

Nanopaint magnetoelectric Ink

Nanopaint Magnetoelectric ink is able to generate an electrical response to the variation of a magnetic field. It can be applied on various substrates, such as glass, PET, PC or paper, by various techniques:

- Screen printing
- Doctor blade printing
- Stencil printing
- Spray printing

Nanopaint magnetoelectric ink shows distinctive properties such as:

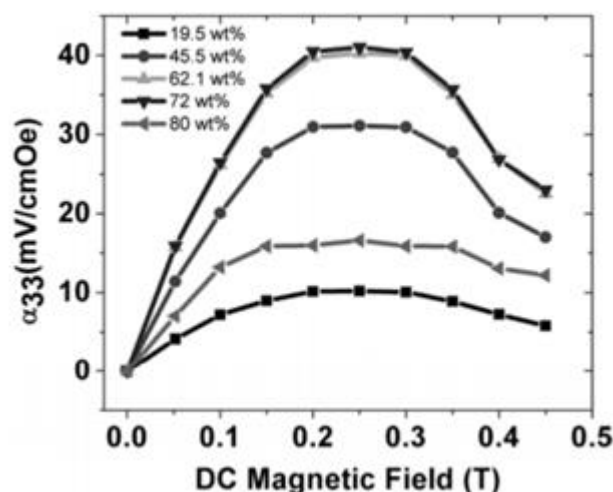
- High dispersion and isotropy;
- High magnetoelectric response;
- Several types of sensor and actuators can be printed;
- Easy processability allowing different sensor configurations;
- Custom formulation suitable for each type of printing technique.

Applications:

- Magnetic field sensors;
- Electrical current sensors;
- Energy harvesters for electronic industry;
- Magnetic scaffolds.

With a low cost solution, it is possible to produce and implement magnetic sensors, measuring mechanical stress or electric field variations, on rigid or flexible substrates.

Magnetoelectric response vs. magnetic field for a 50 μm thickness solvent-casting film.



Instructions:

Place the ink in ultrasonic bath around 30 minutes.
The ink is ready to be used.

Technical Properties

| | |
|---|------------|
| Base polymer | PVDF-TrFe |
| Melting Temp. range(°C) | 150 - 160 |
| Flash Point (°C) | 58 - 120 |
| Curie Temp. range(°C) | 60 - 100 |
| Density (g/cm ³) | 1.06 - 1.9 |
| Viscosity (cps) | 100-20000 |
| Piezoelectric/Pyroelectric values | |
| d ₃₃ (pC/N)* | 18 - 23 |
| Dielectric values | |
| Dielectric const. range @1 KHz, 23 °C | 8 - 12 |
| Coercive field (V/μm) | 45 - 50 |
| Poling min. (V/μm) | 600 |
| Poling max. (V/μm) | 1000 |
| Magnetic properties | |
| Magnetization saturation (emu.g ⁻¹) | 6 |
| Remanence (emu.g ⁻¹) | 3 |
| Coercive Field (Oe) | 2500 |
| Magnetolectric properties | |
| α(mV.cm ⁻¹ .Oe ⁻¹) | 5 |
| Optimum magnetic field (Oe) | 2000 |
| Mechanical values | |
| Young Modulus range (GPa) | 0.6 – 1.2 |
| Screen Printing properties | |
| Mesh opening (μm) | 25 |
| Open area (%) | 18 |
| Mesh count, warp (n/cm) | 165 |
| Wire diameter, warp (μm) | 30 |
| Tension on mesh (N) | 17-20 |