Polylactic Acid (PLA) Production.

A Biodegradable and Bioactive Polyester.

Most Common Bioplastic in Today’s Use
Polylactic acid or polyactide (PLA) is a biodegradable and bioactive polyester made up of lactic acid building blocks. Polylactic acid (PLA) is at present one of the most promising biodegradable polymers (biopolymers) and has been the subject of abundant literature over the last decade.

PLA can be processed with a large number of techniques and is commercially available (large-scale production) in a wide range of grades. It is relatively cheap and has some remarkable properties, which make it suitable for different applications.
Polylactic acid (PLA) is the most common bioplastic in use today. First, corn or other raw materials are fermented to produce lactic acid, which is then polymerized to make polylactic acid (PLA). Bioplastics are expected to make major contributions to environmental protection, because they reduce CO2 and because they are biodegradable. The range of applications for bioplastics is growing, from materials used in automobile interiors to packaging for foods and cosmetics, to agricultural sheeting, to household appliances.
Application:

PLA is biocompatible and thus suitable for medical use, for instance in absorbable suture threads. PLA is also one of the few plastics that are suitable for 3D printing. PLA (polylactic acid) is adapted to classical processing equipments and allows the manufacturing of food contact packagings, bottles for cosmetics application, textile fibers etc.

Early applications of high-density PLA were mostly limited to biomedical areas due to its ability to be safely absorbed biologically. Over the past decades, the development of economical production methods and a rising environmental consciousness in consumers lead to the widespread use of PLA as packaging material for consumer goods.
<table>
<thead>
<tr>
<th>Application sector</th>
<th>Nature of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging industry</td>
<td>PLA can be employed in the preparation of bio plastic and is useful for production of loose fill packaging, drinking cups, salad cups, overwrap, compost bags, food packaging etc</td>
</tr>
<tr>
<td>Biomedical field</td>
<td>As sutures, dialysis media and drug delivery</td>
</tr>
<tr>
<td>Textile/sanitary products / fibers and fabrics</td>
<td>Household and industrial wipes, diapers, nappies, sanitary packages, feminine hygiene products, disposable garments and UV resistant fabrics, upholstery among others.</td>
</tr>
<tr>
<td>Agricultural/Horticulture</td>
<td>Mulch films, seedling pots for transplanting, vegetation nets,..</td>
</tr>
<tr>
<td>Construction materials</td>
<td>Frame works.</td>
</tr>
<tr>
<td>Fishing materials</td>
<td>Fishing nets, fishing lines.</td>
</tr>
</tbody>
</table>
Market Outlook

Polylactic Acid (PLA) Market is expected to garner $5.2 billion by 2020, registering a CAGR of 19.5% during the forecast period 2013-2020. Polylactic acid (PLA) is a bio-degradable thermoplastic aliphatic polymer produced from lactic acid using various crops like corn, sugarcane, tapioca etc. as a raw material.
Segmentation - World PLA Market

- **By Application**
  - Packaging
  - Agriculture
  - Electronics
  - Textiles
  - Bio-Medical
  - Others

- **By Geography**
  - North America
  - Europe
  - Asia Pacific
    - China
    - Thailand
    - Japan
    - Rest of APAC
  - LAMEA (Latin America, The Middle East & Africa)
Increasing consumer awareness, government incentives and easy availability of raw materials are the major factors driving market growth. However, the cost of PLA is comparatively higher than synthetic plastics, thus becoming a primary restraining factor for the market growth.
Top Factors Impacting - World PLA Market

- Increasing environmental awareness
- Need of commercial facility for composting
- Unique physical properties
- Government incentives
- High cost

2014 vs 2020
In terms of volume consumption Polylactic acid accounts for highest consumed bio plastic. Government is taking initiatives, providing subsidies and support for increasing usage of bio degradable products. Pollution control and environment safety are the major reasons why more and more stakeholders are turning towards bio plastic usage rather than conventional plastic synthesised from petroleum. Technological advancement, technological transfer from developed countries and high consumer demand in developing countries are responsible for upcoming new set ups in packaging, textiles and electronics industries. These industries’ demand for Polylactic acid is the key market growth driver in developing countries.
Increasing usage in creams, shampoos, and body care products as it enhances skin lightening effects, improves collagen and elastin synthesis, accelerates exfoliation and cell renewal is expected to propel industry expansion over the forecast period. Rising demand for personal care products, owing to the introduction of sophisticated products along with the formulation development for a particular consumer group is expected to create new growth avenues for the lactic acid market.

There are different types of packaging available in the market such as metal packaging, rigid packaging, flexible packaging, glass packaging, cardboard, and paper packaging. Some common objectives of packaging are physical protection, barrier protection, containment or agglomeration, marketing, security, and convenience. The key driver responsible for the growth of the market is the increasing demand for plastics in packaging from the developing countries such as China and India. The countries like Brazil, India, China, and Russia (BRIC) are global leaders in the Packaging industry with a total 30% of the market share.
Pattern of Application Sector Wise Demand for Polylactic Acid

- Packaging: 65%
- Textile: 18%
- Agriculture: 9%
- Electronics and appliances: 6%
- Others: 2%

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The Polylactic acid Market is segmented based on product form which is further sub-divided into films and sheets, coatings, and fibers; and also on the basis of the application which is again sub-divided into packaging, catering, technical material, consumer goods, agriculture, construction materials and others. Packaging is the main application of PLA since almost 46% of PLA is consumed for manufacturing packaging materials. Packaging material again has two categories, film packaging, and bottle packaging. In this category, most of the PLA is used for making of plastic bags. Around 19000 tons i.e. 18% of total PLA is used for making plastic bottles.

The major players in global Polylactic acid production market are collaborating in order to provide innovative solutions to meet the specific demand for Polylactic acid. Most of European and American firms are taking initiatives via technology and expertise transfer to increase the production of Polylactic acid in Asia pacific market, which is highest growing market.
Indian Scenario:

Poly lactic acid is not presently produced in India.

### Annual import in India

<table>
<thead>
<tr>
<th>Period (April to March)</th>
<th>Import (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-14</td>
<td>1,000</td>
</tr>
<tr>
<td>2014-15</td>
<td>740</td>
</tr>
<tr>
<td>2015-16</td>
<td>4,251</td>
</tr>
<tr>
<td>2016-17</td>
<td>4,000</td>
</tr>
</tbody>
</table>
Major Queries/Questions Answered in the Report?

1. **What is Polylactic Acid (PLA) Manufacturing industry?**

2. **How has the Polylactic Acid (PLA) Manufacturing industry performed so far and how will it perform in the coming years?**

3. **What is the Project Feasibility of Polylactic Acid (PLA) Manufacturing Plant?**

4. **What are the requirements of Working Capital for setting up Polylactic Acid (PLA) Manufacturing plant?**
5. What is the structure of the Polylactic Acid (PLA) Manufacturing Business and who are the key/major players?

6. What is the total project cost for setting up Polylactic Acid (PLA) Manufacturing Business?

7. What are the operating costs for setting up Polylactic Acid (PLA) Manufacturing plant?

8. What are the machinery and equipment requirements for setting up Polylactic Acid (PLA) Manufacturing plant?
9. Who are the Suppliers and Manufacturers of Plant & Machinery for setting up Polylactic Acid (PLA) Manufacturing plant?

10. What are the requirements of raw material for setting up Polylactic Acid (PLA) Manufacturing plant?

11. Who are the Suppliers and Manufacturers of Raw materials for setting up Polylactic Acid (PLA) Manufacturing Business?

12. What is the Manufacturing Process of Polylactic Acid (PLA)?
13. What is the total size of land required for setting up Polylactic Acid (PLA) Manufacturing plant?

14. What will be the income and expenditures for Polylactic Acid (PLA) Manufacturing Business?

15. What are the Projected Balance Sheets of Polylactic Acid (PLA) Manufacturing plant?

16. What are the requirement of utilities and overheads for setting up Polylactic Acid (PLA) Manufacturing plant?

17. What is the Built up Area Requirement and cost for setting up Polylactic Acid (PLA) Manufacturing Business?
18. What are the Personnel (Manpower) Requirements for setting up Polylactic Acid (PLA) Manufacturing Business?

19. What are Statistics of Import & Export for Polylactic Acid (PLA)?

20. What is the time required to break-even of Polylactic Acid (PLA) Manufacturing Business?

21. What is the Break-Even Analysis of Polylactic Acid (PLA) Manufacturing plant?

22. What are the Project financials of Polylactic Acid (PLA) Manufacturing Business?
23. What are the Profitability Ratios of Polylactic Acid (PLA) Manufacturing Project?

24. What is the Sensitivity Analysis-Price/Volume of Polylactic Acid (PLA) Manufacturing plant?

25. What are the Projected Pay-Back Period and IRR of Polylactic Acid (PLA) Manufacturing plant?

26. What is the Process Flow Sheet Diagram of Polylactic Acid (PLA) Manufacturing project?
27. What are the Market Opportunities for setting up Polylactic Acid (PLA) Manufacturing plant?

28. What is the Market Study and Assessment for setting up Polylactic Acid (PLA) Manufacturing Business?

29. What is the Plant Layout for setting up Polylactic Acid (PLA) Manufacturing Business?
Table of Contents of the Project Report
Our Detailed Project Report contains

- Introduction
- Properties
- Uses & Applications
- List of Plant & Machineries
- Miscellaneous Items and Accessories
- Instruments, Laboratory Equipments and Accessories
- Electrification, Electric Load and Water
- Maintenance, Suppliers/Manufacturers of Plant and Machineries
- Process of Manufacture
- Flow Sheet Diagram
- List of Raw Materials
- Availability of Raw Materials
- Requirement of Staff & Labour
• Skilled & Unskilled Labour
• Requirement of Land Area
• Built up Area
• Plant Layout.

Along with financial details as under:
• Assumptions for Profitability workings
• Plant Economics
• Production Schedule
• Land & Building
  • Factory Land & Building
  • Site Development Expenses
• Plant & Machinery
• Indigenous Machineries
- 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
Project Financials

- Project at a Glance
- Assumptions for Profitability workings
- Plant Economics
- Production Schedule
- Land & Building

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  Royalty and Other Charges
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• Salary and Wages ........................................................................ 9

• Turnover Per Annum ..................................................................... 10

• Share Capital ................................................................................. 11
  Equity Capital
  Preference Share Capital
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- Expenses/Cost of Products/Services/Items
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- Financial Charges
- Total Cost of Sales
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- Net Cash Accruals
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- Net Working Capital
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  - Earnings Per Share (EPS)
  - Debt Equity Ratio
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- Semi-Variable/Semi-Fixed Expenses
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- Resultant D.S.C.R
- Resultant PV Ratio
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- Resultant ROI
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<th>No.</th>
<th>Annexure No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Employees Expenses</td>
<td></td>
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<tr>
<td>22</td>
<td>Fuel Expenses</td>
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<tr>
<td>23</td>
<td>Power/Electricity Expenses</td>
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<tr>
<td>24</td>
<td>Royalty &amp; Other Charges</td>
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</tr>
<tr>
<td>25</td>
<td>Repairs &amp; Maintenance Expenses</td>
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<tr>
<td>26</td>
<td>Other Manufacturing Expenses</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Administration Expenses</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Selling Expenses</td>
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</table>
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• Annexure 35 :: Projected Pay-Back Period and IRR
Reasons for Buying our 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.
The report titled “Market Survey cum Detailed Techno Economic Feasibility Report on Polylactic Acid.” provides an insight into Polylactic Acid market in India with focus on uses and applications, Manufacturing Process, Process Flow Sheets, Plant Layout and Project Financials of Polylactic Acid project. The report assesses the market sizing and growth of the Indian Polylactic Acid 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 Polylactic Acid sector in India along with its business prospects. Through this report we have identified Polylactic Acid project as a lucrative investment avenue.
#Polylactic_Acid_Production, #Poly_Lactic_Acid_Production_Pdf, #How_to Make Polylactic_Acid, #Poly_Lactic_Acid_Production_in_India, #Polylactic_Acid Properties_and_Uses, Polylactic Acid Manufacture, #PLA_Manufacturing, Process for Producing Polylactic Acid, #Commercial_Production_of_PLA, #Polylactic_Acid_Manufacturing_Plant, Polylactic Acid Industry, Polylactic Acid (PLA) Industry, Production Process for Polylactic Acid (PLA), Production of Polylactic Acid, Poly (Lactic Acid), Poly (Lactic Acid) or Polylactic Acid or Polylactide (PLA), #Project_Report_on_Polylactic_Acid_Manufacturing, Industry, #Detailed_Project_Report_on_Polylactic_Acid_Production, Project Report on Polylactic Acid Production, Pre-Investment Feasibility Study on Polylactic Acid Production, #Techno_Economic_feasibility_study_on_Polylactic_Acid_Production, Feasibility report on Polylactic Acid Production, Free Project Profile on Polylactic Acid Production, Project profile on Polylactic Acid Manufacturing, Polylactic Acid Production, A Biodegradable and Bioactive Polyester, Most Common Bioplastic in Today’s Use
Niir Project Consultancy Services (NPCS) can provide Detailed Project Report on Polylactic Acid (PLA) Production. A Biodegradable and Bioactive Polyester. Most Common Bioplastic in Today’s Use

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NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our Market Survey cum Detailed Techno Economic Feasibility Report provides an insight of market in India. The report assesses the market sizing and growth of the 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.
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- Good Present/Future Demand
- Export-Import Market Potential
- Raw Material & Manpower Availability
- Project Costs and Payback Period

The detailed project report covers all aspect of business, from analyzing the market, confirming availability of various necessities such as 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, uses and applications, Plant Layout, Project Financials, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis. The DPR (Detailed Project Report) is formulated by highly accomplished and experienced consultants and the market research and analysis are supported by a panel of experts and digitalized data bank.

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 India along with its business prospects......Read more
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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.
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- Laboratory Testing Services
- Turnkey Project Consultancy/Solutions
- Entrepreneur India (An Industrial Monthly Journal)
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- 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
Contact us

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