PEF poly(ethylene furanoate)

PARAMETER	UNIT	VALUE	REFERENCES
GENERAL			
Common name	-	poly(ethylene furanoate)	
SYNTHESIS			
Method of synthesis	-	synthesis from ethylene glycol and 2,5-furandicarboxylic acid	Burgess, S K; Karvan, O; Johnson, J R; Kriegel, R M; Koros, W J, Polymer, 55, 4748-56, 2014.
COMMERCIAL POLYMERS			
Some manufacturers	-	Avantium	
PHYSICAL PROPERTIES			
Density at 20°C	g cm^{-3}	1.39-1.4299	
Melting temperature, DSC	°C	235	
Glass transition temperature	°C	86	
Permeability to oxygen, 35°C	barrer	0.0107 (PET - 0.114; 11 times more permeable)	Burgess, S K; Karvan, O; Johnson, J R; Kriegel, R M; Koros, W J, Polymer, 55, 4748-56, 2014.
MECHANICAL & RHEOLOGICAL PROPERTIES			
Tensile modulus	MPa	3,600	
Elongation	%	36	
PROCESSING			
Applications	-	potential replacement for PET in drink packaging	Kriegel, R M; Shi, Y; Moffitt, R D, US Patent 20150064383, Coca-Cola, Mar 5, 2015; Kriegel, R M; Moffitt, R D; Schultheis, M W; Shi, Y; You, X, US Patent 20150110983, Coca-Cola, Mar 5, 2015.
Outstanding properties	-	biologically sourced polymer because 2,5-furandicarboxylic acid can be produced from renewable sugars	Burgess, S K; Karvan, O; Johnson, J R; Kriegel, R M; Koros, W J, Polymer, 55, 4748-56, 2014.