

Japan Lighting Manufacturers Association (JLMA)

Position Paper

**LED Lighting Products
in Harmonized Commodity Description
and Coding System(HS)2022**

Revision 3

July 15th 2016

 **Japan Lighting Manufacturers Association**

INTRODUCTION

Lighting Product Classification in Harmonized Commodity Description and Coding System (HS) 2012

In HS2012, lighting products classification is defined as following Headings for conventional (not LED) lighting products.

85.12 Electrical lighting or signaling equipment (excluding articles of heading 85.39), windscreen wipers, defrosters and demisters, of a kind used for cycles or motor vehicles.

85.13 Portable electric lamps, designed to function by their own source of energy (for example, dry batteries, accumulators, magnetos), other than lighting equipment of heading 85.12.

85.39 Electric filament or discharge lamps, including sealed beam lamp units and ultraviolet or infra-red lamps; arc lamps;

94.05 Lamps and lighting fittings including searchlights and spotlights and parts thereof, not elsewhere specified or included; illuminated signs, illuminated name-plates and the like, having a permanently fixed light source, and parts thereof not elsewhere specified or included.

Recently, in the world lighting industries, LED lighting products have been growing up. There is no definition of LED lighting products in HS2012. Furthermore, in the next revision of HS2017, only the LED lamps are added to 85.39.

Discussion of the general LED products has been postponed to HS2022. By means of expanding LED products, it is necessary to consider classifications about the new type of components and products that did not exist until now.

In HS2012, LEDs are included in Heading 85.41 semiconductors. In order to consider the classification revision in HS2022, there is a need to include the Heading 85.41 semiconductor in HS2012, as follows;

85.41 Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes; mounted piezoelectric crystals.

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1. Guiding Principles regarding the Classification of LED Lighting Products

Figure 1 shows the overview of the JLMA proposals for HS2022 revision of LED products. Basically, three large categories which were classified into LEDs, LED Light Source and LED Luminaire have been proposed.

LEDs includes LED die, LED PKG and LED PKGs. LED Light source consists of LED assembly and LED lamp. LED Luminaire uses LEDs or LED Light source.

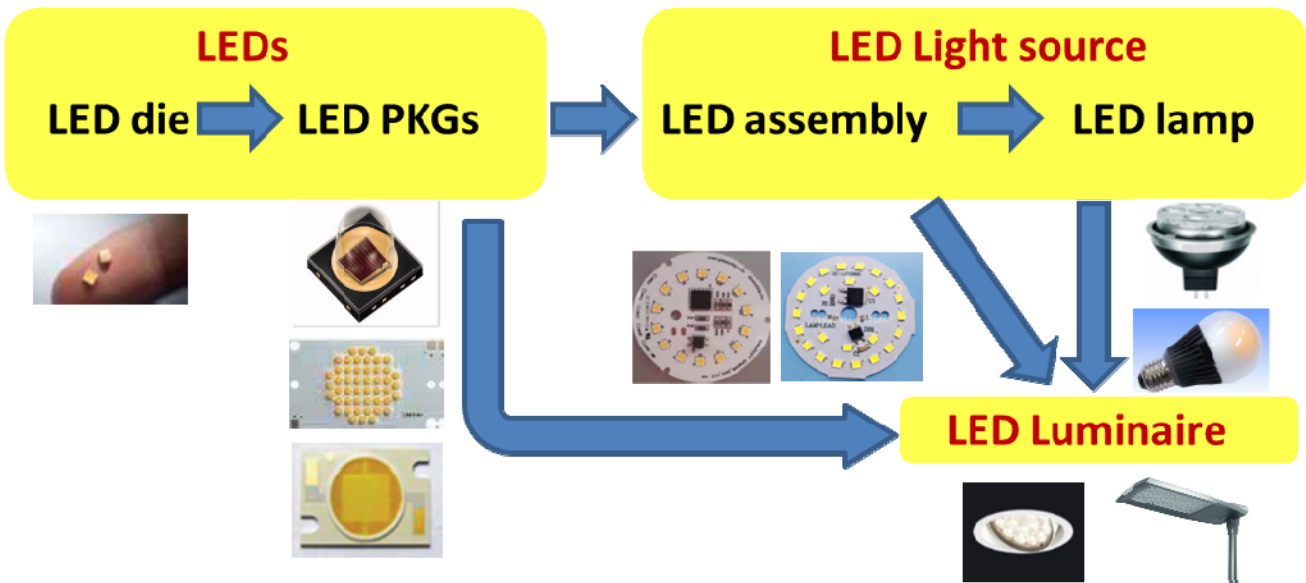


Figure 1. Overview of the JLMA proposals for HS2022 revision of LED products.
Pictures are quoted from IEC 62504¹⁾ and LightingEurope position paper²⁾.

JLMA recognizes that the task for the demarcation of the classification between LEDs and LED Light source and their definitions still remains.

JLMA proposes the following general approach for the HS2022 revision with regard to LED lighting products:

- LEDs (i.e. LED Chips and LED Packages as LED basic components) should be covered under new/modified sub-headings of appropriately amended heading 85.41.
- LED Light Sources (i.e. LED Lamps and LED Assemblies) should be covered under new/modified sub-headings of appropriately amended heading 85.39.
- LED Luminaires should be covered under new/modified sub-headings of appropriately amended heading 94.05.

Naturally, proper definitions of these different types of LED lighting products as well as additionally required explanations may be added as chapter notes or explanatory notes.

The most important discussion point at HS2022 revision is how to consider about the demarcation between 85.41 and 85.39.

Concerning this point, we would like to explain our opinion as follows;

Figure2 is an example of a variety of LED products group using LED.

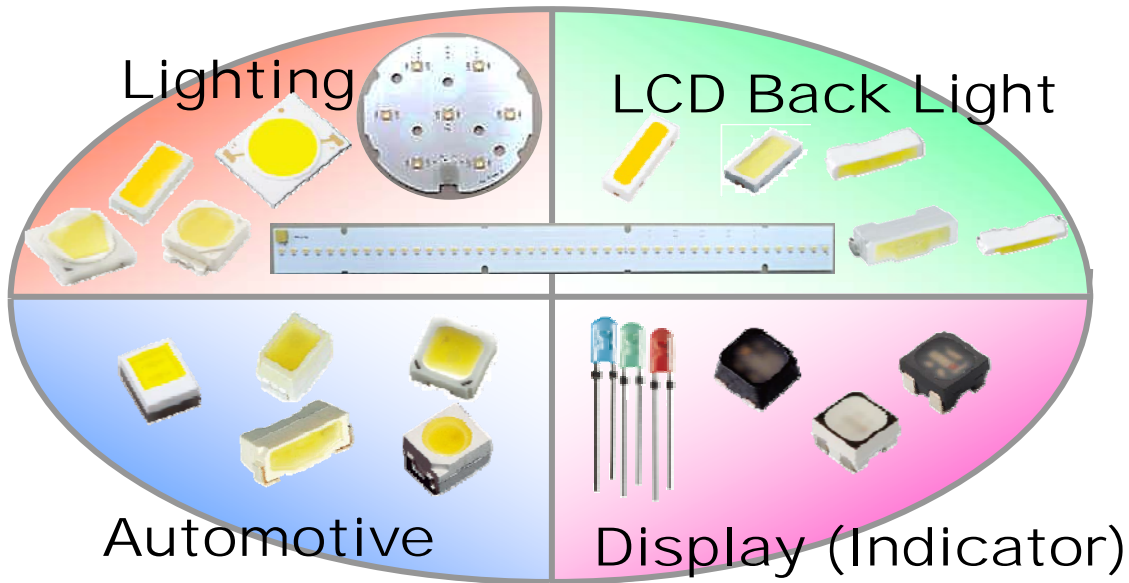


Figure 2. Examples of product categories that use LED.

By using the basic function of converting electrical energy into light, LED components are used in LCD backlight, automotive and display (indicator) in addition to lighting applications.

LED products are used for various types of applications. The important point of the boundaries between 85.41 and 85.39 is whether or not applications have been identified. LED products that is not limited to lighting, it should be classified in 85.41.

On the other hand, there is an opinion which should refer to IEC 62504 specifies the “Terms and definitions of LED products” for the classification. However, IEC 62504 defines terms and definitions of the LED products for only general lighting, and the definition for the LED module used on IEC 62504 does not consider the application other than the general lighting. Therefore, we think that IEC 62504 should not be used for consideration of the classification definition. As the result, the term of module should be used carefully to avoid confusion considering the above mentioned background.

The IEC 62504 definition of "Modules" should not be used in HS code. Moreover, there is a sentence that Heading 85.39 regardless of whether or not there was specifically designed for a particular application at the Explanatory Note of HS2012 Heading 85.39. This suggests that UV or IR lamps are classified in the heading 85.39 besides the lamps for general lighting.

2. LED Basic Components (LEDs) : Proposal for Heading 85.41

Heading

85.41 Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; [light-emitting diodes \(LED\) whether or not assembled](#); mounted piezo-electric crystals.

New chapter note to HS chapter 85:

“Light-emitting diodes (LED)” are semiconductor devices based on semiconductor materials which convert electrical energy into visible, infra-red or ultra-violet rays, whether or not combined with [discrete passive elements \(e.g. protective diodes, connectors and so on\)](#), [excluding articles of heading 85.36 or 85.42 for the purpose of providing power supply or power control](#), or whether or not assembled;

Comments

With regard to Heading 85.41, JLMA considers the following Classification Opinion of LED Assemblies (Decided in HSC55 after a classification ruling decision in HSC54) and adds the words “with electric connector” and “without control circuitry” in chapter note.

Classification Opinion of “certain bar-type LED assemblies” decided in HSC55 (2015)

- 8541.40 1. **Assembly of 62 light-emitting diode (LED) packages** mounted on a printed circuit board (with the dimension of 440 mm in length, 5 mm in width) in a row [with an electric connector](#) at the bottom of the printed circuit board. Each package consists of an LED chip and a diode combined inside. The surface of the package is coated with fluorescent material. The LED assembly is used, e.g., in the backlight unit of liquid crystal display (LCD) TVs, tubular-type LED lamps and exterior lighting. [The device does not have the control circuitry necessary to rectify AC power and convert voltage to a level usable by the LEDs.](#)
※ (※added in HSC55)

Application of GIRs 1 and 6.



The above classification was obtained by voting in HSC53 and 54, after the ICC presentation given by JLMA in HSC53. The following opinions were shared through the presentation.

- ❑ LED is a semiconductor device. Its function is converting electric energy into light.
- ❑ The number of LEDs does not alter the function of LEDs but contributes only to the intensity of light.
- ❑ The function of the diodes is only to protect LEDs from damage, since LEDs are very weak on electric shock.
- ❑ The LED assembly can not generate light without control circuitry.
- ❑ The LED assembly has no specific functions other than a single LED, which is converting electric energy into light.

3. LED Light Sources: Proposal for Heading 85.39

Heading

85.39 Electric filament or discharge lamps, including sealed beam lamp units and ultraviolet or infra-red lamps; arc lamps; [light-emitting diode \(LED\) light sources](#).

New chapter note to HS chapter 85:

For the purpose of heading 85.39, “Light-emitting diode (LED) light sources” are devices that generate visible, infrared, or ultraviolet energy from one or more light-emitting diodes (LED). [Light-emitting diode \(LED\) light sources include the term “Light-emitting diode \(LED\) lamps” and “Light-emitting diode \(LED\) assemblies”.](#) [Light-emitting diode \(LED\) lamps](#) have a mechanically and electrically designed [cap/base](#) and assembled to operate directly on a commercial power supply using an internal control circuitry, or using an independent external control circuitry. [Light-emitting diode \(LED\) assemblies](#) are printed circuit boards containing light emitting diodes and discrete active or passive elements [for the purpose of power supply or power control](#).

Comments

JLMA proposes as follows;

1. To specify the caps in the definition for LED lamps

The caps for use in the lamp refer to those standardized by IEC 60061.

2. To specify LED Assemblies having the control circuitry

To identify the application, LED products which have a drive circuit for converting electricity into light are classified in 85.39. We would like to shorten this chapter notes, more simply.

4. LED Luminaires : Proposal for Heading 94.05

Heading

94.05 [Luminaires and lighting fittings](#) including searchlights and spotlights and [parts thereof, not elsewhere specified or included](#); illuminated signs, illuminated name-plates and the like, having a permanently fixed light source, and parts thereof not elsewhere specified or included.

New explanatory chapter note to HS chapter 94:

(No change expected in HS 2017.)

Comments

To avoid confusion, “lamp” described at Heading in HS 2012 is deleted because “LED lamp” is newly specified at Heading 85.39.

We need to confirm the difference between Luminaires and Lighting fittings.

Regarding “parts thereof not elsewhere specified or included”, we need to define it under heading 85.39 and heading 85.41 clearly.

5. JLMA concept of classification of LED products and Further Considerations

◇1st Step : We should consider the utilization of the LED product.

If the LED product has a cap, it is classified in 85.39 as a LED lamp.

If the LED product has no cap, the LED product is regarded as a part, and it should be considered in the 2nd step.

/with cap → Lighting Products → LED lamp (85.39)

/without cap → Parts → to consider farther more in the 2nd step

※ The cap for use in the lamp refer to those standardized by IEC 60061.

◇2nd Step : We should consider the function of the LED product.

If the LED product has a control circuitry, it is classified in 85.39 as a part of lighting products.











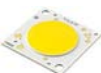
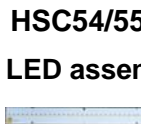
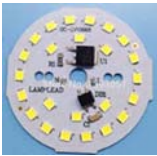

If the LED product has no control circuitry, it is regarded as a component with the function of converting electric energy into light and the product should be classified in 85.41.

/with control circuitry (Parts for Lighting products) LED Assembly (85.39)

/without control circuitry (Components with the function of converting electric energy into light)
LEDs (85.41)

Table 1. Classification of LED Products in HS2022.

Pictures are quoted from IEC 62504¹⁾ and LightingEurope position paper²⁾.

LED Product	Chip/die 				
	Package 				
	Chip on board 	HSC54/55 LED assembly 			
JLMA	① ↓		② LED Light source		LED Luminaire
	LEDs Including assembled articles		LED assembly	LED lamp	
	without control circuitry ③ ⇐		with control circuitry	with cap	94.05
85.41		85.39			

Comments

① LED assemblies of the Korean proposal should be called LEDs.

② LED light sources consist of LED assemblies (with control circuitry) and LED lamps.

③ Demarcation of 85.41 and 85.39 is whether or not having the control circuitry.

Further Considerations

- We are using "with/without control circuitry" as the demarcation between 85.41 and 85.39.

However, it is necessary to consider it from the mechanical, thermal and optical view point.

- We should discuss about the definition and the usage of Module and Assembly.

JLMA does not recommend using the term "module" as the definition of the IEC standard.

There are three reasons as follows,

● The LED module in definition of IEC 62504, is used in LED lamp or LED luminaire for general lighting. The definition for the LED module used on IEC 62504 does not consider the application other than the general lighting.

● The LED module in definition of IEC 62504, includes integrated module, semi-integrated module and non-integrated module. Since the function of LED module is not clear, the definition induces confusing for the discussion of the demarcation between LEDs and LED light source.

● The LED module in definition of IEC 62504 induces contradiction to the Classification Opinion of "certain bar-type LED assemblies" in HSC55 which does not have the control circuitry.

JLMA recommends that we should refer to the semiconductor field IEC standards (for example, such as IEC 60747-5-6) also. The Scope of IEC 60747-5-6 has been described following,

● LEDs with a heat spreader or having a thermal geometry that performs the function of a heat spreader are within the scope of this part of IEC 60747-5-6.

● An integration of LEDs and controlgears, integrated LED modules, semi-integrated LED modules, integrated LED lamps or semi-integrated LED lamps, are out of the scope of this part of IEC 60747-5-6.

- We should consider Sub-Headings including the LED and conventional lighting products.

- We should consider how to include OLED in the legal text.

References

1. IEC 62504:2014 *General lighting - Light emitting diode (LED) products and related equipment – Terms and definitions*, pp.20-23 (2014).
2. LightingEurope, Position paper "*LED lighting products in Harmonized System 2022*" September 2015, pp.15-18 (2015).