Nanopaint PR-2 Ink

Due to the inherent properties of the Nanopaint piezoresistive ink, there is no need for any specific or expensive post treatment process to activate their electroactive proprieties. It can therefore be processed on various substrates, such as glass, PET, MELINEX or textile, by various techniques:

- Doctor blade printing
- Screen printing
- Stencil printing

Nanopaint piezoresistive ink is easily solubilized in various solvents, showing unique properties such as:

- Strong variation of the electrical resistance upon mechanical deformation ideal for pressure, force and stirring sensors;
- Allows the implementation of deformation and force sensors and sensor matrixes on both rigid, flexible and stretchable substrates
- Reduced final cost per sensor
- High flexibility and stretchability allowing truly innovative flexible sensors
- Tight quality control to ensure reproducibility
- Custom formulation for each printing method.

These materials can be worked through R&D to build applications such as:

- Custom format buttons and keypads for multi-purpose interfaces
- Ground presence detectors
- Pressure map monitoring systems
- Sports performance measurement appliances
- Position detectors
- Pressure sensitive switches

Properties

Physical form	Solution
Cure processing	Thermal cure
Temperature (°C)	60
Time (min)	10
Viscosity (Pa.s)	5-10
Max. particle diameter (µm)	< 10
Expiration date after opening (months)	4

Screen Printing mesh properties

Mesh opening (µm)	104
Open area (%)	38
Mesh count, warp (n/cm)	59
Wire diameter, warp (µm)	63
Tension on mesh (N)	17-20

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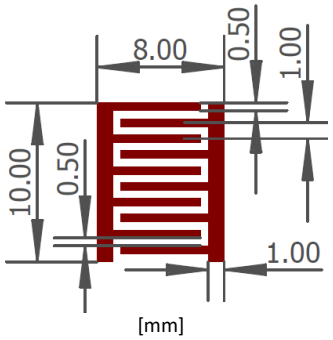
Doctor blade printing

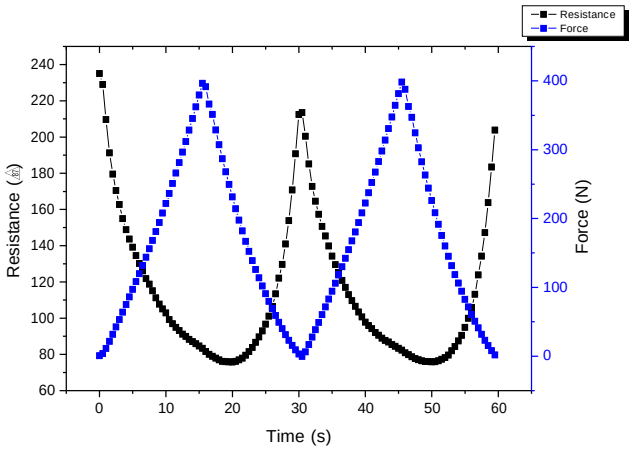
35 µm thickness film with 1 mm pitch interdigitated silver pattern with compression area of 80 square millimetres.

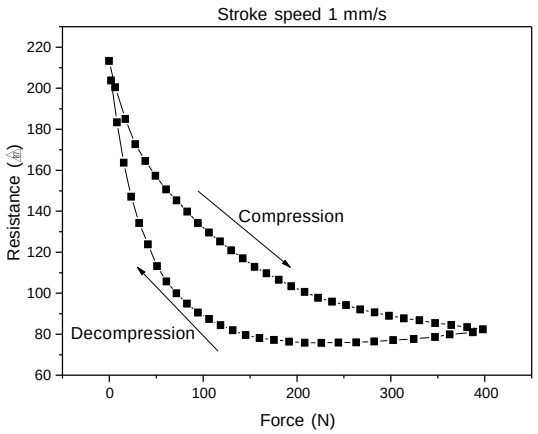


Instructions:

Place the ink in ultrasonic bath around 60 minutes. Then place it in a mechanical stirring between 30-60 minutes. The ink is ready to be used.

NOTE: The ink should not be printed directly on the interdigitated silver pattern. The silver pattern must be cured first.





Average values:

Full scale output: 125 Ω
Span: 90 N
Sensitivity: 1.4 Ω/N

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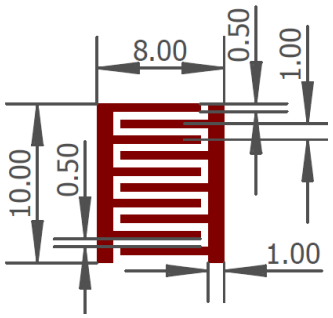
Results for a screen printing sample

10 µm thickness film with 1 mm pitch interdigitated silver pattern with compression area of 80 square millimetres.

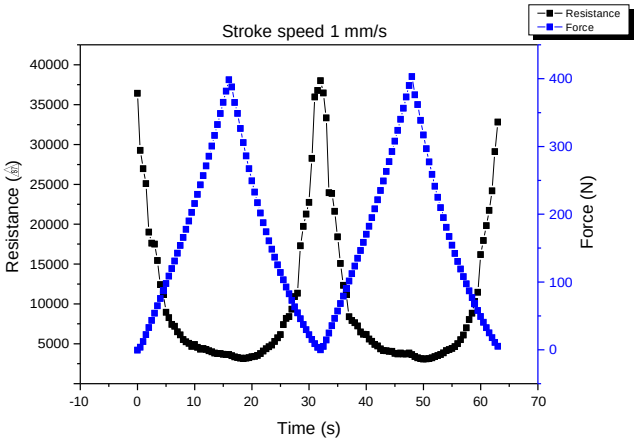


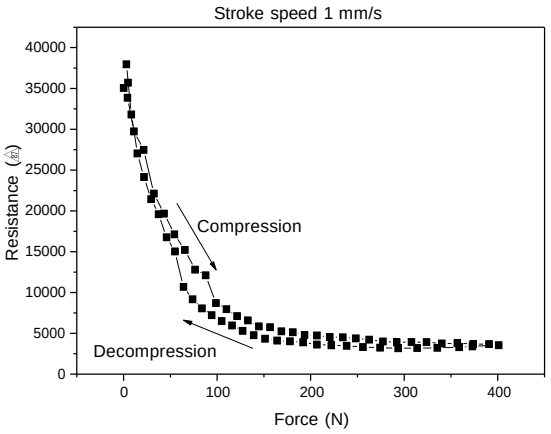
Instructions:

Place the ink in ultrasonic bath around 60 minutes. Then place it in a mechanical stirring between 30-60 minutes. The ink is ready to be used.

NOTE: The ink should not be printed directly on the interdigitated silver pattern. The silver pattern must be cured first.

The thickness of the PR print should be higher than 100 µm. For lower thicknesses it should be created a spacer between the conductive and the piezoresistive layer.





Average values:

Full scale output: 22 kΩ
Span: 75 N
Sensitivity: 293 Ω/N

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