



LED Phosphor Production Technology

Overview

LED phosphor is a high-performance rare earth-based luminescent material used in solid-state lighting for manufacturing high-efficiency white LEDs with excellent luminous efficacy and colour characteristics.

Based on the laboratory-scale technology developed at BARC, the process has been successfully upscaled to Pilot Scale at IREL (India) Limited, RETTP, Bhopal. The technology enables the production of high-quality LED phosphor under controlled conditions with emphasis on product quality, process stability, optical performance, and resource optimization.

Process

The technology employs an integrated manufacturing process for producing high-performance LED phosphor with emphasis on product quality, particle size control, and optical performance. The process has been developed to ensure reliable operation, consistent product quality, and high production efficiency. The produced LED phosphor exhibits high purity, excellent thermal and chemical stability, and superior optical performance. When used with blue LED chips, it enables the generation of high-quality white light with excellent luminous efficacy and colour characteristics.

Salient features

- Indigenous technology for commercial-scale LED phosphor production.
- Superior thermal and chemical stability.
- Environmentally responsible manufacturing process.
- Supports indigenous production of advanced solid-state lighting materials.

Advantages

- Production of high-purity phosphor with excellent luminous efficiency.
- Suitable for white LED lighting applications.
- Consistent optical performance.

Areas of application

- White LED lighting.
- LED bulbs and tube lights.
- Automotive lighting.
- Display backlighting.
- Architectural lighting.
- Industrial lighting.

Facilities required

- Industrial building and production area.
- Electrical power supply.
- Water supply and utility systems.
- In-house quality control laboratory.
- Environmental management facilities.
- Material handling and storage facilities.
- Utility services and maintenance facilities.