

Sector	Grade	Technology #	Density (Kg/m ³)	MFI (I ₂) (g/10min.)	Special Characteristics	Typical Applications
			ASTM D1505	ASTM D1238		
Blow Moulding	B6003	S	961	0.35	Excellent Rigidity and Good Processability	Containers/bottles from 5L to 20L for Oil, Vanaspati & General purpose packing
	B5004	S	950	0.40	Excellent ESCR and good external appearance	High ESCR Containers/Bottles up to 10L for Packing of Pesticides, Surfactants & Cosmetics, shampoo
	B5502	G	955	0.20	Good Rigidity and Processability, Good Impact Strength & ESCR	General purpose containers upto 30L for packaging of Chemicals, Oil & foodstuff.
	B52H06	G	952	0.06	HM Grade with High ESCR	Large Blow Moulded containers used for packaging of chemicals, industrial products
	B48H03	S	948	0.03	HM Grade with High Impact strength, good ESCR	Small Plastic Fuel Tank, General Purpose Extrusion
	B55H03	S	955	0.03	Good Impact strength, Rigidity, High ESCR & Low Parison Sag	Large Containers (upto 100L) for transport & Storage of Chemicals, Detergents, Lube Oil. Blow Moulded Water Tanks (upto 1000L).
Films	F5010	S	950	1.0	Good Processability & Clarity	General Purpose Packaging & Wrapping applications
	F52H04	S	952	0.04	Excellent processability at High Speed	Garment / Grocery/ Merchandise Bags, Disposal Waste Bags, Counter Bags, Shopping bags etc.
	F50H08	G	950	0.08	Excellent Down-gauging, High Tensile Strength & Stiffness	Super Market Carrier bag, Grocery bags
Raffia/ Monofilament	R5504	S	955	0.40	Mechanical Strength, Low Water Carry Over, Good Processability	Fishing Nets, Insect Screens, Ropes, Cloth Yarns, Packing Straps, Woven Sacks for Fertilizer.
	R5410	G	954	0.90	Excellent Processability & Tenacity	Raffia Tapes for Woven Sacks & Tarpaulin, Knitted nets for crop protection, "Raschel" sacks for vegetables, Ropes
	R5106	S	951	0.60	High tensile strength	Geo- Grid
	Y5008	S	950	0.85	Good Processability & Mechanical Strength	Woven sacks, fishing nets, mosquito nets, insect screens, agriculture nets etc.
	Y5808	S	958	0.80	High tear strength, Good Processability	Cloth Yarn, Woven Sacks, Tarpaulin
	Y5710	G	957	0.90	Excellent Processability & Tenacity	Monofilament for Nets, Twines & Ropes

S- Slurry Process, G- Gas phase process

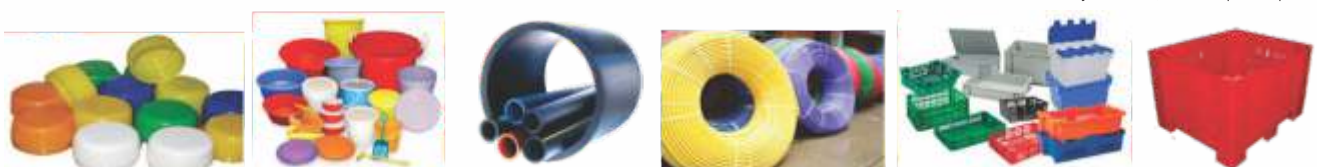


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			ASTM D1505	ASTM D1238		
Injection Moulding	M5203	G	952	2.5	High ESCR & Good Impact Strength, Low Warpage	Caps and Closures, Technical Parts, Bins
	M6405	S	964	5.0	Excellent Rigidity and Impact Strength	General Purpose and Industrial Crates, Vegetable/Fruit Containers, Tool Boxes, Shipping Crates/Pellets
	M5306	S	953	6.0	Excellent ESCR and Good Impact Strength.	General purpose, Automobiles Parts, Caps & Closures.
	M5306L	S	953	6.0	Different Stabilizer, Good Mechanical Properties.	General purpose Moulding, Caps & Closures, Caps for milk bottles
	M6008	G	960	8.0	Excellent Rigidity & Impact Strength, low warpage	Agriculture & Industrial Crates, Pellets, Helmets, Injection Moulded Caps & Closures
	M6008U	G	960	8.0	Excellent Rigidity & Impact Strength, low warpage	UV Stabilized, Agriculture & Industrial Crates, Pellets, suitable for outdoor uses
	M6112	S	961	12.0	High flow, good rigidity	Housewares, Baskets, Pails, Bucket, Caps & Closures, Extrusion Coating on HDPE fabrics (in blend with LLDPE/LDPE)
	M5618	S	956	18.0	High Flow Properties, Good Rigidity	Housewares, Thin Walled Drinking Cups/glasses, Toys, buckets
	M5220	G	952	21.0	High Flow & Good Warpage Resistance	Housewares, Thin Walled Food Containers & Base Resin for Filler Master Batch
	M5050	G	950	55.0	High Flow & Good Warpage Resistance	Housewares, Thin Walled Food Containers & Base Resin for Filler Master Batch
Pipes	P5402	G	954	0.20	Excellent Processing - Meets PE-63 Requirements	Suitable for Non-Pressure Pipes, Ducting Pipes, Drainage Pipes, Drip Laterals, etc.
	P4002	S	940	0.20	Excellent ESCR, Good Mechanical Strength, Medium Density	Pressure Pipe for Gas distribution (PE-80), Water Pipes
	P4402	S	944	0.24	Excellent ESCR, Good Processability	Pipe Coating, Steel Pipe Lining and Submarine Cables, PE-63 pressure pipes for agriculture
	P4402U	S	944	0.24	UV Stabilized, Excellent ESCR, Good Processability	Telecom/Cable Ducts, PE-63 Pipe applications with outdoor exposure, Non-pressure general piping usage
	P51H10	S	951	0.10	Excellent ESCR, Mechanical Strength & Creep Resistance	Pipes for Water Supply (PE-80), Civil Engineering, Drainage, Water Heater, Chemicals, Corrugated Tubes & Pipes, Large diameter irrigation pipes
	P50H03	S	950	0.03	Excellent ESCR, Mechanical Strength and Creep Resistance	Large Diameter Pipes, High Pressure (PE-100) Pipes for agriculture, Sewerage/Drainage Pipes, Water Pipes
Sheet	S5801	S	958	0.10	Rigidity, High ESCR, Less Draw-Down and Malleability	Tarpaulins, Geo-Membranes, Ski Soles, Linings of Bath-Tubs

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*S- Slurry Process, G- Gas phase process



Linear Low Density Polyethylene (LLDPE)

Grade Basket - Typical Applications

Sector	OPaL Grade	Density (Kg/m ³)	MFI (g/10min.) (I ₂)	Special Characteristics	Typical Applications
		ASTM D1505	ASTM D1238		
Films	F2001 A	920	1.00	Good Processability, Better Sealing, Higher Puncture Resistance, Greater Drawdown Capability, Higher tensile strength - Contains Anti-Oxidant. No Slip and No Anti Block additives	Stretch Films, Drip Laterals, Cling Films, Lamination Films, Liners, Co-extrusion films.
	F2001 S	920	1.00	Good Processability, Better Sealing, Higher Puncture Resistance, Greater Drawdown Capability, Higher tensile strength - Contains Anti-Oxidant, with Slip and Anti Block additives	Liquid Packaging Films, Heavy Duty Films, Multilayer Films, Carrier Bags, Drip Laterals, Agriculture films
	F2002 A	920	2.00	High Output - Contains Anti-Oxidant. No Slip and No Anti Block additives	Light and Medium Duty Film, Stretch Cling Film, air bubble films, drip lateral
	F2002 S	920	2.00	High Output - Contains Anti-Oxidant with Slip and Anti Block additives	Light and Medium Duty Films, blending with LDPE
	F2003 A	920	3.00	For Cast Films. Contains Anti-Oxidant No Slip and No Anti Block additives.	Suitable for use on High Speed Co-Extrusion Lines, Blown & Cast Stretch Films
Roto Moulding	T3804	938	4.00	Narrow MWD, Excellent Processability, Good Impact Strength & Stiffness, Excellent Internal & External Surface Finish	Rotational Moulded products like Overhead water tanks, Loft Tanks, Septic Tanks, Chemical Storage Tanks, Toys, Furniture, Injection Moulded Technical Parts and Closure
	T3804 U	938	4.00	UV Stabilized. Narrow MWD, Excellent Processability, Good Impact Strength & Stiffness, Excellent Internal & External Surface Finish	For Rotational moulding applications requiring Outdoor Exposure
Lamination	E2507	927	7.00	Extrusion Coating Grade: Excellent Flow, Good Softness	Lamination for Woven sacks, tarpaulin in blend with LDPE
Injection Moulding	M2525	925	25.00	Excellent Flow Properties and Processability, Very High Warpage Resistance	Housewares, Thin walled Food Containers, Lids, suitable for fast cycling applications
	M2550	926	50.00	Excellent Flow Properties and Processability, Very High Warpage Resistance	Base Resin for Master batches, Moulding of Flat and Large Warpage Free Products / Lids, housewares

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Sector	OPaL Grade	MFI (g/10min.) (I ₂)	Special Characteristics	Typical Applications
		ASTM D1238		
Polypropylene - Homopolymer				
Injection Moulding	MH 03	3	General Purpose	Thermoforming Containers, Rigid Packaging, Flexible Packaging
	MH05K	5	Antistatic	Heavy wall Parts, Consumer Products, Toothpaste Tubes, Closures, Housewares, Rigid Packaging
	MH12N	12	Nucleated, Antistatic	Closures, Lids, Furniture, Housewares, Rigid Packaging
	MH 13	13	General Purpose	Thin parts/Fast moulding, Housewares, Consumer Products, Packaging
	MH 13A	12	Antistatic	General Purpose, injection molding such as thin parts, furniture, Rigid packaging, Housewares etc.
	MH 23	23	High Flow	General Purpose, Very thin parts, Housewares, Consumer Products, Rigid Packaging
	MH 25N	25	Nucleated, Clarified	Consumer Products, Medical Syringes, Housewares, Transparent Containers, Jars
	MH 55N	55	Nucleated, Antistatic, High Flow	Consumer Products, Housewares, Thin-Wall Rigid Packaging, Multi-Cavity Moulding, Media Packaging, Base resin for Compounding
Films (Tubular Quenched, Cast & BOPP)	FH 10S	10	With Slip & Anti-block	TQPP: Water Quenched film, Merchandizing Bags, General purpose textile packaging, Grocery & Snack food packaging
	FH 08S	8	With Slip & Anti-block	CPP Films, Flexible Packaging, Cheese Wrap, Bread Packaging
	FH 03	3.4	BOPP: Tenter-Frame	Flexible Packaging, Overwrap, Metalized Films, Plain Textile films
Fibre & Tape	RH 02Y	2	General Purpose	Thermoformed Sheet; Tape; Woven Bags; Twine etc.
	RH 03	3.3	Low water carry-over, good balance of Tenacity-Elongation	Oriented structures (Stretched tapes), Cement/Fertilizer/ Food grain packaging bags, Bulk industrial packaging (FIBC) etc.
	RH 22U	22	UV Stabilized, Anti-Gas Fading	Continuous Filament, Consumer Products
	RH 25X	25	Anti Gas fading, High Speed	Multi Filament Yarns, Spun-bond Non-Woven, Fine Denier Staple Fibres
	RH 38	38	Anti Gas fading, High Flow	Spun-bond Non-Woven, High Speed Spinning, Fine Denier Fibres
Thermoforming Extrusion	EH 03N	3	Nucleated, good stiffness and optical properties	Thermoforming Cups / Trays, rigid food containers, general purpose Injection moulding

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Sector	OPaL Grade	MFI (g/10min.) (I ₂)	Special Characteristics	Typical Applications
		ASTM D1238		
Polypropylene - Impact Copolymer				
Injection Moulding	MI 03	3.5	High Impact, Good Stiffness	Industrial Moulding, Furniture, Automotive Components
	MI 08N	8	Nucleated, Antistatic	Crates and Other Returnable Transport Packaging, Paint Pails, Lube Pails, Luggage & Furniture
	MI 12NX	12	Nucleated, Antistatic, Good gloss	Industrial Moulding, Appliances, Automotive Parts, Houseware & Luggage
	MI 15	15	Superior Impact, Balanced stiffness, Good flow	Industrial Moulding, Automotive Bumper Fascia, Air Dams, Exterior Trim, base resin for compounding
	MI 20X	20	Nucleated, High Flow	Industrial Moulding, Compounding, Consumer products
	MI 35V	35	Nucleated, High Flow	Auto Interior Trim, Air Ducts, Industrial large parts, Compounding
	MI 44N	44	Nucleated, Antistatic	Housewares, Appliances, Rigid Packaging, Thin wall large parts, Compounding
	MI 70N	70	Nucleated, Antistatic	Thin Walled Injection Molding, Rigid Packing for Dairy Products, Housewares, Caps & Closures, Compounding
	MI 100N	100	Nucleated, Antistatic, High Flow	Thin-Wall Rigid Packaging, Refrigerated Dairy Containers, Stadium Caps, High speed Injection moulding, Compounding
Extrusion	EI 01N	1.5	Nucleated, High Melt strength	Corrugated Sheet (Twin Walled Sheet), Corrugated Pipe and Fittings, Thermoforming, Blow Moulded containers
	EI 02N	1.9	Nucleated, High Stiffness	Food service trays, containers, rigid packaging
Polypropylene - Random Copolymer				
Injection Moulding	MR 12C	12	Clarified, Antistatic	High Clarity Rigid Containers, Media Packaging, Housewares, Injection Stretch Blow Moulding
	MR 20K	20	Clarified, Antistatic	Housewares, Rigid Packaging, Consumer Products
	MR 35K	35	Clarified, Antistatic	High Speed Molding, Rigid Packaging, Thin Wall Molding, Deli Containers, Housewares, media packaging, Stretch Blow Moulding
	MR 53C	53	High Clarity, Antistatic	Thin-Walled Rigid Packaging, Consumer Products
Extrusion	ER 00V	0.3	Good Stiffness/Impact, Long Term Heat Aging	Extruded Pipes, Sheets & Profile
	ER 02N	2	Clarified, Antistatic	Extruded Sheet and Profiles, Thermoformed Packaging, Extrusion/Injection Blow Moulded Containers and Bottles

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CHEMICALS

Benzene

Capacity: 150 KTPA

Technology Licensor: Lurgi GmbH, Germany

Benzene is an organic chemical compound. It is a colorless, highly flammable liquid with a sweet smell. Benzene is one of the most basic petrochemicals and precursor in the production of drugs, plastics, synthetic rubber, dyes, etc.

Benzene is extensively used as a chemical intermediate for the production of many important industrial compounds such as Caprolactum, Linear Alkyl Benzene (LAB), Styrene, Phenol, Cyclohexane, Nitrobenzene, Aniline, Chlorobenzene, Insecticides, Pesticides etc. Benzene is also used for production of thinners for paint industry and also as solvents.

Major Properties	Test Methods	Unit	Specification
Appearance	No method	-	Clear
Purity	ASTM D-5134	Wt%	>99.90
Color	ASTM D-1209	APHA Pt/Co	20 max
Solidification Point	ASTM D-852	°C	5.45 min
Distillation range (at 760mm Hg including 80.1 °C)	ASTM D-850	°C	1max
Density/ Specific Gravity	ASTM D-4052	Gm/ml	0.882-0.886
Moisture content	ASTM D-7375	Wt ppm	500 max
Total non-aromatics	ASTM D-5713	Wt ppm	1000 max
Toluene	ASTM D-5134	Wt ppm	300 max
Acid wash colour	ASTM D-848	Rating	1 max
Thiophene	ASTM D-4735/7011	Wt ppm	0.6 max

Capacity: 115 KTPA

Technology Licensor: Lurgi GmbH, Germany

Butadiene is a colourless, noncorrosive liquefied gas with a mild aromatic or gasoline-like odour. Its low flash point makes butadiene both flammable and explosive.

Butadiene is mainly used in polymers and elastomers such as ABS, SBR and SB latex, and polybutadiene rubber. Together these applications represent 3/4th of the total butadiene demand in the world. Styrene Butadiene latex is mainly used in paper coating, such as on glossy magazines and brochures. It is also used in carpet backing, and construction such as bitumen additive and adhesive for roofing.

Major Properties	Test Methods	Unit	Specification
1:3 Butadiene	ASTM D-2593	Wt%	99.5 min
Total Acetylenes as(MA+VA+EA)	ASTM D-2593	Wt ppm	30 max
Carbonyl as acetaldehyde	BASF	Wt ppm	50 max
Peroxide as H ₂ O ₂	ASTM D-5799	Wt ppm	2 max
Solvent NMP	BASF	Wt ppm	10 max
1:2 Butadiene	ASTM D-2593	Wt ppm	20 max
Other C ₄ s	ASTM D-2593	Wt%	0.5 max
C ₅ hydrocarbons	ASTM D-2593	Wt ppm	10 max
BD Dimer (at the loading point)	BASF	Wt ppm	up to 350
TBC inhibitor as loaded (at loading point)	ASTM D-1157	Wt ppm	75-150 max
Sulphur	ASTM D-6667	Wt ppm	5 max
Propadiene	ASTM D-2593	Wt ppm	10 max

Butadiene



CHEMICALS

Pyrolysis Gasoline PyGas

Capacity: 165 KTPA

Technology Licensor: Linde, Germany

Pygas is produced in an ethylene plant that processes naphtha, butane or gasoil. Raw Pyrolysis Gasoline (RPG) is a naphtha-range product with high aromatics content used mainly as a high-octane blend stock for motor gasoline or as a feedstock for an aromatics extraction unit.

OPaL's Pygas is hydrogenated Pyrolysis Gasoline (HPG) obtained from RPG post Benzene extraction and having < 1.5 wt% benzene content. It can be used as chemical feedstock for Aromatics Extraction – mainly Toluene, mix-Xylene and low & heavy grade Fuel Oil or also can be used as gasoline blending component.

Major Properties	Test Methods	Unit	Specification
Density (at 15°C)	ASTM D-4052	gm/ml	0.830-0.870
Distillation	ASTM D-86	-	60-180
IBP	-	°C	To Report
FBP	-	°C	To Report
Benzene Content	ASTM D-5443/5134	Wt%	2.0 max
Total Aromatics	ASTM D-5443/5134	Wt%	min 70
Sulphur	ASTM D-5453/2622	Wt ppm	100 max
Water	ASTM D-4176	Free water	no
Existing Gum	ASTM D-381	mg/100ml	5 max

Carbon Black Feedstock (CBFS)

Capacity: 70 KTPA

Technology Licensor: Linde, Germany

CBFS is the heavy hydrocarbon mix (mostly C9 to C15 fraction and higher) bottom product of Naphtha cracker unit. CBFS is used to produce Carbon Black, which is used in tyres and road paving, tyre reinforcements, black pigments (e.g. for road markings), and conductors. CBFS is also used as heating Fuel Oil in boilers in several industrial units.

The stream also contains Piperylene, which is used to produce copolymerization elastomers, petroleum resins, curing agents, pesticides, and perfumes.

Major Properties	Test Methods	Unit	Specification
Density (at 15.56°C)	ASTM D-1298	Kg/m ³	To Report
Flash Point	ASTM D-93	°C	70 min
Viscosity (at 98.9 °C)	ASTM D- 445/ D 2161	Sus	To Report
BMCI	Calculation	-	95 min
Free Water	Visual	-	Nil
Sulphur	ASTM D-4294	Wt%	3 max
Asphaltene	IP 143	Wt%	>5
Pour point	ASTM D-97	°C	50
Ash content	ASTM D-482	Wt%	0. 05 max

