

# **Glass Sheet**

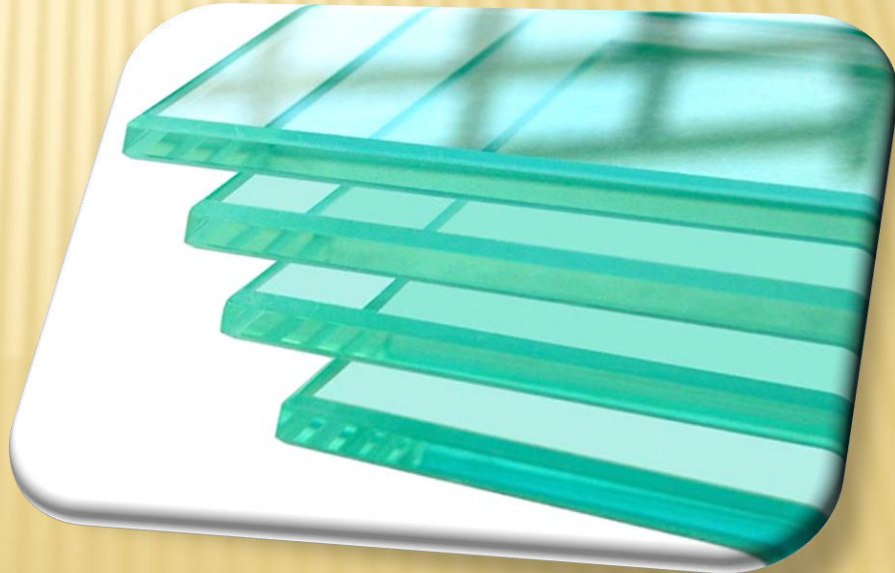
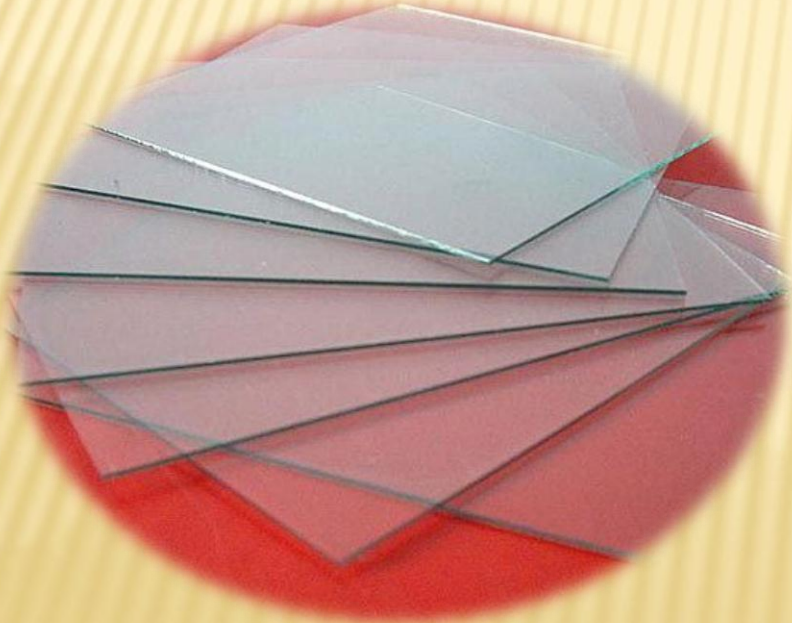
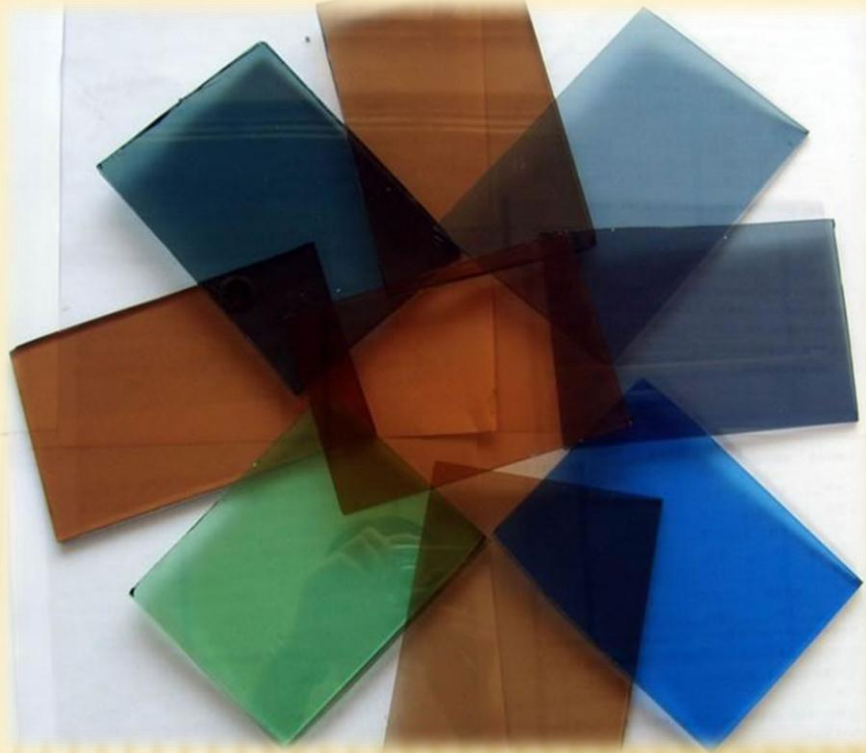
**(Automatic Plant)**

**Flat Glass, Transparent Glass Sheets, Sheet Glass, Plate Glass, Architectural Glass**

**Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Economics, Production Schedule, Working Capital Requirement, Plant Layout, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis**

# Introduction

Glass is one of man's most valuable and versatile materials. About 700 different compositions are in thousands use. These are fabricated into tens of thousands of different articles that have combinations of properties for about a thousand essentially different uses. Glass is formed from those elements such as silicon, boron, phosphorous and arsenic that can be converted into glass when combined with oxygen, sulphur, tellurium or selenium. Common glasses contain about 70% SiO<sub>2</sub>.



Sodium carbonate or soda ash decomposes, to sodium oxides as the batch of raw material melts. Consequently it acts as a flux. The carbon dioxide given off helps to stir the batch, and the oxide lowers the melting point. Limestone and dolomite act similarly as soda ash, but are used to make the glass more inert to water and to add other desirable properties. Other oxides, chiefly aluminium led, and cadmium act as stabilizers, increasing the strength of the glass and increasing resistance to chemical attack. Sodium and barium sulphate may be added to enhance the removal of fine particles of uncombined silica which may form a scum.

Soda lime glass is the most commonly glass, stabilizing oxides are added to decrease the solubility of the sodium silicates. This allows the production of chemically durable glasses. Calcium oxide is a cheap and effective stabilizer. Most glass bottle; window glasses and lamp bulbs are made from soda lime glasses.

The term float glass pertains to all glasses produced in a flat form, regardless of the method of manufacture. Over one third of flat glass produced in Germany is not used in its original form, but finished into other products such as automotive safety glass mirrors.

By far the greatest amount of flat glass consists of soda lime glass. The main user segments of float glass are the automobiles and construction industries. The demand for float glass is, therefore, very much correlated to the growth in these industries. It is well known fact all over the world that the best quality glass can be produced with the help of the float glass technology. There are no waves and distortion in the sheet glass manufacturing with the help of float glass technology, is the final product is free of all defects.

So far in our country sheet glass is being manufactured with the help of four coults and PPG (Pittsburgh process) glass technologies. More or less the waves and distortions invariably remain in the sheet glass manufactured with the help of these technologies. The glass industry represents a number of definable product segments. These are flat glass including float glass, glass containers and hollowware, vacuum glass, domestic and industrial glassware, crystal glass, fiberglass, glass wool, TV picture tube glass shells, and laboratory glass. Most of the glass products have both industrial and consumer usages. Laboratory glass is a minor constituent. So are fiberglass and glass wool.

Although the industry is growing at 12% per annum, it is not enough to keep it afloat. Per capita consumption of glass in India is only 0.4 kg compared to 3.5 kg in China, 5.2 kg in Thailand, 12 Kg in Malaysia and 2.5 kg in Indonesia.

The two main entrants in the glass industry in the recent years have been float glass (by 25%) than normal sheet glass. It also has a much higher degree of optical clarity. Other varieties include figured and wired glass.



**Apart from a very large number of small players in the glass industry, there are some 76 large and medium-sized producers. Of these, 44 produce containers and hollowware with a capacity of 1.5 million tones and registered a production of 1.35 million tonnes.**

**Market for flat glass has always been driven by the demand for building glass and automotive glass, which in turn depend on economic growth.**

With the economy showing signs of revival, demand for glass will once again be back in double digits in the coming years. Thus, this sector has a good market and export potential for new entrants.

The demand for glass has grown phenomenally in the last two decades, outstripping the GDP growth in most countries. Largely fuelled by China, the demand for glass is expected to grow at nearly 4 percent per annum.

The demand for glass is fuelled by legislation and regulations that look at safety, noise control and energy conservation. Design trends that favor glazed buildings that allow for maximum natural light will ensure the growth of the glass industry.

Flat glass includes a number of types of glasses including float glass, sheet glass, figured glass, safety glass among others. The market share of float glass is expected to improve over the years, while the markets share of sheet glass and safety glass is expected to decline marginally.

Flat glass has created significant place in the glass industry not just in India but on a global level. Total size of Flat Glass industry in India is 0.12 million tonnes per month. Indian Glass Industry consists of architectural, automotive, value added glass, mirrors & furniture segment which has market share of 45%, 15%, 15%, 10% & 15% respectively. The architectural market will remain the largest source of demand for flat glass in 2018, comprising 42% of the total in value terms. But the fastest growth will be in other markets, driven by rising manufacture of higher-value products like electronic displays.

Solar energy applications accounted for 130 million m<sup>2</sup> of flat glass consumption in 2013, a figure that is expected to more than double by 2018. Demand for flat glass in the motor vehicle market will advance at a more moderate rate, as many of the investments in motor vehicle production in recent years were accompanied by the closure of facilities in developed countries, particularly in Western Europe.

Asia-Pacific region dominated the construction glass market, with a share of 62% in 2013 and is projected to grow at the highest CAGR from 2015 to 2020, in terms of volume. The rising middle-class population of this region, with high disposable income, and demand for sustainable construction, are driving the growth of the market.

# Few Indian Major Players are as under

- Asahi India Glass Ltd.
- Gujarat Guardian Ltd.
- Hindusthan National Glass & Inds. Ltd.
- I A G Co. Ltd.
- Saint-Gobain Sekurit India Ltd.
- Triveni Glass Ltd.

# Reasons for buying the report:

- **This report helps you to identify a profitable project for investing or diversifying into by throwing light to crucial areas like industry size, market potential of the product and reasons for investing in the product**
- **This report provides vital information on the product like it's characteristics and segmentation**
- **This report helps you market and place the product correctly by identifying the target customer group of the product**

- **This report helps you understand the viability of the project by disclosing details like machinery required, project costs and snapshot of other project financials**
- **The report provides a glimpse of government regulations applicable on the industry**
- **The report provides forecasts of key parameters which helps to anticipate the industry performance and make sound business decisions**



# Our Approach:

- **Our research reports broadly cover Indian markets, present analysis, outlook and forecast for a period of five years.**
- **The market forecasts are developed on the basis of secondary research and are cross-validated through interactions with the industry players**
- **We use reliable sources of information and databases. And information from such sources is processed by us and included in the report**

## Scope of the Report

The report titled “Glass Sheet (Automatic Plant)”: Market Survey cum Detailed Techno Economic Feasibility Report provides an insight into the Glass Sheet market in India with focus on uses and applications, Manufacturing Process, Process Flow Sheets, Plant Layout and Project Financials of Glass Sheet (Automatic Plant) project. The report assesses the market sizing and growth of the Indian Glass Sheet Industry. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line. And before diversifying/venturing into any product, they wish to study the following aspects of the identified product:

- **Good Present/Future Demand**
- **Export-Import Market Potential**
- **Raw Material & Manpower Availability**
- **Project Costs and Payback Period**

**We at NPCCS, through our reliable expertise in the project consultancy and market research field, have demystified the situation by putting forward the emerging business opportunity in the Glass Sheet (Automatic Plant) sector in India along with its business prospects. Through this report we have identified Glass Sheet (Automatic Plant) project as a lucrative investment avenue.**

# Major Queries/Questions Answered in the Report?

- 1. What is Glass Sheet industry ?**
- 2. How has the Glass Sheet industry performed so far and how will it perform in the coming years ?**
- 3. What is the Project Feasibility of a Glass Sheet Plant ?**
- 4. What are the requirements of Working Capital for setting up a Glass Sheet plant ?**

- 5. What is the structure of the Glass Sheet Business and who are the key/major players ?**
- 6. What is the total project cost for setting up Glass Sheet plant ?**
- 7. What are the operating costs for setting up a Glass Sheet plant ?**
- 8. What are the machinery and equipment requirements for setting up a Glass Sheet plant ?**

- 9. Who are the Suppliers and Manufacturers of Plant & Machinery for setting up a Glass Sheet plant ?**
- 10. What are the requirements of raw material for setting up a Glass Sheet plant ?**
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**22. What are the Project financials of a Glass Sheet plant?**



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# **NIIR PROJECT CONSULTANCY SERVICES**

**An ISO 9001:2008 Company**



# Who are we?

- *One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services*
- *We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad*



# What do we offer?

- *Project Identification*
- *Detailed Project Reports/Pre-feasibility Reports*
- *Market Research Reports*
- *Technology Books and Directory*
- *Databases on CD-ROM*
- *Laboratory Testing Services*
- *Turnkey Project Consultancy/Solutions*
- *Entrepreneur India (An Industrial Monthly Journal)*



## How are we different ?

- *We have two decades long experience in project consultancy and market research field*
- *We empower our customers with the prerequisite know-how to take sound business decisions*
- *We help catalyze business growth by providing distinctive and profound market analysis*
- *We serve a wide array of customers , from individual entrepreneurs to Corporations and Foreign Investors*
- *We use authentic & reliable sources to ensure business precision*



# Our Approach

Requirement collection

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

Report Compilation

# Who do we serve?

- *Public-sector Companies*
- *Corporates*
- *Government Undertakings*
- *Individual Entrepreneurs*
- *NRI's*
- *Foreign Investors*
- *Non-profit Organizations, NBFC's*
- *Educational Institutions*
- *Embassies & Consulates*
- *Consultancies*
- *Industry / trade associations*



# Sectors We Cover

- *Ayurvedic And Herbal Medicines, Herbal Cosmetics*
- *Alcoholic And Non Alcoholic Beverages, Drinks*
- *Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin*
- *Activated Carbon & Activated Charcoal*
- *Aluminium And Aluminium Extrusion Profiles & Sections,*
- *Bio-fertilizers And Biotechnology*
- *Breakfast Snacks And Cereal Food*
- *Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling*



- *Bamboo And Cane Based Projects*
- *Building Materials And Construction Projects*
- *Biodegradable & Bioplastic Based Projects*
- *Chemicals (Organic And Inorganic)*
- *Confectionery, Bakery/Baking And Other Food*
- *Cereal Processing*
- *Coconut And Coconut Based Products*
- *Cold Storage For Fruits & Vegetables*
- *Coal & Coal Byproduct*

- *Copper & Copper Based Projects*
- *Dairy/Milk Processing*
- *Disinfectants, Pesticides, Insecticides, Mosquito Repellents,*
- *Electrical, Electronic And Computer based Projects*
- *Essential Oils, Oils & Fats And Allied*
- *Engineering Goods*
- *Fibre Glass & Float Glass*
- *Fast Moving Consumer Goods*
- *Food, Bakery, Agro Processing*

- *Fruits & Vegetables Processing*
- *Ferro Alloys Based Projects*
- *Fertilizers & Biofertilizers*
- *Ginger & Ginger Based Projects*
- *Herbs And Medicinal Cultivation And Jatropha (Biofuel)*
- *Hotel & Hospitality Projects*
- *Hospital Based Projects*
- *Herbal Based Projects*
- *Inks, Stationery And Export Industries*

- *Infrastructure Projects*
- *Jute & Jute Based Products*
- *Leather And Leather Based Projects*
- *Leisure & Entertainment Based Projects*
- *Livestock Farming Of Birds & Animals*
- *Minerals And Minerals*
- *Maize Processing(Wet Milling) & Maize Based Projects*
- *Medical Plastics, Disposables Plastic Syringe, Blood Bags*
- *Organic Farming, Neem Products Etc.*

- *Paints, Pigments, Varnish & Lacquer*
- *Paper And Paper Board, Paper Recycling Projects*
- *Printing Inks*
- *Packaging Based Projects*
- *Perfumes, Cosmetics And Flavours*
- *Power Generation Based Projects & Renewable Energy Based Projects*
- *Pharmaceuticals And Drugs*
- *Plantations, Farming And Cultivations*
- *Plastic Film, Plastic Waste And Plastic Compounds*
- *Plastic, PVC, PET, HDPE, LDPE Etc.*

- *Potato And Potato Based Projects*
- *Printing And Packaging*
- *Real Estate, Leisure And Hospitality*
- *Rubber And Rubber Products*
- *Soaps And Detergents*
- *Stationary Products*
- *Spices And Snacks Food*
- *Steel & Steel Products*
- *Textile Auxiliary And Chemicals*

- *Township & Residential Complex*
- *Textiles And Readymade Garments*
- *Waste Management & Recycling*
- *Wood & Wood Products*
- *Water Industry(Packaged Drinking Water & Mineral Water)*
- *Wire & Cable*



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