

## **OPHTHALMIC LENS GRINDING**

### **1. INTRODUCTION:**

The people of all age groups use sunglasses as an aid to protect eyes against glare or wind and also as a fashion wear. The present younger generations is using these glasses mainly as fashion in different colors and varieties. The sunglasses are mostly manufactured in plane without power in various sizes, colors and shades. Photo chromatic glasses are the latest introduction in the range of sunglasses in the country. These are special variety of glasses with the characteristics that when the sun light strikes on them the invisible micro-crystals of silver halides inside the glass automatically get darker and imparts color and shade to the glass and in normal indoor light, the glasses revert to its colorless clear transparency. These glasses also protect eyes from UV rays and are useful both as sunglasses and reading glasses.

### **2. PRODUCT & ITS APPLICATION:**

Ophthalmic lenses are manufactured out of ophthalmic rough glass blanks. There are different types of ophthalmic lenses such as purely spherical, cylindrical bifocal and fused bifocal as well as sunglasses etc. These spectacle lenses serve as an aid to precious human eyes for better and comfortable vision. They protect and restore the normal eyesight of persons. Sunglasses are used for protect of eyes against glare, second wind and also become a fashion wear. Fused bifocal lens serve dual purpose i.e. for distance and near vision in in one spectacle and thus convenient to wear. Fused bifocal lenses are not only scientifically perfect in having spherical centre with reading segment but also advantageous to cut and fit into different shapes and sizes of spectacle frames.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Graduate in any discipline.

### **4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

There is wide spread use of sunglasses for eye care apart from the style and fashion. The need of powered glasses is felt after the age of forty. The demand for sunglasses/ophthalmic glasses is increasing day-by-day to produce ophthalmic lenses as per doctor's prescription. There is a good scope for setting up of new units with modern machinery in different parts of the country, particularly in the urban and semi-urban areas, where there is immediate demand for the product.

### **5. RAW MATERIAL REQUIREMENTS:**

The major raw materials required for the project are Ohotochromic glass blanks, i.e. (photogrey, photogrey-extra, photobrown and photosun) of 60 mm to 65 mm diameter of 2.8 mm to 5 mm thickness. Colored glass blanks. Different shades i.e. SP2, SP4 and SP10 of 55 to 65 mm diameter and 3.00 mm to 5.00 mm thickness. Abrasive and polishing materials, compounds, blocking alloy and cleaning materials, chemical and other allied materials, packing materials.

### **6. MANUFACTURING PROCESS:**

Glass blanks of particular diameter and thickness are selected on the basis of power to be given to a lens. Glass blanks are first blocked with the help of surface blocker which is latest attachment developed for blocking purposes. After blocking the surfaces are ground by means of Diamond Curve Generator. After grinding and smoothing, the surface is polished with the help of fixing felt cloth and using polishing material (cerium oxide) on fully automatic machines. The polished glass blanks are then de-blocked in alloy reclaim tank that is a compact unit for de-blocking of lenses. The process is further repeated for grinding and

polishing of the second surface of the blanks. Lenses are then cleaned and tested for accuracy and perfection. Though the process of grinding and polishing is simple, it is quite sophisticated in practice with rigid quality control measures at each stage of manufacture.

## 7. MANPOWER REQUIREMENT:

The enterprise requires 9 employees as detailed below:

Sr. No.	Designation of Employees	Salary per person	Monthly Salary ₹	Number of employees required				
				Year-1	Year-2	Year-3	Year-4	Year-5
1	Machine Operators	12,000	12000	1	1	1	1	1
2	Helpers	8,000	24000	3	3	4	4	5
1	Production supervisor	15,000	15000	1	1	1	1	1
2	Accounts/Stores Asst	12,500	12500	1	1	1	1	1
3	Office Boy	9,000	9000	1	1	1	1	1
	<b>Total</b>		72500	7	7	8	8	9

## 8. IMPLEMENTATION SCHEDULE:

The project can be implemented in 2 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	0.00
3	Procurement & installation of Plant & Machinery	1.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required (some activities shall run concurrently)	2.00

## 9. COST OF PROJECT:

The project shall cost ₹ 13.565 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	0
2	Building	0
3	Plant & Machinery	325000
4	Furniture, Electrical Installations	32500
5	Other Assets including Preliminary / Pre-operative expenses	39000
6	Margin for Working Capital	960000
	<b>Total</b>	<b>1356500</b>

## 10. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	3.39125
2	Bank Finance	10.17375
	<b>Total</b>	<b>13.56500</b>

## 11. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 4.80 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	320000	0.25	80000	240000
2	Receivables	320000	0.25	80000	240000
3	Overheads	320000	100%	320000	0
4	Creditors	-		0	0
	<b>Total</b>	<b>960000</b>		<b>480000</b>	<b>480000</b>

## 12. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below: Power Requirement: 5 HP

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value (₹ in Lacs)
	<b>Plant &amp; Machinery / equipments</b>				
<b>a)</b>	<b>Main Machinery</b>				
i.	Spherical Diamond Curve	Nos	1	75000	0.75
ii.	Generator with motor and pump on three phase 440 volts, 1 HP on AC supply and switch	Nos	2	50000	1.00
iii.	Automatic two spindle spherical machine with feeding pump to each spindles for smoothing with switch and motors of 1 HP each and timer		5		0.50
<b>b)</b>	<b>Ancillary machinery</b>				
i.	Automatic two spindle spherical machine with feeding pump to each spindle for polishing with motor and 1 HP motor of each Surface blocker.	Nos	1.00		1.00
	<i>sub-total Plant &amp; Machinery</i>				<b>03.25</b>
	<b>Furniture / Electrical installations</b>				
a)	Office furniture	LS	1	20000	0.2
b)	Stores Almirah	LS	1	30,000	0.3
c)	Computer & Printer		L. S.	1,00,000	32499.5
	<i>sub total</i>				<b>32500</b>
	<b>Other Assets</b>				
a)	preliminary and preoperative				39000
	<i>sub-total Other Assets</i>				39000
	<b>Total</b>				<b>396500</b>

### 13.PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	2304000	2688000	3072000	3456000	3840000
3	Raw Materials & Other direct inputs	₹. In Lacs	1371600	1600200	1828800	2057400	2286000
4	Gross Margin	₹. In Lacs	932400	1087800	1243200	1398600	1554000
5	Overheads except interest	₹. In Lacs	767200	815150	911050	939820	959000
6	Interest	₹. In Lacs	101737.5	101737.5	67825	50868.75	40695
7	Depreciation	₹. In Lacs	227500	162500	113750	81250	73125
8	<b>Net Profit before tax</b>	₹. In Lacs	<b>-164037.5</b>	<b>8412.5</b>	<b>150575</b>	<b>326661.25</b>	<b>481180</b>

### 14. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 64.33 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	3840000
2	Variable costs	₹. In Lacs	2286000
3	Fixed costs incl. interest	₹. In Lacs	999695
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	64.33%