



## TECHNICAL DATA SHEET

### PH-745 PHOSPHOR BINDER

PH-745 is designed to be mixed with **microencapsulated phosphor powder** to produce screen printable pastes suitable for **printing uniform layers of phosphor inks in electroluminescent (EL) panels**

#### DESCRIPTION

- Solvent based, screen printable binder
- Excellent wet out capabilities to allow for dispersion of large amounts of powder using low shear mixing processes
- Excellent flexibility, toughness and resistance to water and oxygen
- Compatible with the complete range of phosphor powders that are commercially available
- Outstanding adhesion to indium tin oxide (ITO) surfaces, and is compatible with our BT-101 barium titanate dielectric
- Allows the screen printer to blend phosphor ink as needed, avoiding issues with shelf life and damage to phosphor particles when remixing material that has been stored for long periods
- Provides the screen printer with the ability to custom blend amounts and quantities of different phosphor materials.

#### TYPICAL PROPERTIES

Appearance	Clear or colored thixotropic liquid
Viscosity- Brookfield SC4-14 25°C, Shear 20	4,500-6,500 cps without phosphor
Weight Per Gallon @ 25°C	9.5 lbs.
Specific Gravity @ 25°C	1.14
Flash Point, PMCC	>212°F (100°C)
Shelf Life @ 25°C	1 year (without phosphor powder)
Percent Solids	25% ± 1
Color, APHA	< 200
Tg by Dynamic Mechanical Analysis	96°C
Volume Resistivity @ 25°C	> 1.0 x 10 <sup>14</sup> Ω-cm
Surface Resistivity @ 25°C	5.0 x 10 <sup>15</sup> Ω/square/mil

# PH-745 PHOSPHOR BINDER

Guidelines are intended to provide a starting point for evaluation. Applied Ink Solutions recognizes that each customer's manufacturing process is unique, and we are available to provide technical assistance to resolve your processing issues. Call us to discuss your application in more detail.

The properties are accurate to the best of our knowledge and Applied Ink Solutions makes no guarantees for customer specifications established in applications where this product is used. Customer assumes responsibility for determining fitness of use in their particular application.

## Application Guidelines

PH-745 should be kept in sealed container in ambient conditions until ready for use. If material is stored for long periods, or container is left open repeatedly for long periods, the percent solids of the binder should be tested before use.

## Mixing

Recommended starting ratio for blending is between 55 and 70 parts of phosphor powder by weight to 100 parts of PH-745. When mixing the binder, DO NOT use high speed, high shear mixing methods since this may damage the surface of the phosphor powder. Recommended mix method is to add phosphor to PH-745, mix gently with non metallic spatula, and place sealed container onto a jar roller at slow speed (<100 rpm) for 12 to 24 hours. Do not add any grinding media, such as metal or ceramic beads, to the jar. The mixing jar should be filled no more than 2/3 full to allow for optimal mixing on the jar roller.

Once mixed, test prints can confirm how well the phosphor powder is dispersed. If material sits for long periods after mixing, it can be remixed by turning any settled material up from the bottom of the container using a spatula, and then jar rolling for 12 hours.

## Screening

Use a monofilament polyester screens from 240 to 380 mesh, with emulsion thickness from .001" to .003". For thicker coatings, use smaller mesh sizes and thicker emulsions. Stainless steel mesh is not recommended. A polyurethane squeegee with a Shore 'A' durometer between 60 and 70 is recommended. For high speed gravure printing, adjustment of viscosity with appropriate solvent may be needed. Suitable solvents are carbitol acetate, dibasic esters and gamma-butyrolactone.

When printing PH-745, it is essential to make a uniform film without pinholes or voids. Sometimes it is necessary to use a wet-wet print sequence. This allows for more efficient packing of the binder on the substrate, and gives more uniform phosphor distribution and greater density of phosphor material in the dried film. In general, two separate print layers will be required.

## Drying

It is essential that PH-745 be dried completely after printing. Any residual solvent can compromise the performance of the lamp. PH-745 can be dried completely in 3 to 8 minutes at 140°C depending upon air flow, dryness of air and heat sources in oven. Lower temperatures will require more time to complete drying.

## Health & Safety

Products manufactured by Applied Ink Solutions are intended for use in an industrial environment by trained personnel. Please follow proper health/safety processes regarding storage, handling and processing of the products.