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## Delivering Excellence, Propelling India's Progress

### IndianOil – The Energy of India

Indian Oil Corporation (IndianOil) is India's largest commercial enterprise, with sales turnover of ₹6,05,924 crore (US\$ 86.59 Billion) and profits of ₹16,894 crore (US\$ 2,414 Million) for the year 2018-19. It is also the leading Indian corporate in *Fortune's* prestigious 'Global 500' listing of the world's largest corporates, ranked at the 117<sup>th</sup> position for the year 2019.

As India's flagship national oil company, IndianOil's business interests straddle the entire hydrocarbon value-chain – from refining, pipeline transportation and marketing of petroleum products to exploration & production of crude oil & gas, marketing of natural gas and petrochemicals, besides forays into alternative energy and globalisation of downstream operations.

### Petrochemicals: World-scale Plants, World-class Technologies

IndianOil is one of the largest players in the domestic Petrochemicals market, offering a full slate of Petrochemical products and intermediates under the brand name *PROPEL*. The Corporation made its big-ticket entry into Petrochemicals with the commissioning of the country's largest LAB (Linear Alkyl Benzene, used in the production of detergents) plant at its Gujarat Refinery in August 2004. An integrated PX/PTA (Paraxylene/Purified Terephthalic Acid) complex came up at Panipat in Haryana in 2006 with a world-scale capacity of 553 KTA. A world-class Naphtha Cracker of 857 KTA Ethylene capacity with downstream polymer units, set up at Panipat in 2010. Its downstream unit produces about 47 grades of polymers catering to diverse range of applications.

#### Brief details of Polymer plants are given below:

Unit	Technology & Licensor	Capacity (KTA)
Polypropylene	Spheripol II – LyondellBasell, Italy	600 (2X300) at Panipat 680 (2X340) at Paradip
Dedicated HDPE	Hostalen – LyondellBasell, Germany	300 at Panipat
LLDPE/HDPE Swing	Sclairtech- Nova Chemicals, Canada	350 at Panipat



IndianOil has already implemented Petrochemical projects worth ₹23,950 crore (US\$ 4.12 billion). Further plans are on the anvil for various petrochemicals projects touching capex of ₹29,590 crore (US\$ 6.4 billion). As part of this mega plan, IndianOil has commissioned a Polypropylene plant with a capacity of 680 KTA at its Paradip Refinery in February 2019. A 356 KTA Ethylene Glycol plant would be commissioned at Paradip, Odisha in 2021. Further to the plan study is underway for PTA plant at Paradip.



## LLDPE / HDPE Grade Slate : Sclairtech Swing Plant

Product	Sector	Grade	MFI(L)	Density	Special Characteristics	Application
LLDPE	LL FILM	010F18S	0.90	0.918	Good processability, Low gel, Good mechanical properties, Excellent optical properties. Contains slip and antiblock.	Liquid packaging film, Multilayer film for adhesive lamination, Carrier bags, Drip lateral.
		010F18A	0.9	0.918	Good processability, Good mechanical properties, does not contain slip and antiblock.	Multilayer film for adhesive lamination, Mulch Film, Drip lateral, Cling film.
		020F18A	2.0	0.918	Easy processability, Low gel, does not contain slip & antiblock.	Cast film for stretch wrapping, stretch cling film
	DRIPLATERAL	010L22S	1.1	0.922	Excellent processability, Good strength, Controlled morphology, Low gel content	Dedicated for Drip lateral pipes applications for high speed extruders
LLDPE	ROTATIONAL MOULDING	042R35A	4.5	0.935	Very good processability, Ease in de-moulding, Good mechanical strength.	Overhead water tanks, Loft tanks, Septic tanks, Chemical storage tanks, Toys, Garden furniture.
		040R40A	4.0	0.940	Superior mechanical strength, Excellent rigidity, impact resistance and Easy Processability	Septic Tanks, Rainwater Harvesting Tanks, Underground Tanks, Manholes & Chambers, Insulated Containers, Automobile Parts, Oil-Grease Traps, Material Handling Equipments
LLDPE	INJECTION MOULDING	500M24A	50	0.924	Very good flow and processability.	Carrier resin for master batches, Injection moulding of flat and large warpage-free products and lids.
LLDPE	EXTRUSION COATING	065E24A	6.5	0.924	Good processability. Low neck-in, Good adhesion on substrates.	Extrusion coating on HDPE Raffia fabric, Paper etc. Base resin for XLPE compounds.
HDPE	INJECTION / COMPRESSION MOULDING	020M52	2	0.952	Superior Processability, Superior Mechanical properties	Compression-injection molded Caps and Closures, Injection Molded closures, sheet for textile cart cans.
		080M60	8	0.960	Good processability, Superior mechanical properties, Good ESCR property.	Crates for vegetables, milk, fish and material handling, Injection moulded Pallets, Caps & Closures.
	INJECTION MOULDING	080M55	8	0.955	Good processability, Superior mechanical properties	Caps & Closures.
		080M60U	8	0.960	UV stabilised, Good processability, Superior mechanical properties, good ESCR property.	Soft drink crates, Industrial crates for outdoor usage, Injection moulded Pallets, Caps & Closures.
		180M50	20	0.950	Excellent flow properties, very good processability, DMF approved.	Houseware, Thin wall injection moulded products.
HDPE	RAFFIA	010E52	0.9	0.952	Excellent orientation characteristics, Low water carry over, Excellent mechanical properties.	Woven sacks for fertilizer packaging, Wrapping fabric, Tarpaulin, Agri shade net, Raschel bags, Extruded sheets
		012E50	1.2	0.950	Narrow MWD, Excellent orientation characteristics, Low water carry over. Superior mechanical properties.	Tarpulin, Woven sacks for wrapping fabrics, Monofilaments for mosquito nets, fishing nets, etc.
	HDFILM	003F46	0.3	0.946	Broader MWD	Blend in multi layer films for barrier improvement, small blow molding containers, blend with HM film for liner.

## HDPE and HMHDPE Grade Slate : Dedicated (Hostalen) Plant

Sector	Grade	MFI(L)	Density	Special Characteristics	Application
HM Film	002DF50	0.22	0.950	Bimodal grade with very good processability with high molecular weight. Excellent dart impact strength.	Shopping bags, Films for wrapping, Liners.
GPBM	012DB54	1.20	0.954	Bimodal grade with very good processability, Good balance of stiffness, ESCR and impact properties. DMF approved.	Blow molded containers for edible & lubricating oil packaging, Pharmaceutical & other general purpose packaging, DWC pipe.
MBM	003DB52	0.35	0.952	Bimodal HMHD grade with very good processability, High stiffness, toughness & good ESCR properties.	Blow moulded containers upto 100 litres. Sheet extrusion, DWC Pipe. Blow moulded water tanks.
LBM	001DB52	0.12	0.952	Bimodal HMHD grade with good processability, Good balance of stiffness and impact properties.	Large containers and L-Ring drums for packaging of industrial products upto 220 litres.
PIPE	002DP48	0.22	0.948	Bimodal grade with good processability, Excellent impact & stiffness. Classified as MRS 10.0 material (PE-100) (Exova certification)	Pressure pipes for water & gas transportation, Irrigation pipes, etc.
	004DP44	0.44	0.946	Bimodal grade with very good processability, Classified as MRS 8.0 material (PE-80)	Pressure pipe for water and gas transportation.
	010DP45	0.9	0.945	Bimodal grade with good processability. Classified as MRS 6.3 material (PE-63)	Sprinkler pipes, Bore well pipes, DWC pipes, Ducts & non-pressure pipes.
	010DP45U	1.0	0.945	Bimodal grade with good processability, specially formulated for teleduct applications. It is UV stabilized grade. CACT approval for OFC ducts for telecom applications.	Teleducts for OFC, DWC pipes.

## Polypropylene (PP) Grade Slate : Spheripol Plant

Family	Sector	Grade	MFI(L)	Special Characteristics	Application
HOMO POLYMER	INJECTING MOULDING	1030MG/P1030MG	3	Good balance of impact and rigidity, Good processability	Industrial products, Household products, General purpose extrusion, Blending with Raffia.
		1060MG/P1060MG	6	Good balance of impact and rigidity, Good processability	Industrial products, Household products. Also used in blends in Thermoforming & Raffia.
		1110MG/P1110MG	11	High flow and high rigidity, Very good gloss.	Rigid Packaging, Household articles, Furniture, Caps & Closures.
		1110MAS/P1110MAS	11	A superior grade having high flow, very high stiffness with excellent gloss. The grade offers better productivity and reduces energy consumption. DMF approved.	Furniture, Household articles & Auto components where high stiffness is required.
		1200MC	20	Good flow characteristics, high clarity, good processability	Syringe barrel application, multicavity products high clarity intricate products hangers for garments.
		P1400MN	40	High flow, good processability	Thin walled injection Molding articles, carrier resin for masterbatch.
	EXTRUSION COATING	1350EG/P1350EG	35	Excellent flow characteristics, Low neck-in & good processability, Good surface finish & excellent adhesion to substrate.	Extrusion coating on substrate PP Raffia fabrics, Lean blend with LDPE.
		RAFFIA	1030RG/P1030RG	3.5	Good processability, Low water carryover, Good balance of tenacity & elongation.
			P1045RG	4.5	High flow, good processability
		BOPP FILM	1030FG/P1030FG	3	Gel free, Good stretchability and processability.
	TQ FILM	1100FS/P1100FS	10	Very good processability, Excellent gloss and clarity, contains Slip and Antiblock.	TQ films for packaging of snacks and bakery foods, Garment packaging, Textiles over wraps.
FIBER AND FILAMENT	1200YG/P1200YG	20	Good melt strength, stable extrusion even at high spinning speeds and stretch ratios.	Lower denier bulk continuous fibre, Continuous Fibre and Staple fibres, High tenacity continuous filament for straps, Low denier staple fibres for spun bond and non-woven.	
	1350YG/P1350YG	35	High melt flow, High speed production of fine denier fibre, Anti gas fading properties.	Spun bonded non-woven fabric for Diapers, Medical and sanitary tissues, Fine fibre yarn, Packaging bags for rice.	
RANDOM CO-POLYMER	BLOW MOULDING	2020EC	2	Excellent clarity & gloss, superior processability & balance of stiffness & impact properties.	Blow moulded articles, sheet extrusion, IBM products.
	INJECTION MOULDING	2120MC	12	Excellent clarity & good processability, grade offers higher productivity and energy saving opportunities in processing. DMF approved.	Transparent injection moulded rigid containers, Houseware, Syringes, ISBM bottles.
IMPACT CO-POLYMER	INJECTION MOULDING	3030MG	3.5	Medium flow, Good stiffness and high impact strength balance.	Injection moulding of components for automobiles, Home appliances and Industrial products, Caps & Closures.
		4080MA	8	Medium flow for easy processing, Good impact & stiffness balance, anti-static properties.	Paint Pails, Furniture and industrial components.
		4100MH	10	Medium flow, Very good processability, Long term heat ageing, Good impact & stiffness balance.	Battery containers, Industrial mouldings, Components requiring long heat exposure like under-the-hood automotive components.
		5080MG	10	Good processability, No break (Superior impact strength).	High impact automotive components, Impact modifier in specialty PP compounds.
		3120MA	12	Medium flow, Good processability, Good impact and stiffness balance, Anti-static properties.	Home appliances, Automotive components, PP compound for automotive components, Houseware, Molded furniture, Luggage shells.
		3400MN	40	High flow, Good processability, Low warpage, Nucleated grade.	Home appliances, PP Compound for automotive components, Thin wall Injection Moulding.
	3650MN	65	High flow, Good processability, Low warpage, Nucleated grade.	PP Compounding for automotive components, TWIM, Appliances.	
EXTRUSION COATING	3250MG	25	High flow, Very good processability, Low neck-in.	Extrusion coating on PP Raffia fabric, Sandwich Lamination of Raffia fabric with BOPP film or Craft Paper etc. in blends with suitable grades of LDPE.	

