

PEM poly(ethylene-co-methacrylic acid)

PARAMETER	UNIT	VALUE	REFERENCES
MECHANICAL & RHEOLOGICAL PROPERTIES			
Tensile strength	MPa	1.3-530.8	Kraemer, R H; Raza, M A; Gedde, U W, Polym. Deg. Stab., 92, 1795-1802, 2007.
Tensile stress at yield	MPa	17.9-21.2	
Elongation	%	630-1,180	
Flexural modulus	MPa	400	
Young's modulus	MPa	276	Cai, X; Riedl, B; Ait-Kadi, A; Composites: Part A, 34, 1075-84, 2003.
Izod impact strength, notched, 23°C	J m ⁻¹	370 to NB	
Shore D hardness	-	46	
Melt index, 190°C/2.16 kg	g/10 min	7.5-60	
FLAMMABILITY			
Ignition temperature	°C	335-365	
Volatile products of combustion	-	CO, organic acids, aldehydes, alcohols, other hydrocarbon oxidation products	
BIODEGRADATION			
Typical biodegradants	-	<i>Aspergillus, Penicillium</i>	Weng, Y-M; Chen, M-J; Chen, W, Lebensm.-Wiss. u-Technol., 32, 191-5, 1999.
Stabilizers	-	benzoic and sorbic acids	
TOXICITY			
Carcinogenic effect	-	not listed by ACGIH, NIOSH, NTP	
OSHA	mg m ⁻³	5 (respirable dust), 15 (total dust)	
PROCESSING			
Typical processing methods	-	extrusion, injection molding	
Processing temperature	°C	135-235	
Additives used in final products	-	slip agent, antifog agent, antiblocking agent	
Applications	-	adhesives, footwear, glass coating, metal coating, modification of surface properties of films and coatings; refrigerated food packaging, wire and cable; ionomer (Surlyn): golf ball covers, hockey helmets, ski boots	
Outstanding properties	-	inherently flexible, self-healing following ballistic puncture	
BLENDS			
Compatible polymers	-	ionomer (Surlyn), ethylene-methacrylic acid-acrylate terpolymer (Nucrel), PBT, PE, PEO, PET	
Compatibilizers	-	compatibilizer of PET/LLDPE blends	
ANALYSIS			
FTIR (wavenumber-assignment)	cm ⁻¹ /-	C=O – 1756, 1750, 1743, 1727; calcium carbonate – 1580-1300, CH ₂ – 1435, CH ₃ – 1365; C-O – 1255	Kraemer, R H; Raza, M A; Gedde, U W, Polym. Deg. Stab., 92, 1795-1802, 2007.
WAXD	2θ	21.5	Huang, J-W; Wen, Y-L; Kang, C-C; Yeh, M-Y; Wen, S-B, Thermochim. Acta, 465, 48-58, 2007.