

USA TECHNOLOGY MADE IN ITALY PRODUCTION



SPHERA
SIGN

MASTERBATCHES & COMPOUNDS



PHOTOLUMINESCENT
FOR THERMOPLASTIC
POLYMER

PHOTOLUMINESCENT MASTERBATCHES & COMPOUNDS



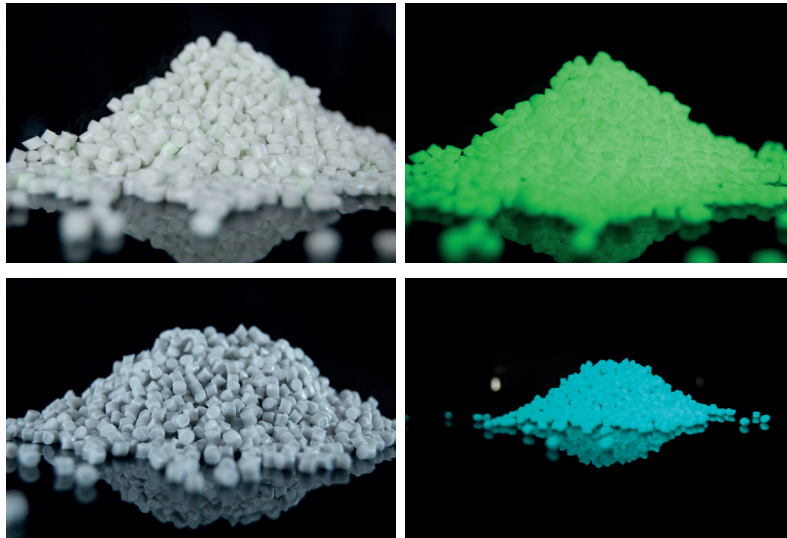
SPHERA
SIGN

MASTERBATCHES & COMPOUNDS



● Pigment developed
US materials
FDA approved

● Production of MASTERBATCHES
MADE IN ITALY



PHOTOLUMINESCENT PIGMENTS FOR PLASTIC MATERIAL

The photoluminescent material is made with inorganic chemical compounds, called photoluminescent pigments, consisting of crystals of aggregated elements and other agents.

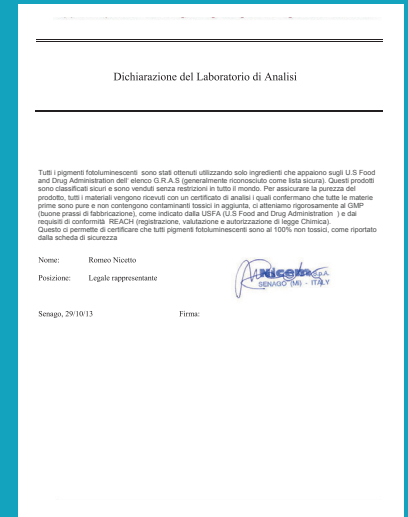
The photoluminescent pigments proposed by Sphera Sign are made with rare earth elements of high quality and with processing methods designed to ensure the highest purity to the final product, with a reduced grinding of the crystals. The uniqueness of the crystalline structure of these pigments, which are produced through a specific patented process based on more thermal cycles, multiplies significantly the intrinsic brightness for a given mass.

The advantages deriving from the use of these crystals include a much higher luminosity than that provided by any other crystal form, with yields and superior performance compared to all other pigments, in an efficient cost range. This has enabled us to develop products that exceed by far all the strictest standards for light emissions, such as the recent New York City RS-6-1 in for photoluminescent pathway indicators and the IMO standards, ASTM, ISO and PSPA.

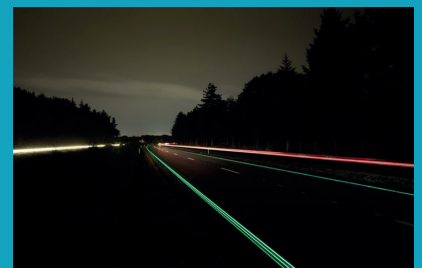
The pigments can be used to produce water-based or solvent based semi-finished. Pigments can be incorporated in most of the plastic materials and resins in flexible or rigid layers, diluted in a liquid to produce paint, screenprinting inks and other paints, or dispersed in silicone rubber and extruded ceramic glazes. The waterproof photoluminescent pigments don't lose their sheen in the water or water-based formulations.

There is a wide range of particle sizes available; this allows an appropriate use of the pigments depending upon raw materials, which may need fine or large particles, and depending upon the area in which the same raw materials are utilised.

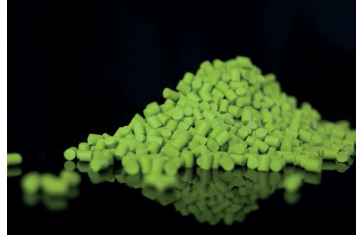
These pigments, available with three levels of efficiency, are bringing a revolution in the world of photoluminescence.



Combination of pigment



Application of photoluminescent pigment in paint road. Particularly suitable for use in safety thanks to the extended ability lighting



01 non-toxic (see data analysis laboratory)
100% hypoallergenic environmentally friendly (does NOT contain phosphorus)

02 with high mechanical strength, with adequate hardness = up to 70 shore* with resistance from -50° to +260° C

03 available in 10 colors and their nuances

04 10 years guarantee

(*The values refer to the scale for evaluating the hardness of the silicone rubbers in both resistance and traction Shore Scala)

COMPARATIVE DATA WITH LEADING MANUFACTURERS

The range of the excitation wavelengths is common to all last generation pigments using strontium aluminate (between 200 nm and 450 nm).

Thanks to such a wide range, the pigments can be loaded with different light sources: sunlight, neon light, energy saving lamps, gas lamps, LED lamps and UV lamps (Wood's lamps black light and blue light).

All pigments are selected based on the standards most widely and commonly used in safety (glow yellow-green) and they emit light at the same wavelength (520 nm).

The following comparison was performed between Luminova Nemoto (*) and Lumilux Honeywell products(**), the most serious and significant competitors on the market today. The comparison takes as a reference the type of pigments most used worldwide, the ones adopted in the field of safety.

	PIGMENTS SPH GRADUATION 8	PIGMENTS SPH GRADUATION 9	NEMOTO PIGMENTS G300M	HONEYWELL PIGMENTS 50095
Particles dimension	20-45 um	20-45 um	2-60 um(7)	MAX 24 um
Afterglow luminance after 10 min (1)	422 mcd/m2	536 mcd/m2	300 mcd/m2	270 mcd/m2
Afterglow luminance after 60 min (2)	60 mcd/m2	78 mcd/m2	45 mcd/m2	40 mcd/m2
Extinction time (3)	> 3.000 min	>7.000 min	>3.000 min	>3.000 min
Excitation time (4)	about 20 min	about 20 min	about 20 min	about 20 min
Luminance duration (5)	> 1.000 hours	> 1.000 hours	> 1.000 hours	> 1.000 hours
Chemical stability	excellent	excellent	excellent	excellent
Specific size (6)	3,4-3,6	3,4-3,6	3,6	3,4
Temperature resistance	>800°C	>800°C	unknown	unknown
PH in water	7,2-7,8	7,2-7,8	unknown	unknown
Radioactive substances	not present	not present	not present	not present

(1) brightness after 10 min; excitation carried out for 5 minutes with a xenon lamp of 1000 lux.

(2) brightness after 60 min; excitation carried out for 5 minutes with a xenon lamp of 1000 lux.

(3) time required to obtain a brightness of 0.32 mcd / m2 upon the excitation mentioned above.

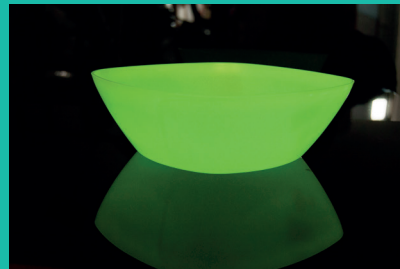
(4) time required to reach saturation with a xenon lamp of 1000 lux

(5) time required to reduce by 20% the brightness upon excitation with lamp 300w mercury vapor

(6) pigment powder

(7) It depends on the gradation of Luminova (*) Luminova data and values have been retrieved from the official site Nemoto.

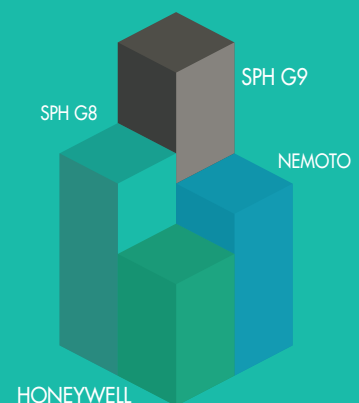
(**)Lumilux data and values have been retrieved from the official site Honeywell.

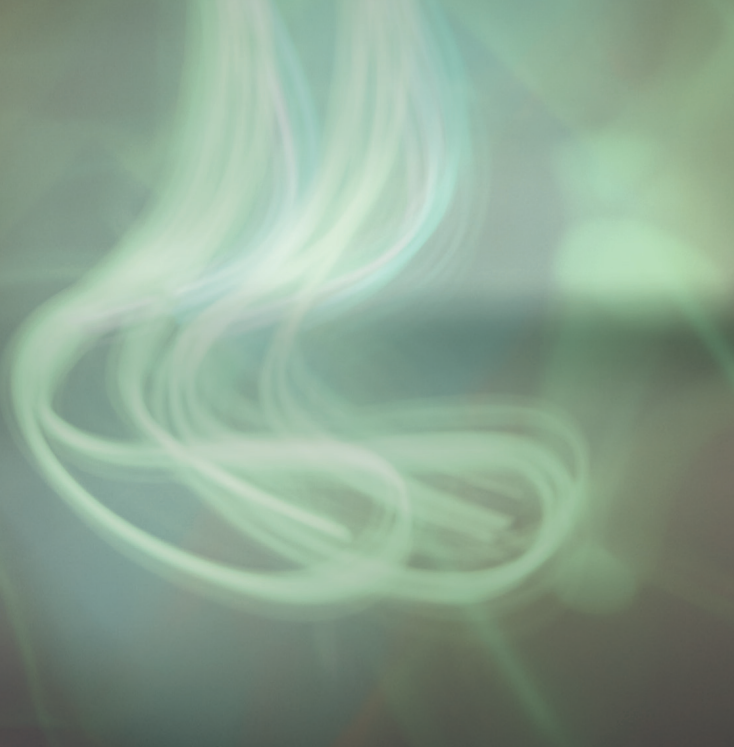


Some applications of the pigments tested in combination with plastic polymers, best suited to food sector, in unique color nuances, in particular **PP color G8 (GOLD)** with **Photoluminescent G9** effect. Tests show a good result in terms of brightness.



Photoluminescent Pigment G9 combined with **PP Transparent** Good transparency and very high light yield.





PLASTICS PHOTOLUMINESCENT

Many plastic materials are well suited to industrial production processes, in a similar way to metallic materials. This is the reason why Sphera, with the support of a preferred partner, has developed formulations and special processes for the realization of photoluminescent and color masterbatches. The photoluminescent masterbatches exploit and enhance the high performance of the pigments, while the color masterbatches ensure high coloring without covering the passage of light photons, essential for the efficiency of the photoluminescence.

Masterbatches produced by Sphera can be used to produce plastic articles of ABS, Polycarbonate, polyethylene (HDPE high density, LDPE low density), NYLON, PET, Polypropylene, PMMA-Polymethylmethacrylate, crystal Polystyrene, TPU (thermoplastic Polyurethane), plasticized PVC.



Our MASTERBATCHES are manufactured entirely in our factory in Italy.

The Photoluminescent Pigment is made to international patent and certified in accordance with the guidelines of the FDA USA.



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