

TOUGHENED GLASS PRODUCTS

1. INTRODUCTION

Ordinary sheet glass has poor mechanical properties. Hence to make glass products, tough and strong, it is required to toughen sheet glass. The products like automobile glasses, household and industrial products are made from toughened glass having better impact strength, vibration resistance, scratch proof and resistance to breakage. Moreover, toughened glasses give protection during accident as it breaks into many small pieces and cause minimum injury to the passengers.

2. PRODUCTS AND ITS APPLICATION

Toughened glass products are widely used in automobiles, building construction, furniture making, fancy and decorative articles, etc. It is also applied in railways, airport buildings, commercial establishments, agriculture, defense, greenhouses construction and ship building.

3. DESIRED QUALIFICATION FOR PROMOTER

The promoter with experience in glass processing or marketing of building materials and contacts with builders, commercial establishments, railways, etc. will be desirable for smooth operations. Moreover, qualification like glass technician or technologist may be advantageous for quality products and saving of raw material.

4. INDUSTRY OUTLOOK/TREND

Toughened glass products are now widely used in building construction and other infrastructure projects. With projects like affordable housing and housing for all in 2022 by government of India, the demand for toughened glass is set to increase many fold.

The present trend is to use toughened glass door and windows instead of wood for cost reduction, ease of installation and maintenance and also for durability.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Toughening of glass is done in various parts of the country. There are existing units doing good business mainly based on local market. Therefore, selection of location is very important to have market potential.

Toughened glass products are mainly used in housing sector. The government efforts and plan to provide affordable housing to all by 2022 is a big boost to this sector. This will increase the demand of toughened glass considerably as a new project wood is replaced in windows and internal doors by glass. Moreover, other consuming sectors such as shipping, railway, hotel, automobiles, etc. are also growing rapidly with increase in GDP and per capita income. The entrepreneur needs to study local market before establishing the facility as transportation at far distance may be limited due to cost and fragile nature of the end products.

6. RAW MATERIAL REQUIREMENTS

The main raw material to produce toughened glass is plain sheet glass. This is available in India from large companies such as Ashahi glass, ModiGuard, Saint Gobain, etc. Glass sheets are available in various thickness. Appropriate thicknesses selected depending on the end product application.

7. MANUFACTURING PROCESS

The plain glass sheets are processed as under:

1. Glass loading for clearing.
2. Grinding of the glasses according to the requirement.
3. Cutting of the glasses according to required sizes.
4. Cleaning of the glasses, in the cleaning machine.
5. Edge polishing of the glasses for better structure of the glasses

6. Polishing of the glasses
7. Toughening of the glasses

In order to get high quality end products, process parameters such as temperature and precision during cutting, aging and polishing are maintained as per the desired end products.

8. MANPOWER REQUIREMENT

For the production of PTFE tape following category of manpower will be required for day to day production. Annual wages are also worked out.

Manpower Requirement

Sr. No.	Designation of Employees	Monthly Salary ₹	Number of employees required	Annual cost ₹. in lacs
1	Unskilled Labour	5,000	3	1.80
2	Production Manager	50,000	1	6.00
3	Administrative Officer	35,000	1	4.20
4	Production Supervisor	20,000	2	4.80
5	Foreman	15,000	1	1.80
6	Furnace Operator	15,000	2	3.60
7	Plant Operators	15,000	3	5.40
8	Glass Cuter	15,000	1	1.80
9	Fitter	11,000	3	3.96
10	Marketing Manager	25,000	1	3.00
11	Accountant	15,000	1	1.80
12	Skilled Labour	10,000	3	3.60
13	Office boy	7,000	1	0.84
	Total		23	42.60

9. IMPLEMENTATION SCHEDULE

The project needs series of equipment for glass processing and molding. The delivery period of the machinery is four months from the date of order. Moreover furnace needs to be installed with structure to be fabricated at site. Therefore the implementation period

is longer compare to other projects it is estimated that implementation will take about eleven months from the date of arranging finance and receiving approval for building construction.

10. COST OF PROJECT

The cost of project as per market rate of factory building, machinery, miscellaneous items, working capital margin and preliminary and pre-operative expenses works out as under:

Cost of Project

Sr. No.	Particulars	₹ in Lacs
1	Land	22.00
2	Building	29.00
3	Plant & Machinery	131.50
4	Furniture, Electrical Installations	5.00
5	Other Assets including Preliminary / Pre-operative expenses	3.00
6	Margin for Working Capital	13.82
	Total	204.32

11. MEANS OF FINANCE

Based on the present norms of the bank, means of finance is worked out as under.

Means of Finance

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	81.73
2	Bank Finance	122.59
	Total	204.32

12. WORKING CAPITAL CALCULATION

Working capital required for storage of raw materials and finished goods, monthly overheads, goods in process, receivables and trade credit is worked out based on the present norms of the bank as under:

Working Capital Calculations

Sr. No.	Particulars	Gross Amt.	Margin %	Margin Amt.	Bank Finance
1	Inventories	8.80	30%	2.64	6.16
2	Receivables	34.00	20%	6.80	27.20
3	Overheads	4.38	100%	4.38	-
	Total	47.18		13.82	33.36

13. LIST OF MACHINERY REQUIRED AND THEIR MANUFACTURERS

The machinery required for the production of Toughened Glass are Toughening furnace, Air Blower, Hydraulic Equipment, Molds and Blowing Boxes, Edge Working Machine, Vertical Notching Machine, Vertical Grinding Machine, Electrical Panel, Distribution Boxes, Material Handling Equipment etc.

- Eastern Equipment & Engineers
12, Pretoria Street,
Kolkata
- S. K. ENTERPRISE
Plot No-502,
Near Vinzol Railway Crossing,
Phase-II, G.I.D.C., Vatva,
Ahmedabad,
Gujarat

14. PROFITABILITY CALCULATIONS

The profitability is worked out as under after taking into account all variable and fixed expenses as under.

Profitability Calculations

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Sales	285.6	326.4	367.2	367.2	367.2
2	Raw Materials & Other direct inputs	191.436	218.784	246.132	246.132	246.132
3	Gross Margin	94.164	107.616	121.068	121.068	121.068
4	Overheads except interest	36.827	42.088	47.349	47.349	47.349
5	Interest	12.369	14.136	15.903	15.903	15.903
6	Depreciation	8.4	9.6	10.8	10.8	10.8
7	Net Profit before tax	36.575	41.8	47.025	47.025	47.025

15. BREAKEVEN ANALYSIS

The Break-Even point as percentage of targeted sales works out as under.

Cash Break-Even (as % of Targeted sales)

Sr. No.	Particulars	UOM	Value
1	Sales Realization	₹. In Lacs	408.00
2	Variable costs	₹. In Lacs	273.48
3	Fixed costs incl. interest	₹. In Lacs	70.27
4	BEP = $FC/SR-VC \times 100 =$	% of sales	52.24%

16. STATUTORY/ GOVERNMENT APPROVALS

There is no specific statutory requirement for Toughened Glass industry. However, MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATION

There is no possibility of backward linkage as the production of sheet glass requires heavy investment in plant and machinery. However it is possible to introduce variety of products made from toughened glass such as fabricated and moulded items like wash basin, glass crockery products and fancy and decorative items.

18. TRAINING CENTERS/COURSES

For toughened glass technical training and courses promoter may look for Central Glass and Ceramic Research Institute, Kolkata and its regional centers and Institute of Research Development and Training (IRDT) Kanpur. Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.