

الهيئة السعودية للمواصفات والمقاييس والجودة
Saudi Standards, Metrology and Quality Org (SASO)

SASO 2902:2018/AMD1:2021

متطلبات كفاءة الطاقة ومتطلبات التشغيل ووضع البطاقات لمنتجات الانارة - الجزء
الثاني

**Energy efficiency, functionality and labelling requirements for
lighting products Part 2**

ICS: 91.160.01

THIS DOCUMENT IS A DRAFT AMENDMENT TO SAUDI STANDARD CIRCULATED FOR COMMENT. IT IS, THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED UNTIL APPROVED BY THE BOARD OF DIRECTORS.

مقدمة

قامت الهيئة السعودية للمواصفات والمقاييس والجودة باعتماد تعديل المواصفة القياسية رقم SASO2902:2018/AMD1:2021 " متطلبات كفاءة الطاقة ومتطلبات التشغيل ووضع البطاقات لمنتجات الانارة - الجزء الثاني" بعد استعراض المواصفات القياسية الدولية والأجنبية والمؤلفات المرجعية. وقد اعتمد هذا التعديل مكملا للمواصفة القياسية رقم SASO2902:2018 " متطلبات كفاءة الطاقة ومتطلبات التشغيل ووضع البطاقات لمنتجات الانارة - الجزء الثاني "

Foreword

Saudi Standards, Metrology and Quality Organization (SASO) has approved the Amendment of Saudi Standard No. "SASO 2902:2017/AMD1:2021" "Energy efficiency, functionality and labelling requirements for lighting products Part 2" based on relevant International and National Foreign Standards and references. This amendment has been approved as a complementary part of the Saudi Standard No. "SASO 2902:2018" "Energy efficiency, functionality and labelling requirements for lighting products Part 2".

2. Reference Standards

Delete:

2.1 Safety and Electromagnetic Compatibility standards

- IEC 60061-1 Specification for lamp caps and holders together with gauges for the control of interchangeability and safety – lamp caps
- IEC 61000-3-2 Electromagnetic compatibility (EMC) – Part 3-2 Limits – Limits for harmonic current emissions (equipment current $\leq 16\text{A}$ per phase)
- IEC 61195 Double-capped fluorescent lamps - Safety specifications
- IEC 61199 Single-capped fluorescent lamps - Safety specifications
- IEC 61347-1 Lamp control gear – Part 1: General and safety requirements
- IEC 61347-2 Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
- IEC 62035 Discharge lamps (excluding fluorescent lamps) - Safety specifications
- IEC 62776 Double-capped LED lamps designed to retrofit linear fluorescent lamps - Safety specifications

3.2 Technical definition

Delete:

Decorative Luminaire: luminaire employing non-white light sources

Note 1: decorative luminaires are not intended to accent an object or an area with a space.

Note 2: decorative luminaires typically employ blown glass, or colorful glass elements

Decorative Pendant (Luminaire): Suspended luminaires that are not intended to accent an object or an area within a space

4.3 Marking requirements

Replace:

“Special purpose” products (Annex B.1) do not need to comply with the marking requirements specified in Annex G. Instead, the following information shall be clearly and prominently indicated on their packaging and in all forms of product information accompanying the lamp when it is placed on the market:

- Their intended purpose.
- That they are not suitable for household/commercial illumination.

Products listed in Annex B.1.2 shall fulfill the documentation and information requirements specified for them in the same Annex.

By:

“Special purpose” products (Annex B.1) do not need to comply with the marking requirements specified in Annex G. Instead, the following information shall be clearly and prominently indicated on their packaging and in all forms of product information accompanying the lamp when it is placed on the market:

- Brand Name
- Model number
- Rated power(Watt)
- Rated Voltage (Voltage)
- Rated Lumen(Lumen)
- Rated color temperature (Kelvin)
- Country of origin
- Their intended purpose

Products listed in Annex B.1.2 shall fulfill the documentation and information requirements specified for them in the same Annex.

5.2 Type of documents needed for registration under the scope of this standard**Replace:**

To confirm the claims of the applicant, the following types of documents are required (see Table 2). Test report or evidence of the claimed properties can be established for a family of products, the definition of which is under the responsibility of the manufacturer.

The definition of the family of product (lamp or luminaire) shall include the minimum performances that apply to all products included in the family (but not limited to):

- Efficacy (lumen/watt),
- Lumen maintenance,
- Lifetime,
- Color rendering Index (Ra),
- Luminous flux (lumen),
- Same country of origin

All products within a family of products are declared with the same Energy Efficiency class (based on rated values).

Products within a family shall not exceed:

- by more than 10% the minimum declared values for Lifetime
- by more than 25% the minimum declared value for Luminous flux (lumen)

Evidences attached to the registration shall comply with the above definition of the family the product belongs to.

For luminaires, the functionality and endurance requirements can be supported by a factory test report. This factory test report shall reference the testing methodology/procedure used to measure the minimum performances required.

NOTE: these documents are not exclusive from other documents required by SASO (e.g. Electro Magnetic Compatibility, safety, ...) for registration.

NOTE: If a model within the registered family of product fails, the registration of all models under the same family of product will be automatically canceled.

By:

To confirm the claims of the applicant, the following types of documents are required (see Table 2). Test report or evidence of the claimed properties can be established for a family of products, the definition of which is under the responsibility of the manufacturer.

The product family definition (lamp or luminaire) must include the minimum performance that applies to all products included in the family:

- Luminous flux.
- All models in the family shall have the same type of product.
- All models in the family shall have the same manufacture and country of origin.
- All models in the family must have the same energy efficiency level (depending on the declared value).
- Products within the family must not exceed by more than 100% the minimum declared value of luminous flux (lumens).

Evidences attached to the registration shall comply with the above definition of the family the product belongs to.

For luminaires, the functionality and endurance requirements can be supported by a factory test report. This factory test report shall reference the testing methodology/procedure used to measure the minimum performances required.

Note1: these documents are not exclusive from other documents required by SASO (e.g. Electro Magnetic Compatibility, safety, ...) for registration.

Note 2: All test reports shall be conducted for the reference model of the family .

Note 3: If a model within the registered family of product fails, the registration of all models under the same family of product will be automatically canceled.

B.1.2 - lighting products exempted as used for non-primary lighting purpose/applications

Replace:

- Products intended for use in applications other than general lighting and products

incorporated into products which do not provide a general lighting function, e.g.:

- Emission of light as an agent in chemical or biological processes (such as polymerization, photodynamic therapy, horticulture, pet care, anti-insect products)
- Image capture and image projection (such as camera flashlights, photocopiers, video projectors)
- Lamps for swimming pools
- Pet care (aquarium, terrarium, etc.)
- Anti-insect lamps
- Disinfection
- Tanning
- Display optic lamps (> 12,000 lumens), such as:
 - Stage and studio lamps
 - Theatre lamps
 - Television (TV) lamps
 - Studio lamps
 - Photo lamps – Flashlights or lamps for the development of pictures
 - Projection lamps
 - Traffic/signal lamps
- Lamps intended for use in potentially explosive atmospheres;
- Emergency lighting luminaires and emergency sign luminaires;
- Control gears (ballasts) intended for use in luminaires defined in paragraph (c) and designed to operate lamps in emergency conditions;
- Luminaires intended for use in potentially explosive atmospheres and medical devices;
- Integrated luminaires for decorative purpose;
- Lamps marketed for operation with batteries only
- Lamps marketed as part of a product whose primary purpose is not lighting. However, if they are offered for sale, hire or hire purchase or displayed separately, for example as spare parts, they shall be included within the scope of this Standard

The intended purpose shall be stated for each product in the product information, and the technical documentation file drawn up for the purposes of conformity assessment shall list the technical parameters that make the product design specific for the stated intended purpose.

These aforementioned lamps are not excluded from this Standard when they are marketed for general lighting purposes.

By:

- Products intended for use in applications other than general lighting and products incorporated into products which do not provide a general lighting function, e.g.:
- Emission of light as an agent in chemical or biological processes (such as polymerization, photodynamic therapy, horticulture, pet care, anti-insect products)
- Image capture and image projection (such as camera flashlights, photocopiers, video projectors)
- Lamps for swimming pools
- Pet care (aquarium, terrarium, etc.)
- Anti-insect lamps
- Disinfection
- Tanning

- Display optic lamps (> 12,000 lumens), such as:
 - Stage and studio lamps
 - Theatre lamps
 - Television (TV) lamps
 - Studio lamps
 - Photo lamps – Flashlights or lamps for the development of pictures
 - Projection lamps
 - Traffic/signal lamps
- Emergency lighting luminaires and emergency sign luminaires;
- Control gears (ballasts) intended for use in luminaires designed to operate lamps in emergency conditions;
- Lamps and Luminaires intended for use in potentially explosive atmospheres and medical devices;
- Lamps and Luminaires marketed for operation with batteries only
- Lamps and Luminaires marketed as part of a product whose primary purpose is not lighting. However, if they are offered for sale, hire or hire purchase or displayed separately, for example as spare parts, they shall be included within the scope of this Standard
- Lamps and Luminaires that cannot be tested across references standards

The intended purpose shall be stated for each product in the product information, and the technical documentation file drawn up for the purposes of conformity assessment shall list the technical parameters that make the product design specific for the stated intended purpose.

These aforementioned Lamps and Luminaires are not excluded from this Standard when they are marketed for general lighting purposes.

D.1 - Functionality and endurance requirements for non-directional fluorescent lamps

Add Before table 10

Lumen maintenance and survival factors values at 2000 h are accepted and shall meet the limits in the table 10.

D.3 - Functionality and endurance requirements for non-directional LED lamps and luminaires

Add Before table 13

Lumen maintenance and survival factors values at 6000 h shall meet the limits in table 13 in accordance with IEC 62722 or IES LM 84 and shall be submitted in registration system. In case IEC 62717 or IES LM 80 test report is available then, Lumen maintenance and survival factors values at 2000 h are accepted and shall meet the limits in the table 13 in accordance with IEC 62722 or IES LM 84.

ANNEX F – Functionality requirements for directional lamps and integrated luminaires**Add Before table 18**

Lumen maintenance and survival factors values at 6000 h shall meet the limits in table 18 in accordance with IEC 62722 or IES LM 84 and shall be submitted in registration system. In case IEC 62717 or IES LM 80 or test report is available then, Lumen maintenance and survival factors values at 2000 h are accepted and shall meet the limits in the table 18 in accordance with IEC 62722 or IES LM 84.

ANNEX G – Marking requirements for non-directional and directional lamps**ANNEX Title correction:**

Marking requirements for non-directional and directional lamps and luminaire.

Page 31, G.1 - Information to be displayed on the lamp itself**Replace:**

For lamps other than high-intensity discharge lamps, the following shall be printed on the bulb with non-removable ink:

- Brand name
- Input voltage
- Nominal power
- Country of origin

By:

For lamps other than high-intensity discharge lamps, the following shall be printed on the bulb with non-removable ink:

- Brand name
- Input voltage *
- Rated power (Watt)
- Country of origin

* Not applicable for fluorescent lamps

G.2 - Information to be visibly displayed to end-users, prior to their purchase, on the packaging and on free access websites**Title correction:**

Information to be visibly displayed to end-users, prior to their purchase and on the packaging.

Replace:

The information in paragraphs (a) to (y) below shall be displayed on free-access websites and in any other form the manufacturer deems appropriate.

The information in paragraphs (a) to (p) below shall be visibly displayed on the packaging if the product is intended to be displayed to the end-users.

The information does not need to use the exact wording on the list below. It may be displayed in the form of graphs, drawings or symbols rather than text.

- a. Brand name;
- b. Model number;
- c. Country of origin;
- d. Rated voltage and rated frequency;
- e. Rated useful luminous flux;
- f. Efficacy (lumen/Watt);
- g. Rated power;
- h. Rated beam angle in degrees (only for directional lamps);
- i. Lamp displacement factor (only for LED lamps with integrated control gear);
- j. Rated life time of the lamp in hours;
- k. Rated Color temperature, as a value in Kelvins, expressed graphically or in words;
- l. Number of switching cycles before premature failure (only for LED lamps or if claimed by the manufacturer for other type of lamps);
- m. Color rendering index (Ra);
- n. Stating all hazardous material contained in the lamp/luminaire, as relevant;
- o. Statement referring to a Website
 - on how to clean lamp debris in case of accidental lamp breakage and disposal of lamp at the end of life, when relevant;
 - About actual values of the hazardous content, when relevant
- p. A warning if the lamp cannot be dimmed or can be dimmed only on specific dimmers; in the latter case, a list of compatible dimmers shall be also provided on the manufacturer's website

Following information are optional:

- q. Lamp type: directional or non-directional
- r. Color consistency (only for LED lamps);

- s. Lumen maintenance factor at the end of the nominal life;
- t. Warm-up time up to 60 % of the full light output (may be indicated as 'instant full light' if less than 1 second), when relevant;
- u. If designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25$ °C or specific thermal management is necessary), provide information on those conditions;
- v. Rated peak intensity in candela (cd), when available;
- w. An equivalence claim involving the power of a replaced lamp type may be displayed only if the lamp type is listed in Part 1 - Table 13 and if the luminous flux of the lamp in a 90° cone (Φ_{90°) is not lower than the corresponding reference luminous flux in Part 1 - Table 13. The reference luminous flux shall be multiplied by the correction factor in Part 1 - Table 14. For LED lamps, it shall be in addition multiplied by the correction factor in Part 1 - Table 15. The intermediate values of both the luminous flux and the claimed equivalent lamp.
- x. For LED lamps, if intended for use in outdoor or industrial applications, an indication to this effect;
- y. Lamp dimensions in millimeters (length and largest diameter);
- z. Actual values of all hazardous material contained in the lamp/luminaire

BY:

The information does not need to use the exact wording on the list below. It may be displayed in the form of graphs, drawings or symbols rather than text

The information in paragraphs (a) to (p) below shall be visibly displayed on the packaging if the product is intended to be displayed to the end-users

- a. Brand name;
- b. Model number;
- c. Country of origin;
- d. Rated voltage and rated frequency;
- e. Rated luminous flux (Lumen);
- f. Rated Efficacy (Lumen/Watt);
- g. Rated power (Watt);
- h. Rated beam angle in degrees (only for directional lamps);
- i. Lamp displacement factor (only for LED lamps with integrated control gear);

- j. Rated life time of the lamp in hours;
- k. Rated Color temperature, as a value in Kelvins, expressed graphically or in words;
- l. Number of switching cycles before premature failure (only for LED lamps or if claimed by the manufacturer for other type of lamps);
- m. Product guarantee, and depends on the default lifetime for the lamp/luminaire
- n. Rated Color rendering index (Ra);
- o. Stating all hazardous material contained in the lamp/luminaire, as relevant;
- p. A warning if the lamp cannot be dimmed or can be dimmed only on specific dimmers; in the latter case, a list of compatible dimmers shall be also provided on the manufacturer's website or any other form the manufacturer deems appropriate
- q. Following information are optional:
 - Lamp type: directional or non-directional
 - Color consistency (only for LED lamps);
 - Lumen maintenance factor at the end of the nominal life;
 - Warm-up time up to 60 % of the full light output (may be indicated as 'instant full light' if less than 1 second), when relevant;
 - If designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25$ °C or specific thermal management is necessary), provide information on those conditions;
 - Rated peak intensity in candela (cd), when available;
 - An equivalence claim involving the power of a replaced lamp type may be displayed only if the lamp type is listed in Part 1 - Table 13 and if the luminous flux of the lamp in a 90° cone (Φ_{90°) is not lower than the corresponding reference luminous flux in Part 1 - Table 13 The reference luminous flux shall be multiplied by the correction factor in Part 1 - Table 14. For LED lamps, it shall be in addition multiplied by the correction factor in Part 1 - Table 15. The intermediate values of both the luminous flux and the claimed equivalent lamp.
 - For LED lamps, if intended for use in outdoor or industrial applications, an indication to this effect;
 - Lamp dimensions in millimeters (length and largest diameter);
 - Actual values of all hazardous material contained in the lamp/luminaire
- r. Following information shall be displayed on free-access websites or in any other form the manufacturer deems appropriate:

- how to clean lamp debris in case of accidental lamp breakage and disposal of lamp at the end of life, when relevant;
- About actual values of the hazardous content, when relevant

ANNEX G – Marking requirements for non-directional and directional lamps

Add new clause:

G.3 - Information on control gear and ballast

For control gear and ballast, the following shall be printed on the product and packaging:

- Brand name;
- Model number;
- Country of origin;
- Rated voltage and rated frequency;
- Rated Efficacy (Lumen/Watt);
- Rated input power (Watt);
- Rated power factor
- Rated ambient temperature (Ta) and Rated case temperature (Tc)

H1.2 - Additional requirement for control gear for halogen and LED lamps

Replace:

The efficiency of control gear shall be at least 0,91 at 100 % load.

By:

- The minimum efficiency of Halogen control gear shall be 0.91 at 100 % load.
- The minimum efficiency of LED control gear for all wattage shall be calculated in accordance with equation:

$$\text{Minimum Efficiency } (\eta) \% = \frac{P^{0.81}}{(1.09 \times P^{0.81} + 2.10)}$$

M.3 - Energy Efficiency Index for luminaires (EEI)

In the 3rd paragraph

Replace:

The EEI is calculated as follows and rounded to three decimal places.

By:

The EEI is calculated as follows and rounded to two decimal places.

ANNEX N – Criteria for market surveillance**Replace:**

The enforcer may draw a sample of batch of a minimum of twenty (20) lamps or ten (10) luminaires of the same model from the same manufacturer, where possible obtained in equal proportion from four randomly selected sources, unless specified otherwise in Table 38.

The model shall be considered to comply with the requirements laid down in this Standard if:

- The lamps in the batch are accompanied by the required and correct product information,
- All parameters listed in Table 38 are met.

By:

For purposes of market surveillance, it might be drawn a sample of batch (based on each parameter listed in table 38) of the same model from the same manufacturer, where possible obtained in equal proportion from four randomly selected sources.

- The lamps in the batch are accompanied by the required and correct product information,
- All parameters listed in Table 38 are met