

 Green Mark	Light Emitting Diode Display Panels	No. 153 <hr/> Category No. J-15
<p>1. Scope</p> <p>This standard is applicable to products which meet the definition of CNS 13091 and CNS 14555, and their associated indoor products.</p> <p>2. Terms and definitions</p> <p>For this standard, the following terms and definitions shall apply.</p> <p>(1) Disassemblability: Refer to the requirement of Designed for Disassembly in Section 7.4 of <i>CNS 14021 Environmental labels and declarations -- Self-declared environmental claims</i> (Type II environmental labelling). The term “disassemblability” means the product with parts and components of different materials can be disassembled and separated using regular tools (such as a screwdriver) during the product’s end-of-life treatment process.</p> <p>(2) Polybrominated biphenyls (PBBs): Include monobromobiphenyl, dibromobiphenyl, tribromobiphenyl, tetrabromobiphenyl, pentabromobiphenyl, hexabromobiphenyl, heptabromobiphenyl, octabromobiphenyl, nonabromobiphenyl, and decabromobiphenyl.</p> <p>(3) Polybrominated diphenylethers (PBDEs): Include monobrominated diphenylethers, dibrominated diphenylethers, tribrominated diphenylethers, tetrabrominated diphenylethers, pentabrominated diphenylethers, hexabrominated diphenylethers, heptabrominated diphenylethers, octabrominated diphenylethers, nonabrominated diphenylethers, and decabrominated diphenylethers.</p> <p>3. Product characteristics</p> <p>3.1 The product’s rated power consumption during the use stage shall comply with the following requirement:</p> $P \leq A_L \times \left(F_L \times I \times \sqrt{\frac{\theta_R}{\theta_B} + 250} \right)$		
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Where:

P $\frac{D}{D_d}$ _____ $\times 10^{-2}$ _____

A_L: Total area of image display device [m²]

F_L: Power consumption per candela [W/cd]. For indoor space, $F_L = 0.4$; for semi-outdoor and outdoor space, $F_L = 0.05$.

- Indoor space: Places where the luminous intensity is 300 lumens or less under normal conditions, e.g., offices, corridors, and center of tunnel.
- Semi-outdoor: Places where the luminous intensity is 1500 lumens or less under normal conditions, e.g., places where indoor luminous intensity are affected by natural light and large indoor spaces, such as indoor stadiums and factories.
- Outdoor: Places with luminous intensity over 1500 lumens, e.g., outdoor sports grounds, roads, squares, and rooftops of buildings.

I: Luminance of product at 0 ° horizontal viewing angle [cd/m²]

θ_R: As the product is being rotated left and right, the horizontal viewing angle when the luminance at that angle equals to 50% of the product luminance at 0 ° horizontal viewing angle.

θ_B : Standard horizontal viewing angle [°].

For indoor space $\theta_B = 50^\circ$; for semi-outdoor space, $\theta_B = 40^\circ$; for outdoor space, $\theta_B = 30^\circ$.

3.2. The product shall be disassemblable.

3.3 The product's display units shall be capable of being repaired or replaced.

3.4 The product and its manufacturing processes shall not use substances stipulated by the Taiwan EPA as toxic substances, and substances controlled by the Montreal Protocol.

4. Materials, accessories and components

4.1 For the product's surface coating material, the content of mercury, lead, cadmium, and hexavalent chromium shall be below the regulatory limits.

4.2 The product's plastic components and parts shall not use halogenated plastics.

Plastic components or parts weighing more than 25 g shall meet the requirements of ISO 11469 regarding labeling in prominent areas to indicate the composition code.

4.3 Product's plastic components or parts weighing more than 25 g shall not contain cadmium, lead, hexavalent chromium, mercury, polybrominated biphenyls, polybrominated diphenyl ethers and short-chain chlorinated paraffins, and their measured contents shall be below the regulatory limits. If recycled materials are used in the plastic components, or safety regulations require the addition of glass fiber to the components, the lead content of such components shall be less than 20 mg/kg.

5. Test methods and regulatory limits

The regulated substances and regulatory limits for this standard are listed below. The applicable test methods shall be the national, international or specific industry standard methods, and the test reports shall be issued by accredited professional testing organizations.

Applicable Part	Regulated Substance	Regulatory Limit	Referenced Test Method
Coating material	mercury	< 2 ppm*	US EPA 3051A US EPA 3050B US EPA 3052
Coating material	lead	< 2 ppm	US EPA 3051A US EPA 3050B US EPA 3052
Coating material	cadmium	< 2 ppm	US EPA 3051A US EPA 3050B US EPA 3052
Coating material	hexavalent chromium	< 3 ppm*	NIEA T303 US EPA 3060A US EPA 7196A
Plastic	cadmium	< 2 mg/kg*	NIEA M353 NIEA M301 CNS 15050 US EPA 3051A US EPA 3050B US EPA 3052
Plastic	lead	< 2 mg/kg*	NIEA M353 NIEA M301 CNS 15050 US EPA 3051A US EPA 3050B US EPA 3052
Plastic	hexavalent chromium	< 3 mg/kg	NIEA T303 CNS 15050

			US EPA 3060A US EPA 7196A
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Plastic	mercury	< 2 mg/kg*	NIEA M317 NIEA M318 CNS 15050 US EPA 7471B US EPA 7473 US EPA 3052
Plastic	polybrominated biphenyls,	< 10 mg/kg*	CNS 15050 US EPA 8270D IEC 62321
Plastic	polybrominated diphenyl ethers	< 10 mg/kg*	CNS 15050 US EPA 8270D IEC 62321
Plastic	short-chain chlorinated paraffins	< 10 mg/kg	US EPA 3540C US EPA 8081B US EPA 8082 US EPA 8270D IEC 62321

*: The test reports shall provide evidence that the employed test methods have detection limits of less than 1/3 of regulatory limits.

6. Packaging

The materials of the product packaging shall meet the requirement of the “Guidelines on Review of Applications for Qualified Environmental Protection Products”.

7. Labeling

7.1 The name, address and consumer hotline of the Green Mark user shall be clearly marked on the product or its packaging.

7.2 The product or packaging shall bear a label reading "Energy Saving" and "Low Pollution”.

8. Other Requirements

Products are considered different if they differ in size and displayed color.