

# Study of Manufacturing of Bioplastics <sup>†</sup>

Kavyan Patel <sup>1</sup>, Bhavesh Purswani <sup>1</sup>, Rishikesh Pawar <sup>1</sup>, Ramesh Bhande <sup>1,\*</sup>

<sup>1</sup> Thadomal Shahani Engineering College, Bandra, Mumbai-400050;

\* Correspondence: [bhande.ramesh@gmail.com](mailto:bhande.ramesh@gmail.com) (R.B.);

<sup>†</sup> Presented at International e-Conference on Green Chemistry and Engineering towards Sustainable Development – An Industrial Perspective (16-18 June 2021), Surat, Gujarat, India

Received: 5.06.2021; Revised: 10.06.2021; Accepted: 12.06.2021; Published: 15.06.2021

**Abstract:** Plastics have been used extensively since their invention at the beginning of the 19th Century. They have proven to be useful in many areas such as weaponry, culinary, storage, medicine, etc. In recent decades, plastic usage has been exponentially increasing. Due to their low cost, high strengths, variable molecular weights, and properties, plastic materials are now found in almost every walk of life, from automobiles to spacecraft. This literature survey is a study of Bioplastic materials as an alternative to traditional petroleum-derived plastics. Bioplastic can degrade and is derived from renewable energy sources. Hence, they are eco-friendlier. In this study, we have studied the threats caused by petroleum plastics, their statistics, and the need for finding a solution. We have studied the various raw materials and processes involved in the manufacture of bioplastics. Our study has drawn a comparison between the bioplastics produced by various raw materials and processes on the ground of physical, chemical, and mechanical properties. We have also included a market survey to study the usage and applications of various bioplastics in the market and industry. Further, a process to manufacture a basic type of starch-based bioplastic is studied thoroughly. Various parameters such as material balance, cost estimation, and plant layout with hazop are also studied.

**Keywords:** Plastics; bioplastics; renewable energy.

---

© 2021 by the authors. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## Funding

This research received no external funding.

## Acknowledgments

This research has no acknowledgment.

## Conflicts of Interest

The authors declare no conflict of interest.