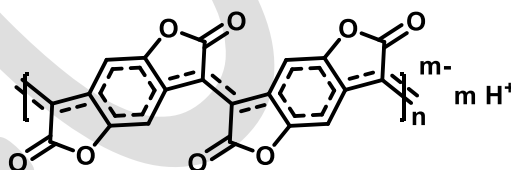


Organic Nano Electronic (ONE=1) Materials for those who understand quality

Technical Data Sheet

1M Material: PBFDO
Common Name: Poly(benzodifurandione) (PBFDO), n-PBFDO, n-PBDF
Potential Applications: Printable solution of n-type conductive polymers used for flexible electrodes, electrochromics, capacitors, batteries and other energy storage devices, bioelectronics, OECT, OPV, OPD, EMS, and thermoelectric devices.

Chemical Structure:



Appearance: Black/Brown liquid
Viscosity(mPa.s@25°C): 200~800 (Rotary Viscometer)
Solid content(mg/ml): 10 ± 2
Conductivity(S/cm): 1000-1500 (depending on film preparation conditions)
Solvent: N,N-Dimethylacetamide(DMAc)/Dimethyl sulfoxide (DMSO) mixture
Shelf life: 6 months (unopened)
Safety: Please consult Material Safe Data Sheet (MSDS) before using.

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Solution processible n-type super conducting polymer, n-PBFDO (n-PBDF)

Suggested film formation procedure:

Substrate: Silicon wafer, glass, PET, prewashing and oxygen plasma treatment recommended.

Dilution: DMAc can be used to dilute the ink to adjust viscosity.

Pre-mixing: Shake well before using.

Filtration: 0.45 μm PVDF syringe filter is recommended.

Coating and printing: Slot die, doctor blade, spin coating (inert atmosphere recommended)

Drying and thermal annealing: Vacuum drying at 50 $^{\circ}\text{C}$ for ≥ 30 min (depending on film thickness)

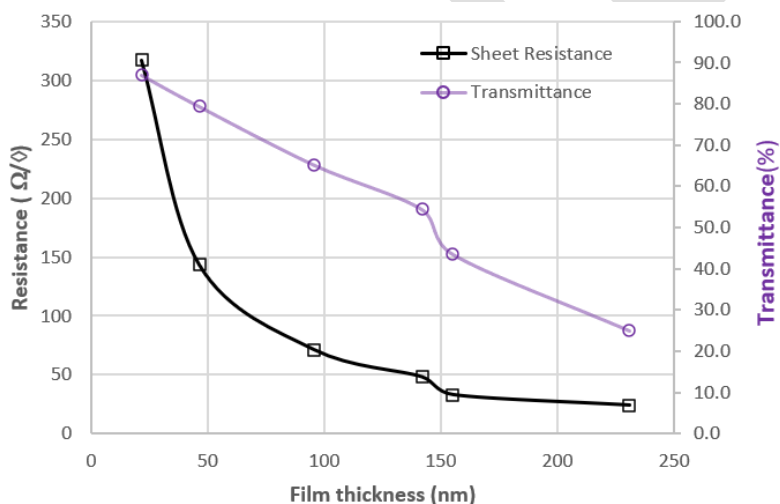


Figure 1. Typical sheet resistance and transmittance vs film thickness (internal experimental data)

Energy levels: HOMO = -6.45eV, LUMO = -5.15eV, $E_g = 1.3\text{eV}$ (reference data).

Reference: Nature 2022, 611, 271 (DOI: 10.1038/s41586-022-05295-8)
Chem. Mater. 2024, 36, 8639 (DOI: 10.1021/acs.chemmater.4c00867)
Nature Electron. 2024, 7, 1158 (DOI: 10.1038/s41928-024-01293-y)
Adv. Sci. 2024, 11, 2405676 (DOI:10.1002/advs.202405676)

Disclaimer: PBFDO is covered by patent WO2023056662A1, 1M has been granted the right to provide this material.

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