lisicon®

EMD PERFORMANCE MATERIALS

PV-E002

DESCRIPTION

PV-E002 is made by combining PV-E002a and PV-E002b in the correct ratio. It is a formulation providing Electron Transporting Layers/Hole Blocking Layers with superior performance and reliability in organic bulk heterojunction solar cells.

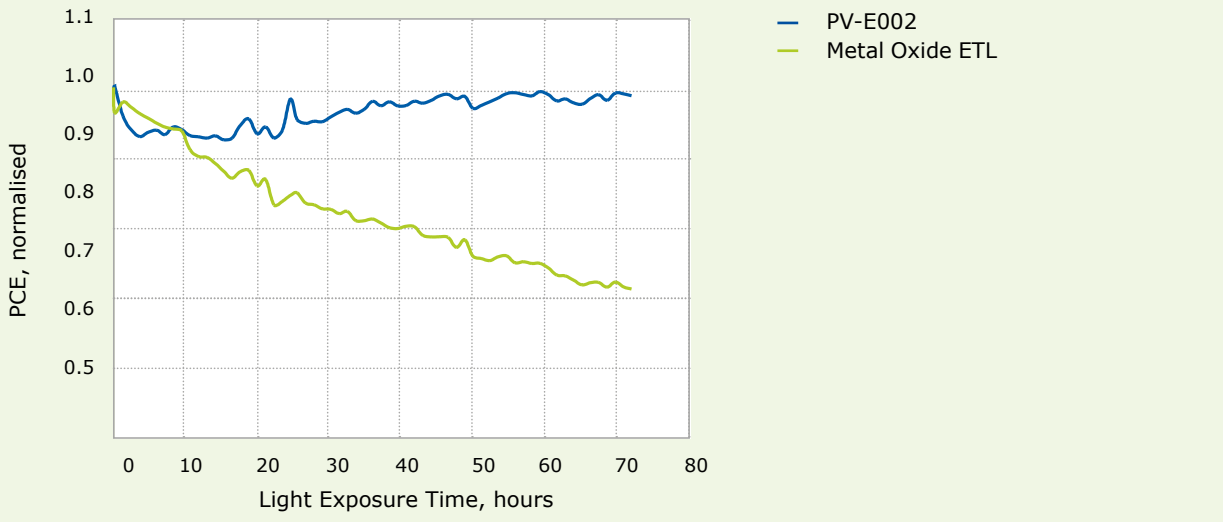
KEY BENEFITS

- Easily processable, organic based alternative to ZnO
- Provides intrinsic light stability to OPV cells
- Designed for roll-to-roll printing processes
- Robust, cross-linked polymer film
- Easy to clean with alcohol based solvents

MATERIAL PROPERTIES

Property	Value
Physical Form	2 pot-solution made of PV-E002a and PV-E002b
Solubility	Butanol or other alcohols
Colour	Colourless

LIGHT SOAKING OF PV-E002 & ZNO



RECOMMENDED STORAGE CONDITIONS

- Store PV-E002a, PV-E002b and PV-E002 separately, in a dark place and in a dry inert atmosphere at ambient temperature
- Shelf-life 6 months

SAFETY MEASURES:

For additional information please refer to our Safety Datasheet

PREPARATION AND COATING

- Gently mix PV-E002a and PV-E002b in a 1:1 ratio by volume for 1 min
- Mix equal volumes of PV-E002a and PV-E002b
- Can be prepared under ambient conditions

Caution:

- Immediately after printing, all tools and equipment should be cleaned thoroughly according to following cleaning guidelines.

SUBSTRATE CLEANING

Clean glass substrates using ultra sonic bath with 50 W/L

- 5 min Acetone
- 5 min in Isopropanol
- Rinse in DI water

Spin-rinser with de-ionised water for 10 min under N_2

COATING PARAMETERS FOR 50X50MM GLASS/ITO SUBSTRATE

Doctor-Blade Coating

- Maintain the solution of PV-E002 at ambient temperature
- Set the temperature of the Dr Blade at 80°C
- Coating parameters: Screw gap = 575 µm; Speed = 5 mm/s; Volume = 140 µL
- After coating, leave the sample on the Dr Blade at 80°C for 1 min, to make sure the film is dry
- After drying, place the substrates on a hotplate at 100°C for 10 min in air

Spin-Coating

- Leave the solution of PV-E002 at ambient temperature
- Coating parameters: Volume = 0.9 mL; 4000rpm for 60 sec
- After drying, place the substrates on a hotplate at 100°C for 10 min in air

CLEANING SOLVENT FOR PV-E002

Recommended cleaning process:

Spin-coating

- Wipe the chamber and substrate holder of the spin-coater with the cleaning solvent once all the substrates have been coated

Doctor Blade

- Wipe both the bare and the plate of the Doctor Blade with the cleaning solvent once all the substrates have been coated

Slot-Dye and Ink-Jet

- Before and after coating of PV-E002, clean all tools needed with the cleaning solvent (tubes, bottles, coating head, ...)

EMD Performance Materials Corporation
One International Plaza, Suite 300
Philadelphia, PA 19113
Phone: +1-484-652-5959
PVmaterials@emdgroup.com

EMD Performance Materials is a business of
Merck KGaA, Darmstadt, Germany

www.emd4photovoltaics.com

February 2016