

EBAC poly(ethylene-co-butyl acrylate)

PARAMETER	UNIT	VALUE	REFERENCES
GENERAL			
Common name	-	poly(ethylene-co-butyl acrylate)	
IUPAC name	-	poly(ethylene-co-butyl acrylate)	
CAS name	-	2-propenoic acid, butyl ester, polymer with ethene	
Acronym	-	EBAC	
CAS number	-	25750-84-9	
Linear formula		$(\text{CH}_2\text{CH}_2)_x[\text{CH}_2\text{CH}[\text{CO}_2(\text{CH}_2)_3\text{CH}_3]]_y$	
HISTORY			
Date of discovery	-	1952	
SYNTHESIS			
Monomer(s) structure	-	$\text{H}_2\text{C}=\text{CH}_2 \quad \text{H}_2\text{C}=\overset{\text{O}}{\parallel}\text{CHCOCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$	
Monomer(s) CAS number(s)	-	74-85-1; 141-32-2	
Monomer(s) molecular weight(s)	dalton, g/mol, amu	280.5; 128.2	
Butyl acrylate content	wt%	3-35	
COMMERCIAL POLYMERS			
Some manufacturers	-	Arkema; Borealis; DuPont; Repsol	
Trade names	-	Lotryl; Borealis PE FA; Elvaloy AC; Alcludia	
PHYSICAL PROPERTIES			
Density at 20°C	g cm ⁻³	0.923-0.944	
Color	-	white	
Transmittance	%	36-55	
Haze	%	10	
Gloss, 60°, Gardner (ASTM D523)	%	70	
Odor	-	characteristic acrylate	
Melting temperature, DSC	°C	78-99	
Decomposition temperature	°C	330	
Glass transition temperature	°C	-54	
Vicat temperature VST/A/50	°C	41-70	
Coefficient of friction	-	0.8	
MECHANICAL & RHEOLOGICAL PROPERTIES			
Tensile strength	MPa	6-25	
Tensile modulus	MPa	62	
Tensile stress at yield	MPa	4-8	
Elongation	%	350-710	
Tensile yield strain	%	15	
Flexural modulus	MPa	45	
Shore A hardness	-	75-90	
Shore D hardness	-	32-34	

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Ball indentation hardness at 358 N/30 S (ISO 2039-1)	MPa	8	
Melt index, 190°C/2.16 kg	g/10 min	0.35-45	
FLAMMABILITY			
Ignition temperature	°C	430	
Volatile products of combustion	-	CO, H ₂ O, CO ₂ , organic acids, aldehydes, alcohols	
TOXICITY			
NFPA: Health, Flammability, Reactivity rating	-	0/0/0	
Carcinogenic effect	-	not listed by ACGIH, NIOSH, NTP	
OSHA	mg m ⁻³	5 (respirable), 15 (total)	
PROCESSING			
Typical processing methods	-	extrusion (blown film, cast film, coextrusion), coating	
Processing temperature	°C	160-285; 180 (extrusion)	
Additives used in final products	-	slip	
Applications	-	film, heavy-duty bags, foam, performance booster for other resins, packaging, profile, shrink wrap, wire & cable	
Outstanding properties	-	easy processing, compatible with LDPE	
BLENDS			
Suitable polymers	-	PA6	Balamurugan, G P; Maiti, S N, Eur. Polym. J., 43, 5, 1786-1805, 2007.
ANALYSIS			
NMR (chemical shifts)	ppm	1.27, 2.27. 4.02	