



ENERGY STAR® Program Requirements for Decorative Light Strings

Eligibility Criteria Draft Version 1.1

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Below is the product specification (Draft Version 1.1) for ENERGY STAR qualified decorative light strings. A product must meet all of the identified criteria if it is to be labelled as ENERGY STAR by its manufacturer.

The intent of the ENERGY STAR initiative in Canada in this product category is to reduce seasonal peak electricity consumption by encouraging Canadian consumers to use energy-efficient decorative strings.

1) Definitions:

- A. Decorative Light String - String of lamps used for a decorative purpose. The lamps may be sealed or unsealed.
- B. Series Block - A number of lamps connected in series, or utilizing a series connection. Additional series blocks can be added to the circuit (or light string) utilizing parallel connections. For example, a 50-lamp light string could have two 25-lamp series blocks connected in parallel.
- C. Brightness - Luminous flux emitted from a surface per unit solid angle per unit of area, projected onto a plane normal to the direction of propagation (I_v). Also known as luminous sterance. Intensity is specified in terms of millicandela (mcd).
- D. Maintained Brightness - The light output of a lamp as a percentage of its initial brightness after a 100-hour seasoning period.
- E. Useful Life - The length of time a light source takes, when operated at an ambient temperature of 35°C, to reach 50% ($L_{50\%}$) of its initial brightness after a 100-hour seasoning period.
- F. Viewing Angle – The spatial radiation pattern of the light emitted, indicating the degree of beam spread.
- G. Input Power - The total, or system, power used by the decorative string during operation, measured in watts (W), including transformers, adaptors, etc.
- H. Maximum Watts per Lamp – The input power divided by the number of lamps on the decorative light string.

- 2) **Reference Standards:** ENERGY STAR qualified decorative holiday strings shall comply with the applicable safety standards and relevant clauses from UL, CSA and other global standards organizations, unless the requirements of the ENERGY STAR specification are more restrictive. Relevant standards include, but are not limited to

Canadian Standards Association (CSA)

CSA-22.2 No.37-M1989 (R2004) *Christmas Tree and Other Decorative Lighting Outfits*

Underwriters Laboratories Inc. (UL)

UL 588-2004, *Standard for Seasonal and Holiday Decorative Products*

Powertech Labs Inc. / BC Hydro

Powertech Labs / BC Hydro Decorative Light String Test Protocol Draft Version 1.1.
developed by Powertech Labs for BC Hydro.

- 3) **Qualifying Products:** In order to qualify for the ENERGY STAR label, any decorative light strings must meet the definition in Section 1.A and the specification requirements provided in Section 4, below.

- 4) **Energy-Efficiency Specifications for Qualifying Products:** Only those products that comply with the requirements of Section 2 and meet the following criteria in Table 1 may qualify for ENERGY STAR.

Table 1: Product Characteristics and Specifications for Decorative Light Strings	
Energy Efficiency Characteristics	Specification
Maximum watts per lamp	0.1 watts
Electrical Characteristics	
Nominal operating voltage	120 Volts
Voltage sag / surge	± 10%
Physical Characteristics	
Plug / plug-ins	Polarized
Double strings	Two opposite polarity groups (balanced)
Visibility Characteristics	
Lifetime claim	25,000 hours (or 'long-lasting')
Brightness (depends on color)	Minimum: TBD I _v (mcd) Maximum: TBD I _v (mcd)
Minimum viewing angle, measured relative to mechanical centre	60°

All performance measurements, except for lifetime, must be conducted according to the "Powertech Labs / BC Hydro Decorative Light String Test Protocol Draft Version 1.1", cited in Section 2.

- 5) **Product Approval:** In Canada, strings for exterior use as portable decorative lighting must be CSA or UL approved.

- 6) **Warranty:** All participating manufacturers must offer a minimum of a 3-year warranty against product defects.

7) **Packaging:** The packaging containing the product shall specify:

- product's suitability for use indoor and/or outdoor,
- number of LED lamps,
- LED lamp spacing,
- total light string length in appropriate metric and SAE units, and
- wattage of light string.

The light string should be labelled with the following information:

- certification agency,
- rating for indoor or outdoor use, and
- maximum number of like strings that can be connected end to end.

- 8) **Testing Criteria:** In order to qualify their products for ENERGY STAR, manufacturers are required to certify their decorative light strings using test procedures referenced in this document (see Section 2). The criteria listed in Table 1 must be tested using "*Powertech Labs / BC Hydro Decorative Light String Test Protocol Draft Version 1.1.*" These test results shall be conducted by a third-party laboratory approved by Natural Resources Canada.
- 9) **Effective Date:** The date that a manufacturer begins to qualify products as ENERGY STAR will be defined as the *effective date* of the agreement.
- 10) **Future Specification Revisions:** ENERGY STAR reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification will be arrived at through stakeholder discussion and consultation.

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