



Westlake  
Chemical

# POLYETHYLENE

*for your demanding applications*

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# A POLYETHYLENE PORTFOLIO TO MEET YOUR NEEDS

The customized attention of a niche supplier with the breadth and capacity to handle your volume requirements — that's the unique combination you will find within Westlake's polyethylene business.

Westlake offers a diverse portfolio of polyethylene products suitable for a variety of applications including extrusion coating, blown and cast film, injection molding, and blow molding. While our product line emphasizes a comprehensive selection of resins to support packaging applications, it also includes our EPOLENE® products — a series of medium to low molecular weight polyethylene or polypropylene polymers that can be utilized in numerous applications such as lubricants, dispersion aids, hot melt adhesives and various coatings. Our polymers are up to the challenge of your application.

Our manufacturing facilities are well equipped to handle specialty runs as well as large-volume

orders, giving us the flexibility to meet your special grade requirements.

Westlake's knowledgeable sales and technical service teams, combined with our experienced chemists, engineers and technicians at the Customer Solutions Center are ready to assist in developing new products that can solve your unique challenges or give you that extra edge in the marketplace. Our state-of-the-art fabrication equipment allows us to support our customers in application development as well as troubleshoot and solve processing problems without interrupting your own production processes.

## Why Westlake Polyethylene?

- Broad portfolio of low density, low density copolymers, linear low density, plastomers, functionalized polymers and waxes
- Focused on flexible packaging, extrusion coating and niche markets
- Production flexibility to handle special grades and custom formulations
- Top-level expertise to assist you with all your sales, customer service, product development and troubleshooting needs
- Access to our Customer Solutions Center for on-site testing and evaluation

# LOW DENSITY POLYETHYLENE (LDPE)

From bakery bags to milk cartons, from high clarity film to molded parts, Westlake low density polyethylene grades offer a versatile choice for blown and cast films, extrusion coated products, and injection molding applications. LDPE offers an excellent balance of properties including good melt strength, flexibility, low neck-in, and good adhesion to many substrates.



## ■ Film — LDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )
EF601	0.25	0.919
EF602	0.6	0.919
EF1807	0.7	0.921
EF403	0.8	0.924
EF603	1.2	0.919
EF412	2.0	0.923
EF421	2.1	0.923
EF606	2.2	0.919
EF311	2.2	0.923
EF310	2.2	0.924
EF706	2.3	0.923
EF796	2.5	0.920
EF923	2.5	0.920
EP413	3.0	0.923
EF378	4.0	0.922
EF677	7.0	0.919
EF608	9.5	0.919

## ■ Injection Molding — LDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )
EN1807AA	0.7	0.921
EM800AA	1.7	0.918
EN1817AA	1.7	0.920
EM1550AA	3.5	0.918
EM808AA	7.0	0.917
EM1870AA	7.4	0.920
EM811AA	20	0.916
EM182AA	20	0.920
EM812AA	200	0.909

## ■ Extrusion Coating — LDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )
EC800AA	1.7	0.918
EC1550AA	3.5	0.917
EC1924AA	4.2	0.923
EC478AA	4.5	0.923
EC4041AA	5.6	0.922
EC479AA	5.7	0.9215
EC808AA	7.0	0.917
EC474AA	8.0	0.918
EC4042AA	10.0	0.917
EC850AA	12.5	0.915
EC476AA	13.7	0.918
EC1390AA	15	0.915
EC477AA	16	0.918
EC811AA	20	0.916
EC4056AA	80	0.909
EC812AA	200	0.909

## ■ Extrusion Coating — HDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )
MC2004	10.0	0.946
MC3016	10.0	0.946
MC3033	10.0	0.947
MC2001	10.5	0.948



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# LINEAR LOW DENSITY POLYETHYLENE (LLDPE)

Westlake linear low density polyethylene film resins meet the demanding needs of food packaging, consumer and industrial packaging, and non-food packaging. Our broad selection of butene and hexene copolymer products includes products with the high performance properties that you require for your demanding film applications.



## ■ HIFOR® LLDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )	Slip (PPM)	AB (PPM)	PPA
LF1010AA	0.80	0.922	0	0	Y
LF2018AB	0.80	0.924	0	4,000	N
LF2018CB	0.80	0.924	1,000	4,000	N
LF2010AA	0.85	0.9255	0	0	Y
LF2010CC	0.85	0.9255	1,000	5,500	Y
LF2010DD	0.85	0.9255	1,500	7,500	Y
LF2020AA	1.0	0.919	0	0	N
LF2020AB	1.0	0.919	0	4,000	N
LF2020AC	1.0	0.919	0	5,500	N
LF2020AD	1.0	0.919	0	7,500	N
LF2020BB	1.0	0.919	700	4,000	N
LF2020DD	1.0	0.919	1,500	7,500	N
LT74104	1.0	0.920	0	0	N
LT74105	1.0	0.920	1,200	3,500	N
LT74113	1.0	0.920	0	3,500	N
LT74119	1.0	0.920	1,300	15,000	Y
LT74147	1.0	0.920	1,200	6,500	N
LT74151	1.0	0.920	1,500	7,500	N
LT74152	1.0	0.920	1,000	2,500	Y
LF1020AA	1.1	0.919	0	0	N
LF1020AC	1.1	0.919	0	5,500	N
LF1020AD	1.1	0.919	0	7,500	N
LF1020CC	1.1	0.919	1,000	5,500	N
LF1020DC	1.1	0.919	1,500	5,500	N
LF1020DD	1.1	0.919	1,500	7,500	N
LF1021CC	1.1	0.918	1,000	5,500	Y
LF1040AA	2.0	0.919	0	0	N
LF1040CC	2.0	0.919	1,000	5,500	N
LF1030AA	2.6	0.919	0	0	N
LF1050AA	3.5	0.925	0	0	N
LF1050CC	3.5	0.925	1,000	5,500	N

## ■ HIFOR Clear® LLDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )	Slip (PPM)	AB (PPM)	PPA
SC74580	0.60	0.926	0	0	Y
SC74557	1.0	0.920	0	2,500	Y
SC74558	1.0	0.920	1,000	2,500	N

## ■ HIFOR Xtreme® LLDPE

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )	Slip (PPM)	AB (PPM)	PPA
SC74844	0.50	0.917	1,200	6,500	Y
SC74853	0.50	0.917	0	6,500	Y
SC74858	0.50	0.917	0	0	Y
SC74880	0.50	0.920	1,200	6,500	Y
SC74849	0.55	0.925	0	0	Y
SC74836	0.60	0.926	0	0	Y
SC74859	0.60	0.926	0	7,500	Y
SC74870	0.75	0.915	750	8,000	Y
SC74876	0.75	0.915	0	5,000	Y
SC74877	0.75	0.915	0	7,000	Y
SC74869	0.85	0.918	500	10,000	Y
SC74845	1.0	0.917	1,200	7,000	N
SC74872	3.5	0.918	0	0	N

## ■ MXSTEN® Plastomers

Grade	MI (g/10 min)	Density (g/cm <sup>3</sup> )	Slip (PPM)	AB (PPM)	PPA
CV77519	0.50	0.906	0	0	Y
CV77523	0.50	0.906	1,150	18,000	Y
CV77529	0.50	0.906	1,500	4,000	Y
CV77526	0.70	0.910	0	0	N
CV77516	1.0	0.910	0	0	N
CV77518	2.0	0.910	0	0	N



Westlake's patented ENERGX® technology makes MXSTEN® plastomers the lowest density gas-phase hexene-based linear low density polyethylene available.

MXSTEN® plastomers meet FDA requirements for food contact and are a preferred resin for flexible food packaging. Their excellent seal strength at low initiation temperatures allows faster line speeds on form, fill and seal machines. MXSTEN® plastomers offer a unique balance of stiffness and toughness as well as good processability. Other applications include modification of engineering resins, TPO compounding and high filler compounded materials.

# ELEVATE<sup>®</sup> EVA

Westlake specializes in ethylene vinyl acetate formulations with vinyl acetate content up to 18%, appropriate for use in thermoplastic extrusion, film compounds and foam molding. With softness and flexibility approaching elastomeric materials, EVA has good clarity and gloss, barrier properties, low-temperature toughness, stress crack resistance and UV resistance. Applications include a wide variety of end-uses, such as flexible packaging heat seal layers, thermal laminations, hose and tubing, blow molded (soft touch) bottles, cap liners, and foams.



## ■ ELEVATE<sup>®</sup> EVA

Grade	MI	VA (%)	Slip & Antiblock Packages
EF437	2.0	2.5	Y
EF545	0.55	4.0	Y
EF439	1.4	4.0	Y
EF446	2.0	6.0	Y
EB561	0.55	6.5	N
EF561	0.55	6.5	Y
EF563	1.1	6.5	Y
EF575	0.55	7.5	N
EB591	2.0	9.0	N
EF598	8.0	9.0	N
EF522	2.5	12.0	N
EF532	8.0	12.0	Y
EB502	0.55	12.5	Y
EF524	3.5	14.5	N
EF526 <sup>b</sup>	15.0	16.0	N
EB508	0.70	18.0	N
EF539 <sup>b</sup>	30	18.0	N
EF528	2.5	18.5	N
EF529 <sup>a</sup>	2.5	18.5	N

Notes:

<sup>a</sup> This resin has also been tested and found to comply with the requirements for US Pharmacopeia (USP) Class VI designation.

<sup>b</sup> Developmental products



# EMAC<sup>®</sup> / EBAC<sup>®</sup> ACRYLATE COPOLYMERS

## EMAC<sup>®</sup>

Grade	MI (g/10 min)	ACRYLATE (%)	Slip (PPM)	Antiblock (PPM)
SP2413 <sup>c</sup>	0.6	16.5	0	0
SP2202	0.4	21.5	0	0
SP2252	0.7	20.5	850	12,000
SP2205	2.0	20	0	0
SP2255	2.1	17	1,950	6,000
SP2258	2.1	17	2,400	10,000
SP2260	2.1	24	0	0
SP2404	2.5	18.5	0	0
SP2261	2.5	23	0	8,000
SP2242	3.5	18	5,000	15,000
SP2207	6.0	20	0	0
SP2403	6.5	24	0	0
SP2409	8.0	20	0	0
SP2268	10.0	24	0	0
SP2220	20.0	20	0	0

## EBAC<sup>®</sup>

Grade	MI (g/10 min)	ACRYLATE (%)	Slip (PPM)	Antiblock (PPM)
SP2810 <sup>c</sup>	1.4	16	0	0
SP1802	0.5	22.5	0	0
SP1806	7.3	17.5	0	0

## EMAC+<sup>®</sup>

Grade	MI (g/10 min)	ACRYLATE (%)	Slip (PPM)	Antiblock (PPM)
SP1330	2.0	22	0	0
SP1358	2.6	21.5	2,000	6,000
SP1307	6.0	20	0	0
SP1501	25	20	0	0

## EBAC+<sup>®</sup>

Grade	MI (g/10 min)	ACRYLATE (%)	Slip (PPM)	Antiblock (PPM)
SP1903	0.5	18	0	0

Notes:

<sup>c</sup> Developmental products

Westlake's ethylene methyl and n-butyl acrylate copolymers offer multiple advantages for applications where elastic properties and flexibility at freezing temperatures are important. They are highly compatible with a wide variety of other polymers for enhancing physical properties such as adhesion to substrates, high filler acceptance, improved processability and increased impact and toughness in many engineering polymers. Processing characteristics similar to polyethylene make EMAC<sup>®</sup> and EBAC<sup>®</sup> easy to process in a variety of extrusion, molding, cast and blown film equipment. Broad acceptability with other polymers and their non-corrosive nature make them a material of choice in many compounding applications.

Our patented "plus" grade blocked copolymer technology products (EMAC+<sup>®</sup> and EBAC+<sup>®</sup>) with acrylate functionality bring enhanced performance for high temperature end use applications and improved adhesion to a variety of substrates.



# EPOLENE<sup>®</sup> POLYMERS



Westlake offers a series of medium to low molecular weight polyethylene or polypropylene polymers under the EPOLENE<sup>®</sup> trade name. They are useful in the plastics industry as lubricants for PVC, processing aids, mold release agents, dispersion aids, and coupling agents. They are also widely used as base polymers for hot melt adhesives, emulsions, polymer modified asphalt for paving and roofing, and pavement-stripping compounds, as well as petroleum wax modifiers for use in candles, investment casting, cable filling, and various paperboard coatings. Numerous types of EPOLENE<sup>®</sup> polymers are available, and properties can be selected to fit various processing operations.

## ■ EPOLENE<sup>®</sup> Emulsifiable Grades — Oxidized Low Molecular Wt.

Product	Polymer Type	Mettler Soft. Pt. (°C)	Density @ 25°C (g/cm <sup>3</sup> )	Acid No.	Brookfield Viscosity @ 125°C (cP)
EE-2	Ox-PE	111	0.960	17	1,500
E-10	Ox-PE	106	0.942	17	800
E-14	Ox-PE	104	0.939	17	375
E-14E	Ox-PE	104	0.939	17	225
E-16	Ox-PE	102	0.943	17	700
E-20	Ox-PE	111	0.960	17	1,500

## ■ EPOLENE<sup>®</sup> Chemically Modified Polypropylene Grades

Product	Polymer Type	Mettler Soft. Pt. (°C)	Density @ 25°C (g/cm <sup>3</sup> )	Acid No.	Brookfield Viscosity @ 190°C (cP)
E-25	Ma-PP	157	0.921	25	300
E-43	Ma-PP	158	0.934	45	300

## ■ EPOLENE<sup>®</sup> Coating Grades — Highly Branched Medium Molecular Wt.

Product	Polymer Type	Mettler Soft. Pt. (°C)	Density @ 25°C (g/cm <sup>3</sup> )	Acid No.	Brookfield Viscosity @ 125°C (cP)	Melt Index @ 190°C (g/10 min)
C-10	PE	103	0.906	<0.05	18,600	-
C-12	PE	108	0.907	<0.05	-	400
C-13	PE	111	0.913	<0.05	-	190
C-15	PE	102	0.906	<0.05	8,950	-
C-16	Ma-PE	104	0.908	2	16,650	-
C-17	PE	133	0.917	<0.05	-	19
C-18	Ma-PE	103	0.905	2	7,750	-
C-19	Ma-PE	103	0.903	5	10,360	-
C-23	PE	112	0.910	<0.05	-	80
C-26	Ma-PE	122 <sup>a</sup>	0.917	8	-	8

<sup>a</sup>DSC T<sub>m</sub>, °C

## ■ EPOLENE® Nonemulsifiable Grades — Low Molecular Wt.

Product	Polymer Type	Mettler Soft. Pt. (°C)	Density @ 25°C (g/cm³)	Brookfield Viscosity @ 125°C (cP)	Brookfield Viscosity @ 190°C (cP)
N-10	PE	108	0.925	1,500	-
N-11	PE	107	0.921	350	-
N-14	PE	108	0.920	150	-
N-15	PP	163	0.902	-	700
N-21	PE	120	0.950	600	-
N-30	PE	110	0.924	1,050	-
N-34	PE	104	0.910	450	-
N-35	PE	104	0.913	700	-

## TYMAX® FUNCTIONALIZED POLYMERS

Westlake has developed its own proprietary grafting technology utilizing maleic anhydride to create a unique line of functionalized polymers for use as tie layers in flexible and rigid packaging, impact modification of engineering resins, compatibilization of diverse recycled materials, TPO compounding, and other modification applications. Our functional tie layers successfully adhere to barrier materials such as Nylon, EVOH, PET, and metallized substrate.

Westlake has the capability to custom tailor a product that will meet your specific performance application needs.



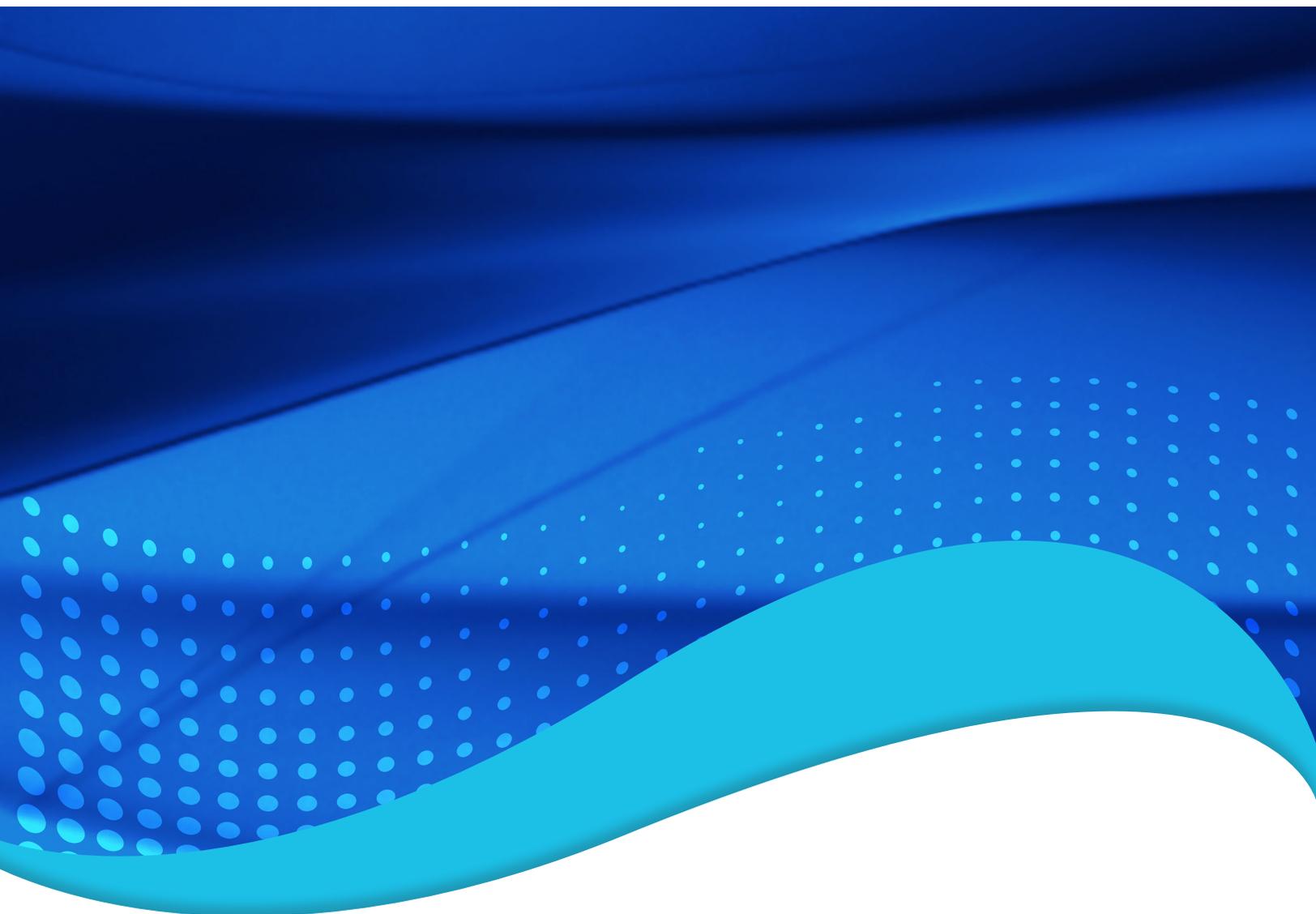
## ■ TYMAX® Functionalized Polymers

Product	MI (g/10 min)	Base Resin	Maleation Level	Application
GT1057	7.0	LDPE	Low	Polyamide / olefins
GT1002 <sup>a</sup>	5.0	LDPE	High	Polyamide / EVOH / olefins
GT4525 <sup>a</sup>	0.65	Plastomer	Medium	Polyamide / EVOH / olefins
GT4157	1.0	LLDPE	Low	Polyamide / olefins
GT4402	2.0	LLDPE	Medium	Polyamide / EVOH / olefins
GT7001	6.0	EMAC®	Medium	Polyamide / PET / EVOH / olefins
GT7058	2.7	EMAC®	Low	Polyamide / PET / olefins
GT7501	6.0	EMAC+®	Medium	Polyamide / PET / EVOH / olefins

Notes:

<sup>a</sup> Developmental products

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