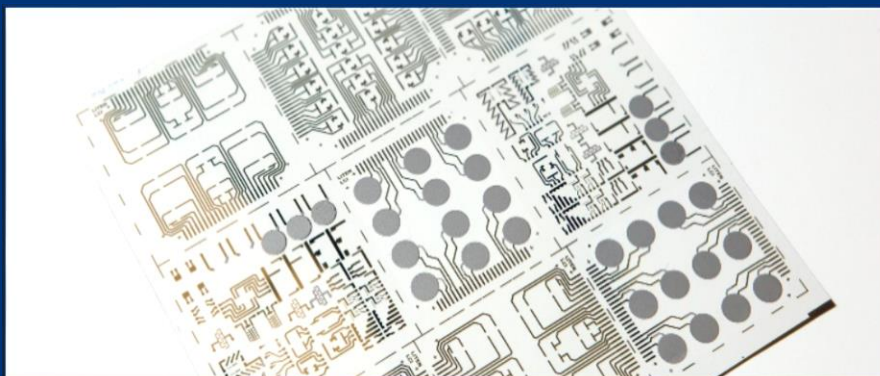


ELECTROACTIVE POLYMERS

For Printed Organic Electronics,
Smart Textiles and Plastronics



Piezotech® Polymer Range

Product name	Piezoelectric				Electrostrictive and High-k			
	Method	Piezotech® FC				Piezotech® RT		
Polymer base		P(VDF-TrFE) Copolymer				P(VDF-TrFE-CTFE/CFE) Terpolymer		
Grade		FC 20	FC 25	FC 30	FC 45	RT-TS	RT-FS	
		Composition (mol%)						
			% TrFE			% CTFE % CFE		
	¹ H & ¹⁹ F NMR	20	25	30	45	Standard Composition		
		Indicative Thermal Properties						
Melting Point (°C)	Second heating by DSC	150	150	151	158	122	127	
Curie Transition (°C)	ASTM D3418	136	115	100	60	-	-	
		Indicative Molar Mass						
Mw (kg.mol ⁻¹)	SEC in DMSO PMMA eq		450			500		
MFI	ASTM D1238 230°C under 10 kg		1-6					
		Indicative Dielectric Properties						
ϵ_r	Capacity measurement at 1 kHz	9 - 12		10 - 14		40	55	
Saturation Polarization (mC.m ⁻²)		-	-	-	-	55	60	
Remnant Polarization (mC.m ⁻²)	At 150 V.µm ⁻¹	80	70	65	45	-	-	
Coercive Field (V.µm ⁻¹)		45	50	50	55	-	-	
		Indicative Piezoelectric / Pyroelectric Properties						
d ₃₃ (pC.N ⁻¹)	Piezotest PM300 1 N, 110 Hz	-24 to -30		-18 to -22		-	-	
Typical P3 (µC/m ² /K)	Literature	-30		-50		-	-	
		Indicative Mechanical Properties						
Storage Modulus E' (GPa)	ASTM D638		0.8 - 2.8			0.2 - 0.4		
		Indicative Optical Properties						
Transmittance (%)	ASTM D1003		>96%			>99%		

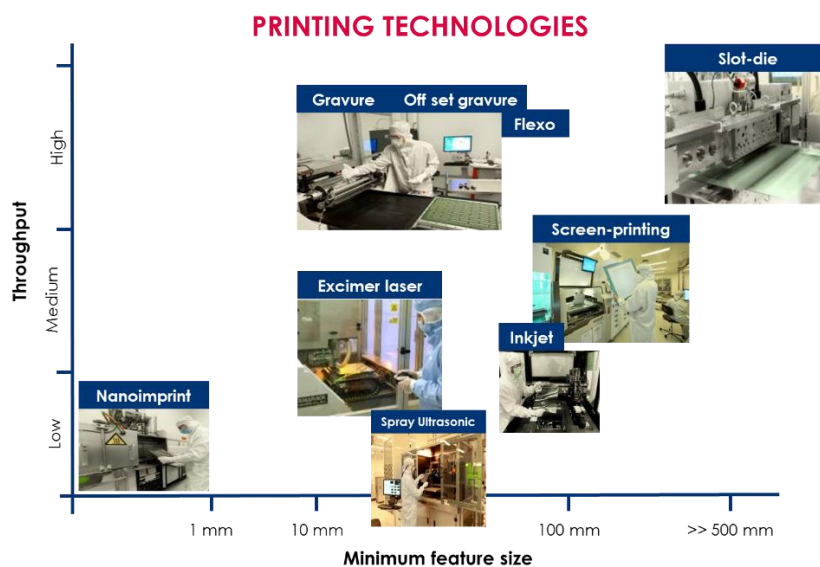
Specific product composition or MFI are available on demand. Do not hesitate to ask us.

Typical properties are only given as indicative values, not specifications.
Electroactive performances strongly depend on processing and operating conditions.

Piezotech® FC and RT Ink Range

Grade	Technology	Viscosity (mPa.s)	Thickness Range (µm)	Typical Dry Content (wt%)	Boiling Point (°C)
Ink I	Ink-jet	16 ±10%	0.05 - 2	0.6	116-120
Ink L	Spin-coating Slot-die	250 ±10%	0.1 - 2	7	128-132
Ink H	Spin-coating Solvent-casting	2300 ±10%	Spin-coat: 5 – 20 Solvent-cast: 2 - 80	20	78-82
Ink P	Screen-printing	23000 ±10%	1 - 20	17.5	213-217

Specific ink formulations could be developed to fit your printing process. Do not hesitate to ask us.



Typical Properties

Ink Name	Piezotech® FC Ink	Piezotech® RT Ink
	Pyro/Piezoelectric	Electrostrictive and High-k
Base Polymer	Piezotech® FC 20	Piezotech® RT-TS
Melting Temp. range(°C)	148 - 152	115 - 130
Annealing Temp. (°C)	135 - 140	105 - 120
Curie Temp. range(°C)	130 - 140	-

Applications

Piezotech[®] FC. A range of printable Ferroelectric Copolymers and inks with unique piezoelectric and pyroelectric properties for printed & flexible sensors, energy harvesting, actuators, memories...

Piezotech[®] RT. A range of Relaxor Ferroelectric Terpolymers and inks with the highest dielectric constant and electromechanical properties for high-k dielectrics, actuators and electrocaloric devices...



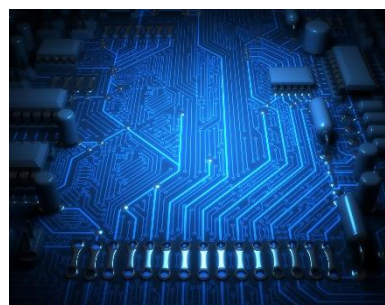
Sensors (Touch, Force, IR, US)



**Energy
(Piezo & Triboelectrics, Electrocalorics)**



**Actuators
(Haptics, Speakers, Microfluidics)**



**High-k dielectric
(Organic Transistors, Capacitors)**

Contact Information

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It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies). It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.