

## **LLDPE AGRICULTURE FILM**

### **1. INTRODUCTION**

Mulching (Agriculture Film) is the practice of covering the soil around plants to improve the growing conditions for the crop. Historically natural mulches such as straw, compost, hay and wood chippings have been used but over the last 40 years paper and plastics have been tried. Because of its poor wet strength and price, paper has been found less effective and more costly than plastic. The result is that plastic mulch film is the primary choice for agricultural application.

Plastic mulch film is widely used on high value crops, such as tomatoes, melons, cucumbers, squash, peppers, strawberries and increasingly on lower value crops such as corn and potatoes.

#### **Benefits of Plastic Mulch Film**

Covering the soil around the plant with plastic film results in the following benefits:

- Moisture retention (particularly valuable in high temperature regions with low rainfall).
- Weed reduction
- Increase in soil temperature
- Less crop contamination
- Less soil compaction
- Improved germination rates

These benefits lead to higher yields (by upto 100% for certain crops) earlier crops (by upto one month) and in some cases the ability to grow certain crops, which would not be possible without the mulch film.

Because of the reduction in weeds, herbicides can be eliminated or at least reduce, which is of particular importance where legislative constraints are being introduced. Pesticides may also be eliminated. The lower soil compaction and greater fertility also allows for a reduction in fertilizer.

## **2. MARKET POTENTIAL**

To meet the growing needs of the farmers who wish continuously to improve the profitability of their farming by using more efficient materials, the plastics industry has introduced new products into the market..

In its early days, Plasticulture mainly were concerned with crop protection techniques (greenhouses, low tunnels & mulch) or the preservation of food for livestock silage). During the course of its evolution other techniques have appeared, always for the same reason of profitability, producing more, at less cost with low investment while improving the quality of the products.

The new techniques are -

- the direct cover of perforated polyethylene in the 70's.
- soil-less cultivation (or hydroponics), a long-known technique, the use of which grew explosively in the 1960's.
- energy screens, mainly used in glasshouses, a consequence of the oil crisis of 1974.
- Thick pond liner films
- use of stretch films for glass silage
- & more recently, animal housing

Coextrusion : This technique, which has been used for a long time in the packaging sector, is being increasingly employed in the agricultural sector, ever since new lines enabling the extrusion of large-width, multilayer films were developed. Since then, the converters have made large investments in the field, allowing the introduction onto the market of new high performance films based on combinations of various differently formulated materials.

The appearance of coextruded films has been of greatest interest for applications such as greenhouse or silage films.

For silage, coextrusion has, in comparison with single layer films of the same thickness, enabled products with higher performance with regard to mechanical & oxygen barrier properties to be obtained, or equal performance with reduced thickness & at a lower price.

An increasing demand of fresh products, the intensification of competition (and hence the need to increase crop yields, quality & mechanisation), geographical expansion, the need for independence in respect of climate conditions as well as the revalorisation of the agricultural profession, all these are factors favouring a significant growth of plasticulture in future years.

LDPE lining is suitable for lining of canals & reservoirs, both with soil or rigid cover.

### **3. BASIS & PRESUMPTIONS**

- (i) The output capacity is taken as 120 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 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

The manufacturing process used to manufacture LLDPE agricultural film is extrusion. The film thickness range varies between 100-800 gauge and the layflat tubing width of the film varies between 450 mm to 2100 mm (18" to 84").

LLDPE granules are fed to a single screw extruder, where they are melted & pumped out of a die in the form of a tube. This is then inflated such that it takes a shape of a bubble. The bubble formed is collapsed & drawn upwards by two nip rolls. Flattened tube is then wound on a winder.

#### 6. **QUALITY & STANDARD**

Agriculture Films are manufactured as per customers' requirement.

#### 7. **PRODUCTION CAPACITY (Per Annum)**

(a) Quantity (M.T.)	:	720 M.T.
(b) Value (Rs.)	:	6,33,60,000/-

#### 8. **TOTAL POWER REQUIREMENT**

Total connected load (KW) : 70

## 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.

## 14. ENERGY CONSERVATION

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

## 10. FINANCIAL ASPECT

### A. FIXED CAPITAL

i) Land & Building:      Area Sq.Mtrs.      Rate per Sq.mtr.  
Value (Rs.)

Land	500	500
2,50,000.00		
Building	300	3500
10,50,000.00		

Total: 13,00,000.00

### ii) MACHINERY & EQUIPMENT

Sr.No.      Description of machines      Qty. (Nos.)  
Value (Rs.)

(a) Production Unit

21,00,000.00	i) Extrusion Blown Film Plant (90 mm) capacity 120 kgs./hour
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ii) Cooling Tower	
2,00,000.00	iii) Compressor
3,00,000.00	
(b) Testing Equipment & Other Accessories	
2,00,000.00	
(c) Electrification & Installation @ 10% of	
2,80,000.00	
cost & machinery (a) & (b)	
(d) Pre-operative expenses	1,20,000.00
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Total cost of machinery & equipment (a to d)	
32,00,000.00	-----
(e) Cost of Moulds & Dies	1,00,000.00
(f) Cost of Office Equipment/Furniture/Computers etc.	
3,00,000.00	
	-----
Total:	36,00,000.00
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Fixed Capital = (i + ii) = (13,00,000 + 36,00,000) =	
49,00,000.00	

## B. WORKING CAPITAL

### i) Staff and Labour (Per month)

Designation (Rs.)	Nos.	Salary (Rs.)	Total
-----			
Production Engineer/ 10,000.00 Manager	01	10,000.00	
Sales Executive	03	5,000.00	
5,000.00			

Accountant-cum- 4,000.00	01	4,000.00	
Store Keeper			
Watchman	02	3,000.00	
6,000.00			
Skilled Workers	03	3,500.00	
10,500.00			
Helpers	03	3,000.00	
9,000.00			
			-----
			44,500.00
Add perquisite @ 10% of the salary			
4,450.00			
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		Total:	48,950.00
		Or Say:	

49,000.00

ii) Raw Material (P.M.)    Qty.(Kg/Tons)    Rate Rs./MT

Total(Rs.)

LLDPE Granules	60 MT	75000	45,00,000.00
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iii) Utilities (per month): (Rs.)

i) Power

1,05,000.00

(60% utilisation x 70 KW x 500 hrs.xRs.5 per unit)

ii) Water

5,000.00

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Total:	1,10,000.00
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iv) Other Contingent Expenses (per month)

(Rs.)

a) Repairs and Maintenance

1,000.00

b)	Transportation charges	3,000.00
c)	Postage and stationery	1,000.00
d)	Telephone/Fax/Computer	2,000.00
e)	Consumable Stores	1,000.00
f)	Advertisement & Publicity	2,000.00
g)	Insurance	3,000.00
h)	Miscellaneous Expenses	2,000.00
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----	Total:	15,000.00

**11. TOTAL WORKING CAPITAL (PER MONTH)**  
(Rs.)

i)	Staff and Labour	49,000.00
ii)	Raw Material	45,00,000.00
iii)	Utilities	1,10,000.00
iv)	Other Contingent Exp.	15,000.00
		-----
	Total:	46,74,000.00
		-----
	Working Capital for 3 months	1,40,22,000.00

**12. TOTAL CAPITAL INVESTMENT**  
(Rs.)

A.	Fixed Capital	49,00,000.00
B.	Working Capital for 3 months	1,40,22,000.00
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Total:

1,89,22,000.00

13. **FINANCIAL ANALYSIS**

(Rs.)

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

(a) Total Recurring Cost

5,60,88,000.00

(b) Depreciation on building @ 5%

52,500.00

(c) Depreciation on machinery & equipment @ 10%

3,20,000.00

(d) Depreciation on Dies & Moulds & Office

80,000.00

Equipment @ 20%

(e) Interest on total Capital Investment @ 12%

22,70,640.00

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Total: 5,88,11,140.00  
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Or Say Rs.:

5,88,11,000.00

B. Sales/Turn over (per year)

<u>Item</u> <u>(Rs.)</u>	<u>Qty.(MT)</u>	<u>Rate (MT)</u>	<u>Value</u>
LLDPE Agriculture Film	720 M.T.	88,000	6,33,60,000.00

C. Net Profit (per year)

Sales	-	Cost of Production	=	Profit Rs.
Rs.6,33,60,000	-	Rs.5,88,11,700	=	45,49,000

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

$$= \frac{45,49,000 \times 100}{6,33,60,000} = 7.17\%$$

$$\begin{aligned}
 \text{E. Rate of Return} &= \frac{\text{Net Profit} \times 100}{\text{Total Capital Investment}} \\
 &= \frac{45,49,000 \times 100}{1,89,22,000} = 25.89\%
 \end{aligned}$$

F. Break-even Point

Fixed Cost (Per Year) Rs.

a) Depreciation on Building @ 5%

52,500.00

b) Depreciation on Machinery & Equipment @ 10%

3,20,000.00

c) Depreciation on Moulds/Dies & Office

80,000.00

Equipment @ 20%

d) Insurance

36,000.00

e) Interest on total capital investment

22,70,640.00

f) 40% of salary and wages

2,35,200.00

g) 40% of other contingent expenses

57,600.00

Total: 30,51,940.00

Or Say Rs. :

30,52,000.00

Net Profit (Per Year)

$$\text{B.E.P. \%} = \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}}$$

$$= \frac{30,52,000 \times 100}{\text{Net Profit}}$$

$$\begin{aligned} & 30,52,000 + 45,49,000 \\ = & \frac{30,52,000 \times 100}{76,01,000} \\ = & 40.50\% \end{aligned}$$

**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 2<sup>nd</sup> 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](http://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](mailto:twist@sancharnet.in), [twist24@rediffmail.com](mailto:twist24@rediffmail.com)

Web: [www.twistplasticmachinery.com](http://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  
5<sup>th</sup> Floor B-Wing, Dr. G.M. Bhonsale Marg  
Worli, Mumbai – 400 018  
Phone: 55618227 Fax: 56604073  
E-mail: [ramanamv@basf-india.co.in](mailto:ramanamv@basf-india.co.in) Web: [www.basf.com](http://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](mailto:plastics@bayerbms.com) Web: [www.bayermaterialscience.com](http://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](mailto:dowcig@dow.com) Web: [www.dowplastics.com](http://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](mailto:joydeep.sen-chaudhuri@dsm.com) Web: [www.dsmep.com](http://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**  
8<sup>th</sup> Floor, Gateway Towers, DLF – III, NH – 8  
Gurgaon – 122 002  
Phone: 0124-5018001 Fax: 0124-5018019

E-mail: [rk.arora@ge.com](mailto:rk.arora@ge.com) Web: [www.geplasticsindia.com](http://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](mailto:Polymer@gharda.com) Web: [www.ghardapolymers.com](http://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](http://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](mailto:khuranavk@iocl.co.in) Web: [www.indianoilcorp.com](http://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](mailto: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](mailto:tushar_roy@ril.com) Web: [www.ril.com](http://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](mailto:sharad_parate@spl.co). on

Web:

[www.supremepetrochem.com](http://www.supremepetrochem.com)

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