

solvene[®]



SOLVAY

asking more from chemistry[®]

solvene[®] EAP
for Printed Organic Electronics

**SPECIALTY
POLYMERS**

solvene® EAP

Innovative Electro Active Polymers Designed to Bring New Features to Printed Electronics

Thanks to their intrinsic properties, solvene® EAP polymers do not need any specific or expensive post treatment process to be electro active. It can therefore be processed by various techniques, from classic extrusion to different printing techniques on various substrates, including flexible plastic films or paper.

solvene® EAP includes two polymer sub families:

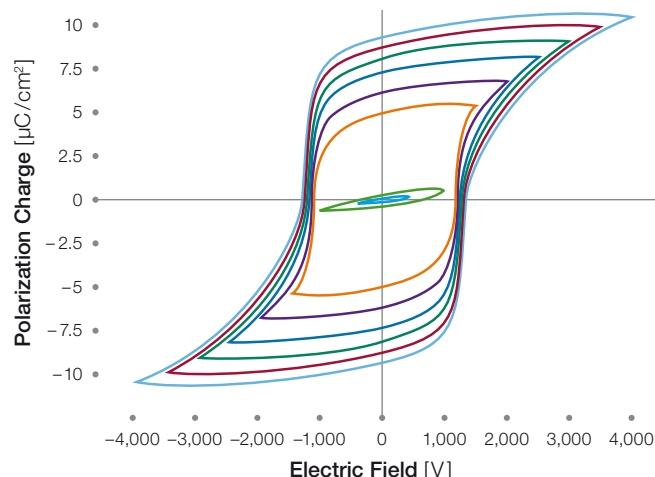
Ferroelectric **solvene® P(VDF-TrFE) copolymers** exhibit a unique set of inherent piezo, pyro and ferroelectric properties:

- Piezo electricity: converting mechanical energy received through a mechanical stress into electrical energy, and conversely can deform under an electrical field (electrostrictive properties)
- Pyro electricity: converting calorific energy into electrical energy, as temperature variations will change the dipole orientation and create a temporary electrical potential
- Ferroelectricity: as an organic ferroelectric material, solvene® EAP exhibits several advantageous properties including a large remnant polarization with excellent stability, a low leakage for high resistivity and switching times as short as 1 μ s. Furthermore, it is intrinsically bistable, and does not require a voltage to keep its polarization state

Ferro-relaxor **solvene® T P(VDF-TrFE-CTFE) terpolymers** are easily solubilized in various solvents, showing unique properties such as:

- A very high dielectric constant above 20 which makes them perform quite well in gate dielectric in OFET or more generally in dielectric coating
- Good actuation power, giving high strain with low applied voltage
- Processability into thin films, allowing various actuators designs
- Large electrocaloric effect, paving the way for innovative heating and cooling systems

Polarization hysteresis – solvene® 250



solvene® EAP polymers are available in a variety of grades suitable for different applications, including ready-to-print formulations.

Key characteristics

	Unit	solvene® 200	solvene® 250	solvene® 300	solvene® T
Melting point	[°C]	145	146	145	128
Curie peak	[°C]	133	116	103	15
ϵ	[25°C]	11	11	11	>20
d_{33} at 110Hz	[pC/N]	-25	-24	-22	n. a.

Transmittance and haze

Sample	Air		Water	
	TT	Haze	TT	Haze
Not annealed	Average 96.0	Average 2.9	Average 98.9	Average 1.2
Annealed	Average 95.3	Average 4.8	Average 97.4	Average 2.2

Tested on 25- μ m thick cast film using standard ASTM E313

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