

Chemical Portfolio



Introduction



The Chatterjee Group (TCG), led by a visionary leader in strategic investments and industrial innovation, Dr. Purnendu Chatterjee, has established a commanding presence in the petrochemicals and advanced materials sector through its flagship enterprise, **Haldia Petrochemicals Ltd. (HPL)**. As one of India's premier petrochemical companies, HPL serves as the cornerstone of TCG's chemical portfolio, consistently delivering high-quality polymers and chemicals that power countless industries and applications worldwide.



Building on this foundation, TCG has strategically expanded its chemical ecosystem through specialized subsidiaries that address distinct market needs:

Haldia Petrochemicals Ltd. is a modern naphtha-based Petrochemical Complex located 125 km from Kolkata, at Haldia, West Bengal, India. HPL is a customer focused organization, recognized as a leading supplier of quality polymers and different chemicals.

Advanced Performance Materials Private Limited is a 100% subsidiary of HPL and located inside the HPL plant complex. It is integrated with HPL for the production of MTBE and Butene-1.

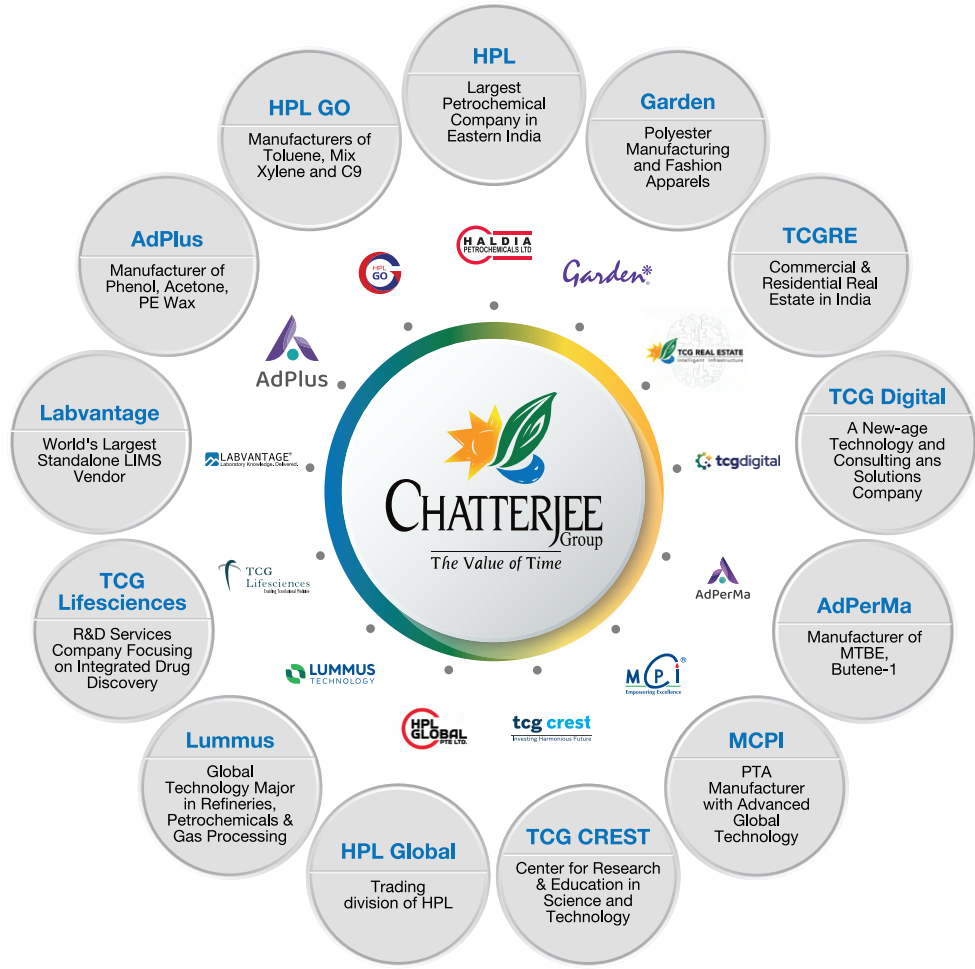
AdPlus Chemicals and Polymers Private Limited, a step-down subsidiary & an affiliate of HPL, is currently in the business of manufacturing Low Molecular Poly-Ethylene Wax (LMW) and is in the process of setting-up an upstream to downstream integration through the production of on-purpose Propylene and utilization of HPL's 100% Benzene to manufacture "Phenol" and "Acetone".

HPL Global Pte. Ltd. is a wholly owned (100%) subsidiary of **Haldia Petrochemicals Ltd. (HPL)**, incorporated in Singapore. Its primary activity is trading, which includes the import and export of polymers, chemicals, oil, and other petrochemical products. These operations primarily support its holding company, **HPL**, as well as **MCPI Pvt. Ltd.**, a TCG Group entity engaged in manufacturing PTA in Haldia.

This integrated constellation of enterprises under The Chatterjee Group creates powerful synergies that drive technological advancement, sustainable growth, and market leadership throughout the chemical value chain. By combining manufacturing excellence with application-specific innovation, TCG's chemical portfolio stands at the forefront of addressing complex industrial challenges while creating enduring value for customers and stakeholders across the globe.



The Chatterjee Group (TCG)





Best-in-class technology across products/processes

Plant	Capacity (KTA)	Technology Partner
Naphtha Cracker	700	Lummus, USA
High Density Polyethylene	334	Mitsui, Japan
Linear Low Density Polyethylene	386	Lyondell Basell, Netherlands
Polypropylene	341	
Butadiene	101	BASF, Germany
Benzene	132	Lurgi, Germany
Low Sulphur Pyrolysis Gasoline	130	Axens, France
Cyclopentane	6	
Butene-1 (AdPerMa)	30	
MTBE (AdPerMa)	98	
Motor Spirit/Gasoline (BS VI)	250	
C4 Raffinate/LPG	113	
Carbon Black Feed Stock (CBFS)	89	Lummus/Axens
Phenol (AdPlus)	345	Lummus, USA
Acetone (AdPlus)	215	Lummus, USA

Acetone



Property	Specification	Unit	Test Method
Purity	99.95	Wt% min (dry basis)	MN-31002
Colour Pt-Co scale	5	Max	ASTM-D-1209
Distillation range @760 mm Hg	1	°C	ASTM-D-1078
Benzene	2	wt ppm max	MN-31002
Methanol	250	wt ppm max	GC
Acetaldehyde	20	wt ppm max	MN-31002
Total GC Impurity	100	wt ppm max	MN-31002
Acidity	20	wt ppm max	ASTM-D-1613
Non-volatiles	5	wt ppm max	ASTM-D-1353
Water	0.25	Wt.% max	ASTM-D-1364
Permanganate Time	4	Hrs min	ASTM-D-1363

Phenol (Molten)



Property	Specification	Unit	Test Method
Purity	99.99	wt% dry basis	ASTM D-6142
Colour, APHA	5	max	ASTM D-6186
Total Carbonyls	15	wt ppm max.	ASTM E-411
2-Methyl Benzofuran	5	wt ppm max.	ASTM D-6142
Total Cresol	25	wt ppm max.	ASTM D-6142
Total GC Impurities excluding cresols	50	wt ppm max.	ASTM D-6142
Mesityl Oxide	5	wt ppm max.	ASTM D-6142
Water Content	200	wt ppm max.	ASTM D-1631
Freezing Point	40.85	C min.	ASTM D-6875
Iron	0.1	wt ppm max.	ASTM E-394
Evaporites	0.01	wt% max	ASTM D-1353

Phenol (Hydrated)



Parameters	Test Method	Unit	Limit
Appearance	Visual	---	Clear Colourless Liquid
Phenol	Calculation	Wt.%	92.0 to 96.0
Water Content	ASTM-E-203	Wt.%	4.0 to 8.0

Note: Additional parameters may be analysed as per customer requirement subject to availability of facility.



Benzene



Properties	Test Method	Unit	Value
Appearance	Visual	—	Clear liquid, free of sediment or haze
Purity	ASTM-D-4492	Wt%	>99.9
Colour	ASTM-D-1209	APHA	20 max
Solidification point	ASTM-D-852	°C	5.40 min
Distillation range at 760mm Hg and including 80.1°C	ASTM-D-850	°C	1.0 max
Density @20°C	ASTM-D-4052	gm/ml	0.878-0.882
Moisture	ASTM-D-1744	wt. ppm	300 max
Total non-aromatics	ASTM-D-4492	wt. ppm	300 max
Toluene	ASTM-D-4492	wt. ppm	100 max
Acid wash colour	ASTM-D-848	—	1 max
Thiophene	ASTM-D-4735	wt. ppm	1 max
Total Sulphur	ASTM-D-3961	wt. ppm	1 max
Bromine Index	ASTM-D-5776	mg/100g	10 max
Acidity	ASTM-D-847	mg NaOH/100g	No free acid

Py-Gas (Low Sulphur)



Properties	Test Method	Unit	Value
Density(@15°C)	ASTM-D-4052	gm/ml	0.89 max
Distillation (IBP)*	ASTM-D-86	°C	35 min
Distillation (FBP)*	ASTM-D-86	°C	215 max
Potential gum	ASTM-D-873	mg/100ml	5 max
Benzene content	ASTM-D-6730	Wt%	1.0 max
RVP**@37.8°C	ASTM-D-323	Kg/cm ²	0.7 max
RON#	ASTM-D-2699		98-100
Sulphur	ASTM-D-5453	Wt ppm	<10

#Note: Typical operating range of Pygas RON (Research Octane Number) is 100-102.7

*IBP – Initial Boiling Point / FBP – Final Boiling Point

**RVP – Reid Vapor Pressure

Butadiene



Properties	Test Method	Unit	Value
1:3 Butadiene (Purity)	ASTM-D-2593	Wt. %	>99.5
Total acetylenes(MA+VA+EA)*	ASTM-D-2593	Wt. ppm	40 max
Carbonyl as acetaldehyde	ASTM-D-4423	Wt. ppm	20 max
Peroxide as H2O2	ASTM-D-5799	Wt. ppm	2 max
Solvent NMP #	GC***	Wt. ppm	10 max
1:2 Butadiene	ASTM-D-2593	Wt. ppm	20 max
Other C4s	ASTM-D-2593	Wt. %	0.5 max
C5 hydrocarbons	ASTM-D-2593	Wt. ppm	10 max
Butadiene Dimer	ASTM-D-2426	Wt. ppm	250 max (Ex Haldia Plant)
TBC** as loaded	ASTM-D-1157	Wt. ppm	(100-150) at the time of loading
Sulphur	ASTM-D-3246	Wt. ppm	10 max
Propadiene	ASTM-D-2593	Wt. ppm	10 max

*MA- Methyl Acetylene, VA- Vinyl Acetylene, EA- Ethyl Acetylene

#NMP – N-Methylpyrrolidone ***GC – Gas Chromatography

** TBC – Tertiary Butyl Catechol

Cyclopentane



Properties	Test Method	Unit	Value
Purity	GC*	Wt %	97 min
Colour	Visual	-	Water white
Density(@15°C)	ASTM-D-4052	gm/ml	0.740-0.755
Distillation Range	ASTM-D-1078	°C	46-50
Benzene	GC	Wt. ppm	2 max
Total Aromatics	GC	Wt. ppm	2 max
n-Hexane	GC	Wt. ppm	10 max
i-Hexane	GC	Wt%	2 max

*GC- Gas Chromatography



Motor Gasoline or Motor Spirit

Parameters	Unit	Specification	Test Method
Colour	-	Undyed	Visual
Density (@15°C)	Kg/m3	720-775	ASTM-D-4052
Distillation:			ASTM-D-86
A) Recovery upto 70°C (E70)	vol%	10-45	
B) Recovery upto 100°C (E100)	vol%	40-70	
C) Recovery upto 150°C (E150)	vol%	75 min	
D) Distillation (FBP)	°C	210 max	
E)Distillation Residue	vol%	2 max	
RVP @ 37.8°C	Kpa	60 max	ASTM-D-323
Vapour Lock Index (VLI)			Calculated
A) Summer	-	850 max	
B) Other months	-	950 max	
Total Sulphur	mg/kg	10 max	ASTM-D-5453
Gum Content (Solvent Washed)	g/m3	40 max	ASTM-D-381
Copper Corrosion, 3 Hrs. @50°C	Rating	Class 1 max	ASTM-D-130
Total Aromatic Content	vol. %	38.5 max	ASTM-D-6730
Benzene	vol. %	1 max	ASTM-D-6277
Olefin Content*	vol. %	21/18 max	Calculated
Lead Content (As Pb)	g/l	0.005 max	ASTM-D-3237
Oxidation Stability	Minutes	360 min	ASTM-D-525
RON	-	92	ASTM-D-2699
Oxygen Content	wt. %	NIL	ASTM-D-4815

#OLEFIN CONTENT IS CALCULATED FROM BROMINE NUMBER *RVP- REID VAPOUR PRESSURE

FBP – FINAL BOILING POINT * RON- RESEARCH OCTANE NUMBER

*For 91 RON base category of MS, olefin content is 21 vol% and for 95 RON base category MS,

olefin content is 18 vol%. This is universal spec of MS.



MTBE



Components	Test Method	Unit	Value
MTBE	ASTM-D-5441	wt % min	98
Total C4	ASTM-D-5441	wt% max	0.5
Methanol	ASTM-D-5441	wt% max	0.5
Di-isobutylene	ASTM-D-5441	wt% max	0.6
TBA	ASTM-D-5441	wt% max	0.6
Water	ASTM-D-1364	wt ppm max	to report
MSBE	ASTM-D-5441	wt%	to report
C5 content	ASTM-D-5441	wt%	to report
Carbonyls	ASTM-E411-92	wt ppm	to report
Sulphur	ASTM-D-5453	wt ppm	to report
Heavies	ASTM-D-5441	wt%	to report

BUTENE-1



Components	Test Method	Unit	Value
Butene 1 - Purity	ASTM-D-6159	Vol%	99.5
Other Butenes content	ASTM-D-6159	Vol% max	0.3
Butanes (nC4+iC4) content	ASTM-D-6159	Vol% max	0.4
Propadiene content	ASTM-D-6159	Vol ppm max	5
Butadiene content	ASTM-D-6159	Vol ppm max	50
Total Acetylene	ASTM-D-6159	Vol ppm max	5
Oxygen	ASTM-D-2504/ Teledyne	Vol ppm max	5
Carbon-di-Oxide	ASTM-D-2504	Vol ppm max	5
Carbon Monoxide	ASTM-D-2504	Vol ppm max	1
COS	PFPD	Vol ppm max	0.05
Total Sulphur	ASTM-D-6667	Wt ppm max	1
Alcohols (CH3OH)	ASTM-D-7423	Vol ppm max	5
Moisture	Shaw meter	Wt ppm max	10
Chloride	ASTM-D-4929	Wt ppm max	1



POLYFAST



Properties	Method	Specification
Appearance	AdPlus	White granular Particle
MFI@125° C, 325g	ASTM D1238	1000-2600
Apparent Viscosity, @140°C, cPS	ASTM D1986	10-200
Density, g/cm ³	ASTM D1505	0.94
Mettler Drop Point, °C	ASTM D3954	116-118
Penetration Hardness, dmm	ASTM 1321	<2
Flash Point °C	ASTM D93	>200
Average Particle Size, μ	AdPlus	~300 (<20 is also available)



**Haldia Petrochemicals
Limited**

**AdPlus Chemicals And
Polymers Private Limited**

**Advanced Performance
Materials Private Limited**

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Plant

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