

# ZnO ink

infinityPV zinc oxide (ZnO) ink has been developed over several years and answers specific needs in terms of processing method, processing conditions and application. The cost competitive ZnO ink is optimized for large-scale fabrication of electron transport layers (ETL) in organic photovoltaics (OPV) and features low curing temperatures and fast curing times. It also suits perovskite solar cells and printed electronics applications. It has full roll-to-roll (R2R) and lab-scale deposition compatibility and comes in nearly any solvent except some acids/bases. Concentrations can be as high as 50% w/v.



## Features:

- Electron transport layer (ETL) for
  - Organic solar cells (OPV)
  - Perovskite solar cells
- Doped and undoped ZnO
- Low curing temperature (< 140°C)
- Fast curing times (seconds to minutes)
- Optimized concentration
- Optimized dry/wet layer thickness ratio
- Various solvents
- Long shelf life
- Best prize per volume
- Sheet-to-sheet (S2S) compatible
- Roll-to-roll (R2R) compatible
- Coating on ITO, PEDOT:PSS, AgNW, etc.
- Processing methods
  - Slot-die (SD)
  - Spin coating (SC)
  - Doctor blading (DB), knife coating (KC)
  - Gravure printing (GR)
  - Rotary screen printing (RSP)
  - Spray coating (SC)
  - Inkjet (on request) (IJ)

## Specifications:

	Doped ZnO	Doped ZnO	ZnO (2.8% w/v)	ZnO (5.6% w/v)	ZnO
Solvent (other solvents on request)	Water	Methanol	Acetone (or IPA)	Acetone (or IPA)	Alcohol
Can be diluted	x	x	✓	✓	x
Can be concentrated	x	x	✓	✓	x
Solid load (g/L)	-	-	2.8	5.6	-
Viscosity at 20 °C (mPa s)	1.7 - 1.8	0.45 - 0.5	< 0.3 (1.9)	< 0.3 (1.9)	27-30
Dry thickness (nm) at 10 µm wet	100	100	50	100	100
Recommended wet thickness (µm)	7 - 12	7 - 10	7 - 12	7 - 12	10 - 20
Speed in R2R (m/min)	1 - 20	2 - 60	0.2 - 60	0.2 - 60	5 - 60
Drying temperature (°C)	80 - 140	20	20 (20 - 70)	20 (20 - 70)	50 - 80
Curing temperature (°C)	120 - 140	120 - 140	120 - 140	120 - 140	120 - 140
Application	ETL on ITO (OPV)	ETL on ITO (OPV)	ETL (OPV/perovskite)	ETL (OPV/perovskite)	ETL (OPV)
Available in sealed ampoule	x	x	✓	✓	x
Processing methods S2S	SC, DB, SD, SP	SC, DB, SD, SP	SC, DB, SD, SP, IJ	SC, DB, SD, SP	x
Processing methods R2R	KC, SD	KC, SD	SD, IJ	SD, IJ	RSP, GR

For further information, application notes, or customized orders don't hesitate to contact us.