

**Investment Opportunities in
Precipitated Silica from
Rice Husk Ash Project**

Rice husk is an agricultural residue abundantly available in rice producing countries. The annual rice husk produce in India amounts is generally approximately 12 million tons. Rice husk is generally not recommended as cattle feed since its cellulose and other sugar contents are low.



Furfural and rice bran oil are extracted from rice husk. Industries use rice husk as fuel in boilers and for power generation.

Rice husk, an agro waste material, contains about 20% ash which can be retrieved as amorphous, chemically reactive silica. This silica finds wide applications as filler,

catalyst support, adsorbent and a source for synthesizing high performance silicon and its compounds. Various metal ions and unburned carbon influence the purity and color of the ash. Controlled burning of the husk after removing these ions can produce white silica of high purity.

Precipitated Silica Production

Silica is not a new commodity in the plastics market. Its usage as extenders and reinforcing fillers, as pozzolanic material and as glass microspheres for specific engineering applications are well known in the market.



Because of its high silica and lignin content, rice husk is tough, woody and abrasive in nature with low nutritive properties and resistance to weathering. With growing environmental concern, open burning has been outlawed in many major rice-producing countries.

18% of the rice husk can be retrieved as ash after the gasification process. Silica content in ash is almost 90% and the rate of recovery of precipitated silica is 90-95% from the rice husk ash if the conversion efficiency is more than 70%.

Rice hull ash (RHA) contains over 60% of silica which can be an economically viable raw material for the production of silica based products. Silica generation is a separate independent process not dependent on electricity generation, although the input ash is dependent on gasification process.

Provision will be taken in the design so that external ash is used also as input thus increase silica production.

Liquid sodium silicate is processed with acid and filtered. The filter separates a diluted sodium sulfate (Glauber's salt solution) and the wet silica product.

The salt solution can be evaporated or fed to a reverse osmosis and solid salt is produced as valuable by-product. The wet filter cake is finally washed and fed to the drying unit. With special dryers a precipitated silica product with about 8% water content is produced.

The precipitated amorphous silica powder is screened and stored in storage silos. For distribution of silica products packaging in bags of various sizes is executed in the packing unit.

Uses of Precipitated Silica

- Rubber industry – as a reinforcing agent
- Cosmetics



- **Tooth pastes –**
as a cleansing agent
- **Food industry –**
as an anti-caking agent.
- **Paints –**
as a filler



Silica is the major constituent of the rice husk ash. So precipitated silica production will not only provide value addition but also solve the problem of large amount of ash disposal generated from gasification process. With such a large ash content & silica content in the ash it becomes economical to extract silica from the ash, which has wide market & also takes care of ash disposal.

Precipitated Silica (also called particulate silica) is composed of aggregates of ultimate particles of colloidal size that have not become linked in massive gel network during the preparation process. It is an amorphous form of silica; the word amorphous denotes a lack or crystal structure, as defined by x ray diffraction.



Early interest in amorphous silica was purely academic. The ash produced after the husks have been burned is high in silica. RHA can be used in a variety of application like: green concrete, high performance concrete, ceramic glaze, water proofing chemicals, roofing shingles, insulator, specialty paints, flame retardants, carrier for pesticides, insecticides & bio fertilizers etc.

Precipitated silica is also used as filler for paper & rubber, as a carrier & diluents for agricultural chemicals, as an anti-caking agent, to control viscosity & thickness and as a cleansing agent in toothpastes & in cosmetics. The distinguishing feature of the growth of precipitated silica industry in India is that it has classifiably flourished in the small scale sector.

Readily available new materials low capital investment & high rates of return offer a distinct advantage to the small scale manufacturers to venture into this field. There is a very good scope in this sector.

Few Indian Major Players are as under:

- Gujrat Multi Gas Base Chemicals Private Limited
- Gujarat Multi Gas Base Chemicals Private Limited,
- Mumbai Manswill Chemicals Private Limited
- Wellink Chemical Industrial Company Limited,
- Nanping Insilco Limited
- Famous Minerals and Chemicals Private Limited
- Gujarat Silicon Pvt. Ltd.

Project at a Glance

Capacity:	4500 MT/Annum
Plant & Machinery:	Rs. 28 Lakhs
Cost of Project:	Rs. 129 Lakhs
Rate of Return:	46%
Break Even Point:	38%

**Niir Project Consultancy Services (NPCS)
can provide Detailed Project Report on
Precipitated Silica from Rice Husk Ash**

See more:

<http://goo.gl/SIKSZO>

Our Detailed Project Report Contains

➤ Introduction

- Project Introduction
- Project Objective and Strategy
- Concise History of the Product
- Properties
- BIS (Bureau of Indian Standards) Provision & Specification
- Uses & Applications

➤ **Market Study and Assessment**

- **Current Indian Market Scenario**
- **Present Market Demand and Supply**
- **Estimated Future Market Demand and Forecast**
- **Statistics of Import & Export**
- **Names & Addresses of Existing Units (Present Players)**
- **Market Opportunity**

➤ **Raw Material**

- **List of Raw Materials**
- **Properties of Raw Materials**
- **Prescribed Quality of Raw Materials**
- **List of Suppliers and Manufacturers**

➤ **Personnel (Manpower) Requirements**

- **Requirement of Staff & Labor (Skilled and Unskilled) Managerial, Technical, Office Staff and Marketing Personnel**

➤ **Plant and Machinery**

- **List of Plant & Machinery**
- **Miscellaneous Items**
- **Appliances & Equipments**
- **Laboratory Equipments & Accessories**
- **Electrification**
- **Electric Load & Water**
- **Maintenance Cost**
- **Sources of Plant & Machinery (Suppliers and Manufacturers)**

➤ **Manufacturing Process and Formulations**

- **Detailed Process of Manufacture with Formulation**
- **Packaging Required**
- **Process Flow Sheet Diagram**

➤ Infrastructure and Utilities

- Project Location
- Requirement of Land Area
- Rates of the Land
- Built Up Area
- Construction Schedule
- Plant Layout and Requirement of Utilities

Along with project financials, as under:

- Assumptions for Profitability workings
- Plant Economics
- Production Schedule
- Land & Building

Factory Land & Building

Site Development Expenses

- **Plant & Machinery**

Indigenous Machineries

Other Machineries (Miscellaneous, Instruments, Laboratory Equipments and Accessories etc.)

- **Other Fixed Assets**

Furniture & Fixtures

Pre-operative and Preliminary Expenses

Technical Knowhow

Provision of Contingencies

- **Working Capital Requirement Per Month**

Raw Material

Packing Material

Lab & ETP Chemical Cost

Consumable Store

- **Overheads Required Per Month and Per Annum**

Utilities & Overheads (Power, Water and Fuel Expenses etc.)

Royalty and Other Charges

Selling and Distribution Expenses

- **Salary and Wages**
- **Turnover per Annum**
- **Share Capital**

Equity Capital

Preference Share Capital

- **Annexure 1 :: Cost of Project and Means of Finance**
- **Annexure 2 :: Profitability and Net Cash Accruals**

Revenue/Income/Realisation

Expenses/Cost of Products/Services/Items

Gross Profit

Financial Charges

Total Cost of Sales

Net Profit After Taxes

Net Cash Accruals

- **Annexure 3 :: Assessment of Working Capital requirements**

Current Assets

Gross Working. Capital

Current Liabilities

Net Working Capital

Working Note for Calculation of Work-in-process

- **Annexure 4 :: Sources and Disposition of Funds**

- **Annexure 5 :: Projected Balance Sheets**

ROI (Average of Fixed Assets)

RONW (Average of Share Capital)

ROI (Average of Total Assets)

- **Annexure 6 :: Profitability ratios**

D.S.C.R

Earnings Per Share (EPS)

Debt Equity Ratio

- **Annexure 7 :: Break-Even Analysis**

Variable Cost & Expenses

Semi-Var./Semi-Fixed Exp.

Profit Volume Ratio (PVR)

Fixed Expenses / Cost

B.E.P

- **Annexure 8 to 11 :: Sensitivity Analysis-
Price/Volume**

Resultant N.P.B.T

Resultant D.S.C.R

Resultant PV Ratio

Resultant DER

Resultant ROI

Resultant BEP

- **Annexure 12 :: Shareholding Pattern and Stake Status**

Equity Capital

Preference Share Capital

- **Annexure 13 :: Quantitative Details-Output/Sales/Stocks**

Determined Capacity P.A of Products/Services

Achievable Efficiency/Yield % of Products/Services/Items

Net Usable Load/Capacity of Products/Services/Items

Expected Sales/ Revenue/ Income of Products/ Services/ Items

- **Annexure 14** :: **Product wise domestic Sales Realisation**
- **Annexure 15** :: **Total Raw Material Cost**
- **Annexure 16** :: **Raw Material Cost per unit**
- **Annexure 17** :: **Total Lab & ETP Chemical Cost**
- **Annexure 18** :: **Consumables, Store etc.,**
- **Annexure 19** :: **Packing Material Cost**
- **Annexure 20** :: **Packing Material Cost Per Unit**

- **Annexure 21** :: **Employees Expenses**
- **Annexure 22** :: **Fuel Expenses**
- **Annexure 23** :: **Power/Electricity Expenses**
- **Annexure 24** :: **Royalty & Other Charges**
- **Annexure 25** :: **Repairs & Maintenance Exp.**
- **Annexure 26** :: **Other Mfg. Expenses**
- **Annexure 27** :: **Administration Expenses**
- **Annexure 28** :: **Selling Expenses**

- **Annexure 29 :: Depreciation Charges – as per Books (Total)**
- **Annexure 30 :: Depreciation Charges – as per Books (P & M)**
- **Annexure 31 :: Depreciation Charges - As per IT Act WDV
(Total)**
- **Annexure 32 :: Depreciation Charges - As per IT Act WDV
(P & M)**
- **Annexure 33 :: Interest and Repayment - Term Loans**
- **Annexure 34 :: Tax on Profits**
- **Annexure 35 :: Projected Pay-Back Period And IRR**

See more:

<http://goo.gl/SIKSZO>

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<https://goo.gl/VstWkd>

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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

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

Sectors We Cover *Cont...*

- 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

Sectors We Cover *Cont...*

- 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

Sectors We Cover *Cont...*

- 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

Sectors We Cover *Cont...*

- 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.

Sectors We Cover *Cont...*

- 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.

Sectors We Cover *Cont...*

- 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

Sectors We Cover *Cont...*

- 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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