

Report No. 48.400.22.0689.01-00/01

Dated 2022-06-14

## Technical Report

**Client:** Jiangsu Acrel Electric MFG. Co., Ltd.  
No. 5, Dongmeng Road, Nanzha Street, Jiangyin, Jiangsu, P. R. China

**Contact person:** Han Zhonghua

**Test object:** The submitted samples were received and described by client as:  
**Product Name:** DC energy meter/直流电能表  
**Model:** DJSF1352-RN



**Tested sample description:** Refer to next page(s).

**Test specification:** 2011/65/EU (RoHS) Directive and 2015/863/EU (RoHS amendment) Directive  
Test with reference to EN 62321-1:2013, EN 62321-2:2014, EN 62321-3-1:2014, EN 62321-4:2014, EN 62321-5:2014, EN 62321-6:2015, EN 62321-7-1:2015, EN 62321-7-2:2017 and EN 62321-8:2017.

**Test result:** Refer to the data listed in following pages

**Conclusion:** With regard to the data of tested components, the requirements of Directive 2011/65/EU (RoHS) and 2015/863/EU are **complied**.

**Remarks:**

1. The tested samples were identified and appointed by client.
2. The result relates only to the items tested.

**Disclaimer Measurement Uncertainty:**

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**Dated** 2022-06-14

## 1. Order

### 1.1 Date of Purchase Order

2022-06-02

### 1.2 Customer's Reference

Nil

### 1.3 Receipt Date of Test Sample

2022-05-30

### 1.4 Date of Testing

2022-05-30~2022-06-13

### 1.5 Document submitted

Nil

### 1.6 Location of Testing

#### **ED-XRF Spectrometer test**

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#### **Wet Chemical test**

TÜV SÜD Certification and Testing (China) Co., Ltd.  
Shanghai Branch, SHA Chemical Lab.

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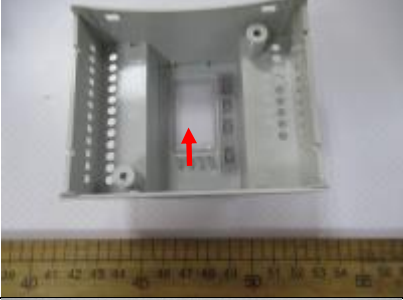


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2. Description of the tested specimen

Sample No.	Result	Description (Material, colour)	Photograph/Location
01	Pass	Gray white hard plastic shell	
02	Pass	Gray rubber button	
03	Pass	Transparent hard plastic window	
04	Pass	Yellow label	
05	Pass	Silvery soft plastic label	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
06	Pass	Black resistance	
07	Pass	Black resistance	
08	Pass	Yellow capacitor	
09	Pass	Yellow capacitor	
10	Pass	Black hard IC	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
11	Pass	Black CPU	
12	Pass	Black hard IC	
13	Pass	Black hard IC	
14	Pass	Black diode	
15	Pass	White shine triode	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
16	Pass	Black triode	
17	Pass	Silver metal crystal oscillator	
18	Pass	Black hard plastic plug	
19	Pass	Silvery copper alloy pin	
20	Pass	Green hard PCB	

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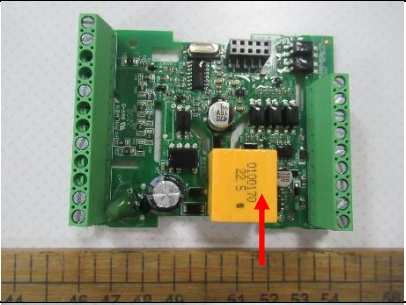
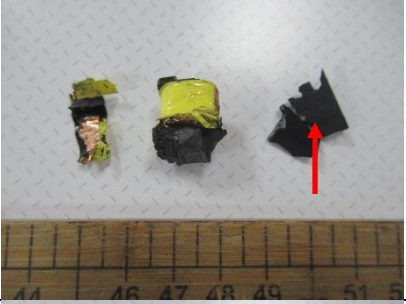
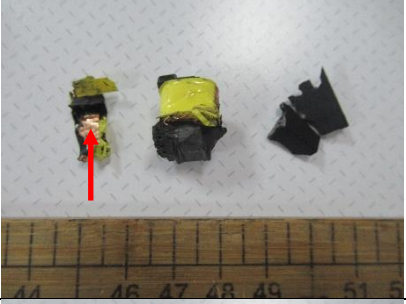


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Sample No.	Result	Description (Material, colour)	Photograph/Location
21	Pass	Yellow hard plastic shell	
22	Pass	Black hard plastic bracket	
23	Pass	Golden metal piece	
24	Pass	Black metal magnet	
25	Pass	Yellow soft plastic film	

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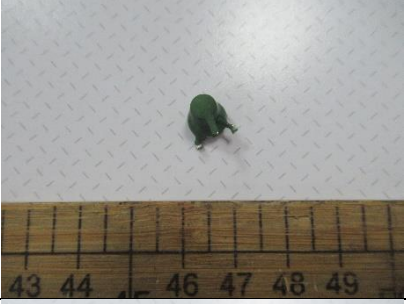
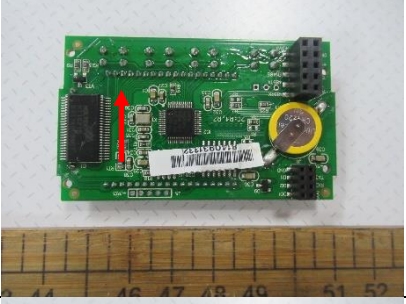

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Sample No.	Result	Description (Material, colour)	Photograph/Location
26	Pass	White soft plastic ring	
27	Pass	Golden metal wire	
28	Pass	Green capacitor	
29	Pass	Green hard PCB	
30	Pass	White paper label	

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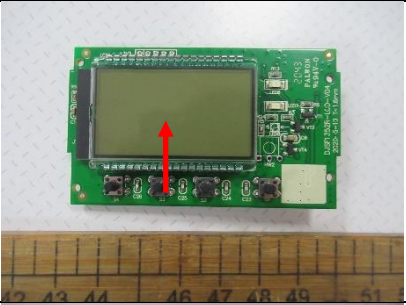
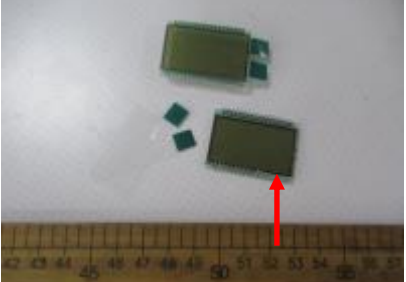
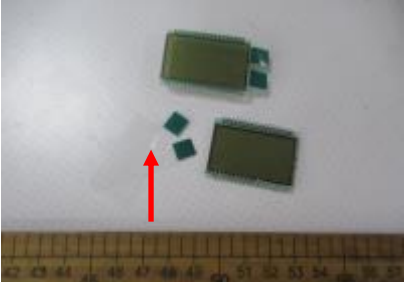
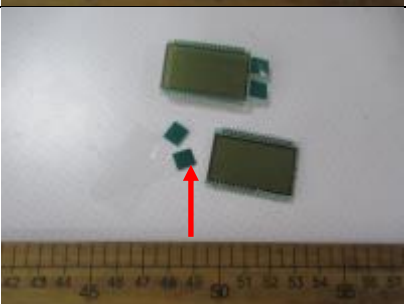
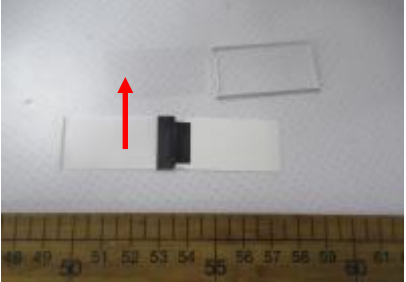
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Sample No.	Result	Description (Material, colour)	Photograph/Location
31	Pass	Dark black glass screen	
32	Pass	Silvery copper alloy pin	
33	Pass	Transparent soft plastic film	
34	Pass	Green soft plastic component	
35	Pass	Transparent soft plastic film	

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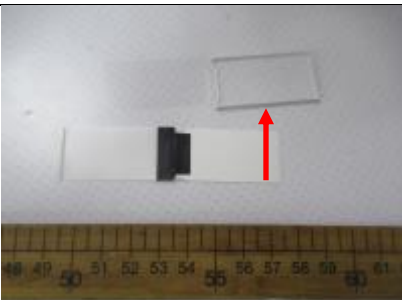
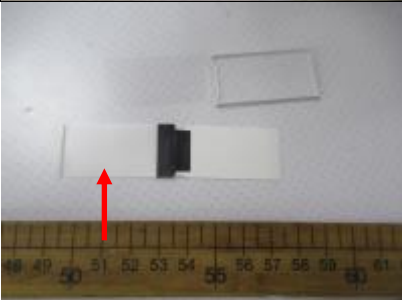
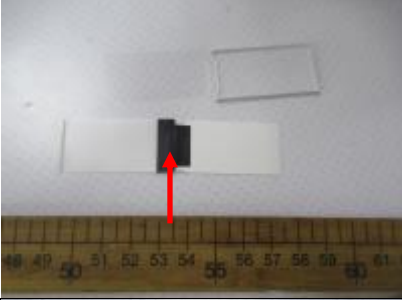
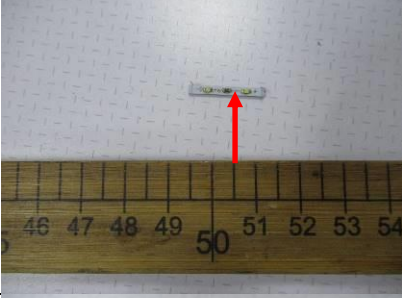

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Sample No.	Result	Description (Material, colour)	Photograph/Location
36	Pass	Transparent hard plastic board	
37	Pass	White soft plastic film	
38	Pass	Black soft plastic film	
39	Pass	White hard PCB	
40	Pass	Silvery copper alloy pin	

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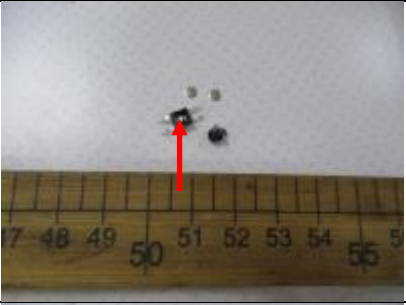




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Sample No.	Result	Description (Material, colour)	Photograph/Location
41	Pass	Black hard plastic frame	
42	Pass	Silvery metal piece	
43	Pass	Black hard plastic button	
44	Pass	Silvery metal shell	
45	Pass	Black resistance	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
46	Pass	Black resistance	
47	Pass	Black resistance	
48	Pass	Yellow capacitor	
49	Pass	Black hard IC	
50	Pass	Black hard IC	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
51	Pass	Brown diode	
52	Pass	Black diode	
53	Pass	Silver metal crystal oscillator	
54	Pass	Silvery copper alloy pin	
55	Pass	Black hard plastic cushion	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
56	Pass	Black hard IC	
57	Pass	Silvery copper alloy pin	
58	Pass	Green hard plastic plug	
59	Pass	Silvery copper alloy pin	
60	Pass	Silvery metal shell	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
61	Pass	Black rubber	
62	Pass	Brown soft plastic film	
63	Pass	Silvery copper alloy pin	
64	Pass	Black hard plastic frame	
65	Pass	Black hard IC	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
66	Pass	Black hard IC	
67	Pass	Black hard IC	
68	Pass	Black hard IC	
69	Pass	Black diode	
70	Pass	Black fuse	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
71	Pass	Silvery copper alloy pin	
72	Pass	Black soft plastic shell	
73	Pass	Silvery metal shell	
74	Pass	Black rubber	
75	Pass	Brown soft plastic film	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
76	Pass	Black hard IC	
77	Pass	Silvery copper alloy pin	
78	Pass	Yellow soft plastic sheath	
79	Pass	Silvery copper alloy piece	
80	Pass	Black hard plastic frame	

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Sample No.	Result	Description (Material, colour)	Photograph/Location
81	Pass	Golden copper alloy pin	
82	Pass	White hard plastic frame	
83	Pass	Yellow paper box	
84	Pass	Transparent soft plastic bag	
85	Pass	Green soft plastic component	

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### 3. Test Results

#### 3.1 ED-XRF Spectrometer test for total Cadmium, Chromium, Mercury, Lead and Bromine according to EN 62321-3-1:2014

##### Criteria of XRF test results

##### **Pass:**

Because of the nature of the testing procedure (caused by the uncertainty of the used, XRF method), a definite pass is given only if the XRF test score is less than 60% of the respective RoHS limit.

##### **Inconclusive:**

If the XRF test score is between 60% and 150% of the respective RoHS limit, further chemical test on the sample is required.

##### **Fail:**

A definite FAIL is given if the XRF test score is above 150% of the respective RoHS limit

##### **\*Explanation for RoHS limit**

Regarding Chromium and Bromine, the XRF test score shows the total Chromium and the total Bromine, but the RoHS limit of 1000 mg/kg, according to the directive 2011/65/EU, is only for Hexavalent Chromium and Brominated Flame Retardants. Therefore, if the XRF test result for the total Chromium and the total Bromine is more than 600 mg/kg and 300 mg/kg respectively, further analytical tests are necessary to find out the exact amount of Hexavalent Chromium and Brominated Flame Retardants

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<b>ROHS LIMIT</b>	<b>100</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	
<b>Pass result</b>	<b>&lt; 60</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 300</b>	
<b>Inconclusive result</b>	<b>60 – 150</b>	<b>600 – 1500</b>	<b>600 – 1500</b>	<b>&gt; 600</b>	<b>&gt; 300</b>	
<b>Fail result</b>	<b>&gt; 150</b>	<b>&gt; 1500</b>	<b>&gt; 1500</b>	<b>-</b>	<b>-</b>	
<b>01</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>02</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>03</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>04</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>05</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>06</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>07</b>	<30	1466***	<30	593	<30	<b>Pass</b>
<b>08</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>09</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>10</b>	<30	<30	<30	<30	203	<b>Pass</b>
<b>11</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>12</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>13</b>	<30	87	<30	<30	<30	<b>Pass</b>
<b>14</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>15</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>16</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>17</b>	<30	64	<30	66	--	<b>Pass</b>
<b>18</b>	<30	<30	<30	56	<b>118960</b>	<b>Inconclusive</b>

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<b>ROHS LIMIT</b>	<b>100</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	
<b>Pass result</b>	<b>&lt; 60</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 300</b>	
<b>Inconclusive result</b>	<b>60 – 150</b>	<b>600 – 1500</b>	<b>600 – 1500</b>	<b>&gt; 600</b>	<b>&gt; 300</b>	
<b>Fail result</b>	<b>&gt; 150</b>	<b>&gt; 1500</b>	<b>&gt; 1500</b>	<b>-</b>	<b>-</b>	
<b>19</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>20</b>	<30	<30	<30	<30	<b>56316</b>	<b>Inconclusive</b>
<b>21</b>	<30	<30	<30	<30	<b>83108</b>	<b>Inconclusive</b>
<b>22</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>23</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>24</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>25</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>26</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>27</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>28</b>	<30	<30	<30	589	<30	<b>Pass</b>
<b>29</b>	<30	<30	<30	<30	<b>5588</b>	<b>Inconclusive</b>
<b>30</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>31</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>32</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>33</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>34</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>35</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>36</b>	<30	<30	<30	<30	<30	<b>Pass</b>

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<b>Pass result</b>	<b>&lt; 60</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 300</b>	
<b>Inconclusive result</b>	<b>60 – 150</b>	<b>600 – 1500</b>	<b>600 – 1500</b>	<b>&gt; 600</b>	<b>&gt; 300</b>	
<b>Fail result</b>	<b>&gt; 150</b>	<b>&gt; 1500</b>	<b>&gt; 1500</b>	<b>-</b>	<b>-</b>	
<b>37</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>38</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>39</b>	<30	<30	<30	<30	<b>23620</b>	<b>Inconclusive</b>
<b>40</b>	<30	92	<30	<30	--	<b>Pass</b>
<b>41</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>42</b>	<30	58	<30	<b>108828</b>	--	<b>Inconclusive</b>
<b>43</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>44</b>	<30	125	<30	585	--	<b>Pass</b>
<b>45</b>	<30	5879***	<30	514	<30	<b>Pass</b>
<b>46</b>	<30	1991***	<30	577	<30	<b>Pass</b>
<b>47</b>	<30	2507***	<30	594	<30	<b>Pass</b>
<b>48</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>49</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>50</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>51</b>	59	32370***	<30	55	<30	<b>Pass</b>
<b>52</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>53</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>54</b>	<30	163	<30	<30	--	<b>Pass</b>

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<b>ROHS LIMIT</b>	<b>100</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	
<b>Pass result</b>	<b>&lt; 60</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 600</b>	<b>&lt; 300</b>	
<b>Inconclusive result</b>	<b>60 – 150</b>	<b>600 – 1500</b>	<b>600 – 1500</b>	<b>&gt; 600</b>	<b>&gt; 300</b>	
<b>Fail result</b>	<b>&gt; 150</b>	<b>&gt; 1500</b>	<b>&gt; 1500</b>	<b>-</b>	<b>-</b>	
<b>55</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>56</b>	<30	<30	<30	<30	<b>9766</b>	<b>Inconclusive</b>
<b>57</b>	<30	133	<30	<30	--	<b>Pass</b>
<b>58</b>	<30	<30	<30	<30	61	<b>Pass</b>
<b>59</b>	<30	126	<30	<30	--	<b>Pass</b>
<b>60</b>	<30	<30	<30	38	--	<b>Pass</b>
<b>61</b>	<30	<30	<30	36	<30	<b>Pass</b>
<b>62</b>	<30	<30	<30	50	<30	<b>Pass</b>
<b>63</b>	<30	<30	<30	<30	--	<b>Pass</b>
<b>64</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>65</b>	<30	<30	<30	<30	<b>9902</b>	<b>Inconclusive</b>
<b>66</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>67</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>68</b>	<30	180	<30	<30	<30	<b>Pass</b>
<b>69</b>	<30	97	<30	<30	<30	<b>Pass</b>
<b>70</b>	<30	<30	<30	<30	<30	<b>Pass</b>
<b>71</b>	<30	<30	<30	43	--	<b>Pass</b>
<b>72</b>	<30	<30	<30	<30	<30	<b>Pass</b>

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ROHS LIMIT	100	1000	1000	1000	1000	
Pass result	< 60	< 600	< 600	< 600	< 300	
Inconclusive result	60 – 150	600 – 1500	600 – 1500	> 600	> 300	
Fail result	> 150	> 1500	> 1500	-	-	
73	<30	<30	<30	47	--	Pass
74	<30	<30	<30	<30	<30	Pass
75	<30	<30	<30	<30	<30	Pass
76	<30	<30	<30	<30	<30	Pass
77	<30	<30	<30	<30	--	Pass
78	<30	<30	<30	<30	<30	Pass
79	<30	75	<30	86729	--	Inconclusive
80	<30	<30	<30	35	107831	Inconclusive
81	<30	<30	<30	<30	--	Pass
82	<30	<30	<30	<30	<30	Pass
83	<30	<30	<30	<30	<30	Pass
84	<30	<30	<30	<30	<30	Pass
85	<30	<30	<30	<30	<30	Pass

**Remark:**

1. “<” means “less than”.
2. “mg/kg” denotes “milligram per kilogram”.
3. With regard to the stoichiometry of Br in PBBs and PBDEs, the lower limit for Br is set at 300 mg/kg.
4. “--” means the substance for this sample are not tested.
5. “\*\*\*” means the result is exempted according to 2011/65/EU ANNEX item 7(c)-I: Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound.

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### 3.2 Wet chemical test

#### Main instruments used for wet chemical test

Testing Target	Instrument	Method
Lead & Cadmium	ICP-OES	EN 62321-5:2014
Mercury	ICP-OES	EN 62321-4:2014/A1:2017
Hexavalent Chromium	UV-Vis	EN 62321-7-1:2015 EN 62321-7-2:2017
PBBs & PBDEs	GC/MS	EN62321-6:2015
DEHP, BBP, DBP & DIBP	GC/MS	EN 62321-8:2017

#### Criteria of chemical test results

##### **Pass:**

A definite Pass is given If the chemical test result meets the requirements of RoHS.

##### **Fail:**

A definite Fail is given If the chemical test result exceeds the full respective RoHS limit.

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Test Sample	Cadmium [mg/kg]	Lead [mg/kg]	Mercury [mg/kg]	Chromium# (VI) [mg/kg]	PBBs (Sum) [mg/kg]	PBDEs (Sum) [mg/kg]	OVERALL RESULT
Limit	100	1000	1000	§	1000	1000	
42	--	--	--	Negative	--	--	Pass
79	--	--	--	Negative	--	--	Pass

**Remark:**

1. "--" means the substance for this sample are not tested.
2. "mg/kg" denotes "milligram per kilogram"
3. "§" The Chromium (VI) content in surface layer have been confirmed with reference to EN 62321-7-1:2015

Result	Chromium (VI) concentration	Qualitative result
Negative	<0.1µg/cm <sup>2</sup>	The sample is negative for Cr(VI). The Cr(VI) concentration is below the limit of quantification. The coating is considered a non-Cr(VI) based coating.
Inconclusive	≥0.1µg/cm <sup>2</sup> and ≤0.13 µg/cm <sup>2</sup>	The result is considered to be inconclusive. Unavoidable coating variations may influence the determination. Recommendation: if additional samples are available, perform a total of 3 trials to increase sampling surface area. Use the averaged result of the 3 trails for the final determination.
Positive	>0.13 µg/cm <sup>2</sup>	The sample is positive for Cr(VI). Concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

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Limit	100	1000	1000	1000	1000	1000	
18	--	--	--	--	<50	<50	Pass
20	--	--	--	--	<50	<50	Pass
21	--	--	--	--	<50	<50	Pass
29	--	--	--	--	<50	<50	Pass
39	--	--	--	--	<50	<50	Pass
56	--	--	--	--	<50	<50	Pass
65	--	--	--	--	<50	<50	Pass
80	--	--	--	--	<50	<50	Pass
18	--	--	--	--	<50	<50	Pass
20	--	--	--	--	<50	<50	Pass
21	--	--	--	--	<50	<50	Pass
29	--	--	--	--	<50	<50	Pass
39	--	--	--	--	<50	<50	Pass
56	--	--	--	--	<50	<50	Pass
65	--	--	--	--	<50	<50	Pass
80	--	--	--	--	<50	<50	Pass

**Remark:**

1. ND = Not detected (Detected limit of Cd :2mg/kg;Pb, Hg, and Cr(VI):5mg/kg; PBBs and PBDEs: 5mg/kg)
2. " mg/kg " denotes " milligram per kilogram ".
3. "--" means the substance for this sample are not tested.
4. " \*\* " means the result is exempted according to 2011/65/EU ANNEX item 6(c): Lead as an copper alloy containing up to 4 % lead by weight.

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Test Sample	DEHP [mg/kg]	DBP [mg/kg]	BBP [mg/kg]	DIBP [mg/kg]	RESULT
Limit	1000	1000	1000	1000	
01	<200	<200	<200	<200	Pass
02	<200	<200	<200	<200	Pass
03	<200	<200	<200	<200	Pass
04	<200	<200	<200	<200	Pass
05	<200	<200	<200	<200	Pass
06	<200	<200	<200	<200	Pass
07	<200	<200	<200	<200	Pass
08	<200	<200	<200	<200	Pass
09	<200	<200	<200	<200	Pass
10	<200	<200	<200	<200	Pass
11	<200	<200	<200	<200	Pass
12	<200	<200	<200	<200	Pass
13	<200	<200	<200	<200	Pass
14	<200	<200	<200	<200	Pass
15	<200	<200	<200	<200	Pass
16	<200	<200	<200	<200	Pass
18	<200	<200	<200	<200	Pass
20	<200	<200	<200	<200	Pass
21	<200	<200	<200	<200	Pass
22	<200	<200	<200	<200	Pass
25	<200	<200	<200	<200	Pass
26	<200	<200	<200	<200	Pass
28	<200	<200	<200	<200	Pass
29	<200	<200	<200	<200	Pass
30	<200	<200	<200	<200	Pass
33	<200	<200	<200	<200	Pass
34	<200	<200	<200	<200	Pass
35	<200	<200	<200	<200	Pass

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Test Sample	DEHP [mg/kg]	DBP [mg/kg]	BBP [mg/kg]	DIBP [mg/kg]	RESULT
Limit	1000	1000	1000	1000	
36	<200	<200	<200	<200	Pass
37	<200	<200	<200	<200	Pass
38	<200	<200	<200	<200	Pass
39	<200	<200	<200	<200	Pass
41	<200	<200	<200	<200	Pass
43	<200	<200	<200	<200	Pass
45	<200	<200	<200	<200	Pass
46	<200	<200	<200	<200	Pass
47	<200	<200	<200	<200	Pass
48	<200	<200	<200	<200	Pass
49	<200	<200	<200	<200	Pass
50	<200	<200	<200	<200	Pass
51	<200	<200	<200	<200	Pass
52	<200	<200	<200	<200	Pass
55	<200	<200	<200	<200	Pass
56	<200	<200	<200	<200	Pass
58	<200	<200	<200	<200	Pass
61	<200	<200	<200	<200	Pass
62	<200	<200	<200	<200	Pass
64	<200	<200	<200	<200	Pass
65	<200	<200	<200	<200	Pass
66	<200	<200	<200	<200	Pass
67	<200	<200	<200	<200	Pass
68	<200	<200	<200	<200	Pass
69	<200	<200	<200	<200	Pass
70	<200	<200	<200	<200	Pass
72	<200	<200	<200	<200	Pass
74	<200	<200	<200	<200	Pass

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Test Sample	DEHP [mg/kg]	DBP [mg/kg]	BBP [mg/kg]	DIBP [mg/kg]	RESULT
Limit	1000	1000	1000	1000	
75	<200	<200	<200	<200	Pass
76	<200	<200	<200	<200	Pass
78	<200	<200	<200	<200	Pass
80	<200	<200	<200	<200	Pass
82	<200	<200	<200	<200	Pass
83	<200	<200	<200	<200	Pass
84	<200	<200	<200	<200	Pass
85	<200	<200	<200	<200	Pass

Remark:

1. "<" means "less than".
2. "mg/kg" denotes "milligram per kilogram".
3. DEHP = Di-(2-ethyl-hexyl)phthalate, DBP = Di-butyl phthalate  
BBP = Butyl-benzyl phthalate, DIBP = Di-iso-butyl phthalate

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TÜV SÜD Certification and Testing (China) Co., Ltd.

Prepared by:



Mr. Yiwei CHEN

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**APPENDIX I: Official Exemption Items**

Below items are quoted based on Directives of 2011/65/EU and its valid Amending Directives.

Exemption		Scope and dates of applicability
1(a)	Single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes < 30W: 5 mg	Expires on 31 December 2011; 3.5 mg may be used per burner after 31 December 2011 Until 31 December 2012; 2.5 mg shall be used per burner after 31 December 2012
1(b)	Single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes ≥ 30 W and < 50 W: 5 mg	Expires on 31 December 2011; 3.5 mg may be used per burner after 31 December 2011
1(c)	Single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes ≥ 50 W and < 150 W: 5 mg	-
1(d)	Single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes ≥ 150 W: 15 mg	-
1(e)	Single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011
1(f)	Single capped (compact) fluorescent lamps not exceeding (per burner): For special purposes: 5 mg	-
1(g)	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner): For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3.5 mg	Expires on 31 December 2017
2(a)(1)	Double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011
2(a)(2)	Double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011
2(a)(3)	Double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5 mg	Expires on 31 December 2011; 3.5 mg may be used per lamp after 31 December 2011
2(a)(4)	Double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	Expires on 31 December 2012; 3.5 mg may be used per lamp after 31 December 2012
2(a)(5)	Double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp): Tri-band phosphor with long lifetime (≥ 25 000 h): 8 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011
2(b)(1)	Other fluorescent lamps not exceeding (per lamp): Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012
2(b)(2)	Other fluorescent lamps not exceeding (per lamp): Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b)(3)	Other fluorescent lamps not exceeding (per lamp): Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011

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	Exemption	Scope and dates of applicability
2(b)(4)	Other fluorescent lamps not exceeding (per lamp): Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
3(a)	Cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): Short length ( $\leq 500$ mm)	No limitation of use until 31 December 2011; 3.5 mg may be used per lamp after 31 December 2011
3(b)	Cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): Medium length ( $> 500$ mm and $\leq 1\,500$ mm)	No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011
3(c)	Cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): Long length ( $> 1\,500$ mm)	No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011
4(a)	Other low pressure discharge lamps (per lamp)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
4(b)-I	High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index $R_a > 60$ : $P \leq 155$ W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(b)-II	High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index $R_a > 60$ : $155$ W $< P \leq 405$ W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(b)-III	High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index $R_a > 60$ : $P > 405$ W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(c)-I	Other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner): $P \leq 155$ W	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011
4(c)-II	Other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner): $155$ W $< P \leq 405$ W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(c)-III	Other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner): $P > 405$ W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(d)	High Pressure Mercury (vapour) lamps (HPMV)	Expires on 13 April 2015
4(e)	Metal halide lamps (MH)	-
4(f)	Other discharge lamps for special purposes not specifically mentioned in this Annex	-
4(g)	Hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0.3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 °C; (b) 15 mg per electrode pair + 0.24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.	Expires on 31 December 2018
5(a)	Glass of cathode ray tubes	-

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Exemption		Scope and dates of applicability
5(b)	Glass of fluorescent tubes not exceeding 0.2 % by weight	-
6(a)	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in galvanized steel containing up to 0,35 % lead by weight	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
6(a)-I	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight	Expires on 21 July 2024 for all categories
6(a)-II	6(a)-II: Lead as an alloying element in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	Expires on 21 July 2026 for all categories
6(b)	Alloying element in aluminium containing up to 0.4 % lead by weight	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.
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 12 months after the decision for all categories
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight.	Expires 18 months after the decision for all categories
6(b)-III	Lead as an alloying element in aluminium casting alloys containing up to 0,3% lead by weight provided it stems from leadbearing aluminium scrap recycling	Expires on 21 July 2026 for all categories
6(b)-IV	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight in gas valves applied in category 1 EEE (large household appliances)	Expires on 31 December 2024
6(c)	Copper alloy containing up to 4 % lead by weight	Expires on 21 July 2026 for all categories
7(a)	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85 % by weight or more lead) (excludes those in the scope of exemption 24)	For all categories except applications covered by point 24 of this Annex, expires on 21 July 2024.
	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85 % by weight or more lead) when used for the following applications (excludes those in the scope of exemption 24): I) for internal interconnections for attaching die, or other components along with a die in semiconductor assembly with steady state or transient/impulse currents of 0.1 A or greater or blocking voltages beyond 10 V, or die edge sizes larger than 0.3 mm x 0.3 mm II) for integral (meaning internal and external) connections of die attach in electrical and electronic components, if the thermal conductivity of the cured/sintered die-attach material is >35W/(m*K) AND the electrical conductivity of the cured/sintered die-attach material shall be >4.7MS/m AND solidus melting temperature has to be above 260°C III) In first level solder joints (internal or integral connections - meaning internal and external) for manufacturing components	Applies to all categories except applications covered by point 24 of this Annex, expires on 21 July 2026

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	Exemption	Scope and dates of applicability
	<p>so that subsequent mounting of electronic components onto subassemblies (i.e., modules or sub-circuit boards or substrates or point to point soldering) with a secondary solder does not reflow the first level solder. This item excludes die attach applications and hermetic sealings</p> <p>IV) In second level solder joints for the attachment of components to printed circuit board or lead frames: 1. in solder balls for the attachment of ceramic ball-grid-array (BGA) 2. in high temperature plastic overmoldings (&gt; 220 °C)</p> <p>V) as a hermetic sealing material between: 1. a ceramic package or plug and a metal case, 2. component terminations and an internal sub-part</p> <p>VI) for establishing electrical connections between lamp components in incandescent reflector lamps for infrared heating or high intensity discharge lamps or oven lamps</p> <p>VII) for audio transducers where the peak operating temperature exceeds 200°C</p>	
7(b)	Solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	-
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound	Expires on 21 July 2024 for all categories
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V 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 2026 for all categories
7(c)-III	Dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
7(c)-IV	PZT based dielectric ceramic materials for capacitors which are 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 monitoring and control instruments, and for category 11.
7(c)-V	<p>Electrical and electronic components containing lead in a glass or glass matrix compound that fulfils the following functions:</p> <ol style="list-style-type: none"> <li>1) protection and electrical insulation in glass beads of high voltage diodes and glass layers for wafer on the basis of a lead-zincborate or a lead-silica-borate glass body,*</li> <li>2) for hermetic sealings between ceramic, metal and/or glass parts</li> <li>3) for bonding purposes in a process parameter window for &lt; 500°C combined with a viscosity of 1013,3 dPas (so called "glasstransition temperature")</li> <li>4) used as resistance materials such as ink, with a resistivity range from 1 Ohms/square to 1 Mega Ohms/square, excluding trimmer potentiometers**</li> <li>5) used in chemically modified glass surfaces for Microchannel Plates (MCPs), Channel Electron Multipliers (CEMs) and Resistive Glass Products (RGPs).</li> </ol>	Expires on 21 July 2026 for all categories

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Exemption		Scope and dates of applicability
7(c)-VI	Electrical and electronic components containing lead in a ceramic that fulfils the following functions (excluding items covered under item 7(c)-II, 7(c)-III and 7(c)-IV of this annex): 1) piezoelectric lead zirconium titanate (PZT) ceramics 2) providing ceramics with a positive temperature coefficient (PTC)	Expires on 21 July 2026 for all categories
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
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 $\geq 200$ Hz.	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.
9	Hexavalent chromium as an anticorrosion 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)-I	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 (including minibars) designed to operate fully or partly with electrical heater, having an average utilised power input < 75 W at constant running conditions	Applies to categories 1-7 and 10 and expires on 5 March 2021.
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 $\geq 75$ 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.

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Exemption		Scope and dates of applicability
9(b)	Bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to categories 8, 9 and 11; 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 other subcategories of categories 8 and 9.
9(b)-I	Bearing shells and bushes for refrigerant-containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to category 1; expires on 21 July 2019.
11(a)	C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	White glasses used for optical application	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)	Filter glasses and glasses used for reflectance standards	Applies to categories 8, 9 and 11; 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 other subcategories of categories 8 and 9
13(b)-I	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	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	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
14	Solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight	Expired on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011
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;

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	Exemption	Scope and dates of applicability
		—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 mm <sup>2</sup> or larger in any semiconductor technology node; —stacked die packages with die of 300 mm <sup>2</sup> or larger, or silicon interposers of 300 mm <sup>2</sup> or larger.	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.
16	Linear incandescent lamps with silicate coated tubes	Expires on 1 September 2013
17	Lead halide as Radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	-
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba)2MgSi2O7:Pb)	Expired on 1 January 2011
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.
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)	Expires on 1 June 2011
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	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

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	Exemption	Scope and dates of applicability
		monitoring and control instruments, and for category 11.
21(a)	Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE	Applies to categories 1 to 7 and 10 except applications covered by entry 21(b) or entry 39 and expires on 21 July 2021.
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Applies to categories 1 to 7 and 10 except applications covered by entry 21(a) or 39 and expires on 21 July 2021.
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.'
23	Finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24	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.
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	-
26	Lead oxide in glass envelope of black light blue lamps	Expires on 1 June 2011
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers	Expired on 24 September 2010
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC	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.
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	-
31	Soldering materials in mercury free flat fluorescent lamps (which, e.g. are used for liquid crystal displays, design or industrial lighting)	-
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

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Exemption		Scope and dates of applicability
		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.
33	Solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	-
34	Cermet-based trimmer potentiometer elements	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.
36	Cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Expired on 1 July 2010
37	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.
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	-
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 31 October 2019
40	Photoresistors for analogue optocouplers applied in professional audio equipment	Expires on 31 December 2013
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 (*1))	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:	Applies to category 11, excluding applications covered by entry 6(c) of this Annex.

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	Exemption	Scope and dates of applicability
	—with engine total displacement $\geq$ 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.	Expires on 21 July 2024. <sup>1</sup>
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 (*1), 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	Applies to category 11 and expires on 20 April 2026

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