LED Phosphors - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 117 pages | Mordor Intelligence

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Report description:

The LED Phosphors Market size is estimated at USD 0.56 billion in 2024, and is expected to reach USD 1.40 billion by 2029, growing at a CAGR of 20% during the forecast period (2024-2029).

The growing preference for LED lighting technologies over conventional lighting systems is one of the primary factors driving the market's growth. Additionally, the increasing popularity of white LEDs has further propelled the market growth.

Key Highlights
-LED phosphors are crucial materials in the manufacture of white LEDs. Phosphor composition largely determines an LED's efficiency, light quality, and stability. White LEDs are generally a combination of a blue light-emitting indium gallium nitride die and phosphor, which takes blue light and then converts it into a broad-spectrum peaking at yellow or amber.?
-Government regulations mandating the use of LEDs are accelerating the demand in the market studied in several regions. For instance, in the United States, as the law requires energy savings to be 45 lumens per watt for the common types of light bulbs, a 60-watt incandescent light bulb can put out around 15 lumens per watt; a halogen incandescent bulb offers around 20 lumens per watt; CFL bulb provides 65 lumens per watt; LEDs put out 80 to 100 lumens per watt with a fraction of energy.
-Materials scientists at FEFU (Far Eastern Federal University), in partnership with an international research team, advanced the invention of composite ceramic materials (Ce3+:YAG-Al2O3), i.e., solid-state light converters (phosphors) that can be used in ground and aerospace technologies. LED systems based on molded materials can preserve 20-30% more energy than commercial analogs. According to the photonics development roadmap run in Russia, the development of LED technology with an efficiency of more than 150 lm/W would allow for savings of up to 30% in electricity by 2025.
-While developing phosphors LED smart lighting hardware components, there is an additional cost associated with this part of the project. Even though the price for hardware components has been dropping over the last few years, this element remains one of

the essential factors in estimating the final price of the smart lighting project. In a smart lighting ecosystem, hardware contains several important elements, sometimes enhanced by additional components, such as light sources and sensors. The backend part of the smart lighting solution consumes at least 2,000 hours of development teamwork, and its price starts at USD 60,000.

LED Phosphors Market Trends

Smartphone to be the Fastest Growing Application

- LED phosphors are crucial materials in the manufacture of white LEDs. White LEDs (light-emitting diodes) are a promising technology replacing conventional incandescent and fluorescent lamps owing to their reliability, high efficiency, and low energy consumption. Currently, commercial white LEDs comprising a blue LED chip and YAG: Ce3+ yellow phosphor are widely used to backlight mobile phone LCDs.
- LED is the technology of choice in battery-powered portable devices like mobile phones due to its high luminous efficiency, durability, and small size. Low-power white LEDs of about 0.1W (watts) are used to backlight LCD (Liquid Crystal Display) panels and keyboards. Multiple LEDs, like a torch or flashlight, can be linked together to provide more light. High-power LEDs of 1 W are utilized in camera phones with high resolutions of 2M pixels or higher to facilitate photography in low-light conditions.
- The market would grow as demand for high-end smartphones outpaces mid-range and low-end. Premium features such as multi-lens front or rear cameras, bezel-less displays, and large batteries are being added to lower-cost models. It would affect market growth. Displays have advanced at an increasing rate during the previous five years. OLED technology has emerged as the most popular smartphone display technology, with the world's most prominent phone providers offering OLED devices. R&D would continue to be a priority for manufacturers in the smartphone display market. Research and development are some of the most common strategies employed by players in the smartphone display market. These initiatives are focused on both improving existing products and developing new ones.
- The rise in the production of smartphones is expected to drive the studied market. According to Ericsson, the number of smartphone subscriptions globally in 2022 surpassed six billion. It is expected to rise by several hundred million in the coming years. The countries that have the highest number of smartphone users are China, India, and the United States.
- The developments in the various features toward the development of smartphone displays are expected to drive the led phosphorus market. For example, smartphones are expected to witness growing demand for enhanced displays, such as OLED, AMOLED, and PMOLED, augmented displays, and rollable transparent displays. Additionally, Samsung uses OLED displays to offer mobile devices that come with foldable displays. For instance, Samsung's first foldable device offered two screens with a large 7.3" 1532x2152 (361 PPI) foldable AMOLED that folds inside and a smaller 4.5" 840x1960 AMOLED to be used when the phone is closed. The company branded the display as the Samsung Infinity Flex Display.

Asia-Pacific is Expected to be the Fastest Growing Market

- The Asia-Pacific LED phosphor market would expand with the expansion of consumer electronics products, including LED lights, LCD TVs and displays, and portable PCs. The market is anticipated to be driven by the government's increasing support for providing cheaper land to foreign companies intending to develop LED manufacturers in the region. Furthermore, many laws have been passed to support energy-efficient lighting equipment, which would cause the Phosphor LED Market to grow.
- India is one of the global markets with the quickest growth. India has a significant demand for lighting solutions because of its dense population. With the improvement of infrastructure and the expansion of the construction sector, government initiatives for energy-efficient lighting solutions are boosting demand nationwide. Due to these factors, India is a promising market for both the production of LEDs and phosphor products.

- For instance, the Indian government announced 15 PLI 2.0 white goods program recipients in June 2022. Adani Copper Tubes, LG Electronics, and Wipro Enterprises are a few of the chosen businesses. With a commitment of INR 4.6 billion, nine companies would concentrate on LED light components. As a result, India would produce LED Chip packing, LED Drivers, LED Engines, LED Light Management Systems, and Metallized films for capacitors, among other products, which would be a key component driving the market in the area under study.
- Furthermore, China's dual carbon policy aims to peak the nation's greenhouse gas emissions by 2030 and achieve carbon neutrality by 2060. With enormous benefits for emissions-reduction technology and low-carbon businesses, these two objectives are anticipated to provide trillions of dollars worth of investment opportunities. One of China's quickest and least expensive methods to meet its climate targets is converting city lighting to LEDs. High-quality LED retrofits beautify the area, making the urban environment more pleasant and appealing to those who live, work, and visit there.
- APAC is anticipated to increase strongly during the predicted period. Due to its widespread use in applications, including illumination, indicators, and LCD backlights, the material is in high demand in the region. Demand for the market is also being driven by a surge in the building of residential infrastructure among the region's nations. Additionally, rising consumer demand in APAC for devices made by companies like Samsung will likely drive the LED phosphor market in the coming years.

LED Phosphors Industry Overview

The LED phosphors market is fragmented with key players like Beijing Yuji International Co. Ltd, Intematix Corporation, Phosphor Tech Corporation, Denka Co. Ltd, and Nichia Corporation, among others. Players in the market are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

In November 2022, Cree LED, an SGH company, announced the release of PhotophyllTMSelect LEDs, an advanced horticulture spectrum available on the XLamp XP-G3 LEDs and the J Series 2835 3V G Class LEDs. LEDs made with PhotophyllSelect have been thoroughly characterized in horticulture metrics, allowing luminaire manufacturers to easily adjust blue/green/red spectral ratios to meet specific plant needs.

In April 2022, Denka Company Ltd. established a new business development. It restructured its companywide research and new business development framework to promote activities further to create new businesses and ensure the sustainable growth of its existing businesses.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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