Name of the Technology: Long Afterglow Phosphor Powders

Summary: The Long Afterglow Phosphor (LAP) absorbs visible or ultraviolet (UV) lights for less than 10 minutes in the daylight and glows in dark by emitting visible light for hours together. CSIR-NPL has developed and patented LAP powders that emit multiple colors such as: yellowish green (~8-12 hours) for a dark adapted human eye. The development of other color emitting phosphors such as blue and red are under development. These powders are non-radioactive, non-hazardous and re-chargeable in nature and the shelf life is more than 15 years. These phosphors find wide-range of applications in defense, domestic, commercial as well as in scientific domains.

With Room lights ON

With Room lights OFF

Applications:

However, the LAP phosphors have strategic applications that could be used for:

- Escape route signage and rescue guidance systems
- Warning signs on highways
- Warning signs in theaters
- Warning signs and accident prevention measures
- Dark vision display applications
- Toys, sports equipment, enamels and ceramic tiles
- Household Switches
- Markings of important machinery
- Special effects in bars and discotheques

Specifications

Sl. No.	Property	Aluminate Type Long Decay Phosphor
1	Chemical Identity	Non-Hazardous, $SrAl_2O_4$ based
2	Odour	Nil
3	Average Particle Size	< 150 μm
4	Specific Gravity	3.6
5	Excitation Wavelength	200-450 nm
6	Excitation Source	Sun light, Fluorescent Tubes,
7	Excitation Time	3-5 minutes
8	Glow Colour	Yellowish Green
9	Emission Peak	520-540 nm
10	Afterglow Time	10-15 Hours
11	Chemical Stability	Avoid direct contact with Acids and Water
12	Storage	Cool, Dry and Clean place

Advantages: The technology offers a simple and novel process of production of a non-toxic, non-radioactive, photoluminescent powder that can be coated onto almost any object which causes it to continuously glow in the dark. It can be mixed with glue, paint, resin,

candle wax, concrete, varnish, glass etc. For the best glow, it can be used in a clear medium on a white background.

Choose the Readiness level of the Technology:

Idea	Concept Definition	Proof of Concept	Prototype	Lab Validation	Technology Development	Technology Demonstration	Technology Integrated	Market Launch

Related Patents:

Patent No: 225682, JP2003292951
Country: INDIA, JAPAN
Publication Date: 27/04/2007
Grant Date: 2008, 2014

Year of Introduction: 2003

Broad Area/Category: Inorganic Materials

User Industries: Chromophoric materials, Dyes, Pigments, ColorantsSome of the potential customers for these products are shown in the adjacent figure.