

Technical Bulletin

RADIANT[®] MP-SERIES

FLUORESCENT MICROSPHERE PIGMENTS

Principal Applications:

- Specialty Coatings/Inks
- Solvent Sensitive Systems
- Plate-out Resistant Plastic Colorants
- Bleed Resistant Vinyl Plastisols
- Colorants for Crayons

Features and Benefits:

Fine particle size:	Pigments exhibit excellent dispersability.
Spherical shape:	Offers excellent light scattering/opacity.
Bleed resistant:	Presents vinyl applications never before possible.
Solvent resistant:	Allows for use in wide range of solvents.
Color strength:	Achieves strong colors without sacrificing cleanliness.
Broad compatibility:	Formulations can be prepared in a wide range of systems.

Typical Physical Properties:

Specific Gravity	1.3
Average Particle size ¹	2-3 microns
Hegman Grind	5.0 +
Decomposition Point	255 +/- 5°C
Maximum Processing Range	~480°F (249°C)

¹ By Laser Diffraction

Solvent Characteristics:

<u>Solvent</u>	<u>Solubility</u>	<u>Bleed</u>
Water	Insoluble	Negligible
Mineral Spirits	Insoluble	Negligible
Toluene	Insoluble	Negligible
Xylene	Insoluble	Negligible
Ethanol	Insoluble	Moderate
Methanol	Insoluble	Considerable
2-Propanol	Insoluble	Moderate
Acetone	Insoluble	Considerable
Methyl Ethyl Ketone	Insoluble	Considerable
Ethyl Acetate	Insoluble	Slight to Moderate

Available Colors:

<u>Color</u>	<u>Code</u>
Chartreuse	MP-CH5510
Green	MP-GR5511
Orange-Yellow	MP-OY5512
Orange	MP-OG5513
Red	MP-RD5515
Cerise	MP-CE5606
Pink	MP-PK5661
Magenta	MP-MG5518
Purple	MP-PR5547
Blue	MP-BL6182

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PLASTICS:

Typical Applications

- Masterbatch
- Molding and Extrusion
- Blow Molding
- Liquid Colorant
- Vinyl Plastisol
- Calendered Film
- Low Density Polyethylene (LDPE)
- High Density Polyethylene (HDPE)
- Polypropylene (PP)
- PVC Calendaring
- Spread and Gel Coat
- Natural and Synthetic Rubber

Plate-out

One of the challenges that plastics processors have faced when handling fluorescent colorants is the occurrence of plate-out. This phenomenon occurs when lower molecular weight organic materials, such as oligomeric species or fluorescent dyestuffs, thermally decompose and separate from the compounding mixture. Consequently, these materials deposit on screws, blow-pins, and other metal processing equipment, resulting in what is commonly referred to as plate-out.

Due to its thermoset nature, the MP series greatly reduces, and in many cases eliminates, the occurrence of plate-out. Therefore, a simple purge with clear has been found to be a sufficient method of cleaning. This results in less down time for the processor due to extensive equipment clean-up.

Processing Temperatures

MP is recommended for use in plastics encountering process temperatures up to 480°F. However, MP is unlike typical fluorescent colorants which "melt-in," because it remains intact as a pigment. Therefore, higher shear than is typically applied to fluorescent colorants is required to disperse the pigment and develop optimum color. To increase thermal stability of the MP line, the addition of 5% zinc oxide, based on pigment weight, has been found to be beneficial in all cases except those where the chartreuse or green shades are present. Zinc, in combination with either of these two colors, may cause a detrimental color shift.

Processing Aids

In some instances, the MP series has been found to process easily without dispersion aids. However, if it is determined that processing aids are necessary, zinc-based additives should be avoided in the chartreuse and green shades (e.g. substitute calcium stearate for zinc stearate). The presence of zinc can tend to shift these colors, resulting in perceived "dirtiness".

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Color Brilliance

In both masstone and tint form, MP produces the cleanest and brightest colors available with a degree of opacity that is not present with "melt-in" fluorescent colorants.

Aging and Stability

The degree of colorfastness will be dependent on the following factors: Type of plastic, concentration of colorant, film thickness, type of exposure (outdoor versus indoor) and direction of exposure.

Storage

When stored in a cool, dry environment, MP pigments have an indefinite shelf life. Colorant containers should be kept closed to minimize contamination.

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