



TEST REPORT

Report No.: HTT202110060CH

Report Date: Nov. 03, 2021

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Applicant : Polyhex Technology Company Limited

Address : 5/F., East Zone, Shunheda A2 Building, Liuxiandong Industrial Park, Xili, Nanshan Dist.,

(The Submitted Sample Said To Be)

Sample Name : Development embedded board industrial kits

Model/Style No. : DEBIX Model A

Trademark : DEBIX

Manufacturer : Polyhex Technology Company Limited

Manufacturer Address : 5/F., East Zone, Shunheda A2 Building, Liuxiandong Industrial Park, Xili, Nanshan Dist.,

Test Period : From Oct. 11, 2021 to Nov. 03, 2021

Tests conducted : As requested by the applicant, for details refer to next page(s).

Executive Summary:

No.	TESTED SAMPLE	STANDARD / REQUIREMENT	CONCLUSION
1	Tested material(s) of submitted sample(s)	Pb, Cd, Hg, Cr (VI), PBBs and PBDEs - Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 and its subsequent amendments	PASS
2	Tested material(s) of submitted sample(s)	Phthalates - Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 and its subsequent amendments	PASS

Signed for and on behalf of
Shenzhen HTT Technology Co., Ltd.

Approved by: Kevin Yang





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TESTS CONDUCTED:

1, Pb, Cd, Hg, Cr (VI), PBBs and PBDEs

Test Method: IEC62321-3-1: 2013, IEC62321-4: 2013+A1:2017, IEC62321-5: 2013, IEC62321-6:2015, IEC62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & ICP-OES & GC-MS & UV-Vis.

No.	Specimen Description	Test Results (mg/kg) ^{(1) (2)}					Conclusion	Comments
		Pb	Cd	Hg	Cr (VI)	PBBs & PBDEs		
1	Black solid	BL	BL	BL	BL	BL	PASS	/
2	Brown solid	BL	BL	BL	BL	BL	PASS	/
3	Golden metal	1749 [#]	BL	BL	BL	NA	PASS	Remark(3)
4	Black plastic	BL	BL	BL	BL	BL	PASS	/
5	Silvery metal	4271 [#]	BL	BL	Negative	NA	PASS	Remark(3)
6	Silvery metal	BL	BL	BL	Negative	NA	PASS	/
7	Silvery/gold metal	BL	BL	BL	Negative	NA	PASS	/
8	Black plastic	BL	BL	BL	BL	BL	PASS	/
9	Silvery metal	BL	BL	BL	BL	NA	PASS	/
10	Silvery/gold metal	8524 [#]	BL	BL	BL	NA	PASS	Remark(3)
11	Black plastic	BL	BL	BL	BL	BL	PASS	/
12	Dark grey solid	BL	BL	BL	BL	BL	PASS	/
13	Black solid	BL	BL	BL	BL	BL	PASS	/
14	Dark grey solid	BL	BL	BL	BL	BL	PASS	/
15	Black solid	BL	BL	BL	BL	BL	PASS	/
16	Silvery metal	12690 [#]	BL	BL	BL	NA	PASS	Remark(3)
17	Silvery metal	BL	BL	BL	BL	NA	PASS	/
18	Silvery solid	BL	BL	BL	BL	BL	PASS	/
19	Green PCB	BL	BL	BL	BL	N.D.	PASS	/
20	White ceramic with red printing	BL	BL	BL	BL	BL	PASS	/
21	Black plastic	BL	BL	BL	BL	BL	PASS	/



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No.	Specimen Description	Test Results (mg/kg) ^{(1) (2)}					Conclusion	Comments
		Pb	Cd	Hg	Cr (VI)	PBBs & PBDEs		
22	Golden metal	30570 [#]	BL	BL	BL	NA	PASS	Remark(3)
23	Black plastic	BL	BL	BL	BL	BL	PASS	/
24	Green PCB	BL	BL	BL	BL	N.D.	PASS	/
25	Black solid	BL	BL	BL	BL	BL	PASS	/
26	Black plastic	BL	BL	BL	BL	BL	PASS	/
27	Beige plastic	BL	BL	BL	BL	BL	PASS	/
28	Silvery metal	10700 [#]	BL	BL	BL	NA	PASS	Remark(3)
29	Silvery metal	BL	BL	BL	BL	NA	PASS	/
30	Silvery/gold metal	BL	BL	BL	BL	NA	PASS	/
31	Blue plastic	BL	BL	BL	BL	N.D.	PASS	/
32	Silvery metal	BL	BL	BL	BL	NA	PASS	/
33	Black plastic	BL	BL	BL	BL	N.D.	PASS	/
34	Silvery/gold metal	BL	BL	BL	BL	NA	PASS	/
35	Green plastic	BL	BL	BL	BL	BL	PASS	/
36	Yellow plastic	BL	BL	BL	BL	BL	PASS	/
37	Silvery metal	BL	BL	BL	BL	NA	PASS	/
38	Black solid	BL	BL	BL	BL	BL	PASS	/
39	Green PCB	BL	BL	BL	BL	BL	PASS	/
40	Silvery metal	BL	BL	BL	Negative	NA	PASS	/
41	Black plastic	BL	BL	BL	BL	BL	PASS	/
42	Beige plastic	BL	BL	BL	BL	BL	PASS	/
43	Silvery metal	6876 [#]	BL	BL	BL	NA	PASS	Remark(3)
44	Silvery metal	BL	BL	BL	Negative	NA	PASS	/



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No.	Specimen Description	Test Results (mg/kg) ^{(1) (2)}					Conclusion	Comments
		Pb	Cd	Hg	Cr (VI)	PBBs & PBDEs		
45	Black plastic	BL	BL	BL	BL	BL	PASS	/
46	Beige plastic	BL	BL	BL	BL	BL	PASS	/
47	Black plastic	BL	BL	BL	BL	N.D.	PASS	/
48	Golden metal	17760 [#]	BL	BL	BL	NA	PASS	/
49	Silvery metal	3143 [#]	BL	BL	Negative	NA	PASS	/
50	Silvery metal	1573 [#]	BL	BL	Negative	NA	PASS	/
51	Black plastic	BL	BL	BL	BL	BL	PASS	/
52	Black solid	BL	BL	BL	BL	BL	PASS	/
53	Black solid	BL	BL	BL	BL	BL	PASS	/
54	Black solid	BL	BL	BL	BL	BL	PASS	/
55	Black solid	BL	BL	BL	BL	BL	PASS	/
56	Black solid	BL	BL	BL	BL	BL	PASS	/
57	Black solid	BL	BL	BL	BL	BL	PASS	/
58	Black PCB with white printing	BL	BL	BL	BL	N.D.	PASS	/
59	Silvery metal	BL	BL	BL	BL	NA	PASS	Resubmitted sample



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Remark:

- (1) ① The test results shown as “BL” are obtained by EDXRF for primary screening (for Cr (VI), the EDXRF screening result is expressed as Cr, and for PBBs and PBDEs, the EDXRF screening results are expressed as Br), and the test results shown as exact data are obtained by further wet chemical testing by ICP-OES (for Cd, Pb, Hg), UV-VIS (for Cr (VI)) and GC/MS (for PBBs and PBDEs).
- ② The EDXRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

Unit: mg/kg

Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	NA	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

③ OL = Over Limit, BL = Below Limit, X = Inconclusive, NA = Not Applicable.

Units and limits:

Restricted Substances	Pb	Cd	Hg	Cr (VI)	PBBs	PBDEs
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit	1000	100	1000	1000	1000	1000

(2) ① mg/kg = ppm = 0.0001%, N.D. = Not Detected (Less than RL).

② Unit and RL (Reporting limit) in wet chemical test.

Restricted Substances	Pb	Cd	Hg	Cr (VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
RL	2	2	2	2	5	5

③ According to IEC 62321-7-1:2015, result on Cr (VI) for metal sample is shown as Positive/Negative.

Negative = Absence of Cr (VI) coating, Positive = Presence of Cr (VI) coating.

Storage condition and production date of the tested sample are unavailable and thus results of Cr (VI) represent status of the sample at the time of testing.

(3) # = Per applicant's declaration, according to exemption list clause 6(c) Copper alloy containing up to 4% lead by weight, the tested material was exempted.



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2 Phthalates (DBP, BBP, DEHP, DIBP) content

Test Method: IEC 62321-8: 2017, analyzed by gas chromatographic- mass spectrometer (GC-MS).

Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS#	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
RL (mg/kg)	30	30	30	30	
No.	Test Results (mg/kg)				
4+8+11	ND	ND	ND	ND	PASS
19+24+39	ND	ND	ND	ND	PASS
21+23+26	ND	ND	ND	ND	PASS
27+31+33	ND	ND	ND	ND	PASS
35+36+41	ND	ND	ND	ND	PASS
42+45+46	ND	ND	ND	ND	PASS
47+51+58	ND	ND	ND	ND	PASS

Remark:

1, mg/kg = milligram per kilogram (ppm)

2, RL = Reporting Limit

3, ND = Not Detected (Less than RL)



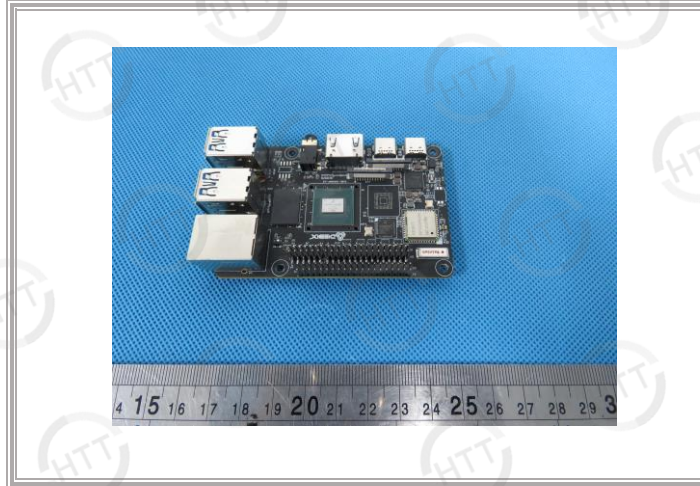
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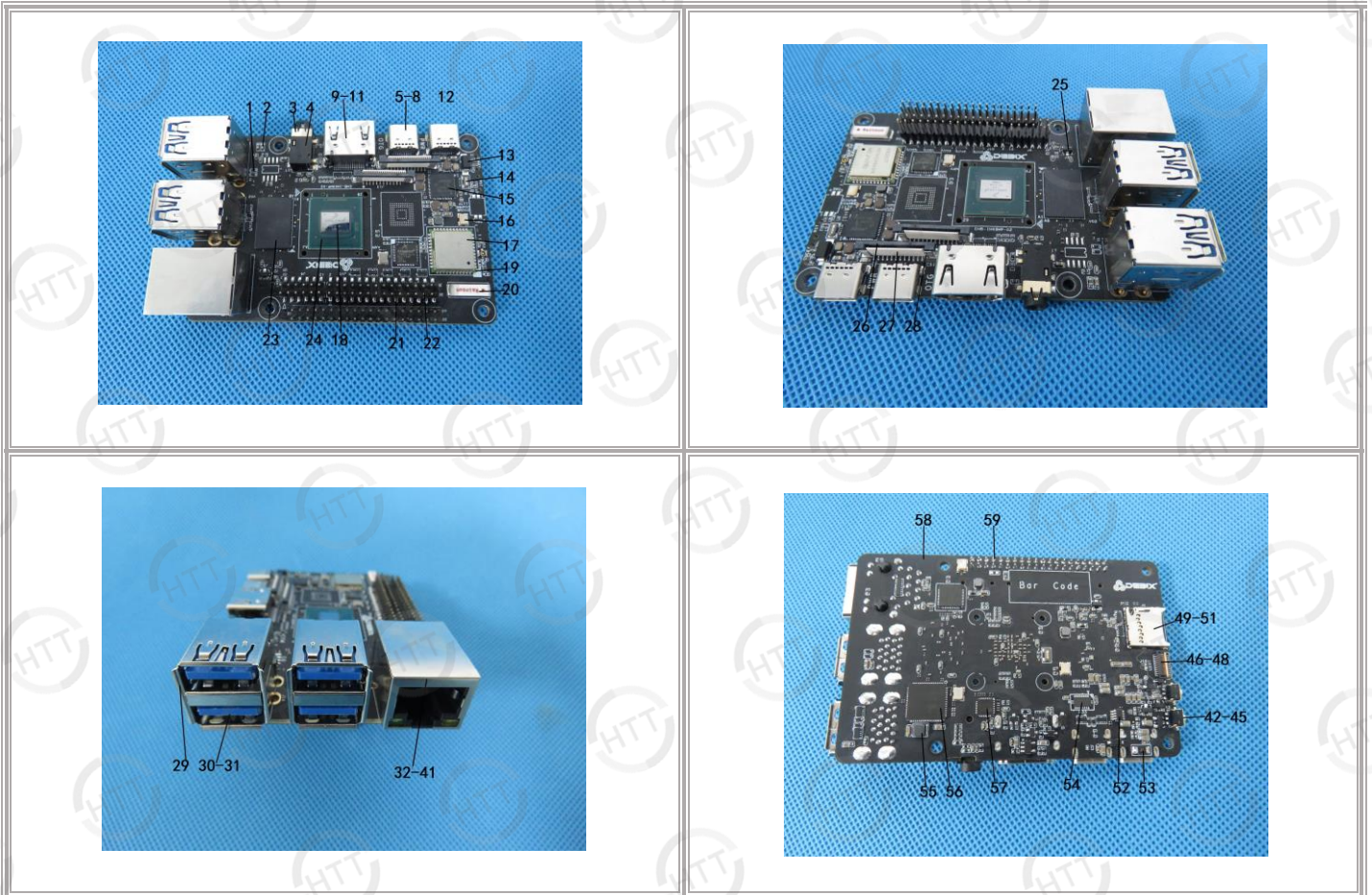
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Sample Photo



Tested Parts Photos





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Appendix

EXEMPTION LIST (ANNEX III TO RoHS DIRECTIVE)

- 1 Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):
 - 1(a) For general lighting purposes < 30W: 2.5mg
 - 1(b) For general lighting purposes $\geq 30W$ and <50W: 3.5mg
 - 1(c) For general lighting purposes $\geq 50W$ and <150W: 5mg
 - 1(d) For general lighting purposes $\geq 150W$: 15mg
 - 1(e) For general lighting purposes with circular or square structural shape and tube diameter $\leq 17mm$: 7mg
 - 1(f) For special purposes: 5mg
 - 1(g) For general lighting purposes < 30 W with a lifetime equal or above 20000 h: 3,5 mg (Expires on 31 December 2017)
- 2(a) Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):
 - 2(a)(1) Tri-band phosphor with normal lifetime and a tube diameter < 9mm (e.g. T2): 4mg
 - 2(a)(2) Tri-band phosphor with normal lifetime and a tube diameter $\geq 9mm$ and $\leq 17mm$ (e.g. T5): 3mg
 - 2(a)(3) Tri-band phosphor with normal lifetime and a tube diameter > 17mm and $\leq 28mm$ (e.g. T8): 3.5mg
 - 2(a)(4) Tri-band phosphor with normal lifetime and a tube diameter > 28mm (e.g. T12): 3.5mg
 - 2(a)(5) Tri-band phosphor with long lifetime ($\geq 25000h$): 5mg
- 2(b) Mercury in other fluorescent lamps not exceeding (per lamp):
 - 2(b)(3) Non-linear tri-band phosphor lamps with tube diameter > 17mm (e.g. T9): 15mg
 - 2(b)(4) Lamps for other general lighting and special purposes (e.g. induction lamps): 15mg
- 3 Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):
 - 3(a) Short length ($\leq 500mm$): 3.5mg
 - 3(b) Medium length (> 500mm and $\leq 1500mm$): 5mg
 - 3(c) Long length (> 1500mm): 13mg
- 4(a) Mercury in other low pressure discharge lamps (per lamp): 15mg
- 4(b) Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index $Ra > 60$:
 - 4(b)-I $P \leq 155W$: 40mg
 - 4(b)-II $155W < P \leq 405W$: 40mg
 - 4(b)-III $P > 405W$: 40mg
- 4(c) Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):
 - 4(c)-I $P \leq 155W$: 25mg
 - 4(c)-II $155W < P \leq 405W$: 30mg
 - 4(c)-III $P > 405W$: 40mg
- 4(e) Mercury in metal halide lamps (MH)
- 4(f) Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex
- 5(b) Lead in glass of fluorescent tubes not exceeding 0.2% by weight
- 6(a)-I Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight (Expires on 21 July 2021 for categories 1-7 and 10)
- 6(b)-I Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling (Expires on 21 July 2021 for categories 1-7 and 10.)
- 6(b)-II Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight (Expires on 18 May 2021 for categories 1-7 and 10.)
- 6(c) Copper alloy containing up to 4% lead by weight. (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 7(a) Lead in high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead) (Applies to categories 1-7 and 10 (except applications covered under point 24) and expires on 21 July 2021. For categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 *in vitro* diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.)
- 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound (Applies to categories 1-7 and 10 (except applications covered under point 34) and expires on 21 July 2021. For categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 *in vitro* diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.)
- 7(c)-II Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher (Does not apply to applications covered by point 7(c)-I and 7(c)-IV of this Annex. Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 7(c)-IV Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial



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- monitoring and control instruments, and for category 11.)
- 8(b) Cadmium and its compounds in electrical contacts (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 8(b)-I Cadmium and its compounds in electrical contacts used in:
- circuit breakers,
 - thermal sensing controls,
 - thermal motor protectors (excluding hermetic thermal motor protectors),
 - AC switches rated at:
 - 6 A and more at 250 V AC and more, or
 - 12 A and more at 125 V AC and more,
 - DC switches rated at 20 A and more at 18 V DC and more, and
 - switches for use at voltage supply frequency ≥ 200 Hz
- (Applies to categories 1 to 7 and 10 and expires on 21 July 2021)
- 9 Hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 9(a)-II Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators:
- designed to operate fully or partly with electrical heater, having an average utilised power input ≥ 75 W at constant running conditions,
 - designed to fully operate with non-electrical heater.
- (Applies to categories 1-7 and 10 and expires on 21 July 2021.)
- 9(b) Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 13(a) Lead in white glasses used for optical applications (Applies to all categories; expires on: 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; 21 July 2021 for all other categories and subcategories)
- 13(b) Cadmium and lead in filter glasses and glasses used for reflectance standards (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 13(b)-(I) Lead in ion coloured optical filter glass types (Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10)
- 13(b)-(II) Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex (Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10)
- 13(b)-(III) Cadmium and lead in glazes used for reflectance standards (Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10)
- 15 Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 15(a) Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies:
- a semiconductor technology node of 90 nm or larger;
 - a single die of 300 mm² or larger in any semiconductor technology node;
 - stacked die packages with die of 300 mm² or larger, or silicon interposers of 300 mm² or larger.
- (Applies to categories 1 to 7 and 10 and expires on 21 July 2021.)
- 18(b) Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi₂O₅:Pb) (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 18(b)-I Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi₂O₅:Pb) when used in medical phototherapy equipment (Applies to categories 5 and 8, excluding applications covered by entry 34 of Annex IV, and expires on 21 July 2021)
- 21 Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glass (Applies to categories 8, 9 and 11 and expires on: 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 24 Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than *in vitro* diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 *in vitro* diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 29 Lead bound in crystal glass as defined in Annex 1 (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (Expires on: 21 July 2021 for



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- categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 32 Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 34 Lead in cermet-based trimmer potentiometer elements (Applies to all categories; expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 37 Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body (Expires on: 21 July 2021 for categories 1-7 and 10; 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.)
- 39(a) Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm² of display screen area) (Expires for all categories on [two years after the publication of the Delegated Directive in the Official Journal])
- 41 Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council) (Applies to all categories and expires on: 31 March 2022 for categories 1 to 7, 10 and 11; 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments.)
- 42 Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment:
- with engine total displacement ≥ 15 litres; or
- with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture applications.
- 43 Bis(2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed:
(a) 30 % by weight of the rubber for
(i) gasket coatings;
(ii) solid-rubber gaskets; or
(iii) rubber components included in assemblies of at least three components using electrical, mechanical or hydraulic energy to do work, and attached to the engine.
(b) 10 % by weight of the rubber for rubber-containing components not referred to in point (a).
For the purposes of this entry, "prolonged contact with human skin" means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.
(Applies to category 11 and expires on 21 July 2024.)
- 44 Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council (), installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users (Applies to category 11 and expires on 21 July 2024)
- 45 Lead diazide, lead styphnate, lead dipicramate, orange lead (lead tetroxide), lead dioxide in electric and electronic initiators of explosives for civil (professional) use and barium chromate in long time pyrotechnic delay charges of electric initiators of explosives for civil (professional) use (Effective from 1 November 2021. Applies to category 11 and expires on 20 April 2026)

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