Comparative study of fluorescent lamps

Thai Green Label (TH)
TGL-J-R4-15

SIRIM Eco-label (MY)
ECO NO.025

Green Choice Philippines (PH)
GCP 20070010

Remarks on identifying common core criteria

1. Scope
This category applies to fluorescent lamps which consist of double-capped, single-capped, and compact fluorescent lamps.

The criteria document applies to three types of the fluorescent lamps (namely linear, circular and compact) that are for household use, office and industrial lightings.

These criteria shall apply to linear and compact fluorescent lamps for general lighting service applications.

2. General requirement
4.1 The product shall be certified to the Thai Industrial Standard TS 236, Standard for Double-capped Fluorescent Lamps, or TS 2173, Standard for Single-capped Fluorescent Lamps, or TS 2233, Standard for Self-balled lamps for general lighting, or International Standard or acceptable National Standard or if not certified the product must have passed the standardized tests of product quality.

Verification: Certification or test report according to the mentioned standards.

4.2 The product shall be certified to the Thai Industrial Standard for safety requirements, TS 956 for double-capped fluorescent lamps or TS 2235 for single-capped fluorescent lamps or TS 2234 for self-balled lamps for general lighting, or International Standard or acceptable National Standard or if not certified the product must have passed the standardized tests of product quality.

Note (GIZ):
- TS 236: Double-capped fluorescent lamps is modified from IEC 60969 (2003-03) and Amendment 2(2003-03)
- TS 2173: Single-capped fluorescent lamps is modified from IEC 60969 (2003-03) and Amendment 2
- TS 2233: Self-balled lamps for general lighting is modified from IEC 60969 (2003-03)
- TS 2235: Standard for single-capped fluorescent lamps-safety requirements is modified from IEC 61199 (2011-07)
- TS 2234: Standard for self-balled lamps for general lighting-safety requirements is modified from IEC 60969 (1999-09)

Verification: Certification or test report according to the mentioned standards.

5.1 Lumen efficacy of product should comply with the following standards.
- TS 2309: Double-capped fluorescent lamps – energy efficiency requirements (see table 2), this standard refers from EC Regulation No. 347/2010 Eco-design to integrated ballast, ...
- TS 2334: Single-capped fluorescent lamps – energy efficiency requirements

3.2.1 Energy efficacy

<table>
<thead>
<tr>
<th>Power rating (W)</th>
<th>Efficiency (lm/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>80</td>
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<tr>
<td>15</td>
<td>80</td>
</tr>
<tr>
<td>24</td>
<td>80</td>
</tr>
<tr>
<td>36</td>
<td>80</td>
</tr>
</tbody>
</table>

TH and MY may have some common requirements as follows:

Question to PH:
Why doesn’t PH have energy efficiency requirement?

Remark:
PH and MY may use the figures of energy efficiency of TH, as TH refers in most of the cases to figures from EU Regulation No. 347/2010. Furthermore TH companies agreed with the revised version of TGL revised in January 2015.

3. Lumen efficacy
5.1 Lumen efficacy of product should comply with the following standards.
- TS 2309: Double-capped fluorescent lamps – energy efficiency requirements (see table 2), this standard refers from EC Regulation No. 347/2010 Eco-design to integrated ballast, ...
- TS 2334: Single-capped fluorescent lamps – energy efficiency requirements

TH and MY may have some common requirements as follows:

Question: Is there a need for PH to have the same scope as TH and MY?

Note (GIZ):
- TH and MY have the same scope for 3 types of fluorescent lamps.

Remarks on implementing guidelines.

Remark (GIZ): Proposed scope (from May 2014 by Öko-Institut):
- Compact fluorescent lamps (single-capped with integrated ballast)
- Single-capped FL without integrated ballast
- Linear (double-capped) fluorescent lamps (such as TS and T8)
- Circular (double-capped and single-capped) FL for general lighting services.

TH, MY, PH have common requirement for performance and safety.

There is no available information about PH national safety standard for double-capped fluorescent lamps.

Safety standards of this product are in the ASEAN list of Harmonized Standards for EEE.

PH and MY may use the figures of energy efficiency of TH, as TH refers in most of the cases to figures from EU Regulation No. 347/2010. Furthermore TH companies agreed with the revised version of TGL.
4. Power factor

Power factor of CFL shall be at least 0.85

N/A

N/A

Alignment is not possible.

Question to MY, PH: Is this requirement already mentioned in other national standards?

5. Mercury content

5.5 Mercury content

Fluorescent lamps ≤ 8 mg per lamp

Single-capped (CFL) ≤ 5 mg per lamp

3.2.2.2 Mercury content

Double-capped

Halophosphate with normal lifetime ≤ 5 mg per lamp

Triphosphate with normal lifetime ≤ 5 mg per lamp

Triphosphate with long lifetime ≤ 8 mg per lamp

Single-capped (with and w/o ballast) ≤ 5 mg per lamp

Verification: not mentioned in the criteria document

2. Mercury content

Double-capped

Halophosphate ≤ 10 mg per lamp

Triphosphate with normal lifetime ≤ 5 mg per lamp

Triphosphate with long lifetime ≤ 8 mg per lamp

Single-capped (CFL) ≤ 5 mg per lamp

Verification: a certification that the product has passed the maximum limit for mercury content based on acceptable and internationally recognized testing procedures for mercury.

• Same requirement of TH, PF, MY for single-capped (CFL) ≤ 5 mg per lamp

• Same requirement of MY and PH for double-capped

Remarks:

1) TH may adapt from MY and PH, also for the single-capped without ballast

2) MY and PH should ban using halophosphate in lamps because it is not energy efficient (low lm/W)

3) Proposed revised criteria:

- Double-capped with long lifetime ≤ 8 mg per lamp

- Double-capped with normal lifetime ≤ 5 mg per lamp

- Single-capped (with and w/o ballast) ≤ 5 mg per lamp

Question to MY, PH: How is the lifetime defined (normal vs. long)?

6. Packaging

5.7.1 The product packaging must be made of recycled pulp paper:

- Packaging must be made of at least 85% recycled pulp paper in which using corrugating medium

- Packaging must be made of at least 85% recycled pulp paper in which using Kraft liner board, reported on a dry basis or an as received basis.

- Packaging must be made of at least 70% recycled pulp paper in which using boxboard.

3.2.2 Packaging shall be of corrugated materials containing at least 80% recycled content.

Verification: not mentioned in the criteria document

N/A

N/A

Alignment is not possible.

Question to TH and MY regarding common criteria for paper packaging is possible.

Remarks:

In order to have a common criteria, MY may have to increase recycled content of corrugated paper to 100%.
<table>
<thead>
<tr>
<th>Thai Green Label (TH)</th>
<th>SIRIM Eco-label (MY)</th>
<th>Green Choice Philippines (PH)</th>
<th>Remarks on identifying common core criteria</th>
<th>Open questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Verification:</strong> Applicants must provide declaration documents that indicating percentage of recycled pulp usage.</td>
<td>N/A</td>
<td>N/A</td>
<td>Alignment is not possible.</td>
<td></td>
</tr>
<tr>
<td><strong>5.7.2 Color ink or pigments used for printing on the packaging or for labeling on packaging is permitted to have concentration of mercury, lead, cadmium and hexavalent chromium from impurities and contamination not exceed 0.01% (100ppm) of the total weight.</strong></td>
<td><strong>Verification:</strong> Heavy metals measurement in the products shall be conducted by the following methods; 1) ISO 3856-7 or ASTM D 3624 for Mercury (Hg) 2) ISO 3856-1 or ASTM D 3335 for Lead (Pb) 3) ISO 3856-4 or ASTM D 3335 for Cadmium (Cd) 4) ISO 3856-5 for Hexavalent Chromium (Cr6+) or test method of IEC 63221 for Mercury (Hg), Lead (Pb), Cadmium (Cd) and Hexavalent chromium (Cr6+) measurement.</td>
<td><strong>N/A</strong></td>
<td><strong>N/A</strong></td>
<td>Alignment is not possible.</td>
</tr>
<tr>
<td><strong>5.7.3 Blowing agent, laminates or plastic contained raw material must not be used in packaging.</strong></td>
<td><strong>Verification:</strong> Declaration letter of compliance from the applicant.</td>
<td><strong>N/A</strong></td>
<td><strong>N/A</strong></td>
<td>Alignment is not possible.</td>
</tr>
<tr>
<td><strong>7. Heavy metals and flame retardants</strong></td>
<td>5.6. The products must not contain lead, cadmium, hexavalent chromium, polybrominated biphenyl (PBB) or polybrominated diphenyl ether (PBDE). However, the concentration of lead, hexavalent chromium, polybrominated biphenyl (PBB) or polybrominated diphenyl ether (PBDE) below 0.01% by weight in homogeneous materials and the concentration of cadmium below 0.01% in the products shall be assumed that the presence of those hazardous substances are not detected. <strong>Verification:</strong> The applicant must submit a declaration document to certify that no prohibited substances as defined in general requirement no. 5.6 are not used during manufacturing of the products. The certified document must be signed by managing committee or authorized personnel of the manufacturer or authorized personnel of the applicant and stamped with the company seal. Sampling of homogeneous materials shall be conducted by officials under The TGL Scheme for accredited monitoring of manufacturer. Payment of monitoring fees shall be provided by the manufacturer.</td>
<td><strong>N/A</strong></td>
<td><strong>N/A</strong></td>
<td>Alignment is not possible.</td>
</tr>
<tr>
<td><strong>8. Take back system</strong></td>
<td>Take back and recycling policy shall be provided in environmentally sound manner and in practical way. It shall be clearly stated time frame to achieve the task once the product has been certified. <strong>Verification:</strong> Submitted evidences of plan and record of the take back system.</td>
<td><strong>N/A</strong></td>
<td><strong>N/A</strong></td>
<td>Alignment is not possible.</td>
</tr>
<tr>
<td><strong>9. Instruction</strong></td>
<td>The following information shall be included and stated in the packaging of the product. 3. Mercury content of the product shall be clearly indicated in the packaging. It shall be stated as: “It contains _____ mg of mercury”. 4. Proper procedures of handling and storing the post-consumer use of the product shall be indicated in the packaging by means of a simple written</td>
<td><strong>N/A</strong></td>
<td><strong>Alignment is possible. However, further discussions are needed.</strong></td>
<td><strong>Question to PH and MY: Is it possible to add the take back system requirements? Or is it already integrated in national law?</strong></td>
</tr>
<tr>
<td><strong>Alignment is possible. However, further discussions are needed.</strong></td>
<td><strong>TH and PH have similar statement about an appropriate procedures or conditions for storage of end used product and packaging by means of simplified message or figure.</strong></td>
<td><strong>PH required declaration of the mercury content. This is not required by TH.</strong></td>
<td><strong>• Alignment is possible. However, further discussions are needed.</strong></td>
<td><strong>•</strong></td>
</tr>
</tbody>
</table>

**Table:**
- **Verification:** Applicants must provide declaration documents indicating percentage of recycled pulp usage.
- **5.7.2 Color ink or pigments used for printing on the packaging or for labeling on packaging is permitted to have concentration of mercury, lead, cadmium and hexavalent chromium from impurities and contamination not exceed 0.01% (100ppm) of the total weight.
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5.8.4 The location for the return of waste products shall be stated.


Table 1 Energy efficacy for double-capped fluorescent lamps [TIS 2309: 2013]

<table>
<thead>
<tr>
<th>Power (W)</th>
<th>Initial efficacy (lm/W)</th>
<th>High efficiency (lm/W)</th>
<th>Power (W)</th>
<th>Initial efficacy (lm/W)</th>
<th>High efficiency (lm/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>35</td>
<td>25</td>
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<td>24</td>
<td>14</td>
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</table>

Table 2 Energy efficacy for single-capped (w/o ballast) [TIS 2334:2013]
<table>
<thead>
<tr>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
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</thead>
<tbody>
<tr>
<td>W</td>
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<td>เย็น</td>
<td>W</td>
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<tr>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
<th>หลอดฝาปิด (U) ชาร์จสี</th>
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