

# PHOSPHORESCENT Pigments



GLOW  
in the dark



Our long afterglow phosphorescent pigments are based on rare earth doped strontium oxide aluminate chemistry. They are drastically different from conventional phosphorescent pigments which are either based on zinc sulfide or on radioisotopes for their self-luminous properties. These pigments can absorb sunlight, artificial light, especially UV light and re-emit the light in the darkness, manifesting colors. These pigments have much longer afterglow time than zinc sulfide types and are non-radioactive, non-toxic materials and nearly odorless.

We offer high quality long afterglow phosphorescent pigments for a wide range of applications, bringing durable, pure and bright glowing effect to your products, from toys to sports wear or household products, from safety signs to artist paints. For either safety or bold identity, our phosphorescent pigments will make your products **GLOW** and stand out in the dark.

## Product range

- **PG-10 Series**  
Rare earth strontium aluminates with long lasting yellow green glowing color.
- **PG-10W\* Series**  
Rare earth strontium aluminates with long lasting yellow green glowing color. Special treatment for stability in water-based systems.
- **PG-20**  
Rare earth strontium aluminates with long lasting blue green/ turquoise glowing color.
- **PG-20W\* Series**  
Rare earth strontium aluminates with long lasting yellow green glowing color. Special treatment for stability in water-based systems.
- **PG-30 Series**  
Rare earth silicates with long lasting sky blue glowing color.
- **PG-40 Series**  
Sulfide and sulfur oxides or rare earth strontium aluminates with limited afterglow time and various glowing colors.
- **PG-50W\* Series**  
Mixture of phosphorescent pigments and vibrant fluorescent colors. PROGlo-50W has vivid body colors and glows with similar colors in the dark but with shorter durable time.
- For more information please refer to our TDS per series. Special grades are available upon request.



## Features and benefits

- ▲ long afterglow time, excellent luminescence
- ▲ Various colors
- ▲ Wide applications
- ▲ Easy to disperse
- ▲ Activated by a wide wavelength band (best under UV range)
- ▲ Non-radioactive, non-toxic

## Applications and markets

### Paints & Coatings

- Water & solvent based paints, marking paints
- Fabric coatings
- Aerosols
- Artist paints / hobby paints
- Powder coating

### Printing Inks

- Screen inks
- Textile printing

### Plastics

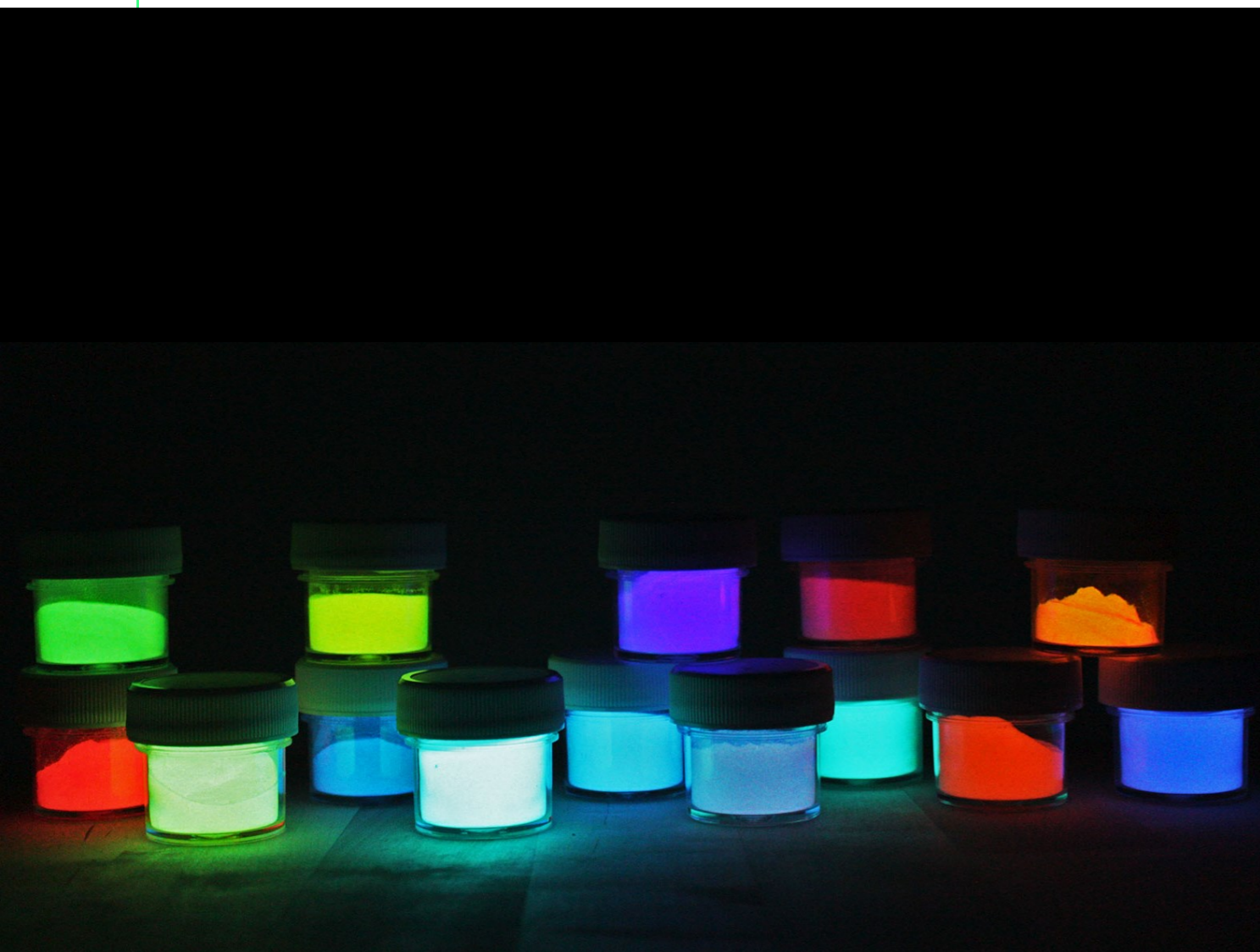
- Injection / extrusion / casting molded polyolefins
- Masterbatches
- Vinyl plastisols / calendering
- TPE / TPU / rubber / silicone

### Miscellaneous

- Crayons / chalks / candles / clays / playdough
- Glass / ceramics / glaze

# PHOSPHORESCENT Pigments

Application in coatings, paints and printing inks



We offer full range of phosphorescent pigments for applications in paints, coatings, printing inks, plastics, toys and textiles, including various particle sizes and luminescence intensities, as well as phosphorescent masterbatches for plastics. We also cover from traditional zinc sulfide type to grades which have excellent stability in water-based systems and don't darken in plastic applications.

Over **7** series

Over **13** glowing colors

Over **100** grades

## Options of particle sizes

Our phosphorescent pigments generally come into three particle size groups.

Large: 45-100 um or 200-300 mesh size

- Relatively large particle size
- Very high afterglow intensity
- Suitable for applications such as brush paint, spray paint, candle making, and glass molding

Medium: 15-45 um or 300-400 mesh size

- Relatively moderate particle size
- Moderate afterglow intensity
- Suitable for applications such as silk-screen printing molded plastics and masterbatches

Fine: 5-10 um or 500 mesh size

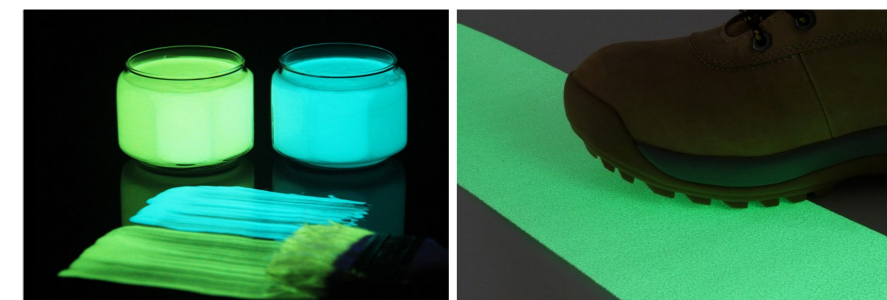
- Relatively small particle size
- Moderately low afterglow intensity
- Suitable for certain applications that require very fine particle size such as thread/fiber production and some printing inks

- Use transparent binders, better with neutral or alkaline pH\*
- Apply high speed mixing or stirring instead of milling to avoid breaking down the particles. If it is possible, use light colored ceramic or glass lined vessels.
- Generally use about 10 parts of phosphorescent pigments to 6 parts of binder (by weight).
- Shelf life of paint/coatings depends on the water content of the vehicle. Shelf life is limited when water is present. Although solvent based paints do not contain water, some of them might absorb ambient moisture.\*
- Avoid sediment by using high viscosity resin or anti-sediment additives. Stir well before application.
- Use white stock to enhance the glowing effect; coating thickness better over 100µm.
- Apply a clear overcoat to protect the pigment from humidity and improve gloss.
- Avoid heavy metal containing additives.

\* It is better to use water-resistant grades in water-based systems

• Recommended • To be Tested \* PG-10W, PG-20W Series tend to be more stable in water-based systems than PG-10, PG-20 Series

## Application in coatings and paints



		PG-10	PG-10W*	PG-20	PG-20W*	PG-30	PG-40	PG-50W
Traditional paints	Water-based	•	•	•	•	•	•	•
	Solvent-based	•	•	•	•	•	•	•
Aerosols	Water-based	•	•	•	•	•	•	•
	Solvent-based	•	•	•	•	•	•	•
Powder coating		•	•	•	•	•	•	•
Textile printings		•	•	•	•	•	•	•

- Viscosity of inks should be about 3,000-5,000 poise. Viscosity could be adjusted by using a diluting agent based on printing speed.
- Apply a white base coat under the phosphorescent layer to enhance the afterglow effect.
- Minimum film thickness should be 100 µm. In order to achieve maximum afterglow (over 8 hours), a film thickness of 130-150 µm is required. Two prints may be needed to achieve this thickness.
- Ideal screen size would be 80 - 100 mesh. Larger screen openings would give better results. Preferably, use screens manufactured from synthetic resins.
- One pound of dry photoluminescent pigment can cover a 12 square foot area at a 150 µm film thickness (1 gram covering 25 cm<sup>2</sup>).
- To minimize settling, use a viscous vehicle and/or anti settling agents. Also stir well before printing.
- Keep the entire system dry. A yellowing of the resin may indicate the pigment reacting with moisture.

\* For gravure and flexographic inks, please contact us for more information.

## Application in silk printing inks\*



		PG-10	PG-10W*	PG-20	PG-20W*	PG-30	PG-40	PG-50W
Screen printing	Water-based	•	•	•	•	•	•	•
	Solvent-based	•	•	•	•	•	•	•
Gravure**		•	•	•	•	•	•	•
Flexo**		•	•	•	•	•	•	•
Others	Wax, crayons, chalks, slime playdoughs	•	•	•	•	•	•	•

\*\* For gravure and flexo printing inks, please contact us for more information.



# PHOSPHORESCENT Pigments



## Applications in plastics and masterbatches

### • Direct applications in molded plastics

- Phosphorescent pigments are generally compatible with acrylic, PET, PUR, Epoxy, PVC, PC, PP and HDPE, LDPE polymers.
- Material can be cast, dipped, coated, extruded or molded.
- Use less than conventional phosphorescent pigment loading.
- It is recommended to use phosphorescent masterbatches or compounds instead of directly incorporating them into plastics, as they are very hard substance and the particles have a needle like shape

### • For injection, extrusion, casting molded plastics, masterbatches

	PG-10	PG-10W*	PG-20	PG-20W*	PG-30	PG-40	PG-50W
PP/HDPE/LDPE	●	●	●	●	●	●	●
PS/ABS/PA/PET/PMMA/PU	●	●	●	●	●	●	●
TPU/TPE/Silicon/Synthetic rubber	●	●	●	●	●	●	●
Rigid PVC	●	●	●	●	●	●	●
Plasticized PVC	●	●	●	●	●	●	●

\* PG-10W, PG-20W Series tend to be more stable in plastics, especially PVC

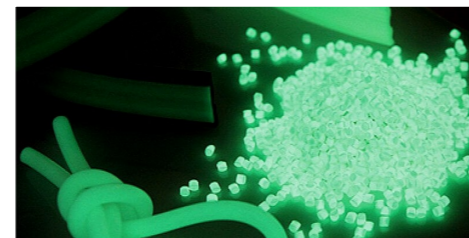
### • Applications in masterbatches production\*

- The interior of the extruder should be thoroughly cleaned before production,
- The processing temperature should be set about 10°C higher than usual. The extruder should be cleaned again by running virgin resin until it is clean.
- The recommended machine configuration is one with a distributive screw design and twin hoppers. Use one to feed the resin and additives and the other to dose phosphorescent pigments into the melt polymers. This would minimize the chances of phosphorescent pigments abrading the interior surfaces of the extruder.
- If the above step is not possible, keep the mixing time of pigment and resin as short as possible. Stirring for a longer period may cause darkening problem.
- The resin and pigment should be thoroughly dried before the production.
- The use of powder form polymers can also minimize darkening.
- The concentration of phosphorescent pigments in masterbatches can go up to 50%.



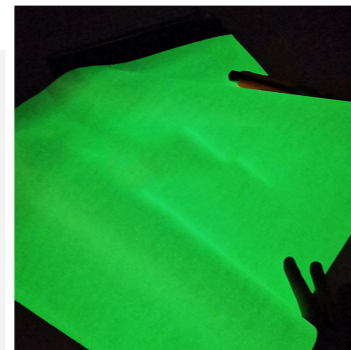
We also supply high quality phosphorescent masterbatches:

- Universal grades
- ABS grades
- PP grades
- PE grades
- PC, PS grades



### • For PVC plastisol / organosol, PVC calendering, PVC / PU coatings

	PG-10	PG-10W*	PG-20	PG-20W*	PG-30	PG-40	PG-50W
PVC / PU coating	●	●	●	●	●	●	●
Fabric Coatings	W/B acrylic	●	●	●	●	●	●
	S/B acrylic	●	●	●	●	●	●
	Latex	●	●	●	●	●	●
Plastisols	PVC plastisol	●	●	●	●	●	●
	PVC calendering	●	●	●	●	●	●
Dipping	PVC, candle	●	●	●	●	●	●
	Latex	●	●	●	●	●	●



\* PG-10W, PG-20W Series tend to be more stable in water-based systems

● Recommended ● To be Tested





# Colors, For the changing world



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- SANER -

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