

## Announcement

# Damp-Proof LED Linear Luminaire Global Market Forecast 2015-2022



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This is the ElectroniCast analysis and forecast of global market consumption of damp-proof luminaires (also known as light fixtures) with LED linear tubes or LED linear printed circuit boards (PCBs)





## **Damp-Proof LED Linear Luminaire Global Market Forecast 2015-2022**

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### **Report Description**

This is the ElectroniCast analysis and forecast of global market consumption of damp-proof luminaires (also known as light fixtures) with LED linear tubes or LED linear light boards – printed circuit boards (PCBs).

Damp-proof and vapor-tight lights can be found in a wide range of damp/wet and dusty environments, such as – parking garages (covered car parks); damp industrial facilities; subways, underpass/tunnels; sports facilities, indoor swimming pools/area; locker rooms; car washes; stairwells; food-processing facilities including walk-in freezers and grocery store cold displays; and an almost endless number of related locations with exposure to dust, dirt, humidity, water, varied temperature ranges, etc...

The value is determined by multiplying the number of units (lamps) by the average selling price (ASP) in US Dollars. The ASPs are not retail prices; the prices are based on the price of the LED lamp at the initial factory level.

### **IP Codes**

The International Electrotechnical Commission (IEC) publishes the IP Codes. IP Codes, International Protection Marking, IEC standard 60529, sometimes interpreted as the Ingress Protection marking; the equivalent British standard is EN 60529.

## Market Forecast Product Categories

This market forecast of the worldwide consumption is presented for five-levels of Luminaire, segmented by the following IP Code classification categories:

- IP64
- IP65
- IP66
- IP67
- IP68

The designation to indicate the degrees of protection consists of the characteristic letters IP followed by two numerals (the “characteristic numerals”) indicating conformity with the conditions stated in Table 1 and Table 2.

### FIRST NUMERAL

Protection of persons against contact with or approach to live parts and against contact with moving parts (other than smooth rotating shafts and the like) inside the enclosure and protection of the equipment against ingress of solid foreign bodies in accordance with IEC 60598-1:2003.

**Table 1**  
**Description of the IP Code Classifications (First Numeral)**

0	Not protected
1	Protected against solid objects 50 mm in diameter or greater. A large surface of the body, such as a hand (no protection against deliberate access)
2	Protected against solid objects 12mm in diameter or greater. Fingers or similar objects not exceeding 80 mm in length
3	Protected against solid objects 2.5mm in diameter or greater. Tools, wires, etc., of diameter or thickness greater than 2.5mm
4	Protected against solid objects 1 mm in diameter or greater. Wires or other similar solid material of thickness greater than 1 mm in diameter
5	Dust protected Dust does not enter in sufficient quantity to interfere with satisfactory operation of equipment
6	Dust tight No ingress of dust

**SECOND NUMERAL**

Protection of the equipment inside the enclosure against harmful ingress of water

**Table 2**  
**Description of the IP Code Classifications (Second Numeral)**

0	Not protected
1	Protected against dripping water. Dripping water (vertically falling drops) shall have no harmful effect.
2	Protected against dripping water when tilted up to 15° Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Protected against spraying water. Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Protected against splashing water. Water splashing against the enclosure from any direction shall have no harmful effect.
5	Protected against water jets. Water projected by a nozzle against enclosure from any direction shall have no harmful effects.
6	Protected against strong jets of water Water from heavy seas or projected in powerful water jets) shall not enter the enclosure in harmful quantities.
7	Protected against the effects of temporary immersion. Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time.
8	Protected against continuous immersion. The equipment is suitable for continuous submersion in water under conditions, which shall be specified by the manufacturer.

## De-coding the IP classification - Example

Regarding the market data presented in the ElectroniCast market forecast and analysis, the IP codes are shown exactly, for example:

### **IP65**

By referring to the description(s) on the preceding pages, the first numeral tells us the following –

Numeral (6) = “Dust tight - No ingress of dust”

The second numeral tells us the following –

Numeral (5) = “Protected against water jets. Water projected by a nozzle against enclosure from any direction shall have no harmful effects.”

This market forecast covers new LED linear luminaire, which are qualified by the IP Codes. The product competition for the new LED linear luminaries is as follows:

- Install LED Tubes, with any required re-tooling, to existing fluorescent tube-based damp-proof luminaire
- Install other LED linear luminaries, besides the linear-shaped fixtures (round, square, etc)
- Install fluorescent linear luminaries with fluorescent tubes
- Install other lamp and luminaire technology, besides fluorescent or LED

The information is presented in easy-to-follow illustrations and text. Company profiles of selected manufacturers of the Damp-Proof LED Linear Luminaires and related products are provided. Terms, acronyms, and abbreviations used are defined.

In the process of this market research project, in addition to interviewing existing customers and potential customers of luminaries (light fixtures) used to house LED tube lights or LED-based liner light-boards for wet, damp or dusty locations (environments), ElectroniCast Consultants also studied lighting manufactures of these lighting products.

During the market research process, ElectroniCast analysts perform interviews with authoritative and representative individuals in the LED and lighting industry, plus – R&D and industrial/factory/manufacturing, from the standpoint of both suppliers and users of LED linear lighting products.

Increasingly, the automatic assembly and test manufacturing process for LED solid-state lighting products allow for mass-production capability. In addition, over the next few years, the average selling prices of the LED-based lighting products will be driven lower, as a result of production efficiencies, yield improvements (aided by quality controls), competition (both market competition and technology competition), marketing/sales distribution improvements, and other factors.

**Market Opportunity Analysis – Market Dynamics** The study process by ElectroniCast Consultants takes into account the following points:

- Standards (including general regulations & standards, environmental issues, etc.)
- Policies and schemes for promoting the penetration of LED lighting
- Industry trends in LED lighting fixtures
- Distribution/Sales Channel
- LED Damp-Proof Lighting competitive environment is considered

Since the light output of individual light-emitting diodes (LEDs) is small compared to incandescent and compact fluorescent lamps, multiple diodes are often used together. With continuing improvement of diode technology, high power LEDs with higher lumen output is enabling the replacement of other lamp technology with LED lamps.

Luminaries are lighting fixtures complete with the light source or lamp, the reflector for directing the light, an aperture (with or without a lens), the outer shell or housing for lamp alignment and protection, components, and connection to a power source, and usually a socket to hold the lamp and allow for its replacement.

The light emitting diode (LED) market, despite exciting innovative devices driven by technological advances and ecological/energy-saving concerns, still face challenges in overcoming performance/price limitations and in attracting widespread consumption.

**Consumption Value Forecast** The global consumption value of LED-based linear luminaires in damp-proof lighting is projected reach \$872 million in 2015. During the 2015-2022 timeline, ElectroniCast forecast that the consumption (use) value is set to increase at an impressive “double-digit” average annual rate of 15.2 percent to \$2.34 billion in the year 2022. <sup>1</sup> Market forecast data in this study report refers to consumption (use) for a particular calendar year; therefore, this data is not cumulative data.

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<sup>1</sup> All values and prices in this report are at factory as-shipped levels, and are in current dollars, which include the effect of a forecasted 5 percent annual inflation rate over the forecast period.

The Asia Pacific region held a lead over the America region in terms of value in 2015, and then, in 3rd-place, the Europe, Middle East, plus Africa region. HOWEVER – the America region is forecast with faster annual growth versus the other regions; the America region is set to catch-up and eventually takes the lead in relative market share.

Increasingly, LED-based linear lamps, which are ideal candidates to replace fluorescent tubes, are forecast to finding a niche in the damp-proof lighting market segment. LED efficiencies are set to exceed those of fluorescent tubes, with dimming and controllable color rendering readily achievable.

## **Market Research Methodology**

Market analysis and technology forecasting are complex tasks. Any predictions of the shape and trends of technology and economic movement start from the notion that the germ of what will be important tomorrow is present, although smaller or larger or in a different form, in our environment today. However, taking as a basis for a prediction the assumptions of current, conventional belief creates a set of preconceived notions that can lead to serious mistakes. ElectroniCast, instead, looks to the basic driving forces.

## **Information Base**

This study is based on analysis of information obtained continually over the past several years, but updated through the middle of August 2016. During this period, ElectroniCast analysts performed interviews with authoritative and representative individuals in the LED manufacturing (materials, integrated circuits/circuit boards, packaging, devices, connectors/pins/end-caps, plastic, aluminum and glass manufacturers, associated parts/pieces, luminaire/fittings/fixtures) and parking-garage and commercial and public building maintenance concerns harsh environment concerns, industrial plants/manufacturing, storage/warehouse facilities, mass transit authorities, transportation/ infrastructure, R&D, gas stations/service stations (lighting distributors), government, and other. The interviews were conducted principally with:

- Engineers, marketing personnel and management at manufacturers of LEDs (chips, components, lamps and fixtures) as well as other technologies.
- Design group leaders, engineers, marketing personnel and market planners at major users and potential users of LEDs.
- Other industry experts, including those focused on standards activities, trade associations, and investments.

The interviews covered issues of technology, R&D support, pricing, contract size, reliability, documentation, installation/maintenance crafts, standards, supplier competition and other topics.

Customers and distributors were interviewed, to obtain their estimates of quantities received and average prices paid. Customer estimates of historical and expected near term future growth of their application are obtained. Their views of use of new technology products were obtained.

The analyst then considered customer expectations of near term growth in their application, plus forecasted economic payback of investment, technology trends and changes in government regulations and funding/tax-break legislation/rules in each geographical region, to derive estimated growth rates of quantity and price of each product subset in each application. These forecasted growth rates are combined with the estimated baseline data to obtain the long-range forecasts at the lowest detailed level of each product and application.

A full review of published information (secondary research) was also performed to supplement information obtained through primary research (interviews). The following sources were reviewed:

- Professional technical journals and papers
- Trade press articles
- Technical conference proceedings
- Product literature
- Company profile and financial information
- Additional information based on previous ElectroniCast market studies
- Personal knowledge of the research team

In analyzing and forecasting the complexities of worldwide markets for light emitting diode products, it is essential that the market research team have a good and a deep understanding of the technology and of the industry. ElectroniCast consultants who participated in this report were qualified.

**Bottom-up Methodology** ElectroniCast forecasts, as illustrated in the forecast data structure, are developed initially at the lowest detail level, then summed to successively higher levels. The background market research focuses on the amount of each type of product used in each application in the base year (last year: 2015), and the prices paid at the first transaction from the manufacturer. This forms the base year data.

ElectroniCast analysts then forecast the growth rates in component quantity use in each application, along with price trends, based on competitive, economic and technology forecast trends, and apply these to derive long term forecasts at the lowest application levels. The usage growth rate forecasts depend heavily on analysis of overall end user trends toward equipment usage and economic payback.



## **About ElectroniCast**

ElectroniCast, founded in 1981, specializes in forecasting technology and global market trends in fiber optics communication components and devices, as well providing market data on light emitting diodes used in lighting.

As an independent consultancy we offer multi-client and custom market research studies to the world's leading companies based on comprehensive, in-depth analysis of quantitative and qualitative factors. This includes technology forecasting, markets and applications forecasting, strategic planning, competitive analysis, customer-satisfaction surveys and marketing/sales consultation. ElectroniCast, founded as a technology-based independent consulting firm, meets the information needs of the investment community, industry planners and related suppliers.

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## Table of Contents

1.	Executive Summary
1.1	Global Overview
1.2	Unpackaged and Packaged LEDs – Overview
2.	Damp-Proof LED Linear Luminaire Market Forecast
2.1	Overview
2.2	Damp-Proof LED Linear Luminaire Forecast
3.	Company Profiles - Damp-Proof LED Linear Luminaire and Related
4.	LEDs – Technology Overview
5.	ElectroniCast Market Research Methodology
6.	Definitions and Standards
6.1	Acronyms, Abbreviations, and General Terms
6.2	Lighting Standards and Protocols
7.	ElectroniCast Market Forecast Data Base Explanation
7.1	Overview
7.2	Tutorial
Addendum	Excel – ElectroniCast Global Market Forecast Worksheets
Addendum	PowerPoint – Market Forecast Summary Figures

### The following is a list of companies profiled in chapter 3

Acuity Brands Lighting, Inc. (ABL)  
 AEI Lighting, Inc.  
 Airfal International  
 Covestro AG (Bayer AG)  
 Cree Inc.  
 Dialight  
 Digital Lumens, Inc.  
 Dixon Technology  
 Dow Corning Electronics  
 Eaton/Cooper Industries  
 Energy Focus, Inc.  
 Engineered Products Company – EPCO  
 Excelitas Technologies Corporation  
 Flextronics (Solectron Corporation)  
 GE Lighting – Current  
 GE Lumination (GELCORE)/ GE Appliances  
 General Electric Company  
 Lumination, LLC (subsidiary of General Electric Company)  
 Hubbell Lighting Inc.  
 Precision-Paragon [P2]  
 Hubbell Incorporated (Columbia Lighting)  
 Independence LED Lighting, LLC  
 Kenall Manufacturing  
 LEDtronics®  
 LSI Industries Inc.  
 MaxLite Incorporated  
 Metaphase Technologies Inc.  
 NICOR  
 Nualight  
 OSRAM, LEDVANCE, SITECO, and SYLVANIA  
 Philips Lumileds Lighting Company  
 Philips Solid-State Lighting Solutions – Color Kinetics  
 Philips Electronics (Royal Philips Electronics)  
 Philips Teletrol  
 RAB Lighting Incorporated  
 Regiolux GmbH  
 Revolution Lighting Technologies, Inc. (TNT Energy)  
 Ricoh Company, Ltd.  
 Samsung Electronics Co., Ltd.  
 Schuch (Adolf Schuch GmbH)  
 Sheenly Lighting Co. Ltd  
 ZALUX  
 Zumtobel Group AG; Thorn Lighting (Zumtobel Group)

## List of Tables

- 1.1.1 Damp-Proof LED Linear Luminaire Market Forecast Product Categories
- 1.1.2 Description of the IP Code Classifications (First Numeral)
- 1.1.3 Description of the IP Code Classifications (Second Numeral)
- 1.1.4 Damp-Proof LED Linear Luminaire, Global Market Forecast, By Region (\$Million)
- 1.1.5 Damp-Proof LED Linear Luminaire, Global Market Forecast, By Region (Quantity/Million)
- 1.1.6 Damp-Proof LED Linear Luminaire, America Market Forecast, By Sub-Region (\$Million)
- 1.1.7 Damp-Proof LED Linear Luminaire, America Market Forecast, By Sub-Region (Quantity/Million)
- 1.1.8 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (\$Million)
- 1.1.9 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (Quantity/Million)
- 1.1.10 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.1.1 Typical Luminous Efficacies for Traditional and LED Sources
- 2.1.1 Calculation of the Cost of Manufacturing Facility Downtime
- 2.1.2 Comparison of Lighting Technologies
- 2.1.3 DIP LED Manufacturing in China
- 2.1.4 LED-Packaging Designers and Manufacturers in Taiwan
- 2.2.1 Damp-Proof LED Linear Luminaire Market Forecast Product Categories
- 2.2.2 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (\$Million)
- 2.2.3 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (Quantity/Million)
- 2.2.4 Damp-Proof LED Linear Luminaire Global Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.2.5 Latin American Demographics
- 2.2.6 Damp-Proof LED Linear Luminaire America Market Forecast, By IP Code Protection Rating (\$Million)
- 2.2.7 Damp-Proof LED Linear Luminaire America Market Forecast, By IP Code Protection Rating (Quantity/Million)
- 2.2.8 Damp-Proof LED Linear Luminaire America Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.2.9 Damp-Proof LED Linear Luminaire North America Market Forecast, By IP Code Protection Rating (\$Million)
- 2.2.10 Damp-Proof LED Linear Luminaire North America Market Forecast, By IP Code Protection Rating (Qty/Million)
- 2.2.11 Damp-Proof LED Linear Luminaire North America Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.2.12 Damp-Proof LED Linear Luminaire Central/South America Forecast, By IP Code Protection Rating (\$Million)
- 2.2.13 Damp-Proof LED Linear Luminaire Central/South America Forecast, By IP Code Protection Rating (Qty/Million)
- 2.2.14 Damp-Proof LED Linear Luminaire Central/South America Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.2.15 European Sub-Regions as identified by the United Nations Geoscheme)
- 2.2.16 Population in Northern Europe, by Country
- 2.2.17 Population in Southern Europe, by Country
- 2.2.18 Population in Western Europe, by Country
- 2.2.18 Population in Eastern Europe, by Country
- 2.2.20 Damp-Proof LED Linear Luminaire EMEA Market Forecast, By IP Code Protection Rating (\$Million)
- 2.2.21 Damp-Proof LED Linear Luminaire EMEA Market Forecast, By IP Code Protection Rating (Quantity/Million)
- 2.2.22 Damp-Proof LED Linear Luminaire EMEA Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 2.2.23 Damp-Proof LED Linear Luminaire APAC Market Forecast, By IP Code Protection Rating (\$Million)
- 2.2.24 Damp-Proof LED Linear Luminaire APAC Market Forecast, By IP Code Protection Rating (Quantity/Million)
- 2.2.25 Damp-Proof LED Linear Luminaire APAC Market Forecast, By IP Code Protection Rating (ASP, \$, each)
- 4.1 LED Color Variety – Selected Examples
- 4.2 LED Color Chart

## List of Figures

- 1.1.1 Damp-Proof Linear LED Luminaire (IP Code – IP65)
- 1.1.2 150W High Output Linear Board LED Light (IP Code – IP65)
- 1.1.3 120cm LED IP65 Luminaire with 18W LED Tube
- 1.1.4 LED-Based T8 Linear Tube Lamps
- 1.1.5 Product Life Cycle (PLC)
- 1.1.6 Damp-Proof LED Linear Luminaire Global Market Forecast (Value Basis, \$ Million)
- 1.1.7 Damp-Proof LED Linear Luminaire Global Market Forecast (Quantity/Million)
- 1.2.1 Diagram of a typical LED chip
- 1.2.2 Diagram of a typical LED chip
- 1.2.3 LED Chip Cross-Sectional Structure
- 1.2.4 Chip On Glass Cross-Sectional Structure
- 1.2.5 ESD Protection Diodes
- 1.2.6 Electrostatic Discharge Example
- 1.2.7 Chip-on-Board LED Technology
- 1.2.8 Single-die LED: 1000 lm at 100 lm/W at 3A
- 1.2.9 Four-die LED with Primary Optics
- 1.2.10 LED Packaged Chip
- 1.2.11 LED Packaged Chip
- 1.2.12 LED Packaged Chip Surface Mount Variations

**- List of Figures - Continued**

- 1.2.13 LED Packaged Chip
- 1.2.14 High Brightness LED Packaged Chip
- 1.2.15 Surface Mounted Device (SMD) LED
- 1.2.16 Chip-On-Board and Multi-Chip On Board (COB/MCOB) LED
  - 2.1.1 World Map – Cooperation on Reducing GHG Emissions
  - 2.1.2 Damp-Proof LED Lighting for Car Parks/Garages
  - 2.1.3 48-inch Fluorescent Replacement Style LED Light Fixture
  - 2.1.4 DIP T8 – Linear Tube Lamps With Plastic End-Caps
  - 2.1.5 SMD T8 and T5 – LED Linear Tube Lamps With Plastic End-Caps
  - 2.1.6 DIP-Type LED Linear Tube Lamps with Plastic End-Caps
  - 2.1.7 DIP-Type LED Linear Tube Lamps with Metal End-Caps
  - 2.1.8 SMD-Type LED Linear Tube Lamps with Metal End-Caps
  - 2.1.9 SMD-Type High-Output LED Linear Tube Lamps with Plastic End-Caps
  - 2.1.10 Linear Tube T8 LED Lamp
  - 2.1.11 Linear Tube T8 LED Lamp
  - 2.1.12 Chip-On-Board (COB) LED
  - 2.1.13 Chip-On-Board (COB) Linear Tube LED Lamp
- 3.1.1 Architectural Vandal-Resistant LED Linear/Wet Area Luminaire
- 3.1.2 IP67 - LED Linear Luminaire
- 3.1.3 High Power LED
- 3.1.4 LED Troffer
- 3.1.5 IP66 - LED Linear Luminaire
- 3.1.6 IP65 - LED Linear Luminaire
- 3.1.7 LED Lighting – Aerospace
- 3.1.8 IP65 - LED Linear Luminaire
- 3.1.9 LED Tube Lights
- 3.1.10 LED Linear Luminaire (Vapor Tight Fixtures)
- 3.1.11 IP66 - LED Linear Luminaire
- 3.1.12 IP66 - LED Linear Fixtures (Luminaire) in Parking Area
- 3.1.13 LED-Based Linear Lamp – Parking Garage
- 3.1.14 IP65 - LED Linear Luminaire
- 3.1.15 IP66 - LED Linear Luminaire
- 3.1.16 IP67 - LED Linear Luminaire
- 3.1.17 Open Area- Work Area with LED Based Damp-Proof luminaires
- 3.1.18 LED-Based Tube
- 3.1.19 Smart Lighting Module
- 3.1.20 Ambient Light Engine
- 3.1.21 IP68 - LED Linear Luminaire
- 4.1 Green light emission from RPCVD p-GaN layers grown on MOCVD
- 4.2 ATEX & IECEx Certified Damp-proof LED Light
- 4.3 Highest-Performing Single-Die LED
- 4.4 LEDs on a Metal Core Linear Flexible Printed Circuit Board
- 4.5 LED Chromatic Chart
- 4.6 Evolution of Research Emphasis During Technology Life Cycle
- 4.7 Wire-Bondable Silicon ESD Diode Chip in Gel-Packs
- 4.8 LED Chip: Metal Layer (Thin Film Technology)
- 4.9 AC LED Technology on a Wafer
- 4.10 UV LED Chip Packages (Sample)
- 4.11 Fully Printed Halide Perovskite LEDs with Silver Nanowire Electrodes
- 4.12 Ultra High Bright LED Chip
- 4.13 LED Chip Design with Copper Alloy Thermal Conductivity
- 4.14 LED Chip Design – Sapphire vs. Copper Alloy
- 4.15 Ultra-Thin LED
- 4.16 Solid-State Lighting LED
- 4.17 LED Module with High Light Quality
- 4.18 LED Module with Low-Profile Rectangular Shape
- 4.19 Phosphor Technology: Thin Film Flip Chip (TFFC) technology
- 4.20 Next-Generation Light Emitting Diode Module
- 4.21 4-Leaded RGB LED
- 4.22 Basic Structure of a Deep-UV Light-Emitting Diode
- 4.23 Vertically Conducting Advanced LED Structure
- 4.24 AlGaInP LED Efficacy
- 4.25 Red Nitride Phosphors
- 5.1 ElectroniCast Market Research & Forecasting Methodology