



# Polyolefins

Products and properties



## Nomenclature

### PE

HDPE = High Density Polyethylene

LDPE = Low Density Polyethylene

LLDPE = Linear Low Density Polyethylene

### EVA

Ethylene Vinyl Acetate Copolymer

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This information reflects typical values obtained in our laboratories, but should not be considered as absolute or as warranted values.

Only the properties and values mentioned on the Certificate of Quality are considered as guarantee of the product.

The mentioned values in this report can be changed at any moment without Braskem previous communication.

Braskem does not recommend the use of its products for storage or contact with parenteral solutions, except where explicitly indicated.

For usage questions or to discuss other applications, contact our Technical Services team.



## Braskem: expanding horizons with products and services

With a global vision of the future oriented towards people and sustainability, Braskem is committed to contributing to the value chain for strengthening the Circular Economy. The petrochemical company's almost 8,000 team members dedicate themselves every day to improve people's lives through sustainable chemicals and plastics solutions. Braskem has an innovative DNA and a comprehensive portfolio of plastic resins and chemical products for diverse segments, such as food packaging, construction, manufacturing, automotive, agribusiness, healthcare and hygiene, among others. With 40 industrial units in Brazil, the United States, Mexico and Germany, Braskem exports its products to clients in more than 100 countries.

Braskem has defined a several global initiatives to boost the Circular Economy in the production chain of plastic products. Entitled "Braskem's Positioning in Circular Economy," the commitment defines initiatives to the development of partnerships with customers in the design of new products to expand and facilitate the recycling and reuse of plastic packaging, especially those for single use. It also includes the advance of investments in new renewable resins of origin, such as Green Plastic made from sugarcane, and support to new technologies, business models and systems of collection, sorting, recycling and recovery of materials.

Through our portfolio we reinforce our commitment to the Circular Economy, presenting products that raise the standard of quality of living and improve sustainability.

Injection Molding

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Density	Tensile Strength at Yield <sup>a</sup>	Tensile Strength at Break <sup>a</sup>	Flexural Modulus 1% Secant <sup>b</sup>	Shore D Hardness <sup>c</sup>	Izod Impact Strength <sup>b</sup>	Vicat Softening Temperature <sup>b</sup>	Deflection Temperature Under Load (0.455 MPa) <sup>a</sup>	Additives
ASTM Method		D 1238	D 1505/D 792	D 638	D 638	D 790	D 2240	D 256	D 1525	D 648	-
Units		g/10 min	g/cm <sup>3</sup>	MPa	MPa	MPa	-	J/m	°C	°C	-
HDPE	GE7252NS	2	0.952	27	36	1200	62	65	126	65	-
	Caps for carbonated soft drinks and water.										
	GE7252XS	2	0.952	27	36	1200	62	65	126	65	SA
	Caps for carbonated soft drinks.										
	HD3401S	4.5	0.954	27	26	1150	58	40	125	66	SA
	Caps for juices, dairy, teas, energy drinks and lubricant oil.										
	HD7255LS-L	4.5	0.954	27	26	1150	58	40	125	66	UV
	Boxes, crates, articles for frozen products and trash cans.										
	HDI0653U1	6.2	0.953	25	30	1270	-	45	125	-	UV
	Pallets, buckets.										
	JV060U	7	0.957	28	22	1350	60	40	126	70	UV
	Boxes, crates and pallets.										
	HC7260LS-L	7.2	0.959	30	18	1375	60	35	125	73	UV
	Boxes, crates, pallets, caps and houseware.										
IA59U3	7.3	0.960	28	15	1250	60	75	128	70	UV	
Boxes, crates, pallets, caps and houseware.											
IA59	7.3	0.960	28	15	1250	60	75	128	70	-	
Boxes, crates, pallets, caps and houseware.											
HDI0861U1	8.5	0.961	30	20	1620	-	45	130	75	UV	
Trays, Boxes, Pails and buckets.											
HA7260	20	0.955	-	26	1150	63	20	122	67	-	
Toys, thin wall parts, large flat area closures and houseware.											
HDI2061	20	0.955	30	17	1250	-	30	125	70	-	
Toys, Large caps, Containers for household products.											
IA58	22	0.957	28	15	1150	63	35	126	65	-	
Toys, thin wall parts, large flat area closures and houseware.											
LDPE	LDF0025	0.25	0.923	-	-	-	-	-	-	-	-
	Shrink film, Bags and sacks, Blown film, agricultural films and greenhouse coverings, Industrial bags, blends with HDPE and LLDPE for extrusion and molding process, bottles for consumer goods.										
	BC818	8.3	0.918	9	12	200	49	NB	86	41	F
Caps, bungs and flexible injection molded articles.											
LDI2020	20	0.92	-	10	-	-	-	45	-	-	
Caps, Large flat injec on molded articles.											
LLDPE	IF33	48	0.931	15	9	450	51	60	100	52	-
Large flat injection molded caps, houseware and general purpose items.											

NB = No Break. Test specimens obtained by compression mold according to ASTM D 4703. Plaque Thickness: a) 2 mm. b) 3 mm. c) 6 mm. Additives: F = Free of additives, SA = Slip Agent, UV = UV Stabilizer.

## Blown Film Extrusion

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Melt Flow Rate (190 °C / 5 kg)	Melt Flow Rate (190 °C / 21.6 kg)	Density Densidad	Thickness Espesor de la Película	Tensile Strength at Break (MD/TD)	Tensile Elongation at Break (DM/DT)	Tensile Modulus (1% Secant) (MD/TD)	Dart Drop Impact	Elmendorf Tear Strength (MD/TD)	Haze	Gloss - Angle 45°	Gloss - Angle 60°	Additives
ASTM Method		D 1238	D 1238	D 1238	D 1505/D 792	-	D 882	D 882	D 882	D 1709	D 1922	D 1003	D 2457	D 2457	-
Units		g/10 min	g/10 min	g/10 min	g/cm <sup>3</sup>	µm	MPa	%	MPa	g/F50	gf	%	-	-	-
HDPE	HDB0355	0.35	-	32	0.953	-	-	-	-	-	-	-	-	-	-
	Blends with LDPE and LLDPE to improve mechanical properties.														
HDPE	HDF8000	0.045	0.25	7.5	0.949	-	60/50	-	-	416	18/47	-	-	-	-
	Very thin film on high speed line, low thickness.														
LDPE	LDF0025	0.25	-	-	0.923	50	30/25	260/585	210/210	200	-/230	10	-	-	-
	Shrink film, Bags and sacks, Blown film, agricultural films and greenhouse coverings, Industrial bags, blends with HDPE and LLDPE for extrusion and molding process, bottles for consumer goods.														
	LD7000A	0.34	-	-	0.921	70	25/25	320/880	150/160	350	-/250	12	57	72	-
	Heavy duty bags, shrink films and industrial packaging.														
	LDF0034	0.34	-	-	0.922	50	30/20	-	165/170	175	-/245	9	-	-	-
	Pipes, Hose, Suggested uses include general foams (sheets, planks, tubes, and profiles), films, and thermoformed, Shrink film, Industrial, Agricultural Film.														
	TN7006	0.6	-	-	0.924	40	25/20	280/870	165/175	140	-/160	9	65	90	-
	Good transparency films for multilayer food packaging.														
	LDF0085	0.8	-	-	0.923	50	30/20	315/535	180/190	135	-/285	<7	-	-	-
	Shrink film, diaper back sheet.														
LDF2023S1	2	-	-	0.922	50	25/20	305/585	155/175	100	-/345	5	-	-	AB, SA	
Shrink film, Bags and sacks, Flexible packaging (Cast films), Blown film.															
LDF2023	2	-	-	0.922	50	25/15	365/610	190/200	115	-/385	5	-	-	-	
Flexible packaging (Cast films), Bags and sacks, Blown film.															
LDF2723S1	2.7	-	-	0.923	50	25/20	350/1050	-	80	580/210	5	-	>75	AB, SA	
Bags and sacks, Flexible packaging (Cast films), Blown film.															
EB853/72	2.7	-	-	0.923	40	25/20	350/1050	145/150	80	580/210	7	-	75	AB, SA	
General purpose films and high transparency technical films for automatic packaging.															

For more details on products and information on the sample processing conditions, please see the product data sheets. Additives: AB = Antiblocking, SA = Slip Agent, PPA = Polymer Processing Aid.



### Blown Film Extrusion

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Melt Flow Rate (190 °C / 5 kg)	Melt Flow Rate (190 °C / 21.6 kg)	Density Densidad	Thickness Espesor de la Película	Tensile Strength at Break (MD/TD)	Tensile Elongation at Break (DM/DT)	Tensile Modulus (1% Secant) (MD/TD)	Dart Drop Impact	Elmendorf Tear Strength (MD/TD)	Haze	Gloss - Angle 45°	Gloss - Angle 60°	Additives	
ASTM Method		D 1238	D 1238	D 1238	D 1505/D 792	-	D 882	D 882	D 882	D 1709	D 1922	D 1003	D 2457	D 2457	-	
Units		g/10 min	g/10 min	g/10 min	g/cm <sup>3</sup>	µm	MPa	%	MPa	g/F50	gf	%	-	-	-	
LLDPE	Butene	LL118/21	1	-	-	0.919	38	40/30	1070/1340	210/230	130	180/400	-	-	-	AB, SA
		General purpose films, technical films for automatic packaging and LDPE and HDPE blends.														
	Hexene	LL5400S	1	-	-	0.918	40	40/30	1100/1400	170/200	120	100/400	10	-	110	-
		Heavy duty bags, bags, liners, general purpose films with high CoF and self-propelled irrigation pipes blends.														
Hexene	HF2007	0.73	-	-	0.920	100	45/40	1260/1350	190/210	530	990/2660	17	66	100	PPA	
	Heavy duty bags, liners, general purpose films with high CoF.															
Hexene	LH118	1	-	-	0.916	40	40/40	1080/1360	200/210	150	300/510	-	-	-	-	
	Stretch films, liners and general purpose packaging.															
Flexus®	Metalloene	Flexus 9200	1	-	-	0.917	100	40/45	960/1090	170/190	1300	780/1820	9	83	100	PPA
		Heavy duty bags, liners, general purpose films with high CoF.														
		Flexus 9211	1	-	-	0.917	40	35/25	850/840	150/160	700	230/790	7	84	-	AB, SA, PPA
High performance technical films for automatic packaging, coextrusion and general purpose films.																
Flexus®	Metalloene	Flexus 9212XP	1	-	-	0.917	40	35/25	850/840	150/160	700	230/790	7	84	-	AB, SA, PPA
		Laminated films with a better CoF control, high performance technical films for automatic packaging and coextrusion.														
Proxess®	Metalloene	Proxess 1809	0.9	-	-	0.918	40	40/30	770/930	165/180	300	370/870	7	73	-	PPA
High performance films, coextrusion, laminates and technical films for automatic packaging.																

For more details on products and information on the sample processing conditions, please see the product data sheets. Additives: AB - Antiblocking, SA - Slip Agent, PPA - Polymer Processing Aid.

### Extrusion Coating

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Density	Thickness	Tensile Strength at Break (MD/TD)	Tensile Elongation at Break (MD/TD)	Dart Drop Impact	Elmendorf Tear Strength (MD/TD)	Haze	Gloss - Angle 60°	Additives
ASTM Method		D 1238	D 1505/D 792	-	D 882	D 882	D 1709	D 1922	D 1003	D 2457	-
Units		g/10 min	g/cm <sup>3</sup>	µm	MPa	%	g/F50	gf	%	%	-
LDPE	BC818	8.3	0.918	25	25/20	380/870	70	-/56	8	76	-
		Specialty Film - Extrusion Coating. Low neck-in applications, good film stability and good adhesion to porous substrates.									

For more details on products and information on the sample processing conditions, please see the product data sheets.

## Cast Film Extrusion

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Density	Film Thickness	Tensile Strength at Break (MD/TD)	Elongation at Break (MD/DT)	Flexural Modulus – 1% Secant (MD/DT)	Dart Drop Impact	Elmendorf Tear Strength (MD/TD)	Haze	Gloss – Angle 45°	Gloss – Angle 60°	Additives
ASTM Method		D 1238	D 1505/ D 792	–	D 882	D 882	D 882	D 1709	D 1922	D 1003	D 2457	D 2457	–
Units		g/10 min	g/cm <sup>3</sup>	µm	MPa	%	MPa	g/F50	gf	%	–	–	–
LDPE	LDF2023	2	0.922	–	25/15	365/610	–	115	–/385	5	–	–	–
	Cast film extrusion, Blown Film Extrusion.												
	LDF2023S1	2	0.922	–	25/20	305/585	–	100	–/345	5	–	–	AB, SA
	Shrink film, Bags and sacks, Flexible packaging (Cast films), Blown film.												
LDPE	LDF2723S1	2.7	0.923	–	25/20	350/1050	–	80	580/210	5	–	>75	AB, SA
	Bags and sacks, Flexible packaging (Cast films), Blown film.												
	EB853/72	2.7	0.923	40	25/20	350/1050	145/140	80	580/210	7	–	>75	AB, SA
Automatic packaging, high transparency films.													
LLDPE	Hexene	LH537	4.8	0.937	38	30/30	1320/1400	420/430	–	20/30	–	–	–
Backsheet for diapers and pantyliners.													

For more details on products and information on the sample processing conditions, please see the product data sheets. Additives: Additives: AB = Antiblocking, SA = Slip Agent, PPA = Polymer Processing Aid.

## Cast Stretch Film Extrusion

Typical Properties		Melt Flow Rate (190 °C / 2.16 kg)	Density	Film Thickness	Highlight Tester (Coex Film, 3 layers, 23 µm)									Haze	Gloss – Angle 45°	Additives	
					Ultimate Test	Puncture	Retention Maximum Force	Retention Ending Force	Retention Loss	Cling	Unwind Force	Sound level	Elongation Force				
ASTM Method		D 1238	D 1505/ D 792	–	D 4649									D 1003	D 2457	–	
Units		g/10 min	g/cm <sup>3</sup>	µm	%	kg	kg	kg	%	g	kgf	dB	kgf	%	–	–	
LLDPE	Butene	LL318	2.7	0.918	23	415	2.3	2.8	1.8	34	35	4.3	73	33	3	93	–
		Stretch films.															
	LF320	2.7	0.919	23	415	2.6	3	2.1	30	13	3	74	33	3	98	–	
Stretch films.																	
LLDPE	Hexene	LH218	2.3	0.916	23	400	2.6	3.1	2	35	29	3.7	73	34	3	95	–
		Stretch films.															
Flexus®	Flexus 7200XP		3.5	0.918	23	380	3.2	3.5	2.5	29	16	4.8	76	37	2	98	PPA
Stretch films.																	
Proxess®	Proxess 1809		0.9	0.918	–	–	–	–	–	–	–	–	–	–	–	–	PPA
Manually applied and no cling layer for stretch films.																	

For more details on products and information on the sample processing conditions, please see the product data sheets. Additives: AB = Antiblocking, SA = Slip Agent, PPA = Polymer Processing Aid.





## Blow Molding

Typical Properties		Melt Flow Rate (90 °C / 2.16 kg)	Melt Flow Rate (190 °C / 5 kg)	Melt Flow Rate (90 °C / 2.16 kg)	Density	Tensile Strength at Yield <sup>a</sup>	Tensile Strength at Break <sup>a</sup>	Flexural Modulus – 1% Secant <sup>b</sup>	Shore D Hardness <sup>c</sup>	Izod Impact Strength (23 °C) <sup>b</sup>	Charpy Impact Strength (-40 °C) <sup>b</sup>	Environmental Stress Cracking Resistance <sup>d</sup>		Vicat Softening Temperature <sup>b</sup>	Deflection Temperature Under Load (0.455 MPa) <sup>b</sup>
		D 1238	D 1238	D 1238		D 1505/ D 792	D 638					D 638	D 790		
ASTM Method		D 1238	D 1238	D 1238	D 1505/ D 792	D 638	D 638	D 790	D 2240	D 256	D 6110	D 1693		D 1525	D 648
Units		g/10 min	g/10 min	g/10 min	g/cm <sup>3</sup>	MPa	MPa	MPa	-	J/m	J/m	h/F50		°C	°C
HDPE	HS5103	-	-	2.2	0.952	30	35	1200	-	-	-	-	-	-	70
	Blow molding large volumes, 200 liters storage drums.														
	HD4507UV	-	-	6.3	0.945	25	40	-	-	-	-	-	-	-	65
	IBC (Intermediate Bulk Container), Blow molding large volumes.														
	HS5407	-	0.3	7.0	0.954	30	40	1250	65	-	NB	>140	>1000	128	70
	Liquid food packaging (up to 60 L), domestic, chemical and industrial products; IBC (Intermediate Bulk Container); bedliner.														
	HS5407V1	-	0.3	7.0	0.954	30	40	1250	65	-	NB	>140	>1000	128	70
	IBC (Intermediate Bulk Container).														
	HS5608	-	0.3	8.5	0.955	30	35	1250	65	-	120	>170	>1000	128	70
	Liquid food packaging (up to 60 L), domestic, chemical and industrial products.														
	HS5010	-	0.3	10	0.948	25	35	1000	63	-	120	65	-	126	70
	2 L to 20 L domestic, chemical and industrial products jerricans; bedliner.														
	RIGEO HD1053M	0.1	-	10	0.953	30	40	1250	-	-	-	600	>1000	-	70
	Gallons from 5 to 20 L for chemicals and agrochemicals, Containers from 2 to 20 L for Household and Industrial Chemicals.														
HDB0358	0.3	-	-	0.958	30	35	1465	-	155	-	200	>1500	130	70	
Packages, Small bottles, Blow molding of packages up to 25 L for chemical and household products, oils and food packaging, Sheets extrusion and Corrugated pipe extrusion.															
HS5502XP	0.35	-	30	0.955	25	25	1300	65	150	-	50	120	125	75	
Cosmetic and hygiene products packaging.															
HDB0355	0.35	-	-	0.953	25	20	1300	-	110	-	7	20	130	70	
Containers for household products, Containers for chemical industry (HIC), Containers for cosmetic industry.															
HDB0763	0.72	-	-	0.960	32	22	1480	-	130	-	-	12	130	75	
Milk packaging, Water bottles, Juice packaging, Liquid food packaging.															
RIGEO LUMIOS	1	-	-	0.948	28	40	1200	60	-	-	10	-	-	-	
Co-extrusion of two or three layer bottles with volume up to 5L requiring exceptional gloss and surface finishing.															
LDPE	LD7000A	0.34	-	-	0.921	10	20	260	50	-	-	-	-	95	45
	Blends with HDPE; squeeze packaging.														

NB = No Break. Test specimens obtained through compression molding according to ASTM D 4703. Plaque Thickness: a) 2 mm. b) 3 mm. c) 6 mm. d) 2 mm at 50 °C. e) 3 mm at 50 °C.



# EVA • Ethylene Vinyl Acetate

## Foams

Typical Properties		Melt Flow Rate (190°C / 2.16 kg)	Vinyl Acetate Content	Density	Melting Point	Vicat Softening Temperature <sup>a</sup>	Shore A Hardness <sup>b</sup>	Shore D Hardness <sup>b</sup>	Tensile Strength at Break	Elongation at Break
ASTM Method		D 1238	Braskem	D 1505/D 792	D 3418	D 1525	D 2240	D 2240	D 638	D 638
Units		g/10 min	%	g/cm <sup>3</sup>	°C	°C	-	-	MPa	%
EVA	PN2021	2.1	19	0.94	86	61	89	38	19	750
	Base polymer for the manufacture of expanded and reticulated plates for use in the footwear industry, toys, furniture; blends with others polymers.									
EVA	3019PE	2.5	19	0.94	86	60	90	30	-	-
	Base polymer for the manufacture of expanded and reticulated plates for use in the footwear industry, toys, furniture. Injection molded high clarity and flexible parts.									

Test specimens obtained through compression molding according to ASTM D 4703. Plaque Thickness: a) 3 mm. b) 6 mm.

## Hot Melt

Typical Properties		Melt Flow Rate (190°C / 2.16 kg)	Vinyl Acetate content	Density	Melting Point	Vicat Softening Temperature <sup>a</sup>	Shore A Hardness <sup>b</sup>	Shore D Hardness <sup>b</sup>	Tensile Strength at Break	Elongation at Break
ASTM Method		D 1238	Braskem	D 1505/D 792 <sup>a</sup>	D 3418	D 1525	D 2240	D 2240	D 638	D 638
Units		g/10 min	%	g/cm <sup>3</sup>	°C	°C	-	-	MPa	%
EVA	HM728	6	28	0.95	77	49	80	25	-	-
	Hot-Melt adhesives for furniture, bricolage. The formulations present good compatibility with waxes, and other materials.									
EVA	HM2528	25	28	0.95	75	46	79	23	-	-
	Base component for the manufacture of hot-melt adhesives for packaging, bindings, carpets and other applications in general; Injected and extruded products in applications that require flexibility and adherence.									

Test specimens obtained through compression molding according to ASTM D 4703. Plaque Thickness: a) 3 mm. b) 6 mm.

## General Film

Typical Properties		Melt Flow Rate (190°C / 2.16 kg)	Vinyl Acetate content	Density	Film thickness	Vicat Softening Temperature <sup>a</sup>	Melting Temperature	Tensile Strength at Break (MD/TD)	Tensile Elongation at Break (MD/TD)	Flexural Modulus 1% (DM/DT)	Dart Drop Impact (Method B)	Elmendorf Tear Strength (MD/TD)	Gloss - Angle 45°	Haze
ASTM Method		D 1238	Braskem	D 1505/D 792	-	D 1525	D 3418	D 882	D 882	D 882	D 1709	D 1922	D 523	D 1003
Units		g/10 min	%	g/cm <sup>3</sup>	µm	°C	°C	MPa	%	MPa	g/F50	gf	-	%
EVA	TN2005	0.5	13.5	0.935	70	75	94	32/32	750/800	58/64	725	240/350	95	2
	Co-extruded food packaging; cooled and frozen food packaging; thermal agricultural film (greenhouse coverage).													
EVA	TN2006	0.7	18	0.940	70	70	90	38/33	820/700	44/46	950	210/320	92	2
	Sealant layer in co-extruded and/or laminated films; stretch hood; agricultural film.													

Test specimens obtained through compression molding according to ASTM D 4703. Plaque Thickness: a) 3 mm.



**Rotterdam, Netherlands**

Headquarters  
Start-up year: **2017**

**Mexico**

HDPE and LDPE: **1050 kT/y**

**Brazil**

HDPE, LDPE, LLDPE, EVA: **3055 kT/y**

Braskem  
in **numbers**



**Warehouses  
Europe**

Antwerp | **Belgium**  
Murcia | **Spain**  
Bologna | **Italy**  
Rotterdam | **The Netherlands**



**PE** Production of  
in Brazil & Mexico

PRODUCTION  
CAPACITY OF

**4105** KT/Y

of **PE**



# Global presence



With a human-oriented global vision of the future, Braskem strives every day to improve people's lives by creating sustainable solutions with chemicals and plastics. Braskem is the largest producer of thermoplastic resins in the Americas and the leading producer of biopolymers in the world, creating more environmental-friendly, intelligent and sustainable solutions through chemicals and plastics. Braskem exports to clients in approximately 100 countries and operates 40 industrial units, which are located in Brazil, United States, Germany and Mexico, the latter in partnership with the Mexican company Idesa. For more information, visit [www.braskem.com](http://www.braskem.com).



**40** industrial units:  
28 plants in Brazil  
6 plants in the United States  
2 plants in Germany  
4 plants in Mexico

PRODUCTION  
OF OVER

**20**

MM TONS/YEAR



of thermoplastic  
resins & other  
chemicals products



**8,000** Members

