PIEZOELECTRIC INK

MAGRON PEInk01NP® is a screen printable piezoelectric ink. It is produced through a high-quality process in order to exhibit a unique set of inherent piezo and pyroelectric properties. Various printing techniques can be used in a wide range of substrates. After printing, the ink requires annealing and poling, to make it functional.

GPEInk01NP®, MAGRON green piezoelectric ink is also available. This ink presents the same characteristics as PEInk01NP® and is produced using a green solvent.

INK FEATURES

- ✓ PVDF-TrFe based
- ✓ Good actuation power
- ✓ High dielectric constant
- ✓ Easy screen printable
- ✓ Of easy cleaning
- ✓ Piezoelectric
- ✓ Flexible
- ✓ Easy production process
- ✓ Capable of detection of pressure, impacts, accelerations and deformations in the substrate

INK PROPERTIES

Apparency	Clear/Transparent
Cure processing	Thermal cure
Solid content (%)	25%
Viscosity	4 000 – 8 000 cP

PIEZOELECTRIC/PYROELECTRIC VALUES

Piezoelectric coefficient d33 (pC/N)	18 - 23
Pyroelectric Coefficient ρ (μC/m^2.K)	- 23
Remnant Polarization P_r (mC/m^2)	80

DIELECTRIC VALUES

Dielectric const. range @1 KHz, 25 °C	11.5

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Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products. The information and the products are for use by technically skilled people at their own discretion and risk and do not relate to the use of this product in combination with any other substance or any other process.

Coercive field (KV/cm)	450
Poling min. (KV/cm)	600
Poling max. (KV/cm)	1000

HANDLING GUIDELINES

Processing	Vigorously stir with a spatula
Printing methods	Screen printing, doctor blade, inkjet, spray
Mesh count, warp (n/cm)	60-90
Clean-up solvent	MAGRON cleaning solvent **Clear100NP**
Substrates	Glass, PET, PC, paper (…)
Storage	Should be kept well sealed in its container, away from direct sunlight and stored at a controlled temperature above 20 ºC
Shelf-life	Ink in an unopened container has a recommended shelf life of 3 months from the date of delivery

ANNEALING

Annealing above Curie transition temperature is required as the following procedure:

- Temperature: 135-140 °C
- Duration: 15 minutes

This step is recommended in order to increase polymer crystallinity properties and final sensor performance.

POLING

The ink must be poled to enhance the piezoelectric properties through a Corona or Contact method. The process is made by applying an electric field with a voltage above the coercive field.

Polling can also be performed while heating the sample and applying a constant electric field.

Typical poling values:

- Voltage: 50 V / µm
- Temperature: 80-120 °C
- Duration: 60-90 minutes

Please ask for the poling processing guide at magron@magron.co.kr .

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