

# HIGH-DENSITY POLYETHYLENE (HDPE) PLANT

The plant produces 300,000 ton annum of HDPE. It can produce 21 different grades.

The product is used in the production of containers, bottles, chemical tanks, hygienic materials, cosmetics, films, high-impact fibers, cable insulations, high-pressure pipes and various packaging films.





## HD-I4

### License Grade Code HD 7255(THE)

#### **Product Description:**

“I4” is a high density polyethylene with 1-Butene as co monomer. It is high rigidity, good toughness, low warpage, high impact strength.

#### **Applications:**

- Injection moulding
- Engineering Leisure & sport equipment



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.954
Melt Flow Rate (190 C/2.16kg)	ISO 1133	g/10min	4
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	11
FRR(5/2.16)		-	2.8
Impact strength (23 C)	ISO 179/1eA	mj/mm2	3
Stress at Yield	ISO 527	Mpa	26
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1300
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1100
Stress at Break	ISO 527	Mpa	30
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	70
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
ESCR in full notch creep test (80 C, 2%Arcopal)	ISO CD 16770	h@2.5 Mpa	3
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- ① Typical values not to be constructed as specifications.
- ② Recommended injection moulding temp. 200-280 c



## HD-I4 S

### License Grade Code HD 7255(Z501)

#### **Product Description:**

“I4” is a high density polyethylene with 1-Butene as co monomer. It is high rigidity, good toughness, low warpage, high impact strength.

#### **Applications:**

- Injection moulding
- Engineering Leisure & sport equipment



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.954
Melt Flow Rate (190 C/2.16kg)	ISO 1133	g/10min	4
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	11
FRR(21.6/5)		-	2.8
Impact strength (23 C)	ISO 179/1eA	mj/mm2	3
Stress at Yield	ISO 527	Mpa	26
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1300
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1100
Stress at Break	ISO 527	Mpa	30
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	70
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@2.5 Mpa	3
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- Typical value not to be constructed as specifications.
- Recommended injection moulding temp. 200-280 c



## HD-I3

### License Grade Code HC 7260(THE)

#### **Product Description:**

"I3" is a high density polyethylene with 1-Butene as co monomer. It is rigid, low warpage, good flowability, high density, hardness and stiffness, good impact strength good stress cracking resistance.

#### **Applications:**

- Injection moulding
- Crates
- Engineering parts
- Closures



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.957
Melt Flow Rate (190 C/2.16kg)	ISO 1133	g/10min	8
Melt Flow Rate (190 C/5 kg)	ISO 1133	g/10min	23
FRR(21.6/5)		-	2.8
Impact strength (23 C)	ISO 179/1eA	kJ/mm2	2.5
Stress at Yield	ISO 527	Mpa	29
Flexural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1550
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1350
Stress at Break	ISO 527	Mpa	30
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	72
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		64
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@2.5 Mpa	1.5
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- ① Typical value not to be constructed as specifications.
- ② Recommended injection moulding temp. 200-280 c



## HD-I3 S

### License Grade Code HC 7260(Z501)

#### **Product Description:**

"I3 S" is a high density polyethylene with 1-Butene as co monomer. It is rigid, low warpage, good flowability, high density, hardness and stiffness, good impact strength good stress cracking resistance.

#### **Applications:**

- Injection moulding
- Crates
- Engineering parts
- Closures





## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.960
Melt Flow Rate (190 C/2.16kg)	ISO 1133	g/10min	8
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	23
FRR(21.6/5)		-	3.1
Impact strength (23 C)	ISO 179/1eA	mj/mm2	2.5
Stress at Yield	ISO 527	Mpa	30
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1550
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1350
Stress at Break	ISO 527	Mpa	30
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	72
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		64
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@2.5 Mpa	1.5
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- ① Typical value not to be constructed as specifications.
- ② Recommended injection moulding temp. 200-280 c



## HD-BL 2

### License Grade Code HF 7255(THT)

#### **Product Description:**

"BL2" is a high density polyethylene with 1-Butene as co monomer. It is high impact strength & slightly, lower stiffness than BL3, outstanding resistance to stress cracking, even in contact with surfactants.

#### **Applications:**

- Small blow moulding
- Bottles
- Containers (up to 5 lit)
- Packaging of pharmaceuticals & surfactants



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.944
Melt Flow Rate (190 C/5.06kg)	ISO 1133	g/10min	1.1
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	23
FRR(21.6/5)		-	21
Impact strength (23 C)	ISO 179/1eA	mj/mm2	11
Swell ratio	MPC-Test	%	120
Flextural Creep Modulus (4point,1min)	DIN 19537-2	Mpa	1050
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	900
Stress at Break	ISO 527	Mpa	32
Elongation at Break	ISO 527	%	>600
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	70
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		60
ESCR in full notch creep test (80 C, 2% Arcopal)	ISO CD 16770	h@3.5 Mpa	10

- ① Typical value not to be constructed as specifications.
- ② Recommended injection moulding temp. 180-220 c



## HD-BL 3

### License Grade Code HF 4760(THT)

#### **Product Description:**

“BL3” is a high density polyethylene with 1-Butene as co monomer. It is high density and stiffness, good ESCR, high rigidity, good flowability and impact strength.

#### **Applications:**

- Small blow moulding
- Bottles
- Containers (up to 5 lit)
- Packaging of pharmaceuticals & surfactants



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.954
Melt Flow Rate (190 C/5.06kg)	ISO 1133	g/10min	1.2
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	23
FRR(21.6/5)		-	19
Impact strength (23 C)	ISO 179/1eA	kJ/mm2	10
Swell ratio	MPC-Test	%	120
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1300
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1250
Stress at Break	ISO 527	Mpa	32
Elongation at Break	ISO 527	%	>600
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	77
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@3.5 Mpa	5

- ① Typical value not to be constructed as specifications.
- ② Recommended melt temp. 180-220 c



## HD-BL 4M

### License Grade Code HM 8355(THT)

#### **Product Description:**

“BL 4M” is a high density polyethylene with 1-Butene as co monomer.

It is high molar mass,easily processable, high stiffness and strength, good ESCR, very good molding surface finish.

#### **Applications:**

- Jerry can
- General- purpose grade for large containers



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.952
Melt Flow Rate (190 C/5.06kg)	ISO 1133	g/10min	0.35
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	9.5
FRR(21.6/5)		-	27
Impact strength (23 C)	ISO 179/1eA	mj/mm <sup>2</sup>	10
Swell ratio	MPC-Test	%	>115
Flexural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1100
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1200
Stress at Break	ISO 527	Mpa	34
Elongation at Break	ISO 527	%	>800
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	80
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
ESCR in full notch creep test (80 C, 2%Arcopal)	ISO CD 16770	h@3.5 Mpa	5

- Typical value not to be constructed as specifications.
- Recommended melt temp. 180-220 c



## HD-BL 3VD

### License Grade Code HH 4765(THT)

#### **Product Description:**

“BL3VD” is a high density polyethylene with 1-Butene as co monomer. It is very high density and stiffness, good ESCR, high flowability and impact strength.

#### **Applications:**

- Small blow moulding
- Bottles





## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.959
Melt Flow Rate (190 C/5.06kg)	ISO 1133	g/10min	1.5
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	27
FRR(21.6/5)		-	19
Impact strength (23 C)	ISO 179/1eA	kJ/mm <sup>2</sup>	7
Swell ratio	MPC-Test	%	>115
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1350
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1250
Stress at Break	ISO 527	Mpa	32
Elongation at Break	ISO 527	%	>600
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	80
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		63
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@3.5 Mpa	3

- Typical value not to be constructed as specifications.
- Recommended melt temp. 180-220 c



## HD-EX 1

### License Grade Code HF 7740F

#### **Product Description:**

“EX1” is a high density polyethylene with 1-Butene as co monomer. It is acceptable tear strength, medium molar mass and narrow molar mass distribution.

#### **Applications:**

- Stretched film and tapes for production of high strength knitted & woven.



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.944
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	1.8
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	27
FRR(21.6/5)		-	15
FN	MPC-Test	note/size	≤ 4/≤150
Stress at Yield	ISO 527	Mpa	21
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	900
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	800
Stress at Break	ISO 527	Mpa	32
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	73
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		58
Impact strength	ISO 179/1eA	Kj/m2	12

- Typical values not to be constructed as specification.
- Recommended melt temp. 200~230 c



## HD-EX 1 S

### License Grade Code HF 7740 F2(Z501)

#### **Product Description:**

“EX1S” is a high density polyethylene with 1-Butene as co monomer. It is good tear strength, medium molar mass, low density grade with a narrow molar mass distribution.

#### **Applications:**

- Tapes, Netting, Sacks, Bag
- Packaging tubes film extrusion
- Blending partner
- Film for laminating



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.944
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	1.8
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	21
FRR(21.6/5)		-	12
Stress at Yield	ISO 527	Mpa	21
Flextural Creep Modulus (4point,1min)	DIN 19537-2	Mpa	900
Tensile Modulus (23 C,v=1mm/min,secant)	ISO 527	Mpa	800
Stress at Break	ISO 527	Mpa	32
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	73
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		59
Impact strength	ISO 179/1eA	Kj/m2	12
FN	-	NOTE/ $\mu$ m	$\leq 4/\leq 150$

- Typical Values: not to be construed as specifications
- Recommended melt temp. 200-230 °C.
- Recommended film thickness . 20-200  $\mu$ m



## HD-EX 2

### License Grade Code HF 7750 M

#### **Product Description:**

"EX2" is a high density polyethylene with 1-Butene as co monomer. It is Good rigidity, medium molar mass.

#### **Applications:**

- Monofilaments
- Ropes
- Yarns



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.956
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	2.5
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	25
FRR(21.6/5)		-	10
Stress at Yield	ISO 527	Mpa	27
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1350
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1200
Stress at Break	ISO 527	Mpa	31
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	80
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		59
Impact strength	ISO 179/1eA	Kj/m2	19
ESCR in full notch creep test (80 C, 2%Arcoopal)	ISO CD 16770	h@2.5 Mpa	2
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- Typical Values: not to be construed as specifications
- Recommended melt temp: 220-270 c



## HD-EX 2 S

### License Grade Code HF 7750 M2

#### **Product Description:**

"EX2S" is a high density polyethylene with 1-Butene as co monomer. It is medium molar mass, low density grade with a narrow molar mass distribution, high rigidity, good tear strength.

#### **Applications:**

- Monofilaments, Ropes, Yarns
- Fish netting geotextiles & cavil engineering





## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.956
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	2.8
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	28
FRR(21.6/5)		-	10
Stress at Yield	ISO 527	Mpa	27
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1350
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	1200
Stress at Break	ISO 527	Mpa	31
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	80
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
Impact strength	ISO 179/1eA	Kj/m <sup>2</sup>	23
ESCR in full notch creep test (80 C, 2% Arcopal)	ISO CD 16770	h@2.5 Mpa	2
volatiles	ASTM D1023-94	%WT	≤0.3
contamination	-	RATING	≤2

- Typical Values: not to be construed as specifications
- Recommended melt temperature: 220~270 c



## HD-EX 3-80

### License Grade Code HM 5010 T2N

#### Product Description:

"EX3-80" is a high density polyethylene with 1-Butene as co monomer. It is natural, good ESCR, good impact strength, tough and rigid pipe resin.

#### Applications:

- Pipe extrusion PE class
- Industrial and pressure pipe, Gas pipe, drinking water pipe
- Pressure less pipe, relining, fittings

#### Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.945
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.45
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	12
FRR(21.6/5)		-	27



PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Stress at Yield	ISO 527	Mpa	22
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	950
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	850
Stress at Break	ISO 527	Mpa	35
Elongation at Break	ISO 527	%	>850
Elongation at Yield	ISO 527	%	8
Softening Temperature	ISO 306	C	67
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		60
ESCR in full notch creep test (80 C, 2% Arcopal)	ISO CD 16770	h@4.0 Mpa	50
Impact strength (23 C)	ISO 179/1eA	Kj/m2	23
S4 Test (RCP)	ISO DIS 13477	bar	PC >3
Notch Test (SCG)	ISO DIS 13479	Mpa h@4.0	>250
Hydrostatic strength test (80 C)	ISO 1167	Mpa h@4.6	>1000
VN	-	Cm3/g	300

- ① Typical Values: not to be construed as specifications
- ② Recommended melt temp: 190-220 c



## HD-EX 3-80S

### License Grade Code HM 5010 T3 N

#### Product Description:

"EX3-80S" is a high density polyethylene with 1-Butene as co monomer. It is natural, excellent ESCR, high impact strength, outstanding hydrostatic strength for PE 80 class.

#### Applications:

- Pipe extrusion PE 80 class
- Industrial and pressure pipe, Gas pipe, drinking water pipe
- relining, fittings

#### Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.944
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.43
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	10.3
FRR(21.6/5)		-	24



PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Stress at Yield	ISO 527	Mpa	22
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	900
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	850
Stress at Break	ISO 527	Mpa	35
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	67
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		59
ESCR in full notch creep test (80 C, 2% Arcopal)	ISO CD 16770	h@4.0 Mpa	200
Impact strength (23 C)	ISO 179/1eA	Kj/m2	23
S4 Test (RCP)	ISO DIS 13477	bar	PC >3
Notch Test (SCG)	ISO DIS 13479	Mpa h@4.0	>2500
Hydrostatic strength test (80 C)	ISO 1167	Mpa h@4.6	>5000
VN	-	Cm3/g	>300
FNCT (950C, 4.0MPa)	-	h	>100

- Typical Values: not to be construed as specifications
- Recommended melt temp: 190-220 c



## HD-EX 3-100S

### License Grade Code HM CRP 100 N

#### Product Description:

"EX3-100s" is a high density polyethylene with 1-Butene as co monomer. It is Natural outstanding ESCR, high impact strength, outstanding hydrostatic strength for PE 100 class.

#### Applications:

- Pipe extrusion PE 100 class
- Industrial and pressure pipe, Gas pipe, drinking water pipe
- relining, fittings

#### Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.948
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.22
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	6.2
FRR(21.6/5)		-	27



PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Stress at Yield	ISO 527	Mpa	23
Flextural Creep Modulus (4point, 1min)	DIN 19537-2	Mpa	1050
Tensile Modulus (23 C, v=1mm/min, secant)	ISO 527	Mpa	850
Stress at Break	ISO 527	Mpa	36
Elongation at Break	ISO 527	%	>1000
Elongation at Yield	ISO 527	%	10
Softening Temperature	ISO 306	C	74
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		62
ESCR in full notch creep test (80 C, 2% Arcopal)	ISO CD 16770	h@4.0 Mpa	400
Impact strength (23 C)	ISO 179/1eA	Kj/m2	25
S4 Test (RCP)	ISO DIS 13477	bar	PC >20
Notch Test (SCG)	ISO DIS 13479	Mpa h@4.0	>1000
Hydrostatic strength test (80 C)	ISO 1167	Mpa h@4.6	>15000
VN	-	Cm3/g	>360
FNCT (950C, 4.0MPa)	-	h	>5000

- ① Typical Values: not to be construed as specifications
- ② Recommended melt temp: 190–220 c



## HD-EX 4

### License Grade Code HM 9455 F

#### **Product Description:**

“EX4” is a high density polyethylene with 1-Butene as co monomer. It is high rigidity, low gel level, high drowdown, somewhat stiffer than EX5

#### **Applications:**

- Film extrusion
- Blending partner
- (refuse) bags, carrier bags





## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.956
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.28
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	8
FRR(21.6/5)		-	29
FN	MPC-TEST	-	≤3/≤120
Stress at Yield	ISO 527	Mpa	27
Max. Tensile Strength MD / TD	ISO 527	Mpa	45/40
Stress at Break	ISO 527	Mpa	35
Tear Strength MD / TD	ISO 6383-2	m N	200/400
Max. Elongation MD / TD	ISO 527	%	400/450
Softening Temperature	ISO 306	C	75
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		61
Dart Drop Impact	ASTM D 1709	g	220

- ① Typical Values: not to be construed as specifications
- ② Blow film thickness 20  $\mu\text{m}$  , Extruded at melt temp. of 200 c and Blow up Ratio 4:1
- ③ Recommended melt temperature: 200\_230 °C
- ④ Recommended film thickness: 10-20  $\mu\text{m}$



## HD-EX 4HS

### License Grade Code HM 9455 F1

#### **Product Description:**

“EX 4HS” is a high density polyethylene with 1-Butene as co monomer. It is high rigidity, low gel level, high drowdown, very high stiffness and good tenacity

#### **Applications:**

- Film extrusion
- Blending partner
- (refuse) bags, carrier bags



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.957
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.22
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	7.5
FRR(21.6/5)		-	34
FN	MPC-TEST	-	≤3/≤120
Stress at Yield	ISO 527	Mpa	27
Max. Tensile Strength MD / TD	ISO 527	Mpa	45/40
Stress at Break	ISO 527	Mpa	35
Tear Strength MD / TD	ISO 6383-2	m N	200/400
Max. Elongation MD / TD	ISO 527	%	400/450
Softening Temperature	ISO 306	C	75
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		60
Dart Drop Impact	ASTM D 1709	g	210

- ① Typical Values: not to be construed as specifications
- ② Blow film thickness 20  $\mu\text{m}$  , Extruded at melt temp. of 200 c and Blow up Ratio 4:1
- ③ Recommended melt temp: 200-230 c
- ④ Recommended film thickness: 10-200  $\mu\text{m}$



## HD-EX 5

### License Grade Code HM 9450 F

#### **Product Description:**

"EX 5" is a high density polyethylene with 1-Butene as co monomer. It is good toughness, low gel level, good toor strenght, good stiffness and tenacity, High molar mass.

#### **Applications:**

- Film extrusion
- Counter bag, carrier bag
- Wrapping films & sheets



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.949
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.28
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	8
FRR(21.6/5)		-	29
FN	MPC-TEST	-	≤3/≤120
Stress at Yield	ISO 527	Mpa	24
Max. Tensile Strength MD / TD	ISO 527	Mpa	45/40
Stress at Break	ISO 527	Mpa	35
Tear Strength MD / TD	ISO 6383-2	m N	200/450
Max. Elongation MD / TD	ISO 527	%	400/450
Softening Temperature	ISO 306	C	75
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		60
Dart Drop Impact	ASTM D 1709	g	220

- ① Typical Values: not to be construed as specifications
- ② Blow film thickness 20  $\mu\text{m}$  , Extruded at melt temp. of 200 c and Blow up Ratio 4:1
- ③ Recommended melt temp: 200~230 c
- ④ Recommended film thickness: 10~200  $\mu\text{m}$



## HD-EX 5 HS

### License Grade Code HM 9450 F1

#### **Product Description:**

“EX5 HS” is a high density polyethylene with 1-Butene as co monomer. It is high toughness, low gel level, good tear strength, high molar mass, very high stiffness and good tenacity.

#### **Applications:**

- Film extrusion
- Blending partner
- (refuse) bags, carrier bags,
- Wrapping film & sheets



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.950
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.22
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	7.5
FRR(21.6/5)		-	34
FN	MPC-TEST	-	≤4/≤120
Stress at Yield	ISO 527	Mpa	24
Max. Tensile Strength MD / TD	ISO 527	Mpa	45/40
Stress at Break	ISO 527	Mpa	35
Tear Strength MD / TD	ISO 6383-2	m N	200/450
Max. Elongation MD / TD	ISO 527	%	400/450
Softening Temperature	ISO 306	C	75
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		60
Dart Drop Impact	ASTM D 1709	g	240

- Typical Values: not to be construed as specifications
- Blow film thickness 20  $\mu\text{m}$  , Extruded at melt temp. of 200 c and Blow up Ratio 4:1
- Recommended melt temp: 200-230 c
- Recommended film thickness: 10-200  $\mu\text{m}$



## HD-EX 6HT

### License Grade Code HM 9445 HT

#### **Product Description:**

“EX 6HT” is a high density polyethylene with 1-Butene as co monomer. It is good toughness, low gel level, good tear strength, high tenacity.

#### **Applications:**

- Film extrusion
- Blending partner
- (refuse) bags, carrier bags,
- Heavy duty packing





## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm3	0.944
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	0.18
Melt Flow Rate (190 C/21.16kg)	ISO 1133	g/10min	5.4
FRR(21.6/5)		-	30
FN	MPC-TEST	-	≤4/≤120
Stress at Yield	ISO 527	Mpa	21
Max. Tensile Strength MD / TD	ISO 527	Mpa	45/40
Stress at Break	ISO 527	Mpa	36
Tear Strength MD / TD	ISO 6383-2	m N	200/400
Max. Elongation MD / TD	ISO 527	%	450/500
Softening Temperature	ISO 306	C	73
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		58
Dart Drop Impact	ASTM D 1709	g	240

- ① Typical Values: not to be construed as specifications
- ② Blow film thickness 20 , Extruded at melt temp. of 200 c and Blow up Ratio 4:1
- ③ Recommended melt temp: 200-230 c
- ④ Recommended film thickness: 10~200



## HD-EX 7C

### License Grade Code HF4750 K

#### **Product Description:**

"EX7C" is a high density polyethylene with 1-Butene as co monomer.

#### **Applications:**

- Wire & Cable insulation



## Typical data

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE*
Mass density (23 C)	ISO 1183	g/cm <sup>3</sup>	0.946
Melt Flow Rate (190 C/5.0kg)	ISO 1133	g/10min	3.5
Melt Flow Rate (190 C/21.16 kg)	ISO 1133	g/10min	63
FRR(21.6/5)		-	18
Stress at Yield	ISO 527	Mpa	24
Stress at Break	ISO 527	Mpa	32
Elongation at Yield	ISO 527	%	8
Softening Temperature	ISO 306	C	77
Brittle Temperature	ASTM D746-72	C	<-80
shore D hardness	ISO 868		58
Impact strength (23 C)	ISO 179/1eA	Kj/m <sup>2</sup>	10
VN	-	Cm <sup>3</sup> /g	200

- Typical Values: not to be construed as specifications
- Recommended melt temp: 180-220 c