

innovex LL 0209 AA and LL 0209 KJ

LLDPE film products

Applications

LL 0209 AA and LL 0209 KJ are suitable for general purpose films, neat or in blends with LDPE and other ethylene polymers. Lean blend applications include sacks of all types, FFS and agricultural film.

Characteristics

LL 0209 AA and LL 0209 KJ are linear low density polyethylene copolymers containing butene-1 (C4) as the comonomer. In lean blends, they offer the following advantages compared to LDPE neat:

- greater drawdown
- improved hot-tack and lower seal shrinkage
- better tear resistance
- higher tensile stress and elongation at break.

LL 0209 KJ offers high slip film with easy opening properties when used pure in the thickness range 35 - 100 µm. Addition of other polymers, masterbatches and pigments, or use of other thicknesses may alter film slip and antiblock performance.

If corona treatment is necessary, the level should normally be in the range 38-48 mN/m.

We recommend that you consult your Innovene technical representative for further advice on the use of LL 0209 AA and LL 0209 KJ.

Physical properties

		Units	Typical value		Test method
Resin		LL 0209 AA/LL 0209 KJ			
Melt flow rate		g/10 min	0.9	0.9	ISO 1133 Condition 4
Conventional density (conditioning ISO 1872/1)		kg/m ³	920	921	ISO 1183 Method D
Vicat softening temperature		°C	100	100	ISO 306 Method A
Slip (erucamide)		ppm	0	1175	Innovene Method
Antiblock (silica)		ppm	0	1425	Innovene Method
Additives: antioxidants					
Film*					
Dart drop impact	Method A	g	140	140	ASTM D1709
Tensile stress at yield	MD/TD	MPa	10/11	10/11	ISO 1184
Tensile stress at break	MD/TD	MPa	41/32	41/32	ISO 1184
Elongation at break	MD/TD	%	620/840	620/840	ISO 1184
1% Secant modulus	MD/TD	MPa	195/205	195/205	ISO 1184
Elmendorf tear strength	MD/TD	g/25 µm	145/370	145/370	ASTM D1922
Coefficient of friction		-	> 0.5	0.13	ASTM D1894
Haze		%	12	12	ASTM D1003
Gloss (45°)		% _o	50	50	ASTM D2457

* 38 µm film, 2.5:1 blow-up ratio, 225°C melt temperature.
MD = machine direction TD = transverse direction

Extrusion conditions

LL 0209 AA and LL 0209 KJ in lean blends can be processed on most standard extrusion equipment. Optimisation of conditions may be necessary, depending on the exact blend used. LL 0209 AA and LL 0209 KJ rich film formulations are often processed on modified LDPE machinery, but for the best performance the use of purposely designed LLDPE machinery is recommended. Particular attention should be paid to maintaining a low melt temperature (<240°C), and an efficient bubble cooling system should be employed. The recommended melt temperature range is 180 - 225°C.

Storage

Innovex LL 0209 AA and LL 0209 KJ should be stored in a dry and dust free environment at temperatures below 50°C. Exposure to direct sunlight should be avoided, as this may lead to product deterioration.

FOOD CONTACT APPLICATIONS

As dispatched from our plants Innovene's Innovex and Novex grades meet the requirements of most European countries in respect of their usage in food contact applications. Official confirmation of compliance with current requirements in the individual countries will be provided on request. No liability can be accepted for any damage, loss, or injury arising out of failure to obtain such confirmation, or failure to observe any recommendations given.

If pigments or other additives are incorporated into the Innovex and Novex polymers at the processing stage, the above statements may not be fully valid. Innovene will be pleased to offer advice in specific cases.

HEALTH AND SAFETY

Material Safety Data Sheets for Innovex and Novex grades are available, and should be consulted before handling and using Innovex and Novex grades.

POLYETHYLENE AND THE ENVIRONMENT

"Innovene will act responsibly and caringly towards those who work for us, the community whom we serve and the environment in which we live."

Natural Innovex and Novex polymers, as supplied, can be recycled, incinerated or disposed of in landfill without detriment to the environment in accordance with local or national regulations.

With recycling, clean waste can be re-used for many less demanding applications.

Alternatively, with properly controlled and efficient incineration, preferably linked to heat or other energy recovery systems, polyethylene's high calorific value will assist the combustion of municipal solid waste.

In landfill sites, Innovex and Novex grades do not degrade to produce voids, and do not emit dangerous gases or contribute to ground water pollution.

Natural Innovex and Novex polymers, as manufactured, comply with the limit for heavy metals (100 ppm total of lead, cadmium, mercury and hexavalent chromium) in packaging materials as defined in the European Union Directive 94/62/EC on packaging and packaging waste and the corresponding US CONEG regulations.

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