TECHNICAL DATASHEET

LLDPE 218 Series

AL RAMZ
Plastic Factory

PRODUCT DESCRIPTION

218B is a butene Linear Low Density Polyethylene grade designed to provide easy processing and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

TRPICAL APPLICATION

Cling film, Stretch films for manual and pellet wrap, melt embossed films and other general-purpose applications.

GRADE	SLIP (PPM)	ANTIBLOCK (PPM)
218N	None	None
218W	1500	3500

TYPICAL DATA

RESIN PROPERTIES	UNIT	VALUE (1)	ASTM METHOD
Melt Flow Rate @ 190°C & 2.16 Kg load	g/10 min.	2	D 1238
Density	Kg/m^3	918	D 1505
MECHANICAL PROPERTIES(2)			
Tensile Strength @ break, MD TD	MPa	35 29	D 882
Tensile Elongation @ break, MD TD	**%**	700 750	D 882
Tensile Strength @ yield, MD TD	MPa	12 10	D 882
1% Secant Modulus, MD TD	MPa	220 260	D 882
Puncture Resistance	J/mm.	63	SABIC Method
Dart Impact Strength	g	85	D 1709
Elmendorf Tear Strength, MD TD	g	130 320	D 1922

TECHNICAL DATASHEET

CEFOR 1220

Overview

Polyethylene 1220P is a butene Linear Low Density Polyethylene for general blown film extrusion film applications.

Main Characteristics:

- Used in Industrial, Food & Specialty Packaging
- Better optics and processability
- Better color stability

Complies with:

- U.S. FDA 21 177.1520 (c) 3.2a
- EU. No 10/2011
- Consult the regulations for complete details.

Additive

- Antiblock: 2000 ppm
- Slip: 1200 ppm
- Processing Aid: No

Physical	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.919	g/cm³	0.919	g/cm³	ASTM D792
Base Density	0.918	g/cm³	0.918	g/cm³	Dow Method [1]
Melt Index (190°C/2.16 kg)	2.0	g/10 min	2.0	g/10 min	ASTM D1238
Films	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Film Thickness - Tested	1.5	mil	38	µm	
Film Puncture Resistance (1.5 mil (38 µm))	60.4	ft·lb/in³	5.00	J/cm³	Dow Method
Secant Modulus					ASTM D882
2% Secant, MD: 1.5 mil (38 µm)	21800	psi	150	MPa	
2% Secant, TD: 1.5 mil (38 µm)	21000	psi	145	MPa	
Tensile Strength					ASTM D882
MD: Yield, 1.5 mil (38 µm)	1450	psi	10.0	MPa	
TD: Yield, 1.5 mil (38 µm)	1450	psi	10.0	MPa	
MD: Break, 1.5 mil (38 µm)	4790	psi	33.0	MPa	
TD: Break, 1.5 mil (38 µm)	3630	psi	25.0	MPa	
Tensile Elongation					ASTM D882
MD: Break, 1.5 mil (38 µm)	950	%	950	%	
TD: Break, 1.5 mil (38 µm)	1100	%	1100	%	
Dart Drop Impact (1.5 mil (38 µm))	140	g	140	g	ASTM D1709A
Elmendorf Tear Strength					ASTM D1922
MD: 1.5 mil (38 µm)	220	g	220	g	
TD: 1.5 mil (38 µm)	330	g	330	g	
Thermal	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Vicat Softening Temperature	206	°F	96.7	°C	ASTM D1525
Melting Temperature (DSC)	241	°F	116	°C	Dow Method
Optical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Gloss (45°, 1.50 mil (38.1 µm))	53		53		ASTM D2457
Haze (1.50 mil (38.1 µm))	13	%	13	%	ASTM D1003

Extrusion Notes

Fabrication Conditions For Blown Film:

- Melt Temperature: 428°F (206°C)
- Die Gap: 70mil (1.8mm)
- Output: 120 lb/hr (54kg/fr)
- Blow-Up Ratio: 2.5:1

TECHNICAL DATASHEET

LLDPE M500026

PRODUCT DESCRIPTION

M500026 is Linear Low Density Polyethylene grade with narrow molecular weight distribution suitable for injection molding applications. It has been designed to give excellent flow properties with better low temperature toughness, stress crack resistance and gloss

TRPICAL APPLICATION

M500026 is recommended for lids for closures and containers and deep draw houseware products, automotive parts etc.

TYPICAL DATA

Properties	Unit	Value (1)	ASTM Method
Resin Properties			
Melt Flow Rate @ 190°C & 2.16 kg load	g/10 min.	50	D 1238
Density @ 23°C	kg/m^3	926	D 1505
Mechanical Properties(2)			
1% Secant Modulus	MPa	240	D 638
Tensile Strength @ Yield	MPa	10	D 638
Tensile Strength @ Break	MPa	8	D 638
Tensile Elongation @ Break	%	>350	D638
Flexural Strength	MPa	8	D 790
Flexural Modulus	MPa	200	D 790
Izod Impact	J/m	500	D 256
Hardness (Shore D)	-	50	D 2240
ESCR (100% Igepal), F_{50}*	Hrs	6	D 1693B
ESCR (10% Igepal), F_{50}*	Hrs	3	
Thermal Properties			
Vicat Softening Point	°C	88	D 1525
Brittleness Temperature	°C	< -75	D 746

TECHNICAL DATASHEET

M200024

PRODUCT DESCRIPTION

LLDPE M200024 is a linear low density polyethylene copolymer injection moulding grade with a narrow molecular weight distribution. It has been typically designed to have good low temperature toughness, stress crack resistance (ESCR) and gloss.

TRPICAL APPLICATION

LLDPE M200024 is typically used for injection moulding of large items where high flow and fast cycles are required such as housewares, trash cans, automotive parts, lids and large industrial containers. This product is not intended for and must not be used in any pharmaceutical/medical applications.

TYPICAL DATA

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
POLYMER PROPERTIES			
Melt Flow Rate			
at 190°C and 2.16 kg	20	g/10 min	ASTM D1238
Density (1)	924	kg/m³	ASTM D1505
MECHANICAL PROPERTIES			
Flexural properties			
flexural strength	9	MPa	ASTM D790
flexural modulus	200	MPa	ASTM D790
Izod Impact Strength	500	J/m	ASTM D256
Hardness (Shore D)	50	-	ASTM D2240
ESCR (2)			
100% Igepal, F50	6	hrs	ASTM D1693B
10% Igepal, F50	3	hrs	ASTM D1693B
FILM PROPERTIES			
Tensile Properties (3)			
1% secant modulus	230	MPa	ASTM D638
stress at yield	10	MPa	ASTM D638
stress at break	12	MPa	ASTM D638
strain at break	>500	%	ASTM D638
THERMAL PROPERTIES			
Vicat Softening Point	92	°C	ASTM D1525

TECHNICAL DATASHEET

LLDPE 318B

PRODUCT DESCRIPTION

318B is Linear Low Density Polyethylene grade designed to provide easy processability and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

TRPICAL APPLICATION

Cling film, Stretch films for manual and pellet wrap, melt embossed films and other general purpose applications.

TYPICAL DATA

Properties	Unit	Value [1]	ASTM Method
Resin Properties			
Melt Flow Rate @ 190°C & 2.16 kg load	g/10 min.	2.8	D 1238
Density @ 23°C	kg/m^3	918	D 1505
Mechanical Properties[2]			
Tensile Strength @ break, MD	MPa	28	D 882
TD		18	
Tensile Elongation @ break, MD	%	470	D 882
TD		600	
Tensile Strength @ yield, MD	MPa	13	D 882
TD		10	
1% Secant Modulus, MD	MPa	135	D 882
TD		140	
Puncture Resistance	J/mm	57	
Dart Impact Strength	g	75	D 1709
Elmendorf Tear Strength, MD	g	65	D 1922
TD		300	
Optical Properties[2]			
Haze	%	5	D 1003
Gloss @ 60°	-	90	D 2457
Thermal Properties			
Vicat Softening Point	°C	98	D 1525

TECHNICAL DATASHEET

R50035

PRODUCT DESCRIPTION

R50035 are linear low density polyethylene grade with balanced density and viscosity designed to provide excellent stress cracking resistance, good mechanical properties with high rigidity, toughness, and low warpage. R50035 : Non-UV stabilized grade in pellet form

TRPICAL APPLICATION

Rotational molding of water tanks, industrial and agricultural tanks and containers. General purpose rotomolding articles where easy processing is required.

TYPICAL DATA

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
POLYMER PROPERTIES			
Melt Flow Rate @ 190°C & 2.16 kg load (1)	5	g/10 min	ASTM D 1238
Density (1)	935	kg/m³	ASTM D1505
MECHANICAL PROPERTIES			
Tensile Strength at Break (2)	17	MPa	ASTM D638
Tensile Elongation at Break (2)	590	%	ASTM D638
Tensile Strength at Yield (2)	16	MPa	ASTM D638
1% Secant Modulus (2)	420	MPa	ASTM D638
Flexural Strength (2)	13	MPa	ASTM D790
Hardness (Shore D) (2)	66	-	ASTM D2240
ESCR (100% Igepal),F50 (2)	>	hrs	ASTM D1693B
THERMAL PROPERTIES			
Vicat Softening Point	114	°C	ASTM D 1525
Brittleness temperature	< -75	°C	ASTM D746

TECHNICAL DATASHEET

CEFOR™ 1050P

Linear Low Density Polyethylene Resin

Overview

CEFOR™ 1050P is a Linear Low Density Polyethylene Resin 1-Butene copolymer, produced in the Solution process. This resin is designed to be used in cast extrusion to produce films for stretch and health & hygiene applications.

Complies with:

- U.S FDA 21 CFR 177. 1520 (c) 3.2a.
- European Commission Regulation (EU). No 10/2011

Consult the regulations for complete details.

Additive

- Antiblock: No
- Slip: No
- Processing Aid: No

Physical Properties	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.916	g/cm^3	0.916	g/cm^3	ASTM D792
Base Density[1]	0.918	g/cm^3	0.918	g/cm^3	Dow Method
Melt Mass-Flow Rate (190 ^{0}C/2.16 kg)	3.0	g/10 min	3.0	g/10 min	ISO 1133
Film Properties	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Film Thickness – Tested	0.94	mil	24	µm	
Film Puncture Resistance	134	ft/lb/in^3	11.1	J/cm^3	Dow Method
Secant Modulus					ASTM D882
2% Secant, MD	28100	psi	194	MPa	
2% Secant, TD	15200	psi	174	MPa	
Tensile Strength					ASTM D882
Yield : MD	4870	psi	33.6	MPa	
Yield : TD	2630	psi	18.1	MPa	
Break : MD	870	psi	6.00	MPa	
Break : TD	754	psi	5.20	MPa	
Tensile Elongation					ASTM D882
Break : MD	560	%	560	%	
Break : TD	870	%	870	%	
Dart Drop Impact	50	g	50	g	ASTM D1709A
Elmendorf Tear Strength					ASTM D1922
MD	52	g	52	g	
TD	260	g	260	g	
Optical Properties	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Gloss (20^0)	93		93		ASTM D2457
Haze	0.94	%	0.94	%	ASTM D1003

Extrusion Notes

Fabrication Conditions for cast film analyzed:

- Die Gap: 31.5 mil (0.8 mm)
- Melt Temperature: 455 ^{0}F (235^{0}C)
- Chill Roll Temperature: 64.4 ^{0}F (18^{0}C)
- Haul Off Speed: 15 m/min

TECHNICAL DATASHEET

LLDPE 218 Series

PRODUCT DESCRIPTION

218B is a butene Linear Low Density Polyethylene grade designed to provide easy processing and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

TRPICAL APPLICATION

Cling film, Stretch films for manual and pellet wrap, melt embossed films and other general-purpose applications.

GRADE	SLIP (PPM)	ANTIBLOCK (PPM)
218N	None	None
218W	1500	3500

TYPICAL DATA

RESIN PROPERTIES	UNIT	VALUE (1)	ASTM METHOD
Melt Flow Rate @ 190°C & 2.16 Kg load	g/10 min.	2	D 1238
Density	Kg/m^3	918	D 1505
MECHANICAL PROPERTIES(2)			
Tensile Strength @ break, MD TD	MPa	35 29	D 882
Tensile Elongation @ break, MD TD	**%**	700 750	D 882
Tensile Strength @ yield, MD TD	MPa	12 10	D 882
1% Secant Modulus, MD TD	MPa	220 260	D 882
Puncture Resistance	J/mm.	63	SABIC Method
Dart Impact Strength	g	85	D 1709
Elmendorf Tear Strength, MD TD	g	130 320	D 1922

TECHNICAL DATASHEET

LLDPE 118NJ

PRODUCT DESCRIPTION

LLDPE 118NJ is a butene linear low density polyethylene resin typically used for general purpose applications. Films produced from this resin are tough with good puncture resistance, high tensile strength and good hottack properties. LLDPE 118NJ is TNPP free.

TRPICAL APPLICATION

Typical applications for LLDPE 118NJ are shipping sacks, ice bags, frozen food bags, liners, carrier bags, garbage bags, agriculture films, lamination and coextruded films, shrink film (for blending with LDPE), industrial consumer packaging and high clarity film if blended with (10-20%) LDPE.

TYPICAL DATA

Properties	Units SI	Values	Test methods
Polymer properties			
Melt flow rate (MFR)			ISO 1133
at 190 °C and 2.16 kg	dg/min	**1.0**	
Density	kg/m³	**918**	ISO 1183 (A)
Formulation			
Anti oxidant		**+**	SABIC method
Optical properties			
Gloss (45°)	%	**50**	ASTM D2457
Haze	%	**13**	ASTM D1003A
Film properties			
Impact strength	kJ/m	**22**	ASTM D4272
Tear strength TD	kN/m	**120**	ISO 6383-2
Tear strength MD	kN/m	**40**	ISO 6383-2
Puncture resistance	J/m	**630**	SABIC method
Tensile test film			ISO 527-3
Yield stress TD	MPa	**11**	
Yield stress MD	MPa	**11**	
Stress at break TD	MPa	**30**	
Stress at break MD	MPa	**37**	
Strain at break TD	%	**850**	
Strain at break MD	%	**700**	
Modulus of elasticity TD	MPa	**180**	
Modulus of elasticity MD	MPa	**160**	
Thermal properties			
Vicat softening temperature			ISO 306
at 10 N (VST/A)	°C	**100**	
DSC test			
melting point	°C	**121**	

TECHNICAL DATASHEET

LLDPE 218 Series

PRODUCT DESCRIPTION

218B is a butene Linear Low Density Polyethylene grade designed to provide easy processing and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

TRPICAL APPLICATION

Cling film, Stretch films for manual and pellet wrap, melt embossed films and other general-purpose applications.

GRADE	SLIP (PPM)	ANTIBLOCK (PPM)
218N	None	None
218W	1500	3500

TYPICAL DATA

RESIN PROPERTIES	UNIT	VALUE (1)	ASTM METHOD
Melt Flow Rate @ 190°C & 2.16 Kg load	g/10 min.	2	D 1238
Density	Kg/m^3	918	D 1505
MECHANICAL PROPERTIES(2)			
Tensile Strength @ break, MD TD	MPa	35 29	D 882
Tensile Elongation @ break, MD TD	**%**	700 750	D 882
Tensile Strength @ yield, MD TD	MPa	12 10	D 882
1% Secant Modulus, MD TD	MPa	220 260	D 882
Puncture Resistance	J/mm.	63	SABIC Method
Dart Impact Strength	g	85	D 1709
Elmendorf Tear Strength, MD TD	g	130 320	D 1922

TECHNICAL DATASHEET

LLDPE R50035E

PRODUCT DESCRIPTION

LLDPE R50035E is a LLDPE copolymer that is designed to provide excellent stress crack resistance, excellent mechanical properties with high rigidity, toughness, gloss and very low warpage.
The resin contains UV stabilizer. It is recommended that LLDPE R50035E is grinded before use in rotational moulding applications..

TRPICAL APPLICATION

LLDPE R50035E is desinged for rotational moulding of large industrial and agricultural tanks, trash containers and chemical shipping drums. Its excellent mechanical properties and low warpage makes it suitable for injection moulding applications such as screw closures, caps and housewares. LLDPE R50035E is UV stabilised; that provides excellent protection for the final product.

TYPICAL DATA

Properties	Units SI	Values	Test methods
Polymer properties			
Melt flow rate (MFR)			ASTM D 1238
at 190 °C and 2.16 kg	g/10 min	**5.0**	
Density	kg/m³	**935**	ASTM D 1505
Mechanical properties			
Tensile test			ASTM D 638
stress at yield	MPa	**16**	
stress at break	MPa	**17**	
strain at break	%	**590**	
secant modulus at 1% elongation	MPa	**420**	
Flexural test			ASTM D 790
Flexural strength	MPa	**13**	
Hardness Shore D	-	**66**	ASTM D 2240
ESCR (100% Igepal), F50	h	**>150**	ASTM D 1693B
Thermal properties			
Vicat softening temperature	°C	**114**	ASTM D 1525
Brittleness temperature	°C	**<-75**	ASTM D 746