	Socket "MD", PCB	-
I006		Silvery metal	Pin, socket "MD", PCB	-
I007		Black plastic	Socket, PCB	-
I008		Silvery metal	Pin, socket, PCB	-
I009		Golden metal	Contact plate, plug, PCB	-
I010		Golden metal	Pin, plug, PCB	-
I011		White plastic	Pin holder, plug, PCB	-
I012		Black plastic	Button, touch switch, PCB	-
I013		Silvery metal	Case, touch switch, PCB	-
I014		Transparent/yellow plastic	Cover, contact plate, touch switch, PCB	-
I015		Silvery metal	Contact plate, touch switch, PCB	-
I016		Black plastic	Base, touch switch, PCB	-
I017		Silvery metal	Pin, touch switch, PCB	-
I018		Black body	SMD IC, PCB	-
I019		Bright black body	SMD IC, PCB	-

Test Item(s)	Sample Photo	Item / Component Description(s)	Location(s)	Style(s)
I020		Black body	SMD resistor, PCB	-
I021		Brown body	SMD capacitor, PCB	-
I022		Grey body	SMD capacitor, PCB	-
I023		White printed black body	SMD resistor, PCB	-
I024		White body	SMD LED, PCB	-
I025		Black body	SMD diode, PCB	-
I026		Silvery body	SMD EC, PCB	-
I027		Black/green body	SMD EC, PCB	-
I028		White printed brown body	SMD EC, PCB	-
I029		Translucent/black body	SMD EC, PCB	-
I030			Black plastic	Socket, PCB
I031	Silvery metal		Pin, socket, PCB	-
I032	Black body		Inductor, PCB	-
I033	Coppery metal		Coil, inductor, PCB	-
I034	Black body		Big SMD diode, PCB	-
I035	Black body		SMD transistor, PCB	-
I036	Silvery/golden body		SMD EC, PCB	-
I037	Brown/white body		SMD EC, PCB	-
I038	Black/white body		SMD EC, PCB	-
I039	Silvery solder		Solder, PCB	-
I040	Black coated brown plastic with coppery metal		PCB	-



LAB NO. : (8818)283-0062(A)
 DATE : Jun 27, 2019
 PAGE : 6 OF 10

TEST RESULT

Compliance Test – European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU

Test Method : See Appendix.

See Analytes and their corresponding Maximum Allowable Limit in Appendix

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg						-
Test Item(s)	-	-	-	-	-	-	-
I001	ND	ND	ND	ND	NA	NA	PASS
I002	ND	ND	ND	ND	NA	NA	PASS
I003	ND	ND	ND	ND	NA	NA	PASS
I004	ND	ND	ND	ND	ND	ND	PASS
I005	ND	ND	ND	ND	ND*	ND*	PASS
I006	ND	ND	ND	ND	NA	NA	PASS
I007	ND	ND	ND	ND	ND*	ND*	PASS
I008	ND	ND	ND	ND	NA	NA	PASS
I009	ND	ND	ND	ND	NA	NA	PASS
I010	ND	ND	ND	ND	NA	NA	PASS
I011	ND	ND	ND	ND	ND	ND	PASS
I012	ND	ND	ND	ND	ND	ND	PASS
I013	ND	ND	ND	Negative*	NA	NA	PASS
I014	ND	ND	ND	ND	ND	ND	PASS
I015	ND	ND	ND	Negative*	NA	NA	PASS
I016	ND	ND	ND	ND	ND	ND	PASS
I017	ND	ND	ND	ND	NA	NA	PASS
I018	ND	ND	ND	ND	ND	ND	PASS
I019	ND	ND	ND	ND	ND	ND	PASS
I020	ND	ND	ND	ND	ND	ND	PASS
I021	ND	ND	ND	ND	ND	ND	PASS
I022	ND	ND	ND	ND	ND	ND	PASS
I023	ND	ND	ND	ND	ND	ND	PASS
I024	ND	ND	ND	ND	ND	ND	PASS
I025	ND	ND	ND	ND	ND	ND	PASS
I026	ND	ND	ND	ND	ND	ND	PASS



LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 7 OF 10

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg						-
Test Item(s)	-	-	-	-	-	-	-
I027	ND	ND	ND	ND	ND	ND	PASS
I028	ND	ND	ND	ND	ND	ND	PASS
I029	ND	ND	ND	ND	ND	ND	PASS
I030	ND	ND	ND	ND	ND*	ND*	PASS
I031	ND	ND	ND	ND	NA	NA	PASS
I032	ND	ND	ND	ND	NA	NA	PASS
I033	ND	ND	ND	ND	NA	NA	PASS
I034	ND	ND	ND	ND	ND	ND	PASS
I035	ND	ND	ND	ND	ND	ND	PASS
I036	ND	ND	ND	ND	ND	ND	PASS
I037	ND	ND	ND	ND	ND	ND	PASS
I038	ND	ND	ND	ND	ND	ND	PASS
I039	ND	ND	ND	ND	NA	NA	PASS
I040	ND	ND	ND	ND	ND*	ND*	PASS

Note / Key:

ND = Not detected
NR = Not requested
NA = Not applicable
Detection Limit : See Appendix.

“>” = Greater than
mg/kg = milligram(s) per kilogram = ppm = part(s) per million
% = percent

“<” = Less than
10000 mg/kg = 1 %

Remark:

- The testing approach is listed in table of Appendix.
- * denotes as reported result(s) was (were) performed by wet chemistry method. Others were screened by XRF. For XRF screening, the result(s) of Cr VI was (were) reported as total chromium and the result(s) of PBBs and PBDEs was (were) reported as total bromine. Also, the XRF result(s) may be different to the actual content based on various factors including, but not limit to, sample size, thickness, area, non-uniformity composition, surface flatness.
- According to European Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.

APPENDIX

List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit							
[Compliance Test for European Parliament and Council Directive 2011/65/EU] :							
No.	Name of Analytes	Detection Limit (mg/kg)				Wet Chemistry	Maximum Allowable Limit (mg/kg)
		X-ray fluorescence (XRF)^[a]					
		Plastic	Metallic / glass / ceramic	Others			
1	Lead (Pb)	100	200	200	10 ^[b]	1000	
2	Cadmium (Cd)	50	50	50	10 ^[b]	100	
3	Mercury (Hg)	100	200	200	10 ^[c]	1000	
4	Chromium (Cr)	100	200	200	NA	NA	
5	Chromium VI (Cr VI)	NA	NA	NA	3 ^[g, h] / 10 ^[d] / See ^[e, i]	1000 / Negative ^[j]	
6	Bromine (Br)	200	NA	200	NA	NA	
7	Polybromobiphenyls (PBBs) - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	NA	NA	NA	Each 50 ^[f]	Sum 1000	
8	Polybromodiphenyl ethers (PBDEs) - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	NA	NA	NA	Each 50 ^[f]	Sum 1000	



LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 9 OF 10

List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit [Compliance Test for European Parliament and Council Directive 2011/65/EU] :

NA = Not applicable

- [a] Test method with reference to International Standard IEC 62321-3-1: 2013.
- [b] Test method with reference to International Standard IEC 62321-5: 2013.
- [c] Test method with reference to International Standard IEC 62321-4: 2017.
- [d] Polymers and Electronics - Test method with reference to International Standard IEC 62321-7-2:2017.
- [e] Metal - Test method with reference to International Standard IEC 62321-7-1: 2015.
- [f] Test method with reference to International Standard IEC 62321-6: 2015.
- [g] Leather - Test method International Standard ISO 17075-1:2017.
- [h] Other Than Metal, Leather, Polymers and Electronics - Test method with reference to International Standard ISO 17075-1:2017.
- [i] The principle of this method was evaluated and supported by two studies organized by IEC TC 111 WG3. These studies were focused on detecting the presence of Cr VI in the corrosion protection coatings on metallic samples. Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative. Negative means the absence of Cr VI on the tested areas and the result(s) was (were) regarded as in compliance with European Parliament and Council Directive 2011/65/EU, Article 4(1). While, positive means the presence of Cr VI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1).
- [j]

Testing Approach [Compliance Test for European Parliament and Council Directive 2011/65/EU] :

The testing approach was with reference to the following document(s).

- 1 International Standards IEC 62321-1: 2013 and IEC 62321-2: 2013
- 2 "RoHS Enforcement Guidance Document Version 1" by EU RoHS Enforcement Authorities Informal Network. (May 2006)
- 3 "RoHS Regulations - Government Guidance Notes" by United Kingdom Department for Business Innovation & Skills. (February 2011)
- 4 "Final Report to RoHS substances (Hg, Pb, Cr(VI), Cd, PBB and PBDE) in electrical and electronic equipment in Belgium" by Belgium Federal Public Service Health, Food Chain Safety and Environment. (November 2005)



LAB NO. : (8818)283-0062(A)
DATE : Jun 27, 2019
PAGE : 10 OF 10

TEST RESULT

BBP/DBP/DEHP/DIBP Content – European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU

Test Method : With reference to International Standard IEC 62321-8

Test Parameter:	BBP	DBP	DEHP	DiBP	-
Limit (%):	0.1	0.1	0.1	0.1	-
Test Item(s)	Result (%)				Conclusion
I004+I005+I007 +I011+I012	ND	ND	ND	ND	PASS
I014+I016+I030 +I040	ND	ND	ND	ND	PASS

Note / key:

BBP = Butyl benzyl phthalate (CAS No: 85-68-7)

DBP = Dibutyl phthalate (CAS No: 84-74-2)

DEHP = Di(2-ethylhexyl) phthalate (CAS No: 117-81-7)

DiBP = Diisobutyl phthalate (CAS No: 84-69-5)

ND = Not detected

% = percent

10000 mg/kg = 1 %

mg/kg = milligram(s) per kilogram

Detection Limit (%) : Each 0.005

Remark:

- The amendment will be effective on 22 July 2019. For medical devices and control instruments, effective date will be 22 July 2021.
- The composite test sample(s) of the submitted samples was prepared in the manner requested by the client, when subject to the test performed.
- The item(s) 004,005,007,011,012,014,016,030,040 were provided by client dated on Jun 19, 2019.

*** End of Report ***