

P.P. THERMOFORMING

1. INTRODUCTION

Thermoforming is one of many manufacturing process that converts plastic resin into usable everyday product. Thermoforming is considered to be one of the most cost-effective processes in plastic manufacturing because of the low moulding costs and fast moulding cycles. Speed and cost efficiency are the highlighted qualities that thermoforming offers which lead the way for the process becoming so important in industry today.

We have entered into another area of plastic consumer goods, which are continuously replacing the traditional items. The use of disposable items is increasing day by day because of growing hygiene consciousness, low cost, easy usability and impressive appearance. The major products that are in use are disposable glasses, cups, plates and spoons. These have become a part of the hectic life style due to their convenience. Apart from being used at home, they also come in handy during parties, picnics and other functions and get-togethers. The major user of cups are the ice cream manufacturers and they have started using plastic cups instead of paper ones that were being used earlier. The main advantage of these plastic cups is that they are completely leak proof. Plastic cups can be made up of different sizes and they can hold bulk material easily in comparison to the traditional paper cups.

The new carry away fast food culture has created the demand for the articles to pack food item. These articles consist of variety of packing boxes such as small tumblers, bowls, etc. Apart from this the use of blisters for packing pencil cell, toothbrushes, pens and variety of toys,

etc. has also been on the rise. This is the new emerging area, which can be tapped as an ancillary support to the various products of different kind of above-mentioned products.

2. MARKET POTENTIAL

As per the Working Group Report on Petrochemicals, Ministry of Chemicals & Fertilisers, the demand of PP Sheet in India is projected to be 22 KT by 2010-11.

The consumption of PP in PP Thermoformed Cups in India in 2004-05 was 11 KT. Looking to the advantage of thermoformed product, the demand has increased in various sectors for packaging and disposable cups etc. Some of the major sectors where thermoformed products are used are Food Industries, Pharmaceutical, Electronics, Horticulture. Cosmetics, Automobile Industry etc.

3. BASIS & PRESUMPTIONS

- (i) The output capacity is taken as 100 Kgs/hr. The unit will work at 20 hrs. per day for 25 working days in a month and 300 days in a year. The output capacity may vary from machinery to machinery and the cost of machinery may also vary from supplier to supplier.
- (ii) The time period for achieving the full envisaged capacity utilisation is six months
- (iii) The labour wages are as per the prevailing rates in the market
- (iv) The rate of interest for fixed and working capital is taken as 12 per cent
- (v) The margin money requirement for this project is 30 per cent
- (vi) The pay back period of this project is 5 years
- (vii) The rate of land is taken @ Rs. 500/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place.

(viii) The present profile has to be updated taking into prevailing cost of land, building, machinery etc. at the time of implementation of the project

4. IMPLEMENTATION SCHEDULE

The Time requirement for preparation of Project report	:	Two months
Time requirement for selection of Site	:	One month
Time required for registration as Small Scale Unit	:	One Week
Time required for acquiring the loan		
Machinery procurement, erection and commissioning	:	Three months
Recruitment of labourer etc.	:	One month
Trial runs	:	One month

5. TECHNICAL ASPECT

MANUFACTURING PROCESS

In the thermoforming of PP, constant air pressure and the use of a preheating oven are essential requirements of a viable process. The heating station includes two plates, each consisting of 6 transversal rows with 5 IR heating elements. The total power of each plate as well as the power of each transversal row can be adjusted. The position of the thermic screen allows adjusting the length of the exposed zone of the sheet by a multiple of the forming step.

The thermoforming station consists of two mobile tables (lower) & (upper) on which the mould, the chamber and in some cases the mobile plugs are fixed. It is possible to introduce compressed air into the chamber and to create a vacuum in the mould. The mould is

thermoregulated. A measuring device allows visualizing the thermoforming cycle by measuring the pressure in the mould and in the chamber and the plug movement. On one cavity, contact sensors are installed. The cutting is a delicate operation for PP, especially when it is done after the forming station. In order to centre properly the cutting operation, the knives are mobile in relation to the frame. They are positioned with the help of TEFLON centering which lodge in the plastic cup. The knives are heated to 170° C and the clamping force must be strong in order to achieve regular cutting.

The quick cooling of the polypropylene when contacting the tool increases the consistency and the material for the contact areas. Especially during the plug displacement, the strain rates value are almost zero in the frozen areas (that means in the centre of the sheet) and the deformation is localized in the warmer zones.

Thickness profile and mechanical resistance are closely linked especially for thermoforming parts. To design a packaging component, the process conditions have to be optimized and the mechanical behavior to be calculated.

Recent experimental studies confirm that, even with Homopolymer polypropylene, well-controlled thermoforming conditions allow to form deep cups with good properties.

- Processing cycle time
- Thickness distribution
- Transparency
- Mechanical properties

The optimizations must become more efficient because it is easier to quickly test different tool designs, process parameters and polypropylene grades.

6. QUALITY & STANDARD

Thermoformed products are manufactured as per Customers' requirement and Specification.

7. PRODUCTION CAPACITY (Per Annum)

- (a) Quantity (M.T.) : 600
(b) Value (Rs.) : 6,60,00,000.00

8. TOTAL POWER REQUIREMENT

Total connected load (KW) : 110

9. POLLUTION CONTROL MEASURES

The unit does not create any pollution. However, a proper ventilation should be made in the processing area for the better circulation of the fresh air.

10. ENERGY CONSERVATION

Entrepreneurs may select energy efficient machinery and proper planning has also to be made for saving energy in the unit.

11. FINANCIAL ASPECT

A. FIXED CAPITAL

i) <u>LAND & BUILDING:</u> (Rs.)	Area sq. mtrs.	Rate	Rs. per Sq. mtr.
Land	300	500	1,50,000.00
Building	200	3500	7,00,000.00
		Total :	8,50,000.00

ii) MACHINERY & EQUIPMENT:

(Rs.)	<u>Sr. No.</u>	<u>Description of machines</u>	Qty.(Nos.)
	(a)	Production Unit	
	i)	Automatic Thermoforming Machine	1
		2,50,00,000.00	
	ii)	Chilling Plant	
		5,00,000.00	
	iii)	Four Colour Dry Offset Printing	1
		9,00,000.00	
		machine with automatic unloading	
	iv)	Air Compressor	1
			2,00,000.00
	v)	Scrap Grinder	1
		1,00,000.00	
	(b)	Testing Equipment & Other Accessories	
		1,00,000.00	
	(c)	Electrification & Installation @ 10% of cost & machinery	
		26,80,000.00	
		(a) & (b)	
	(d)	Pre-operative expenses	
		1,20,000.00	
		Total cost of machinery & equipment (a to d)	
		2,96,00,000.00	
	(e)	Cost of Moulds & Dies	
		6,00,000.00	
	(f)	Cost of Office Equipment/Furniture/Computers etc.	
		3,00,000.00	
		Total:	3,05,00,000.00
Fixed Capital	= (i) + (ii) = 8,50,000 + 3,05,00,000		
3,13,50,000.00			

B. WORKING CAPITAL

i) Staff and Labour (Per Month)

Designation	Nos.	Salary (Rs.)	(Rs.)
Production Engineer/Manager	1	10,000.00	10,000.00
Sales Executive	1	5,000.00	5,000.00
Accountant-cum-Store Keeper	1	4,000.00	4,000.00
Watchman	2	3,000.00	6,000.00
Skilled Workers	3	3,500.00	10,500.00
Helpers	3	3,000.00	9,000.00

			44,500.00

Add perquisite @ 10% of the Salary
4,450.00

Total: -----
48,950.00
Or Say Rs.

49,000.00

ii) Raw Material (Per Month) Qty. (M.T.) Rate Rs./M.T.
(Rs.)

P.P. Granules 50 75,000
37,50,000.00

iii) Utilities (per month): (Rs.)

a) Power 1,65,000.00
(60% utilisation x 110 KW x 500 hrs. x Rs. 5 per unit)

b) Water
2,000.00

Total: 1,67,000.00

iv) Other Contingent Expenses (Per month) (Rs.)

sss) Repairs and Maintenance
2,000.00

ttt) Transportation Charges 5,000.00

uuu) Postage and stationery 1,000.00

vvv) Telephone/Fax/Computer
2,000.00

www) Consumable Stores
1,000.00

xxx) Advertisement & Publicity
2,000.00

yyy) Insurance 10,000.00

zzz) Miscellaneous Expenses
2,000.00

Total: -----
25,000.00

12. TOTAL WORKING CAPITAL (Per Month) (Rs.)

i) Staff and Labour 49,000.00

ii) Raw Material

37,50,000.00

iii) Utilities 1,67,000.00

iv) Other Contingent Exp. 25,000.00

Total: 39,91,000.00

Working Capital for 3 months 1,19,73,000.00

13. TOTAL CAPITAL INVESTMENT

(Rs.)

A. Fixed Capital
3,13,50,000.00 B. Working Capital for 3 months
1,19,73,000.00

Total:

4,33,23,000.00

14. FIANCIAL ANALYSIS

(Rs.)

A. Cost of Production (per year) (300 days)

(a) Total Recurring Cost

4,78,92,000.00

(b) Depreciation on building @ 5%

35,000.00

(c) Depreciation on machinery& equipment @ 10%

29,60,000.00

(d) Depreciation on Dies, Moulds & office equipment

1,80,000.00

@ 20%

(f) Interest on total Capital Investment @ 12%

51,98,760.00

Total:

5,62,65,760.00

Or say Rs.

5,62,66,000.00

B. Sales/Turn over (per year)

<u>Item</u>	<u>Qty.(MT)</u>	<u>Rate (MT)</u>	<u>Value (Rs.)</u>
P.P. Thermoforming items	600	1,10,000	
6,60,000.00			

C. Net Profit (Per year)

Sales(Rs)	–	Cost of Production (Rs.)	=	Profit
(Rs.)				
6,60,00,000	-	5,62,66,000	=	
97,34,000.00				

D. Net Profit Ratio = $\frac{\text{Net Profit} \times 100}{\text{Sales}}$

% = $\frac{97,34,000 \times 100}{6,60,00,000}$ = 14.74

E. Rate of Return = $\frac{\text{Net Profit} \times 100}{\text{Total Capital Investment}}$

% = $\frac{97,34,000 \times 100}{4,33,23,000}$ = 22.46

F. Break-even Point

Fixed Cost (Per Year)	Rs.
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a) Depreciation on Building @ 5%

35,000.00

b) Depreciation on Machinery & Equipment @ 10%

29,60,000.00

c) Depreciation on Moulds/Dies & Office Equipment

1,80,000.00

@ 20%

d) Insurance

1,20,000.00

e) Interest on total capital investment

51,98,760.00

f) 40% of salary and wages

2,35,200.00

g) 40% of other contingent expenses
72,000.00

Total: -----
88,00,960.00

Or say Rs. 88,00,000.00

Net Profit (Per Year)

$$\begin{aligned}\text{B.E.P. \%} &= \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}} \\ &= \frac{88,00,000 \times 100}{88,00,000 + 97,34,000} \\ &= \frac{88,00,000 \times 100}{1,85,34,000} \\ &= 47.48 \%\end{aligned}$$

MACHINERY & EQUIPMENT SUPPLIERS

1) A-ONE ENGINEERING

71/2 Phase – 1, GIDC Vatva, Ahmedabad-382 445

Phone : 079-25834843 Fax: 079-25834843

E-mail : aoneengineering@rediffmail.com

Web: www.aoneengineering.com

Products/Services : Plastic Processing machinery (Bag making machine)

2) A ONE INTERNATIONAL

11, Amar Estate, Anil Starch Road,

Opp: Super Bread Factory,

Naroda Road, Ahmedabad-380 025.

Phone: 079-22201482/22201861 Fax: +91-79-22203684

E-mail: aonead1@sancharnet.in Web: http: \\www.newyesh.com

Products/Services: HDPE/PP Woven Sack Machinery:

- 1) High speed 4,6 &8 shuttle circular looms
- 2) High speed magnetic type cheese winders
- 3) Flexographic printing machines
- 4) Bale Press Machines
- 5) Sutli Plant
- 6) Sutli Monofilament box strapping & all types of winders
- 7) Spares for all the above

3) AMBICA PLASTIC MACHINERY MANUFACTURERS

1-2, Kansawala Estate, Opp: Chakudia Mahadev,

Rakhial, Ahmedabad-23. (Guj.) INDIA

Phone: (O) +91-79-2274 5089, 6512 6275 Fax: +91-79-2278 2613

Cell: 098251 57891, 092274 48246

E-mail: info@ambicaplastic.com/ambica_kalpesh@hotmail.com

Web: www.ambicaplastic.com

Products/Services : Reprocessing/H.D.P.E. Monofilament/P.P. Tap Plants

Sutli Plant with "T" Die

HDPE/P.V.C. Pipe Plant

Tubing Plant

Ancillary Equipments

PP/HDPE Rope Machinery

Box Strapping Plant

Jerry Can Plant

- 4) **CENTRAL MACHINERY & PLASTIC PRODUCTS**
 1, Lajya Estate, Mogra Road, Andheri East, Mumbai-400 069.
 Phone : +91-22-28366198 Fax: +91-22-28375271
 E-mail: cmp@bom3.vsnl.net.in Web : www.cmppin.com
 Products/Services : Manufacturers of fully automatic blow moulding
 Machines for processing of PVC, HDPE, LDPE, PP materials from 5 ml. to
 60 ltrs.

- 5) **DYNAMIC ENGINEERS (INDIA)**
 B-54, Hari Nagar (Clock Tower),
 New Delhi-110 064.
 Phone: 011-25496293/25126188
 E-mail: dynamicengineers@trade-india.com
 Products/Services: Cooling Tower, Heat Exchanger, Indl. Chiller,
 Mould Temp. Controller

- 6) **FERROMATIC MILACRON INDIA LTD.**
 92 Phase – I GIDC, Vatva, Ahmedabad-382 445
 Phone: 079-25890081 Fax: 079-25830125
 E-mail: sales@fmi-ahd.com Web: www.milacronindia.comm
 Products/Services : Mfg. of plastics injection moulding machines from
 the
 Range of 30 tons to 3000 tons and extrusion blow moulding machines.

- 7) **FIVE STAR ENGINEERS**
 Bhagwati Estate, Opp: Bavri Kumbharwada, Idgah Road, Pratapnagar,
 Baroda-390 004.
 Phone : (F) 0265-2581698 Telefax : 2580026 (R) 0265-2564896
 (M) 098980 87865 E-mail: fivestarengineer@hotmail.com
 Web : www.fivestarengineers.com
 Products/Services : Double Die Extruder, Single Die Extruder

- 8) **FIXOPAN MACHINES PVT. LTD.**
 71, Nehru Place, New Delhi-110 019
 Phone: 0129-2237212/5067210-12 Fax: 0129-2237672
 E-mail: roto@fixopan.net/sales @fixopan.net
 Web: www.fixopan.net
 Products/Services : Manufacturers of Rotomoulding machines,
 Pulverisers,
 Molds in cast aluminium/SS/MS, finished roto parts/planters.

- 9) **GUJARAT MACHINERY**
Plot No. 524, GIDC Phase II, Vatva, Ahmedabad-382 445.
Phone: +91-79 25830043 Fax : 079 25332439
E-mail : intek@icenet Web: www.gujaratmachinery.com
Products/Services : Plastic machinery viz: Wide Width Lamination Plants.
- 10) **JAGMOHAN INDUSTRIES**
115 Sharad Industrial Estate, Lake Road, Bhandup (West),
Mumbai-400 078.
Phone : 25950246 Fax: 25965434
E-mail: jagmohan@vsnl.com Web: www.jagmohan.com
Products/Services : Plastic Automatic Blow Moulding Machine from 100 MI to 1000 Ltrs.
- 11) **JAI MATA ENGINEERING**
No. 734, Rajagopalanagar, B/h Maruti Theatre,
Peenya 2nd Stage, Bangalore-560 058.
Phone: 080-6763 4323 Cell. : 093437 33300, 098862 14330
Products/Services : Single Decker Cutting & Sealing Machine, Double Decker Cutting & Sealing Machine, Point to Point Cutting & Sealing Machine, Pouch Making Machine for Carry Bags, Slide Sealing Machine, Polyethylene/PP/HM/LLDPE Extruders, reprocessing Units, Automatic Roll Winding Nes, Scrap Grinders, Colour Mixer/Driers Card Making (sutli) Machine, Rotogravure Printing Machine, Automatic Liquid – Fill & Seal Machine, Automatic Form – Fill & Seal Machine, Thermoforming Machine, Seat Plant & Die.
- 12) **KABRA EXTRUSIONTECHNIK LTD.**
Kolssite House, Veera Desai Road, Andheri (West), Numbai-400 053.
Phone : 26734822/24 Fax : 267335041
E-mail: sales@kolsitegroup.com Web : www.kolsite.com
Products/Services : Twin screw extruders for RPVC pipes/profiles/pellets high output single screw extruders for PO pipes raffia tape plants & cheese winders monolayer & multilayer film plants.
- 13) **KONARK PLASTOMECH PVT. LTD.**
Plot No. 81, GIDC, Odhav, Ambica Nagar Road, Ahmedabad-382 415.
Phone : 079-22281670 Fax : +91-79-22890874

E-mail : sales@konarkplasticmachinery.com
Web : www.konarkplastomech.com
Products/Services : Mfrs. Thermoplastic extrusion plants.

14) **LARSEN & TOUBRO Ltd.**

LTM Business Unit, Mount-Poonamallee Road,
Post Bag No. 990, Chennai-600 089.
Phone: 22497360 Fax: 044-22492471
E-mail : vpb@ltmindia.com Web: www.ltmindia.com
Products/Services : Injection Moulding Machines, Auxiliary Equipment

15) **LOHIA STARLINGER LIMITED**

D-3/A, Panki Industrial Estate, Kanpur-208 022.
Phone : +91-5112-282001 Fax : +91-5112-282205
E-mail: sales@lohiagroup.com
Web : www.lohiagroup.com
Products/Services : Complete range of Machinery for manufacture of PP and HDPE Woven sacks and Fabrics comprising of – Tape Extrusion Lines – High Speed Inverter controlled Tape Winders – Circular Weaving Machines – Fabric to Bag Conversions Machines – Compact PP Multifilament Spinning Machine.

16) **MACPLAST**

49, Shreenathji Estate, Nr. Panna Estate, B/h B.O.C. Gases,
Rakhial, Ahmedabad-380 021 (Guj.) INDIA
Phone : (F) 079-22746802
E-mail : macplastbp@hotmail.com/macplastbp@rediff.com
Products/Services : Multi Layer Film Plant, Two Layer PPTQ Blown Film Plant,
Twin Head Mono Layer Blown Film Plant, Sutli Plants, Box Strapping Plants, LDPE Kiswa Pipe Plants, HDPE Pipe Plants, Reprocess Plants, Woven Sacks Tape Plant.

17) **MAMATA BRAMPTON ENGINEERING PVT. LTD.**

5/1/1A/1, GIDC, Phase-1, Vatva, Ahmedabad-382 445.
Phone: 079-55309800 Fax : 079-25832026
E-mail: info@mamata.com
Products/Services : Multilayer co-ex blown film plant

- 18) **MAMATA MACHINERY PVT. LTD.**
 5/1/1A, GIDC Estate, Phase-1, Vatva, Ahmedabad-382 445.
 Phone: 079-55309800 Fax : 079-25832026
 E-mail: info@mamata.com Web : www.mamata.com
 Products/Services : Plastic Bag & Pouch making machine, Packaging machines.
- 19) **NEOPLAST ENGINEERING PVT. LTD.**
 43, GIDC Estate, Phase-1, Vatva, Ahmedabad-382 445.
 Phone : +91-79-25831185 Fax : +91-79-25835298
 E-mail : info@neoplastindia.com Web : www.neoplasstindia.com
 Products/Services : Complete compounding plant with automation, High speed heater cooler mixers, Single screw extruders, Super conical twin screw extruders, Down stream equipments for R PVC pipe, profile, pelletizing application, Under water pelletizing system, Air cooled die face pelletizing system, Material handling system, Liquid metering/Dosing system, Anti-dusting/de-gassing system, Labaoratory scale equipments like – lab mixer, single screw extruder with various attachments, two roll mill, hydraulic press.
- 20) **PANCHAL PLASTIC MACHINERY P. LTD.**
 Plot No. 127, GIDC, Umbergaon, Dist. Valsad-396 171
 Phone : 0260-2563391/92 Fax : 0260-2562892
 E-mail: panchal@panchal-plastic.com Web: www.panchal-plastic.com
 Products/Services : Agglomerator/Densifier machine – extruder (Single Screw & Twin Screw) – Blown Film Plant – Box strapping plant, Flat Film & Sheet – Pipe & Profiles – Grinder/shredders/Crushers – Compounding Plant – Re-processing/recycling Plant – Hot die-face cutting under air & water cooling – in-line recycling plant for film waste & lumps waste – Mixer (type-high speed, tumbler, vertical) – strand pelletizer - Screen changer (Hydraulic & manual) – Grinding, washing & drying plant for PET bottle, film waste & moulded article, PET-recycling plant-bags/sacks cutting & sealing machine.
- 21) **R.R. PLAST EXTRUSIONS PVT. LTD.**
 B-3, Nand Jyot Ind. Estate, Safed Pool, Sakinaka, Andheri-Kurla Road, Andheri (E), Mumbai-400 072.
 Phone : +91-22-2852 0396/2850 5208 Telefax : 2850 9603
 Cell : 9967023161 E-mail : rrengg@vsnl.net/mkt@rrengg.com
 Web : www.rrengg.com
 Products/Services : RR's Drip Irrigation Pipe Plant with Auto Coiler

- 22) **RAJOO ENGINEERS LIMITED**
Survey No.210, Plot No.1, Industrial Area
Veraval Shapar, Rajkot-360 002.
Phone : 0091-2827-252701/2 Fax : 0091-2827-252700
E-mail : rel@rajoo.com Web. www.rajoo.com
Products/Services : FOILEX: Monolayer Blown Film Lines for PE/PP/PVC.
MULTIFOIL: Multilayer Upward Extrusion Blown Film Lines. AQUAFLEX :
Multilayer Downward Extrusion Blown Film Lines. LAMINA: Mono &
Multilayer Sheet Lines for PS/PP/PET/LDPE. DISPOCON: Thermoformers
for PS/PP/PET. TWINEX : Single and Twin Screw Lines for pipes and
profiles. HDPE permanently lubricated duct plant for optical fibres
including nylon rope insertion.
- 23) **RANA & SONS**
Plot No. 128-A, Govt. Ind. Estate, Charkop Kandivali West,
Mumbai-400 067.
Phone : 28683897/4181 Fax: +91-22-28682244
E-mail: ranasons@vsnl.com/arun@bom7.vsnl.net.in
Web: www.ranasons.com
Products/Services : Blow Moulding Machine, Injection Moulding Machines,
PET Stretch Blow Moulding Machines.
- 24) **REMICA PLASTIC MACHINERY MANUFACTURERS**
2/AB Sardar Patel Ind. Estate, Near Gujarat Petrol Pump,
Narol, Ahmedabad-382 405.
Phone : 079-25712741 Fax: 079-25714234
E-mail : remicaad1@sancharnet.in Web. www.remicaplastics.com
Products/Services : Manufacturers of Thermoplastic Extrusion Plants for
Tapeline, Circular Looms, Extrusion Lamination Plants.
- 25) **STAR FLEX INTERNATIONAL**
A-43, Street No. 7, Anand Parbat Industrial area,
New Rohtak Road, New Delhi-110 005.
Phone : +91-11-2876 5588 Telefax: +91-11-2876 5588
Mobile : 093111 45588, (TATA) 092135 02930
Products/Services : High Class Flexographic/Rotogravure Printing
Machine.

26) **SUNRISE PLASTIC MACHINERY MANUFACTURER**

B/21-22, Ambica Estate, Ambikanagar, Nr. Hanuman Temple,
Odhav, Ahmedabad-382 415 (Guj.) INDIA.

Phone : (O) 079-65137486

Cell : 098253 58581, 098256 15776, 098793 01422

E-mail : joshi_sunriseplasticmachinery@yahoo.co.in

Web : www.sunriseplastic.tradeindia.com

Products/Services : 'T' Die Sutli Plant, PP/HDPE Mono Filament Plant, PP/HDPE Box Strapping Plant, PP TQ Blown Film Plant, HM/LD/LLDPE Mono Layer, Blown Film Plant, Multilayer Blown Film Plant, Lamination Plant, Air Bubble Sheet Plant, PP/HDPE/Rigid PVC Pipe Plant, PP/HDPE Woven Sacks Plant, Reprocess Plant.

27) **TWIST ENGINEERING WORKS**

C/1, 4410, Phase-4, G.I.D.C. Estate, B/h Indo-German Tool Room, Vatva, Ahmedabad-
382 445 (Guj.) INDIA

Phone : (O) 079-25842878, 30913587 Fax: 079-25840429

E-mail : twist@sancharnet.in, twist24@rediffmail.com

Web: www.twistplasticmachinery.com

Products/Services : Extrusion Plants for – Rigid PVC, HDPE, HM/HDPE, LLDPE, LDPE and PP Blown Film Plant, Above Plants with Rotating Extruder/Rotating Die, Pipe, Casing Caping, Section & sleeve Plants for PVC/HDPE PP & PP-R, PVC Braided & Suction Hose Multilayer Co-Extrusion Film Plants, Plastic Sheet Plant with Teedie & Steel Polishing Stack, PVC Wire/Cable Plant & Spool Drum/Winder, PVC Compounding Plant with Die-Face Cutter & Reprocessing Plant, PP/HD Box Strapping Plant, Rafia Tape Plant, Scrap Grinder and Agglomerater, Special Specification Plants on request & Extruders with 'Realloy' Barrel, LD Foam Film Plant, Automatic Pipe Cutter, High Speed Mixers & Heater-Cooler Mixers.

RAW MATERIAL SUPPLIERS

1. **BASF STYRENICS PVT. LTD.**
RBC Mahindra Towers
5th Floor B-Wing, Dr. G.M. Bhonsale Marg
Worli, Mumbai – 400 018
Phone: 55618227 Fax: 56604073
E-mail: ramanamv@basf-india.co.in Web: www.basf.com
Products: ESCR Polystyrene, ABS, SAN, MABS, ASA Blends etc.

2. **BAYER MATERIAL SCIENCE PVT.LTD.**
Building D-527, Kolshet Road, Thane – 400 607
Phone: 91-22-25311297/285 Fax: 25455069
E-mail: plastics@bayerbms.com Web: www.bayermaterialscience.com
Products: Polycarbonate (PC) PC Films & PC Sheets, PC Blends

3. **DOW CHEMICAL PACIFIC (SINGAPORE) PTE LTD.**
260 Orchard Road, # 18-01, The Heeren, Singapore – 238855
Phone: (65) 68353773 Fax: (65) 68340320
E-mail: dowcig@dow.com Web: www.dowplastics.com
Products: Polyethylene resins, Polystyrene, Polypropylene, Engineering Thermoplastics, Elastomers and Speciality Products, and Wire & Cable Compounds.

4. **DSM ENGINEERING PLASTICS INDIA (P) LTD.**
"Ashirvad" 110/12 Erandawane
Lane No. 14 Income Tax Lane, Off Prabhat Road
PUNE – 411 004
Phone: 020-25461075/39506264 Fax: 020-25455259
E-mail: joydeep.sen-chaudhuri@dsm.com Web: www.dsmep.com
Products: Stanyl (PA 4,6) Amite (TPE-E), Akulon (PA 6, pa 66), Amite (PBT, PET and blends)

5. **GE PLASTICS INDIA**
8th Floor, Gateway Towers, DLF – III, NH – 8
Gurgaon – 122 002
Phone: 0124-5018001 Fax: 0124-5018019

E-mail: rk.arora@ge.com Web: www.geplasticsindia.com
Products: Polycarbonate – Lexan, PBT – Valox, PPO – Noryl.

6. **GHARDA CHEMICALS LTD.**

Plot No. 3525 – 26 – 27, GIDC Estate, Panoli
Dist. Bharuch, Gujarat – 394 116
Phone: 02646 – 272575 /6 Fax: 02646 – 272141
E-mail: Polymer@gharda.com Web: www.ghardapolymers.com
Products: Polymers PEEK, PEK, PES, PSS, PSU, PSU

7. **HALDIA PETROCHEMICALS LTD.**

1, Auckland Place, Kolkata – 700 017
Phone: 033-22831640/3/5 Fax: 033 – 22831654
Web: www.haldiapetrochemicals.com
Products: LLDPE, HDPE, PP, Benzene, Butadiene, MS Euro III, LGP, PY
Gas, Cyclopentane.

8. **INDIAN OIL CORPORATION LIMITED**

Scope Complex, Core-2, 7 Institutional Area
Lodhi Road, New Delhi – 110 003
Phone: 011-24360214 Fax: 011 – 24367548
E-mail: khuranavk@iocl.co.in Web: www.indianoilcorp.com
Product: PP- 600 KTA, HDPE – 300 KTA, hdpe/Ildpe – 350 KTA, MEG –
300 KTA, PTA – 553 KTA.

9. **J.P. POLYMERS PVT. LTD.**

3, Shram Laxmi Industrial Est.
Opp. Indiana Bakery, Kanchpada, Ramchandra Lane Extn. Road.
Malad (W), Mumbai – 400 064.
Phone: 56998881 – 84 Fax: 56998887
E-mail: mail@jppolymers.net
Products: Polycarbonate (Dupont), Nylon'6, Nylon'66& PBT 9SRF),
Acrylic-PMMA (Sumitomo), K-Resin (Philips), Transparent ABS (Toray),
POM, UHMW-PE, ABS & SAN

10. **RELIANCE INDUSTRIES LTD.**

Maker Chambers-IV, Nariman Point, Mumabi – 400 021
Phone: 30322100 Fax: 30322199
E-mail: tushar_roy@ril.com Web: www.ril.com
Products: Polymers, Chemicals, Fibers & Intermediates

11. **SUPREME PETROCHEM LTD.**

17/18, Shah Industrial Estate, Veera Desai Road
Andheri (West), Mumbai – 400 053.

Phone: 26736196 – 99 Fax: 26736203

E-mail: sharad_parate@spl.co. on Web:
www.supremepetrochem.com

Products: Crystal Polystyrene, Impact Polystyrene, ESP, Modified
Polystyrene, Flame Retardant and Antistatic Polystyrene, Color and
Additive Masterbatches, Polyolefinic Compounds.