Module 3: Product Description

Appendix 3.1.2-7: Testing report for System - EN 50581

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TEST REPORT: 7191186647-CHM18-03-LPL

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SUBJECT

EU RoHS 2 Screening and Verification test for IQOS 3

CLIENT

Philip Morris Product S.A.
Quai Jeanrenaud 3, 2000 Neuchatel,
Switzerland

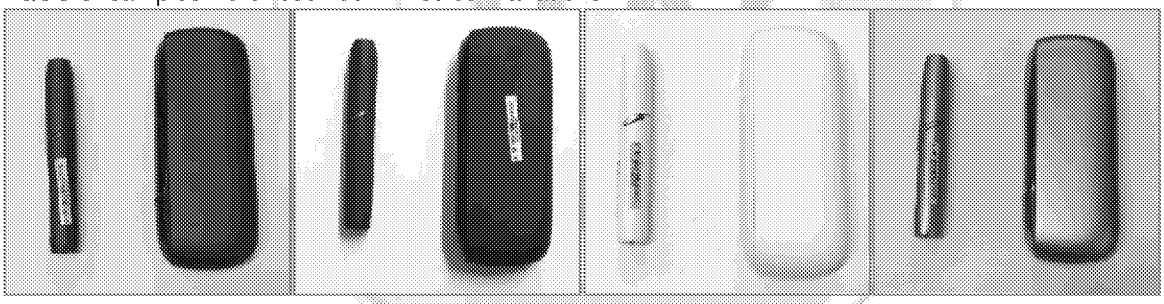
Attn: Marco Esposito

SAMPLE SUBMISSION / TEST DATE

31 May 2018 / 31 May 2018 – 08 Aug 2018

DESCRIPTION OF SAMPLES

"IQOS 3" samples were received in 4 colour variations:



The Equipment Under Test (EUT) is a TOBACCO HEATING SYSTEM (IQOS 3). It is composed of:

i. IQOS Holder A1404
ii. IQOS Pocket Charger A1504

Manufacturer: Phillip Morris Product S.A.

TEST METHOD

1) IEC 62321-3-1:2013 "Determination of certain substances in electrotechnical products – Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry"

2) IEC 62321-4: 2013 "Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS"

3) IEC 62321-6:2015 "Determination of certain substances in electrotechnical products - Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatograhy -mass spectometry (GC-MS)"

4) IEC 62321-7-1:2015 "Determination of cetain substances in electrotechnical products –Hexavalent chromium – Presence of hexavalent chromium (Cr(VI)) in colourless and coloured corrosion-protected coatings on metals by the colorimetric method"

5) IEC 62321-8:2017 "Determination of certain substances in electrotechnical products - Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory (Py/TD-GC-MS) "

6) Fully diamantle the device and test the components accoding to the above methods.

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RESULTS

Screening results of sample "IQOS 3" by IEC 62321-3

Components tested marked out in Annex A.

Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
A01	21	ND	ND	ND	ND
A02	ND	ND	ND	ND	ND
A03 [a]	1436	ND	ND	ND	ND
A04 [a]	1767	ND	ND	ND	ND
A05	ND	ND	ND	ND	ND
A06	ND	ND	ND	ND	ND
A07	ND	ND	ND	ND	ND
A08 [a]	1472	ND	ND	ND	ND
A09	ND	ND	ND	ND	ND
A10	93	ND	ND	ND	ND
A11	73	ND	ND	ND	ND
A12	294	ND	ND	13	ND
B01	43	ND	ND	ND	ND
B02	ND	ND	ND	ND	ND
B03	ND	ND	ND	ND	ND
B04	ND	ND	ND	ND	ND
B05	25	ND	ND	ND	ND
B06	799	ND	ND	ND	ND
B07	708	ND	ND	ND	ND
C01	ND	ND	ND	ND	ND
C02	ND	ND	ND	ND	ND
C03 [a]	111289	ND	ND	ND	ND
C04	640	ND	ND	ND	ND
C05 [a]	4343	ND	ND	ND	682
C06	ND	ND	ND	ND	ND
C07 [a]	2969	ND	ND	ND	413
C08	ND	ND	ND	ND	ND
C09	ND	ND	ND	ND	ND

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Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
D01	ND	ND	ND	ND	ND
D02	ND	ND	ND	ND	ND
D03	ND	ND	ND	ND	ND
D04	ND	ND	ND	ND	ND
D05	ND	ND	ND	ND	ND
D06	ND	ND	ND	ND	ND
E01 [b]	ND	392	38	11	ND
E02 [b]	27	405	25	ND	ND
E03 [b]	10	7019	ND	10	ND
E04	122	246	ND	ND	ND
E05 [a]	103615	14	ND	ND	10
E06	ND	ND	ND	ND	ND
E07	ND	ND	ND	ND	ND
E08	ND	ND	ND	ND	ND
E09	ND	ND	ND	ND	ND
E10	ND	ND	ND	12	ND
E11 [b]	ND	511	ND	ND	ND
E12	582	ND	ND	ND	85
E13 [a]	3974	ND	ND	ND	ND
E14 [a]	1470	ND	ND	ND	ND
E15	236	ND	15	14	ND
E16	10	42	ND	21	ND
E17 [b]	256	835	ND	ND	ND
E18	244	117	ND	ND	ND
E19 [b]	126	1232	ND	ND	ND
E20	ND	19	ND	ND	ND
E21	ND	ND	ND	ND	ND
E22 [a]	97980	ND	ND	ND	ND
E23 [a / b]	9740	7530	ND	ND	18
E24	ND	122	42	ND	ND
E25 [b]	ND	3667	11	30	ND
E26 [b]	ND	4022	ND	ND	ND
E27 [b]	302	1186	25	133	ND
E28	ND	44	12	10	ND
E29 [b]	ND	1251	ND	30	ND
E30	ND	94	65	10	19
E31 [b]	147	1559	14	ND	ND

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Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
E32 [b]	239	3150	ND	ND	ND
E33 [b]	61	3018	ND	ND	ND
E34	ND	186	ND	ND	ND
E35 [b]	ND	837	11	ND	19
E36	ND	40	ND	ND	154
E37 [b]	ND	1128	ND	30	ND
E38 [b]	162	408	49	10	ND
E39	ND	217	ND	72	ND
E40 [b]	ND	297	ND	ND	ND
E41	ND	34	ND	ND	ND
E42 [b]	ND	943	ND	ND	ND
E43 [b]	ND	688	28	14	ND
E44 [b]	ND	789	ND	11	ND
E45	473	165	ND	ND	ND
E46 [b]	ND	277	ND	ND	ND
E47 [b]	ND	4098	ND	ND	ND
E48 [b]	ND	879	76	23	ND
E49	ND	ND	ND	ND	ND
E50	ND	12	ND	19	ND
E51	214	12	ND	ND	ND
E52 [b]	ND	304	ND	ND	ND
E53	38	ND	ND	ND	ND
E54	260	ND	ND	ND	ND
E55 [a]	246442	ND	ND	ND	ND
E56	240	ND	ND	ND	ND
E57	ND	ND	ND	ND	ND
E58	ND	ND	ND	ND	ND
E59	ND	ND	ND	ND	ND
E60	ND	ND	ND	ND	ND
E61	79	ND	ND	ND	ND
E62	ND	ND	34	ND	ND
E63	ND	15	ND	ND	ND
E64	ND	ND	ND	16	ND
E65	ND	ND	10	ND	ND
E66	ND	ND	ND	ND	13
E67	124	ND	ND	ND	ND
E68	37	ND	ND	ND	ND

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Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
E69	ND	ND	ND	ND	ND
E69	45	ND	ND	ND	20
E70 [a]	121143	ND	ND	ND	ND
E71	ND	ND	ND	ND	ND
E72	ND	ND	ND	18	ND
E73	ND	70	ND	40	159
E74 [c]	ND	35	ND	207	1078
E75 [c]	ND	24	ND	14	1671
F01	359	ND	17	ND	ND
F02	ND	ND	ND	ND	ND
F03 [a]	2207	122	ND	58	ND
F04 [a]	21920	132	ND	262	ND
F05	ND	ND	ND	ND	ND
F06	ND	ND	ND	ND	ND
F07	ND	ND	ND	ND	ND
F08	ND	ND	ND	10	ND
F09	ND	ND	ND	ND	ND
F10	ND	ND	ND	ND	ND
F11	ND	ND	ND	ND	ND
F12 [a]	109153	ND	ND	ND	ND
F13	ND	ND	ND	ND	ND
F14	ND	ND	ND	ND	ND
G01	352	ND	ND	ND	ND
G02 [a]	231655	ND	ND	33	ND
G03	ND	50	ND	81	ND
G04	ND	ND	ND	ND	ND
G05 [a]	49787	ND	ND	10	ND
G06	ND	ND	ND	ND	ND
H01	ND	ND	ND	ND	ND
H02	814	ND	ND	10	ND
I01	458	ND	ND	ND	ND
I02	ND	ND	ND	ND	ND
I03	921	21	ND	ND	27
I04 [a]	1007	ND	ND	791	240
I05 [a / b]	1323	352	ND	89	63
I06	ND	ND	ND	ND	ND
107	237	ND	ND	ND	ND

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Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
I08	182	ND	ND	ND	ND
I08	37	ND	ND	ND	ND
I09	ND	ND	11	14	ND
I10 [a]	17065	ND	ND	ND	ND
I11	65	ND	ND	ND	ND
I12	ND	ND	ND	ND	ND
I13	60	ND	ND	ND	ND
I14	ND	ND	84	ND	ND
I15	ND	ND	ND	ND	ND
I16 [d]	ND	65	ND	>1000	ND
I17	ND	ND	ND	ND	ND
I18	410	ND	ND	14	ND
I19	ND	ND	ND	ND	ND
I20 [b]	103	292	ND	475	ND
I21 [a]	1120	10	ND	ND	ND
I22	ND	ND	ND	ND	ND
I23	222	ND	ND	ND	20
I24	532	28	ND	ND	ND
I25 [b]	ND	877	33	ND	ND
I26 [b]	334	1963	30	ND	ND
I27 [a/b]	7083	1603	ND	13	ND
I28 [b]	101	255	30	26	ND
I29 [b]	ND	733	22	40	ND
I30 [b]	72	2062	ND	ND	653
I31 [b]	378	847	ND	ND	ND
I32 [b]	186	742	23	ND	ND
I33 [a/b]	10860	1117	ND	ND	632
I34	297	25	ND	15	ND
I35	ND	ND	96	ND	ND
I36	ND	ND	ND	ND	ND
I37 [b]	246	542	ND	ND	ND
I38 [a/b]	2170	1418	47	ND	ND
I39 [a/b]	40227	916	20	49	ND
I40 [a/b]	112877	866	ND	16	ND
I41 [b]	ND	1626	ND	ND	ND
I42 [b]	214	526	28	26	ND
I43 [b]	ND	1441	ND	ND	ND

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Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
I44 [b]	ND	2376	ND	ND	ND
I45 [b]	105	1348	49	ND	ND
I46 [a / b]	3468	1164	21	ND	102
I47 [b]	ND	667	ND	29	ND
I48 [a / b]	82859	430	ND	ND	207
I49 [a]	84177	66	ND	ND	205
I50	ND	37	ND	21	ND
I51	ND	21	ND	ND	13
I52 [b]	ND	413	ND	210	55
J01	ND	ND	ND	ND	ND
J02	13	ND	ND	ND	ND
J03	ND	ND	ND	ND	17
J04	ND	ND	ND	ND	ND
J05	ND	ND	ND	ND	ND
J06	ND	ND	ND	ND	ND
J07	ND	ND	ND	ND	ND
J08	ND	ND	ND	ND	ND
J09	ND	ND	ND	ND	ND
J10	ND	ND	ND	ND	ND
J11	ND	ND	ND	13	ND
J12	ND	ND	ND	ND	ND
J13	ND	ND	ND	ND	ND
J14	ND	ND	ND	ND	ND
J15	ND	ND	ND	ND	ND
J16	ND	ND	ND	ND	ND
J17	ND	ND	ND	ND	ND
J18	ND	ND	ND	ND	ND
J19	ND	ND	ND	ND	ND
J20	ND	ND	ND	ND	ND
J21	ND	ND	ND	ND	ND
J22	ND	ND	ND	ND	ND
J23	ND	ND	ND	ND	ND
J24	ND	ND	ND	ND	ND
K01	ND	ND	ND	ND	ND
K02	ND	ND	ND	ND	ND
K03	738	ND	11	ND	ND
K04	ND	ND	ND	ND	ND

Component	Total Chromium as Hexavalent Chromium, Cr^{6+} (mg/kg)	Bromine, Br (mg/kg)	Cadmium, Cd (mg/kg)	Mercury, Hg (mg/kg)	Lead, Pb (mg/kg)
K05	73	ND	ND	ND	ND
K06	147	ND	ND	ND	ND
K07	ND	ND	ND	10	ND
K08	93	ND	ND	ND	ND
K09	708	ND	ND	10	ND

ND: Not Detected, detection limit for Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) & Bromine (Br) is 10 mg/kg.
[a] requires Hexavalent Chromium confirmation
[b] requires PBBs and PBDEs confirmation
[c] The items are under Exemption of clause 6(c) of ANNEX III as declared by product supplier
[d] requires Mercury (Hg) confirmation

The parts scanned exceeding control limits of Cr, Br and Hg contents were to be verified by IEC 62321-7 method for Cr^{6+}, IEC 62321-6 method for PBBs and PBDEs and IEC62321-4 method for Hg.

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RESULTS *(Cont'd)*

Verification of Hexavalent Chromium Cr^{6+} content by IEC 62321-7

Component (partial)	Hexavalent Chromium, Cr^{6+} (mg/kg)
A03	Not Detected by UV-Vis method (detection limit: 1 mg/kg)
A04	
A08	
C03	
C05	
C07	
E05	
E13	
E14	
E22	
E23	
E55	
E70	
F03	
F04	
F12	
G02	
G05	
I04	
I05	
I10	
I21	
I27	
I33	
I38	
I39	
I40	
I46	
I48	
I49	

RESULTS *(Cont'd)*

The Polybrominated Biphenyls (PBBs) content of sample "IQOS 3" by IEC 62321-6

Test Item Polybrominated Biphenyls (Mono – Deca)	Result (mg/kg)
Extractable Monobromobiphenyl	Not Detected[a]
Extractable Dibromobiphenyls	Not Detected[a]
Extractable Tribromobiphenyls	Not Detected[a]
Extractable Tetrabrobiphenyls	Not Detected[a]
Extractable Pentabromobiphenyls	Not Detected[a]
Extractable Hexabromobiphenyls	Not Detected[a]
Extractable Heptabromobiphenyls	Not Detected[a]
Extractable Octabromobiphenyls	Not Detected[a]
Extractable Nonabromobiphenyls	Not Detected[a]
Extractable Decabromobiphenyl	Not Detected[b]

[a] The method detection limit for PBBs (Mono to Nona) was 5 mg/kg.
[b] The method detection limit for PBBs (Deca) was 200 mg/kg.

The Polybrominated Diphenyl Ethers (PBDEs) content of sample "IQOS 3" by IEC 62321-6

Test Item Polybrominated Diphenyl Ethers (Mono – Deca)	Result (mg/kg)
Extractable Monobromo Diphenyl Ether	Not Detected[c]
Extractable Dibromo Diphenyl Ethers	Not Detected[c]
Extractable Tribromo Diphenyl Ethers	Not Detected[c]
Extractable Tetrabro Diphenyl Ethers	Not Detected[c]
Extractable Pentabromo Diphenyl Ethers	Not Detected[c]
Extractable Hexabromo Diphenyl Ethers	Not Detected[c]
Extractable Heptabromo Diphenyl Ethers	Not Detected[c]
Extractable Octabromo Diphenyl Ethers	Not Detected[c]
Extractable Nonabromo Diphenyl Ethers	Not Detected[c]
Extractable Decabromo Diphenyl Ether	Not Detected[d]

[c] The method detection limit for PBDEs (Mono to Nona) was 5 mg/kg.
[d] The method detection limit for PBDEs (Deca) was 200 mg/kg.

The phthalates content of sample "IQOS 3" by IEC 62321-8

Test	Result (mg/kg)
Extractable Dibutyl phthalate (DBP)	Not detected
Extractable Bis(2-ethylhexyl) phthalate (DEHP)	Not detected
Extractable Butyl benzyl phthalate (BBP)	Not detected
Extractable Diisobutyl Phthalate (DIBP)	Not detected

Not Detected: The method detection limit was 100 mg/kg

The mercury content of sample "I16" by IEC 62321-4

Test	Result (mg/kg)
Mercury (Hg)	Not detected

Not detected: The method detection limit was 5 mg/kg

REMARKS

1) Pass criteria according to EU RoHS Directive 2011/65/EU.
(Cadmium < 100 mg/kg, Lead < 1000 mg/kg, Mercury < 1000 mg/kg, Hexavalent Chromium < 1000 mg/kg, PBBs < 1000 mg/kg, PBDE < 1000 mg/kg and Phthalates < 1000 mg/kg)
2) Bromine (Br) content in screening test is an indicator for possible presence of PBBs and PBDEs.
3) All verification test results compliance with RoHS 2.0 requirement
4) Components E74 and E75 are under Exemption of clause 6(c) of ANNEX III as declared by product supplier
5) The part/product complies with RoHS 2.0 requirements after testing on individual component and in composite of partial and whole components according material grouping.

(b) (6)

MR LEE PAN LIANG
TECHNICAL EXECUTIVE
ELEMENTAL ANALYSIS
CHEMICAL & MATERIALS

(b) (6)

DR CHEN HUAYI
ASSISTANT VICE PRESIDENT
ELEMENTAL / ENVIRONMENTAL ANALYSIS
CHEMICAL & MATERIALS

ANNEX A

(b) (4)

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July 2011