CHEMOPETROL a.s.
436 70 Litvínov - Záluží 1
Czech Republic

Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BB 37

Characteristics

LITEN BB 37 is a copolymer with medium molecular weight distribution, suitable for blow moulding. It exhibits high rigidity and good impact and ESC resistance. Typical application is the manufacture of bottles sized from 4 to 40 litres.

Hygienic approval

LITEN BB 37 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,50-D003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,30	ISO 1133
Melt Flow Rate (190/21,6)		24	
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	79	
Density (23 ±0,1) °C	kg/m^3	949	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	24	ISO 527-1
Flexural Modulus of Elasticity	MPa	900	ISO 178
ESCR F_{50}	h	130	ASTM D 1693

The parameter values are based on licence specification. The parameters, test methods and guaranteed values may be added or modified after experimental determination of properties of this grade during test run.

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 2002-05-08

CHEMOPETROL a.s.
436 70 Litvínov - Záluží 1
Czech Republic

Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BB 48

Characteristics

LITEN BB 48 is a copolymer with medium molecular weight distribution, suitable for blow moulding. It exhibits good impact strength and resistance against most chemicals. Typical application is the manufacture of thin walled containers up to 10 litres, such as chemical and oil bottles, canisters, etc.

Hygienic approval

LITEN BB 48 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,50-D003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,28 – 0,54	ISO 1133
Melt Flow Rate (190/21,6)		28 - 38	
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	70 - 100	
Density (23 ±0,1) °C	kg/m^3	950 - 955	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	26	ISO 527-1
Flexural Modulus of Elasticity	MPa	1000	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	8 5	ISO 179-1
Vical Softening Temperature	°C	125	ISO 306
ESCR F_{50}	h	50	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BB 70

Characteristics

LITEN BB 70 is a high molecular weight copolymer with broad molecular weight distribution and basic stabilization. It exhibits outstanding balance of toughness, impact strength and processability. Typical application is the manufacture of large containers up to 200 litres, such as shipping containers, drums, etc.

Hygienic approval

LITEN BB 70 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,45-T003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,07	ISO 1133
Melt Flow Rate (190/5)		0,27 – 0,60	
Melt Flow Rate (190/21,6)		8 - 12	
Melt Flow Rate Ratio (21,6 kg/5 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	946 - 950	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	22	ISO 527-1
Flexural Modulus of Elasticity	MPa	800	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	15 5	ISO 179-1
Vical Softening Temperature	°C	124	ISO 306
ESCR F_{50}	h	2000	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BB 75

Characteristics

LITEN BB 75 is a high molecular weight copolymer with broad molecular weight distribution, which contains a processing improving stabilization. It exhibits outstanding balance of toughness, impact strength and processability. Typical application is the manufacture of large containers up to 200 litres.

Hygienic approval

LITEN BB 75 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,45-T003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,07	ISO 1133
Melt Flow Rate (190/5)		0,27 – 0,60	
Melt Flow Rate (190/21,6)		8 - 12	
Melt Flow Rate Ratio (21,6 kg/5 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	946 - 950	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	22	ISO 527-1
Flexural Modulus of Elasticity	MPa	800	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	15 5	ISO 179-1
Vical Softening Temperature	°C	124	ISO 306
ESCR F_{50}	h	2000	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BB 85

Characteristics

LITEN BB 85 is a copolymer with broad molecular weight distribution, suitable for blow moulding. It exhibits good toughness, impact and ESC resistance. Typical application is the manufacture of containers up to 120 litres, such as bottles, canisters, barrels, etc.

Hygienic approval

LITEN BB 85 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,50-D001

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,15	ISO 1133
Melt Flow Rate (190/21,6)		16	
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	100	
Density (23 ±0,1) °C	kg/m^3	952	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	24	ISO 527-1
Flexural Modulus of Elasticity	MPa	880	ISO 178
ESCR F_{50}	h	min. 350	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR BLOW MOULDING

LITEN BS 75

Characteristics

LITEN BS 75 is a high molecular weight copolymer with broad molecular weight distribution and improved melt properties. It exhibits outstanding balance of toughness, impact strength and processability. Typical application is the manufacture of large containers up to 200 litres.

Hygienic approval

LITEN BS 75 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,B,45-T003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,07	ISO 1133
Melt Flow Rate (190/5)		0,27 – 0,60	
Melt Flow Rate (190/21,6)		8 - 12	
Melt Flow Rate Ratio (21,6 kg/5 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	946 - 950	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	22	ISO 527-1
Flexural Modulus of Elasticity	MPa	800	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	15 5	ISO 179-1
Vical Softening Temperature	°C	124	ISO 306
ESCR F_{50}	h	2000	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR FILMS

LITEN FB 75

Characteristics

LITEN FB 75 is a high molecular weight copolymer with broad molecular weight distribution, suitable for manufacture of tubular films. The products exhibit excellent processability and high mechanical strength. Typical application is the manufacture of thin sacks for packaging and freezing of foodstuffs, shopping bags, thin films, substituting paper, etc.

Hygienic approval

LITEN FB 75 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,F,45-T003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,07	ISO 1133
Melt Flow Rate (190/5)		0,27 – 0,60	
Melt Flow Rate (190/21,6)		8 - 12	
Melt Flow Rate Ratio (21,6 kg/5 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	946 - 950	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	22	ISO 527-1
Flexural Modulus of Elasticity	MPa	800	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	15 5	ISO 179-1
Vical Softening Temperature	°C	124	ISO 306
Film Test		max. standard	internal method *

* Internal film test: 1. continuous 1 hour drawing test (0,008 mm film): without failure
2. film appearance test (0,03 mm film): large gels >0,3 mm: max. 8 pc/m^2
small gels =0,3 mm: max. 150 pc/m^2

The parameter values are based on licence specification. The parameters, test methods and guaranteed values may be added or modified after experimental determination of properties of this grade during test run.

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MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR FILMS

LITEN FB 85

Characteristics

LITEN FB 85 is a copolymer with broad molecular weight distribution, suitable for manufacture of tubular films. Typical application is the manufacture of thin films, millinery bags, packaging bags, etc.

Hygienic approval

LITEN FB 85 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,F,50-D001

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,15	ISO 1133
Melt Flow Rate (190/21,6)		16	
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	100	
Density (23 ±0,1) °C	kg/m^3	952	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	24	ISO 527-1
Flexural Modulus of Elasticity	MPa	880	ISO 178
Film Test		max. standard	internal method *
* Internal film test: 1. continuous 1 hour drawing test (0,008 mm film): without failure 2. film appearance test (0,03 mm film): large gels >0,3 mm: max. 8 pc/m^2			

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MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR FILMS

LITEN FS 75

Characteristics

LITEN FS 75 is a high molecular weight copolymer with broad molecular weight distribution and improved melt properies, suitable for manufacture of tubular films. The products exhibit excellent processability and high mechanical strength. Typical application is the manufacture of thin sacks for packaging and freezing of foodstuffs, shopping bags, thin films, substituting paper, etc.

Hygienic approval

LITEN FS 75 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,F,45-T003

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	0,07	ISO 1133
Melt Flow Rate (190/5)		0,27 – 0,60	
Melt Flow Rate (190/21,6)		8 - 12	
Melt Flow Rate Ratio (21,6 kg/5 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	946 - 950	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	22	ISO 527-1
Flexural Modulus of Elasticity	MPa	800	ISO 178
Charpy Notched Impact Strength at 23 °C -50 °C	kJ/m^2	15 5	ISO 179-1
Vical Softening Temperature	°C	124	ISO 306
Film Test		max. standard	internal method *

* Internal film test: 1. continuous 1 hour drawing test (0,008 mm film): without failure;
2. film appearance test (0,03 mm film): large gels >0,3 mm: max. 8 pc/m^2, small gels =0,3 mm: max. 150 pc/m^2

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MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR INJECTION MOULDING

LITEN MB 71

Characteristics

LITEN MB 71 is a homopolymer with narrow molecular weight distribution, suitable for injection moulding. Typical application is the manufacture crates, bins, closures, technical parts and other products, requiring high toughness and impact resistance.

Hygienic approval

LITEN MB 71 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,M,62-D090

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	7,2 – 9,2	ISO 1133
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	min. 961	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	32	ISO 527-1
Flexural Modulus of Elasticity	MPa	1100	ISO 178
Charpy Notched Impact Strength at 23 °C	kJ/m^2	7	ISO 179-1
Vical Softening Temperature	°C	128	ISO 306
ESCR F_{50}	h	55	ASTM D 1693

The parameter values are based on licence specification. The parameters, test methods and garanteed values will be added and modified after experimental determination of properties of this grade during test run.

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR INJECTION MOULDING

LITEN MB 87

Characteristics

LITEN MB 87 is a copolymer with narrow molecular weight distribution and higher melt flow rate, suitable for injection moulding. It exhibits outstanding balance of toughness, impact resistance, moldability and a good melt flow. Typical application is the manufacture of housewares, food containers, pails, closures, pots, etc.

Hygienic approval

LITEN MB 87 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,M,50-D200

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	20	ISO 1133
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	954	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	26	ISO 527-1
Flexural Modulus of Elasticity	MPa	1000	ISO 178
Vical Softening Temperature	°C	120	ISO 306
ESCR F_{50}	h	60	ASTM D 1693

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Issued: 2002-04
Replaced edition: -

MATERIAL SPECIFICATION

HIGH DENSITY POLYETHYLENE FOR INJECTION MOULDING

LITEN ML 71

Characteristics

LITEN ML 71 is a homopolymer with narrow molecular weight distribution and UV stabilization, suitable for injection moulding. Typical application is the manufacture crates, technical parts and other products, requiring high rigidity, good impact resistance and oxidation stability.

Hygienic approval

LITEN ML 71 meets the hygienic requirements on materials and articles intended for contact with foodstuffs according to EU Council Directive 90/128/EEC, including Amendments and relating Directives.

ISO designation

ISO 1872-PE,ML,62-D090

Quality parameter	*Unit*	*Values*	*Test method*
Melt Flow Rate (190/2,16)	g/10 min	7,2 – 9,2	ISO 1133
Melt Flow Rate Ratio (21,6 kg/2,16 kg)	-	20 - 30	
Density (23 ±0,1) °C	kg/m^3	min. 961	ISO 1183
Yellowness Index	standard	max. A	ASTM D 1925
Volatile Matter Content	%	max. 0,1	ISO 1269
Yield Stress	MPa	32	ISO 527-1
Flexural Modulus of Elasticity	MPa	1100	ISO 178
Charpy Notched Impact Strength at 23 °C	kJ/m^2	7	ISO 179-1
Vical Softening Temperature	°C	128	ISO 306
ESCR F_{50}	h	55	ASTM D 1693

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