

# “Piñatex”- A Journey from Fiber to Faux Leather

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**Abstract**-The use of eco-friendly textiles is growing day by day. Peoples are getting aware of various harmful impacts of synthetic materials, which are very unsafe for the environment as well as for our skin too. “Piñatex” is one of the biodegradable product which was created from pineapple leaf fiber and the founder of this innovative material is Dr. Carmen Hijosa a Spanish designer. The process of manufacturing this material is very interesting and the best thing about its processing is that it does not require any additional land, water, or fertilizers. Piñatex is such a helpful material which is having a very bright future as an alternative to leather.

**Keywords**- Pineapple fiber, Piñatex, Sustainable, Biodegradable, Non-woven, Artificial Leather.

## I. INTRODUCTION

Pineapple (Ananas) a juicy fruit which is loved by everyone because of its refreshing taste and sweet flavor, Ananas is cultivated in a humid tropical region. Several countries are cultivating pineapple plant-like India, China, Philippines, etc wherein India is the 5<sup>th</sup> largest producer of Pineapple; its producing states are Kerala, Goa, Bihar, West Bengal, etc. Pineapple plant starts blooming from February-April and its fruit starts maturing from July-September. This fruity pineapple fruit’s plant presents our textile industry a very precious and valuable fiber called “Piña” so that we can not only keep our internal system clean but also to achieve an outer elegant appearance. This fiber comes out from pineapple leaf which is 1-1.60m long and 5-7.5cm broad, it looks alike sword-shaped. The scrapping of these leaves gives us strong, white, silky and lustrous fiber, this white fiber was used in textiles from many decades usually in the Philippines and many other countries. This pineapple fiber is biodegradable which had not harmed our environment yet. There is also a groundbreaking innovation that was achieved from this Ananas known as “Piñatex”, this non-woven was made from pineapple leaf fiber which supports our textile industry to achieve new heights in non-woven. In this paper, Piñatex is the main subject to make aware that how pineapple has given two interesting materials that are biodegradable.

## II. Aim & Objectives

### II.1 Aim

This paper aims to make people aware of this sustainable product which can replace many of the synthetic leather because of its good strength and excellent physical properties.

### II.2 Objectives

Here are two objectives of this paper: -

- To define Piñatex as a sustainable product.
- To support Piñatex as an alternative to leather.

## III. DISCUSSION

### III.1 An Introduction to Piñatex

“Piñatex” is a sustainable non-woven textile from PALFit was introduced by Dr. Carmen Hijosa, she had discovered this groundbreaking material while pursuing her research in 2015. This innovative material started its journey from the Philippines- a lush beautiful countryside. This creation starts with the extraction of fibers from waste pineapple leaves which are the by-product of fruit harvesting, about 40,000 tonnes of pineapple leaves are wasted worldwide every year. Piñatex represents a major advance in the sustainable textile industry from the agricultural outcome which does not require any additional land, water, fertilizers, chemical or any extra material. “To make one square meter of Piñatex it needs approximately 480 leaves”, where treated PALF undergoes through manufacturing and dyeing processes in local factories, whose expenditure and weight is not as much as of leather”. This faux leather does not harm any animal or living being while it’s manufacturing.

### III.2 Founder of Piñatex

Dr. Carmen Hijosa is a Spanish designer, she had also worked for leather goods production house for 15 years while searching the alternate for leather she finds out the opportunity of converting pineapple fibers into a mesh with the help of local weavers in the Philippines. Dr. Hijosa pursued her Ph.D. from Royal College of Arts where very first time in an exhibition she had presented her models with shoe brand “Camper” and fashion Brand “Ally Capellino” in 2014 as a part of her research. This 62 years old lady had won many awards for her eco-safe innovation as well as given an alternate to replace leather to support our environment.

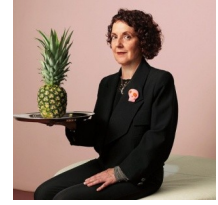


Fig.1- Founder of Pinatex

“Design is not just about product.  
Design is about responsibility.”  
-Dr. Carmen Hijosa

### 3.3 Advantages of Piñatex

Below are the advantages of Piñatex, which will help to replace synthetic and leather.

- It's a substance made from leftover pineapple leaves (Usually left by farmers to be rotten or they are burned).
- No extra land, water, fertilizer or pesticides are required to produce it.
- It is cruelty-free textile.
- A biodegradable alternative.
- Piñatex is a versatile, strong, breathable fabric
- It can be easily printed on, stitched and cut.
- It feels like artificial leather.
- Increment in its production can provide additional income to pineapple farmers.
- A sustainable miracle from everyday's waste
- This substance is capable to blend with other allied fibers to advance their features and functions.
- It's a zero-waste, swift innovation.

## IV. MANUFACTURING PROCESS

Piñatex is made from pineapple leaf fiber; these leaves are taken out from pineapple plants which are leftover by farmers after harvesting and tonnes of leaves are wasted every day.

### IV.1 Extraction course of fiber

The extraction process was done by two different methods i.e. manually and mechanically.

#### 4.1.1. Manual extraction

In this process leaves are placed on a flat surface and then scrapped by a busted ceramic plate or with half-broken coconut shell, rubbing was done till it does not take out the fiber.

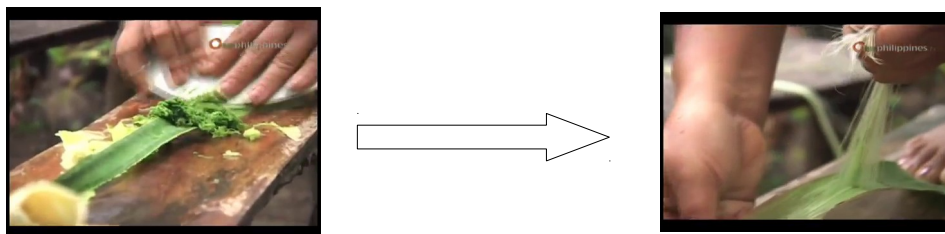


Fig.2 - Extraction of fiber manually

#### 4.1.2 Mechanical extraction

An extracting machine is used to take out the fiber one by one leaf and is placed between two rollers of the extractor to remove the upper waxy layer of leaves to take out the precious fiber. This machine somehow looks like a sugarcane juice squeezing machine.

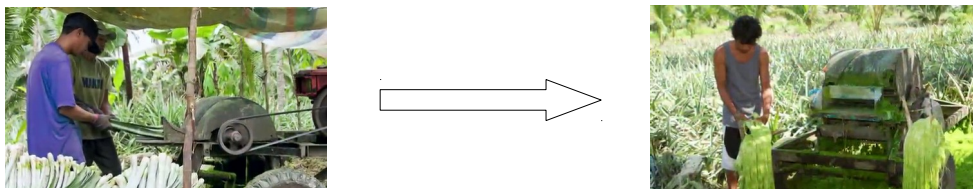


Fig.3 - Extraction of fiber by extraction machine

After extraction, fibers are washed thoroughly with normal water along with mild soap and later will be left for drying.

#### IV.2 Fabric making

Collected fibers are carded with the help of a carding machine with 80% of Pineapple leaf fiber and 20% of Polylactic acid fibers, the composition of these two fibers create a non-woven textile.



Fig.4 - Leaves to fiber then fiber to artificial leather

### V. BRIGHT FUTURE OF THIS SUSTAINABLE MATERIAL

This outstanding creation of Dr. Carmen Hijosa has a very bright future, as it's a strong sustainable material that takes up original equipment and cares for both the procedure and the complete textile. Piñatex is manufactured on "155cm width" fabric roll since this is flexible material so it's easy to cut, stitch, dye & print as well. This fabric is tested according to ISO standards to check its various properties:

- Tearing and tensile strength
- Abrasion resistance
- Light and colorfastness
- Flexing endurance
- Seam rupture
- Water spotting

Because of all these excellent properties, Piñatex is used for various applications in textiles for example - mats, baggage, sports items, automobiles and basically for outstanding accessories. It is also used for industrial purposes too i.e. machinery parts; transmission cloth, belt cord, airbag, tying cord and many more. This material is already used by several companies like Camper & Puma for shoes, yet it has created a range of varieties and styles in handbags, watchbands, jackets, etc. It is unbelievable that nobody had imagined that we can acquire any material which can replace the leather and have sustainable quality.

### VI. CONCLUSION

It can be concluded that a textile made from pineapple leaf fiber can be strong, glossy, luxurious as well as similar to leather. This non-woven signifies a major advance in the sustainable textile industry as it is constructed from the agricultural by-product which does not require any additional land, water, fertilizers or any other extra material. This creation is cruelty-free & biodegradable as well as it can replace leather but at the end of its journey, it can be returned to our mother earth through decomposing. Throughout its life cycle, Piñatex was inspired by cradle to cradle principles, fully supporting our environment. It offers a positive example of a mass production for material that will help pineapple grower's communities to increase their additional income. It does not create any negative impact on our earth so, make use of Piñatex can show us the potential of artificial leather in transforming our textile industries.

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