



WHEN WOMAN AND NATURE IN HARMONY

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INTRODUCTION

Up to **64 million tons** of waste in a year makes Indonesia become the second largest polluting country in the world. Disposable plastic products overwhelm most of the world's garbage collection, especially disposable sanitary pads. **Disposable sanitary pad** composed of **synthetic absorbent, leak-proof base and wrapper** commonly made of **polyester** or **polypropylene**, which **pollute the environment**. Indonesian women are more common to those item than other menstrual products. In fact, a **single woman can spend up to 16.000 pads** throughout her life.

Unfortunately, most of the absorbent material in sanitary pads is made from recycled waste paper pulp. One of the manufacturing processes of sanitary pads is through bleaching using bleach-containing chlorine. Chlorine compounds can produce dioxins, a carcinogenic and allergic material that cause various infections and damage, specifically lead to hormonal disfunctions. Female reproductive problems are leading causes of death among women.

So we create **Nilam Pad**, a natural, healthy and eco-friendly sanitary pad. We are developing **superabsorbent polymer (SAP) from patchouli stem waste** with a polymerization method using UV radiation **and orange peel waste** by the photopolymerization method with sunlight also coconut husk as matrix layer. Nilam Pad is disposable, make it feasible for career women and students. We make **bioplastics from cassava waste**, instead of common plastic. **Nilam Pad can degrade in 30 days**. The material we use are abundantly available and mostly thrown away vainly unprocessed. Utilizing patchouli, orange, coconut and cassava waste can pursue entrepreneurial diversification of local agricultural products to be successful.

THE AIM

1. Creating a healthy and biodegradable sanitary pad by utilizing organic commodity.
2. Socially inviting consumers to use healthy sanitary pad and participate in environmental preservation.

RESEARCH

The creation of patchouli pad involves research into superabsorbent polymers (SAP) and biodegradable plastics.

SAP

SAP compositions are patchouli powder, and orange peel powder (ratio 1 : 3)



Patchouli waste that we use is patchouli stem from patchouli oil refinery. Dried patchouli stems that have been sun-dried and then grinded to a powder. Patchouli powder is polymerized by exposure to UV light for 5 hours.



Orange peel waste is cleaned and teared up leaving only the albedo and flavedo. Then, it is exposed to photopolymerization for 2 days. Dried orange peel grinded into powder.

MATRIX

Matrix layer to hold SAP powder



Coconut husk waste is dried in the sun, stirred up in water, and cut up into smooth fibers.

BIOPLASTIC



Pieces of cassava are dried in the sun. then, cassava is ground to powder.

Cassava powder boiled to a pulp then printed very thin and dried to form plastic sheets.



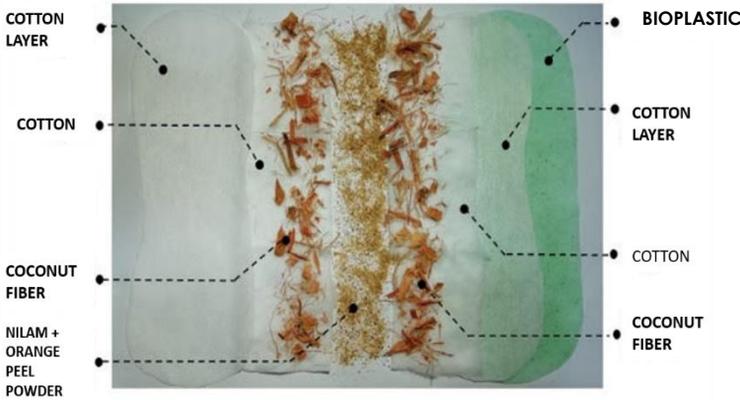
Biodegradable plastic made from **cassava**.

Cassava is cleaned from the skin then cut into small pieces.

BIODEGRADATION TEST

Nilam Pad and commercial sanitary pad were buried in the soil for **30 days** and we compared the result.

NILAM PAD COMPOSITION



To maintain the comfort of Nilam Pad users, the top layer of Nilam Pad is made from smooth and soft cotton layers that looks like a tissue. All arranged by sewing using string and needle.



After 30 days, it appears that the commercial pad only absorbs the soil. Otherwise, bioplastics in nilam pad have been completely degraded and leaving only a cotton layer that has been destroyed.

OUR PROGRAM



We only use organic waste to make Nilam Pad. We collected bags of orange peels from the juice shop on the market. We utilize patchouli waste from patchouli oil refinery. While the coconut husk we get from the coconut ice seller.

For a start, we funded our own project. The profits we get slowly from sales revenue. We sell Nilam Pad at an affordable price. For only Rp.2000, customers can get Nilam Pad. For product launches, we have produced 50 Nilam Pad and received very positive responses from customers. We are targeting to produce 200 units of Nilam Pad per week. To attract the attention of consumers with the aim of creating new innovations in sanitary pads with materials from waste.

We have our own website for Socially inviting consumers to use healthy sanitary pads, participating in environmental preservation, and introducing Nilam Pad to society. By adopting common technology, we add a barcode on the packaging so the customer could directly open our website page which contains the manufacturing process, composition, nutrition fact, program, history, and all about Nilam Pad.

From 10% of our sale profit, we able to donate and hold charity toward residents with mental retardation at "Idiot Village" Sidoharjo, Jambon, Ponorogo. We also introducing children and women about menstruation and why every family must care about it to achieve better understanding of menstrual health education.



OUR ORGANIZATION

Nilam Pad is an innovation born from our school research organization. Our team consists of a handful of members who are able to produce Nilam Pad. Making Nilam Pad involves a lot of members. Especially in sorting raw materials and manufacturing pads. We were able to reach this much from organizational input and discussion. Our organization is sizeable, including various specialist fields such as science, language, social, arts, and many more. That way, we can see from various sides and correct the shortcomings of Nilam Pad. Our organization also has a chat group so we can discuss it anytime and anywhere.

