Product Comparison

Technical Data

Product Description	
Alathon® XL3805	ALATHON XL 3805 is an experimental, high molecular weight, medium density polyethylene copolymer with a broad and bimodal mo lecular weight distribution. Films produced from this resin exhibit excellent MD and TD tear with a soft feel and improved optics in a HMW resin. Applications include typical thinner gauge (<1.0 mil.) merchandise bags, grocery sacks, can liners, and produce bags as well as thicker gauge (>1.0 mil.) heavy duty shipping sacks, construction film and agriculture film. This resin can be used to produce mono- and multi-layer films requiring toughness as well as improved feel and appearance.
CONTINUUM™ DGDA-2420 NT	CONTINUUM™ DGDA-2420 NT Bimodal Polyethylene Resin is produced using UNIPOL™ II process technology. This product is formulated with a UV stabilizer for outdoor storage. This product may be utilized for pipe applications where long-term hydrostatic strength combined with outstanding resistance to slow crack growth and rapid crack propagation is desired. Suitable applications include natural gas distribution pipes, irrigation and drip tube. Industrial Standards Compliance: • ASTM D 3350: cell classification PE277370D • ISO PE 80 pipe grade • ASTM PE 2708 pipe grade - 1250 psi HDB @ 73F, 800 psi HDS at 73F, and 1000 psi HDB at 140F Consult the regulations for complete details.
Marlex® HHM TR-392	This high performance medium density polyethylene is an ethylene-hexene copolymer that is tailored for demanding applications that require: • Excellent tensile elongation properties • Outstanding resistance to slow-crack growth • Very good thermal stability Typical applications for HHM TR-392 include: • Irrigation tubing and/or tape This resin meets these specifications: • ASTM D4976 - PE 225 • ASTM D3350, Cell Class PE234320E
BorSafe™ ME3444	BorSafe ME3444 is a bimodal polyethylene compound produced by the advanced Borstar technology. It includes a combination of pigments and stabilisers to ensure excellent long-term thermal stability and UVresistance. BorSafe ME3444 is classified as an MRS 8.0 material (PE80). BorSafe ME3444 is recommended for pressure pipe systems in the application fields of drinking water particulary where flexibility and coilability is of importance. It also shows excellent resistance to rapid crack propagation and slow crack growth. Thanks to the structure, it gives outstanding extrudability, compared to conventional PE80.
Rigidex® K38-20	RIGIDEX® K38-20 is a medium-density polyethylene copolymer designed for the extrusion of non-pressure pipe. RIGIDEX® K38-20 is also suitable for blown film extrusion. Benefits & Features

Product Comparison

- Natural medium density polyethylene with high stress crack resistance and broad molecular weight distribution.

Applications

- Non pressure pipes, corrugated pipes, conduits
- Blown film (as pure, in blend or co-extrusion)

General	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20
Manufacturer / Supplier	• LyondellBasell Industries	• The Dow Chemical Company	• Chevron Phillips Chemical Company LLC	• Borealis AG	• INEOS Olefins & Polymers Europe
Generic Symbol	• MDPE	• MDPE	• MDPE	• MDPE	• MDPE
Additive	--	• Antiblock: No • Processing Aid: Yes • Slip: No	• UV Stabilizer	• Unspecified Stabilizer • UV Stabilizer	--
Features	• Copolymer • Food Contact Acceptable • Good Tear Strength • Good Toughness • High Molecular Weight • Med.-Wide Molecular Weight Distrib.	--	• Copolymer • Crack Resistant • Good Thermal Stability • Hexene Comonomer • High Elongation • Medium Density	• Crack Resistant • Good Flexibility • Good Thermal Stability • UV Resistant	• Copolymer • High ESCR (Stress Crack Resist.) • Medium Density • Wide Molecular Weight Distribution
Uses	• Agricultural Applications • Bags • Construction Applications • Film • Liners	--	• Irrigation Applications • Tape • Tubing	• Piping	• Blown Film • Conduit • Corrugated Pipe • Piping
Agency Ratings	--	• ASTM PE2708 • PPI TR-4	• ASTM D3350 PE234320E • ASTM D4976-PE225	• PPI PE-80	--

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General	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20
RoHS Compliance	--	--	--	--	• Contact Manufacturer
Appearance	--	--	--	• Blue	--
Forms	• Pellets	• Pellets	• Pellets	• Pellets	• Pellets
Processing Method	• Film Extrusion	• Profile Extrusion	• Extrusion	• Extrusion • Pipe Extrusion	• Blown Film • Coextruded Film • Pipe Extrusion

Physical	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Density / Specific Gravity							
Natural Compound [3]	--	0.941	--	--	--	g/cm³	ASTM D792
--	--	--	--	0.943	--	g/cm³	ISO 1183
23°C	--	--	--	--	0.938	g/cm³	ISO 1183
--	0.938	--	0.939	--	--	g/cm³	ASTM D1505
Melt Mass-Flow Rate (MFR)							
190°C/2.16 kg	0.057	--	0.16	--	--	g/10 min	ASTM D1238
190°C/2.16 kg [4]	--	0.16	--	--	--	g/10 min	ASTM D1238
190°C/21.6 kg [5]	--	9.5	--	--	--	g/10 min	ASTM D1238
190°C/21.6 kg	--	--	20	--	--	g/10 min	ASTM D1238
190°C/2.16 kg	--	--	--	--	0.20	g/10 min	ISO 1133
190°C/5.0 kg	--	--	--	0.90	0.85	g/10 min	ISO 1133
Environmental Stress-Cracking Resistance (ESCR)							
--	--	--	--	--	> 1000	hr	Internal Method
100% Igepal, F50	--	--	> 1000	--	--	hr	ASTM D1693B

Mechanical	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Tensile Modulus							ISO 527-1/1
--	--	--	--	800	--	MPa	
23°C	--	--	--	--	600	MPa	

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Mechanical	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Tensile Strength							
Yield [6]	--	--	19.0	--	--	MPa	ASTM D638
Yield [7]	--	> 17.9	--	--	--	MPa	ASTM D638
Yield	--	--	--	19.0	--	MPa	ISO 527-2/50
Yield, 23°C	--	--	--	--	19.0	MPa	ISO 527-2
Break [6]	--	--	32.0	--	--	MPa	ASTM D638
Tensile Elongation							
Break [7]	--	> 600	--	--	--	%	ASTM D638
Break [6]	--	--	800	--	--	%	ASTM D638
Break	--	--	--	> 500	--	%	ISO 527-2
Break, 23°C	--	--	--	--	> 350	%	ISO 527-2/50
Flexural Modulus - 2% Secant							
-- [8]	--	--	620	--	--	MPa	ASTM D790
-- [9, 7]	--	> 621	--	--	--	MPa	ASTM D790B

Films	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Secant Modulus							ASTM D882
MD : 13 µm	641	--	--	--	--	MPa	
TD : 13 µm	772	--	--	--	--	MPa	
Tensile Strength							ASTM D882
MD : Yield, 13 µm	26.3	--	--	--	--	MPa	
TD : Yield, 13 µm	23.1	--	--	--	--	MPa	
MD : Break, 13 µm	88.3	--	--	--	--	MPa	
TD : Break, 13 µm	47.5	--	--	--	--	MPa	
Tensile Elongation							ASTM D882
MD : Break, 13 µm	270	--	--	--	--	%	
TD : Break, 13 µm	390	--	--	--	--	%	
Total Energy Impact							ASTM D4272
13 µm	3.12	--	--	--	--	J	
100 µm	5.97	--	--	--	--	J	

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Films	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Elmendorf Tear Strength							ASTM D1922
MD : 13 µm	20	--	--	--	--	g	
MD : 100 µm	420	--	--	--	--	g	
TD : 13 µm	40	--	--	--	--	g	
TD : 100 µm	750	--	--	--	--	g	

Thermal	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Brittleness Temperature							ASTM D746A
-- [7]	--	< -75.0	--	--	--	°C	
-- [10]	--	--	< -75.0	--	--	°C	
Vicat Softening Temperature	--	--	--	--	121	°C	ISO 306/A50
Melting Temperature [11]	--	--	--	--	127	°C	ISO 11357-3

Additional Information	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit	Test Method
Oxidation Induction Time [12] (200°C)	--	--	--	> 20	--	min	
Resistance to Rapid Crack Propagation, Pc							
Full Scale : 0°C [13]	--	> 38.6	--	--	--	bar	ISO 13478
S-4 : 0°C [14]	--	> 10.0	--	--	--	bar	ISO 13477
S4 test : 0°C [15]	--	--	--	> 6.00	--	bar	ISO 13477
Resistance to Rapid Crack Propagation, Tc - S-4 @ 5 bar [14]	--	< -2	--	--	--	°C	ISO 13477
Resistance to Slow Crack Growth [16] (80°C)	--	--	--	> 2000	--	hr	ISO 13479
Slow Crack Growth Resistance [7]							
Notched Pipe Test	--	> 3000	--	--	--	hr	ISO 13479
PENT	--	15000	--	--	--	hr	ASTM F1473
Thermal Stability	--	> 220	> 220	--	--	°C	ASTM D3350

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Extrusion	Alathon® XL3805	CONTINUUM™ DGDA-2420 NT	Marlex® HHM TR-392	BorSafe™ ME3444	Rigidex® K38-20	Unit
Cylinder Zone 1 Temp.	--	--	--	180 to 210	--	°C
Cylinder Zone 2 Temp.	--	--	--	180 to 210	--	°C
Cylinder Zone 3 Temp.	--	--	--	180 to 210	--	°C
Cylinder Zone 4 Temp.	--	--	--	180 to 210	--	°C
Cylinder Zone 5 Temp.	--	--	--	18 to 210	--	°C
Melt Temperature	199 to 210	--	--	200 to 220	--	°C
Die Temperature	--	--	--	200 to 210	--	°C

Extrusion Notes	
Alathon® XL3805	Typical Extrusion Conditions Blow Up Ratio: 4:1 Neck Height: 8 Die Diameters
BorSafe™ ME3444	Head: 200 to 210°C

Notes

[1] These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

[2] Typical properties: these are not to be construed as specifications.

[3] Base density is estimated using the assumption that every 1000 ppm of antiblock in the finished product raises the density of the polymer by 0.0006 g/cm³. Base density is the estimated density of the polymer if it did not contain any antiblock.

[4] Melt Index

[5] Flow Index

[6] Type IV, 51 mm/min

[7] Compression molded parts prepared according to ASTM D 4703 Procedure C unless otherwise noted in the test method. Properties will vary with changes in molding conditions and aging time.

[8] 13 mm/min

[9] Method I (3 point load)

[10] Type I specimen

[11] DSC 2nd heating, 10°C/min

[12] EN 728

[13] Calculated value, determined by the equation in ISO 4437 based on S-4 test data. Pipe diameter of 12 inch IPS (30.5 cm) and Standard Dimension Ratio (SDR) 11.5.
Pipe diameter of 12 inch IPS (30.5 cm) and Standard Dimension Ratio (SDR) 11.5.

[14] Pipe diameter of 12 inch IPS (30.5 cm) and Standard Dimension Ratio (SDR) 11.5.

[15] Test pipe 110 mm, SDR11

[16] 8 bar