

Toughened Glass, Tempered Glass and Safety Glass Industry

**Global Demand for Toughened Glass
will continue to Increase – An
Investment Opportunity**

**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 making, one of the oldest of industries, has had a fascination for man throughout the ages. The transmutation of common sand and earth into a gem- like, rigid, transparent material has all the romance of alchemy. Today, by far the greater volume of glass is made by fully automatic means, and a visit to a modern bottle factory, The glass technologist is the alchemist behind the scenes who must daily exercise his art, assisted by science, to ensure that the machines are capable of functioning properly.

Glass truly has become symbolic of communication and openness in architecture today. Combining technological advantages with glass, designers have plunged forward to experiment with its various facets.

Toughened or tempered glass is a type of safety glass processed by controlled thermal or chemical treatments to increase its strength compared with normal glass. Tempering puts the outer surfaces into compression and the inner surfaces into tension.

Such stresses cause the glass, when broken, to crumble into small granular chunks instead of splintering into jagged shards as plate glass (aka: annealed glass) creates. The granular chunks are less likely to cause injury. The product is employed in numerous applications including shower doors, passenger vehicle windows, refrigerator trays, architectural doors and tables, a component in the manufacturing of bullet proof products, mobile screen protectors, cookware and diving masks on account of superior properties including high strength and safety features.

- Toughened Glass has to pass the following important tests:
- Transfer strength test on sheets on simply supported (Modules of rupture and electricity)
- Impact test: By following weight on sheets supported on two wooden battens
- Impact by falling weight on sheet evenly bedded (on putty)
- Impact by falling weight on edge of sheet
- Repeated twisting tests
- Sand blast abrasion
- Thermal tests

Because of the strength and other specific physical properties mentioned above, it finds applications in the following fields:

- Automobile: Cars, trucks,
- dustry buses, tempos etc.
- Railways: Coaches
- Defence: Fleets, vehicles factory
- Commercial: Hotels, shops, complex
- Air ports: Doors

In recent years, several changes in legislation and standards have made the use of safety glass in critical locations compulsory by law. Apart from the obvious uses of toughened glass in windows, doors and conservatories, etc., it is widely utilized in squash and handball courts, canopies and roofs, cabinets, table tops, balustrades for stairways and balconies and entrance door assemblies.

Properties

Toughened glass is physically and thermally stronger than regular glass. The greater contraction of the inner layer during manufacturing induces compressive stresses in the surface of the glass balanced by tensile stresses in the body of the glass. For glass to be considered toughened, this compressive stress on the surface of the glass should be a minimum of 69 megapascals (10,000 psi). For it to be considered safety glass, the surface compressive stress should exceed 100 megapascals (15,000 psi). The greater the surface stress, the smaller the glass particles will be when broken.

Market Potential

The glass industry comprises five main sectors covering different glass products, applications and markets. These sectors are very different, whether in terms of manufacturing process, products, markets, the economics of the sectors or manufacturers, but they all transform raw materials into glass by a process of melting. More than 90 per cent of glass industry products are sold to other industries. Glass manufacturing is thus significantly dependent on the building construction sector, car manufacturing and the food and beverage industry. However, there are also smaller volume sectors that produce high-value technical or consumer products.

With increased transportation facilities the demand of the product is increasing at a steady pace especially in the automobile industry, railways, ships building both for production and replacement. Local market and advertisement has become very essential for the success of any business activity. As such it is found to have scope for starting new small scale units for the manufacture of Toughened glass to meet the growing demand.

Few Indian Major Players are as under

Asahi India Glass Ltd.

Atul Glass Inds. Ltd.

Auroplast India Ltd.

Gold Plus Glasses India Ltd.

Hindusthan Safety Glass Works Pvt. Ltd.

Saint-Gobain Sekurit India Ltd.

Project at a Glance

Capacity:	30 MT/Day
Plant & Machinery:	Rs. 162 Lakhs
Cost of Project:	Rs. 499 Lakhs
Rate of Return:	50.48%
Breakeven Point:	53.71%

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Toughened Glass

See more

<https://goo.gl/4q9k50>

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Major Queries/Questions Answered in the Report?

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

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

- 9. Who are the Suppliers and Manufacturers of Plant & Machinery for setting up a Toughened Glass plant ?**
- 10. What are the requirements of raw material for setting up a Tempered Glass plant ?**
- 11. Who are the Suppliers and Manufacturers of Raw materials for setting up a Toughened Glass plant ?**
- 12. What is the Manufacturing Process and Formulations of a Tempered Glass plant ?**

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- 14. What will be the income and expenditures for a Tempered Glass plant ?**
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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 project**
- **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 “Market Survey cum Detailed Techno Economic Feasibility Report on Toughened Glass” provides an insight into the Toughened Glass market in India with focus on uses and applications, Manufacturing Process, Process Flow Sheets, Plant Layout and Project Financials of Toughened Glass project. The report assesses the market sizing and growth of the Indian Toughened Glass 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 NPCS, 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 Toughened Glass sector in India along with its business prospects. Through this report we have identified Toughened Glass project as a lucrative investment avenue.

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Toughened Glass

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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*

We at NPCS want to grow with you by providing solutions scale to suit your new operations and help you reduce risk and give a high return on application investments. We have successfully achieved top-notch quality standards with a high level of customer appreciation resulting in long lasting relation and large amount of referral work through technological breakthrough and innovative concepts. A large number of our Indian, Overseas and NRI Clients have appreciated our expertise for excellence which speaks volumes about our commitment and dedication to every client's success.



We bring deep, functional expertise, but are known for our holistic perspective: we capture value across boundaries and between the silos of any organization. We have proven a multiplier effect from optimizing the sum of the parts, not just the individual pieces. We actively encourage a culture of innovation, which facilitates the development of new technologies and ensures a high quality product.

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*

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- *Ayurvedic And Herbal Medicines, Herbal Cosmetics*
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- *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*
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- *Water Industry(Packaged Drinking Water & Mineral Water)*
- *Wire & Cable*

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