



Test Report

Report No: CX/2020/20066A

Date: 2020/06/03

HIGGSTEC INC.
NO. 38, LIGONG 1ST ROAD, SEC. 2, WUJIE YILAN HSIEN, 26841, TAIWAN (R.O.C.)

The following sample(s) was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : HIGGSTEC INC.
 Sample Description : TOUCH PANEL
 Style/Item No. : TXXXX-XDGXXXXX-XXXXXX-XXXXX
 Sample Receiving Date : 2020/02/17 and 2020/05/15
 Testing Period : 2020/02/17 to 2020/03/16 and 2020/05/15 to 2020/05/22

Test Requested : (1) As specified by client, the sample(s) was/were tested with reference to RoHS Directive 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).
 (2) As specified by client, to test Halogen-Chlorine, Bromine in the submitted sample(s).

Test Result(s) : Please refer to next page(s).

Summary : (1) Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

* This report is combined with CX/2020/20066 *

Rachel
 Rachel Yang / Team Leader
 Signed for and behalf of
 SGS TAIWAN LTD.
 Chemical Laboratory - Taipei



PIN CODE: B50D3633

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1. Material Fraction Composition

Table 1 The results of screening and chemical test

No.	Type of Components	Description	Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	GC-MS	Other Chemical Test	Note	
					Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	Phthalate			
1	TOUCH PANEL	1.1 TRANSPARENT GLASS WITH BLACK RIM (CX/2020/20066 No.1.1)		Composite Material	Pb	n.d.	---	---	---	---	---	---	
					Cd	n.d.							
					Hg	n.d.							
					Cr	n.d.							
					Br	n.d.							
					Cr(VI)	---							
					PBB	---							
					PBDE	---							
					BBP	---							
	DBP	---											
	DIBP	---											
	DEHP	---											
		1.2 TRANSPARENT FILM (CX/2020/20066 No.1.2)		Polymers	Pb	n.d.	---	---	---	---	---	Refer to Table 2	
					Cd	n.d.							
					Hg	n.d.							
					Cr	n.d.							
					Br	n.d.							
					Cr(VI)	---							
PBB					---								
PBDE					---								
BBP					n.d.								
DBP	n.d.												
DIBP	n.d.												
DEHP	n.d.												
	1.3 TRANSPARENT GLASS (CX/2020/20066 No.1.3)		Composite Material	Pb	n.d.	---	---	---	---	---	Refer to Table 2		
				Cd	n.d.								
				Hg	n.d.								
				Cr	n.d.								
				Br	n.d.								
				Cr(VI)	---								
				PBB	---								
				PBDE	---								
				BBP	---								
DBP	---												
DIBP	---												
DEHP	---												

No.	Type of Components	Description	Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	GC-MS	Other Chemical Test	Note
					Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	Phthalate		
1	TOUCH PANEL	1.8	BLACK PLASTIC HOUSING (CX/2020/20066 No.1.8)		Polymers	Pb	n.d.	---	---	---	Refer to Table 2	
						Cd	n.d.					
						Hg	n.d.					
				Cr	n.d.							
				Br	n.d.							
				Cr(VI)	---							
				PBB	---							
				PBDE	---							
				BBP	n.d.							
				DBP	n.d.							
				DIBP	n.d.							
				DEHP	n.d.							
				Pb	n.d.							
				Cd	n.d.							
				Hg	n.d.							
				Cr	181000							
				Br	n.d.							
				Cr(VI)	n.d.							
				PBB	---							
				PBDE	---							
				BBP	---							
				DBP	---							
				DIBP	---							
				DEHP	---							
				Pb	---							
				Cd	---							
				Hg	---							
				Cr	---							
				Br	---							
				Cr(VI)	n.d.							
				PBB	---							
				PBDE	---							
				BBP	---							
				DBP	---							
				DIBP	---							
				DEHP	---							
				Pb	---							
				Cd	---							
				Hg	---							
				Cr	---							
				Br	---							
				Cr(VI)	n.d.							
				PBB	---							
				PBDE	---							
				BBP	---							
				DBP	---							
				DIBP	---							
				DEHP	---							



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Table 2 The test results of Halogen (Unit: mg/kg)

Test Item (s):	Method	MDL	Result				
			1.2 (CX/2020/20066 No.1.2 in Table 2)	1.3 (CX/2020/20066 No.1.3 in Table 2)	1.5 (CX/2020/20066 No.1.5 in Table 2)	1.8 (CX/2020/20066 No.1.8 in Table 2)	1.10
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n.d.	n.d.	n.d.	n.d.	n.d.
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)		50	n.d.	n.d.	n.d.	n.d.	82.0

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Test Item	MDL (mg/kg)				Screening threshold (mg/kg)	Test method
	Category Substance	Polymers	Composite Material	Metals		
Screening	Pb	50	100	100	500	With reference to IEC 62321-3-1 (2013)
	Cd	50	50	50	50	
	Hg	50	100	100	500	
	Cr	50	100	100	500	
	Br	50	100	n.a.	250	
	DIBP	500		n.a.	500	With reference to IEC 62321-8: 2017 (modify)
	DBP	500		n.a.	500	
	BBP	500		n.a.	500	
	DEHP	500		n.a.	500	

Test Item (s)	Unit	Test method	MDL
Lead (Pb)	mg/kg	With reference to IEC 62321-5 (2013) and performed by ICP-OES.	2
Cadmium (Cd)			
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 (2013) and performed by ICP-OES.	2
Hexavalent chromium Cr(VI)	mg/kg	With reference to IEC 62321-7-2 (2017) and performed by UV-VIS. (For Polymers and Electronics)	8
Hexavalent chromium Cr(VI)	µg/cm ²	With reference to IEC 62321-7-1 (2015) and performed by UV-VIS. (For Coatings on Metals) (#2)	0.1

Test Item (s)	Unit	Method	MDL (mg/kg)	
PBBs				
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6 (2015) and performed by GC/MS.	5	
Dibromobiphenyl	mg/kg		5	
Tribromobiphenyl	mg/kg		5	
Tetrabromobiphenyl	mg/kg		5	
Pentabromobiphenyl	mg/kg		5	
Hexabromobiphenyl	mg/kg		5	
Heptabromobiphenyl	mg/kg		5	
Octabromobiphenyl	mg/kg		5	
Nonabromobiphenyl	mg/kg		5	
Decabromobiphenyl	mg/kg		5	
PBDEs				
Monobromodiphenyl ether	mg/kg		5	
Dibromodiphenyl ether	mg/kg		5	
Tribromodiphenyl ether	mg/kg		5	
Tetrabromodiphenyl ether	mg/kg		5	
Pentabromodiphenyl ether	mg/kg		5	
Hexabromodiphenyl ether	mg/kg		5	
Heptabromodiphenyl ether	mg/kg		5	
Octabromodiphenyl ether	mg/kg	5		
Nonabromodiphenyl ether	mg/kg	5		
Decabromodiphenyl ether	mg/kg	5		
DIBP (CAS No.: 84-69-5)	mg/kg	With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	
DBP (CAS No.: 84-74-2)	mg/kg		50	
BBP (CAS No.: 85-68-7)	mg/kg		50	
DEHP (CAS No.: 117-81-7)	mg/kg		50	

1. mg/kg = ppm
2. MDL = Method detection limit
3. n.d. = not detected or lower than MDL
4. "---" = not conducted
5. n.a. = not applicable
6. " - " = Not Regulated
7. The XRF result of Br for metal sample is conducted from semi-quantitative method of polymer. If the Br result is shown as n.d., the reading will be less than 100ppm.
8. (#2):
 - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm².
The coating is considered to contain Cr(VI).
 - b. The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 µg/cm²).
The coating is considered a non-Cr(VI) based coating.
 - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination.

9. Magnetic samples can not be located on test position and there are breakdown risks on XRF equipment. Therefore, this kind of sample will be conducted chemical test directly.
10. If the test result by EDXRF analysis is greater than XRF screening threshold, the test sample should be further conducted by chemical test.
11. The statement of compliance conformity is based on comparison of testing results and limits.

Mark	Description of Mark
*1	The sample weight is not enough to conduct chemical tests.
*2	The item is exempted from EU RoHS directive.
--*2	The item might be exempted from EU RoHS directive.
*3	The result was retested after regetting the same sample from client.
*4	The sample is provided separately from the client.
*5	Adopting modified IEC 62321-7-1(2015), due to the test area less than 25 cm ²
*6	The test item was tested by dry base.
*7	This sample follows requirement of client to conduct directly chemical tests.