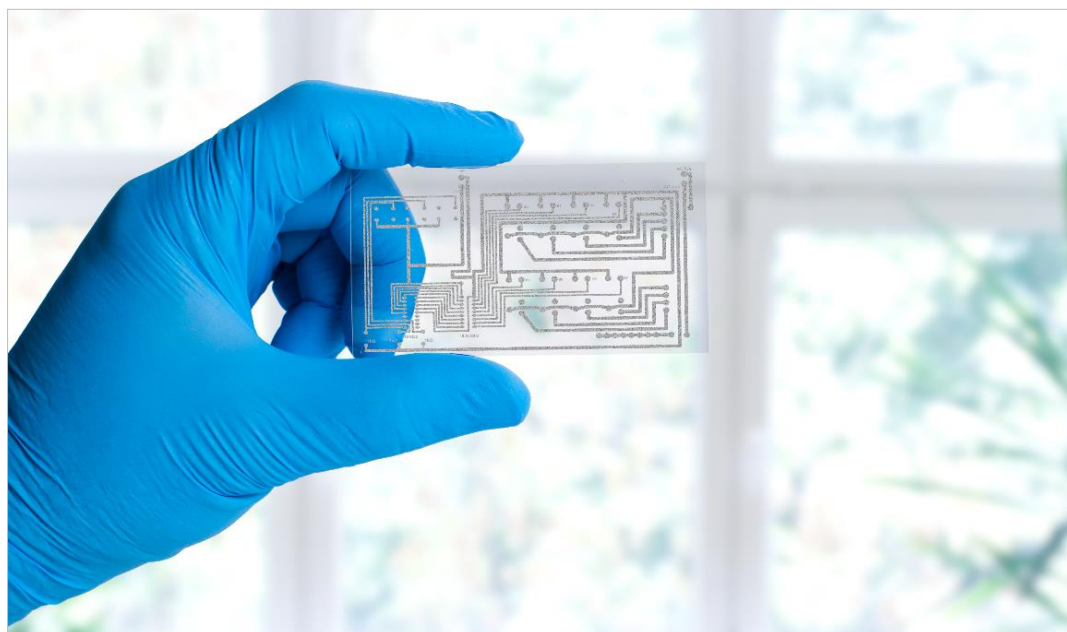


# Pinhole-Free Conductive Ink Printing for Printed Electronics



NORCOP has developed a wide range of transparent Atmospheric Pressure Plasma-Induced Nano-Coatings on polyester films dedicated to the Printed Electronics market which are able to push forward your printing performances.

Our nano-coatings allow us to obtain Surface Energies varying from 20 to 60 dyne/cm on different polymer substrates that can be fine-tuned to your specific ink's Surface Tension. Perfect ink spreading is coupled with enhanced wetting to give reliable reproducible and pinhole-free coverage. Selected grafting of chemical functions ensures excellent adhesion of conductive and dielectric inks.<sup>1</sup>

## SPECIFICATIONS

- Compatible Substrates: PET, PEN, PI, PC
- Substrate Thickness Range : 50 – 250µm
- SE<sup>2</sup> Range : 20 – 60 dyne/cm
- Compatible Formats : Rolls up to 2000mm width or sheets (dimensions upon request)
- Printing Method Compatibility : Screen, Gravure, Flexo
- Ink Compatibility : inorganic, organic, solvent or water based and solventless (UV)
- AP-PECVD<sup>3</sup> Processing Speed : 20 – 70m/min
- Extended shelf-life : 6-24 months, depending on coating chemistry

## TAILORED SURFACES

- Excellent Wetting
- Polar Function Selection
- Roughness Control

## ENVIRONMENTALLY RESPONSIBLE TECHNOLOGY

- Non-polluting Processes
- Sustainable Materials
- No Solvents, No Waste, No Heat
- Very Low Carbon Footprint

## LEGEND

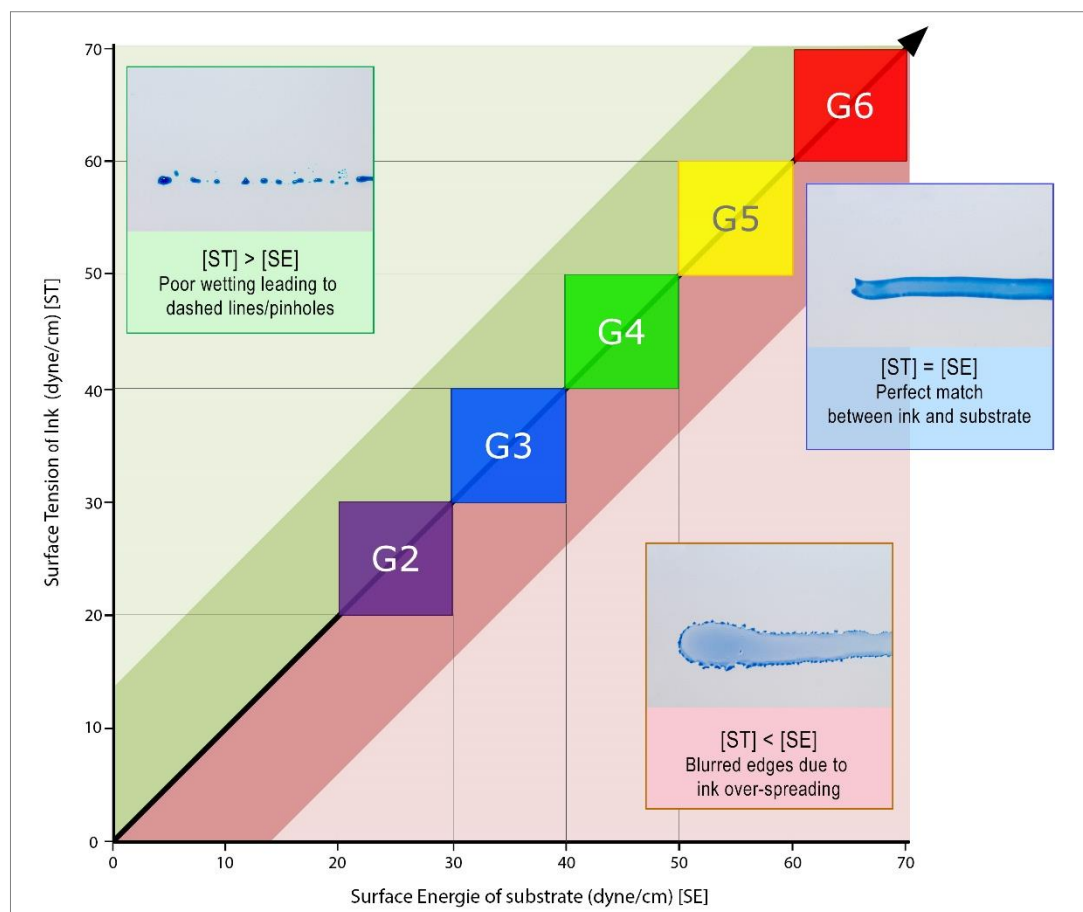
<sup>1</sup> N, O, Si - based chemical functions

<sup>2</sup> Surface Energy

<sup>3</sup> Atmospheric Pressure – Plasma Enhanced Chemical Vapor Deposition

## Surface customization for specific ink-PET combinations

At NORCOP we have the technology and the know-how to customize the Surface Energy of your preferred PET to make it compatible with the Surface Tension of the conductive and dielectric inks of your choice. (Fig. 1)



**Fig. 1 :** Graph showing the '**Perfect Match**' between ink Surface Tension and polyester Surface Energy achieved by NORCOP's surface customization using our proprietary AP-PECVD technology.

Solvent Family	Ink Solvent Base	Ink ST (dyne/cm)	Nano-Coating Series	Surface Energy Range (dyne/cm)***
Saturated Hydrocarbons*	Tetradecane	27-31	G2	Very Low
Glycols**	Tripropylene Glycol Monomethyl Ether (TPM)	28	G3	Low
	Triethylene Glycol Monomethyl Ether (TGME)	30-34	G4	Medium
	Diethylene Glycol Monomethyl Ether (DGME)	33-34	G5	High
	Ethylene Glycol (EG)	46	G6	Ultra High
Water	Water	72		

\*\*\* based on contact angle measurements \*\*\*\* wet coating

Sources: \* MERCK, \*\* PVNANOCELL

**Table 1:** Comparative table showing solvent surface tensions of commonly used conductive and dielectric inks, together with NORCOP's obtainable Surface Energy Ranges.

For more information on any of our products or services please visit our website at: [www.norcop.eu](http://www.norcop.eu)