Processing Plastic for Fashion Accessories with Hot Textile Technique

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Abstract: Plastic bag type PE (Polyethylene) is one of plastic bag type that is used by local people of Indonesia every day. It is usually used to wrap food, snack, drink or vegetable in market. It is used merely as a temporary carrier from stall, store or market to home then is littered after use. There are not too many people take this condition into their concern. Researcher therefore, is interested in looking for opportunity to process PE plastic bag so that it won't merely become a temporary carrier that has a short life cycle.
Researcher will process PE plastic bag using Do-It-Yourself (manual) way to make it become an alternative material using hot textile technique, where the purpose of doing it this way is to dig up potential of one of PE plastic's main characters, thermoplastic. Do-It-Yourself or D.I.Y, according to Nancy Pardo's definition in an article of The New Era of Do-It-Yourself Manufacturing (2011), is one of alternative ways to repurpose tools or material to meet the user's needs where in the production process involves and relies on the user's skill.
In this research, researcher attempts to develop fashion accessories, adjust it with the alternative material. Repurposing processed PE plastic bag to meet the needs and skill of the researcher is one of the ways to repurpose PE plastic bag. By doing it D.I.Y (manual) way, using simple technique and tools, it is expected that it will become a model many other people can develop in the future. Then, it is possible to extend PE plastic bag life cycle.

Keywords: *Alternative Material, D.I.Y, Plastic, Product Life Cycle, Repurpose*

1. Introduction

Plastic bag among local people of Indonesia is a common thing. Its types may be varies, one that we can frequently find is plastic bag type PE (Polyethylene). Thermoplastic1 has characters such as easy to stretch, flexible, low melting point, transparent, and can be reform with particular process. People know PE plastic bag because it is commonly used in traditional market. Its low price and easy-to-get at groceries stall to big stores make people use this type of plastic bag. It is countless of how many PE plastic bags used in a day.

Behind the people's habits in using plastic bag PE, most of them have not realized that it is used merely as a temporary carrier from stall, store or market to home. Even though some of them keep it after use, but commonly happen, they will immediately dispose it. Because its appearance will change into matted and dull after use, which makes most of the people won't use it anymore. Its function as a temporary carrier, makes PE plastic bag has a short life cycle, inversely proportional with its production process that takes quite a long time. In addition, considering there will be more people use PE plastic bag in the future, researcher is interested in looking for opportunity to process PE plastic bag so that it won't merely become a temporary carrier that has a short life cycle.

Figure 1. Plastic Bag PE (Polyethylene)

Figure 2. Sample of PE (Polyethylene) Plastic Bag in Traditional Market

2. Method

Researcher attempts to process PE plastic bag with Do-It-Yourself (D.I.Y) process to make it become an alternative material using textile approach, in accordance with researcher's background. This alternative material thereafter may be applied for fashion, textile and other lifestyle products. Do-It-Yourself or D.I.Y according to Nancy Pardo's definition in an article of The New Era of DoIt-Yourself Manufacturing (2011), Do-It-Yourself or D.I.Y is one of alternative ways to repurpose tools or material to meet the user's needs where in the production process involves and relies on the user's skill.

Hot textile technique is chosen in order to dig up potential of one of main characters of PE plastic bag, thermoplastic. Refers to Hot Textile by Kim Thittichai, 'by treating and processing a nontextile material (PE plastic bag) as if it is textile, it will give result of various unpredictable effect or texture'. Therefore, PE plastic bag will be heated using households iron, a simple heating tool, within different times and heating ways intervals, and it will be combined with other materials to produce alternative effects or textures.

The usage of simple tool and technique as well as manual (DIY) process have become researcher's main consideration in order to enable other people to redo it easily. The more people try, the more opportunity to extend PE plastic bag's life cycle in the future.

3. Creative Process

3.1 Result of Initial Exploration and Advanced Exploration

Below are the best initial exploration result using hot textile technique:

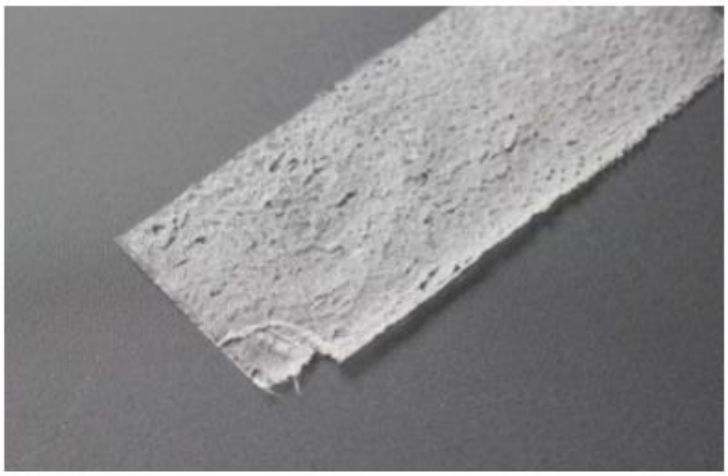

Figure 3. Initial Exploration Result: Bloombogus

a. Number of heated plastic bag : 1 sheet
b. Heating duration : 1-2 minutes
c. Ironing direction : Evenly on PE plastic bag surface
d. Result : Unique plastic sheet. Slightly transparent, white colored, perforated yet quite dense, strong (not fragile), and quite flexible (can be folded without breaking) however it is no longer elastic. Researcher calls this alternative material as Bloombogus.

To make Bloombogus more perforated and textured, PE plastic bag should be heated between 3-7 minutes. If it is wanted to have evenly perforated, ironing direction should also swept evenly on the surface. Because if it takes too long to iron one area, then that area will be more perforated or has a big hole.

To get thicker and more rigid Bloombogus, several plastic bags can be heated one at a time for 1-7 minutes, depends on how many PE plastics are used. Since its thermoplastic character still exists, to add Bloombogus thickness, it can be done by adding PE plastic bags on the surface of Bloombogus and heat it, so that PE plastic will melt and mixed with Bloombogus sheet on the layer under it. These process can be repeated until we get the thickness we want. When there is a damage such as a hole during heating process, it can be patched with PE plastic bag and repeat the same heating process. This exploration result will be developed further.

Further development of Bloombogus will be done by researcher is to combine Bloombogus with other materials, then heat it within different timing, and try different ironing directions. The best result according to researcher is as follows:

Figure 4. Results of Chosen Bloombogus Exploration Develop into Product in Detail

a. Number of heated plastic bag : 3 sheets
b. Heating duration : 2-4 minutes
c. Ironing direction : Evenly on PE plastic bag surface

d. Other materials added : Styrofoam grain and tulle fabric
e. Result : Bloombogus sheets with rich texture, white-rounded-accent from melted styrofoam grain. Part of tulle fabric mixed into plastic, other parts fly out of Bloombogus surface, make it looks more dynamic. At the other hand, some part of these sheets are cut into rectangular shape approximately 5 cm x 12 cm, then it is shaped like a tube. This Bloombogus sheet and module will be further developed as simple creative product.

3.2 Prototyping Product From Advanced Exploration of Bloombogus

Developed Bloombogus has character such as rich with texture, random perforated, asymetric, and slightly transparent. These characters remind researcher to similar natural objects such as corral, mineral stones, and glass. Therefore, researcher decided to process it become fashion accessories to emphasize the material character. Other consideration to make it as fashion accessories is because the best result of Bloombogus sheet is still in form of a small sheet of about 25 cm x 15 cm, or at PE plastic bag size itself. So that, the most possible product to be developed is a product at its size. Bigger-sized-Bloombogus still needs further exploration to find the best heating process in order to get perfect solid Bloombogus sheet. In addition to its typical character, white and transparent Bloombogus sheet and module give impressions of clean, minimalist, and modern as the most recent fashion accessories trend. Refers to it, researcher will develop Bloombogus as a choker necklace, current market trend. Its inspirational board is as follows:

Figure 5. Inspirational Board

Material's character can be optimally shown on necklace, even in a small size. Tube shaped Bloombogus module is cut into several parts to make it as necklace ornaments. To strengthen

and firm the tube-shaped, it is reinforced by a clear acrylic put inside it. Clear acrylic is chosen because of its similar character with Bloombogus, tranparent and modern. While for Blooombogus sheet, sheet is cut into small parts to be arranged on necklace.

Repurposing Bloombogus to meet user's needs and skill can be performed in many ways. Make it become choker necklace, like researcher has done, is one way to repurpose Bloombogus. The process of Bloombogus in D.I.Y (manual) way with simple technique and tool is expected will invite more people to develop it in the future. When a product meets the user's needs and demands, therefore it is possible to extend life cycle of the product. And when it changes into a creative product, with added, function and economic values, PE plastic bag won't merely become a temporary carrier.

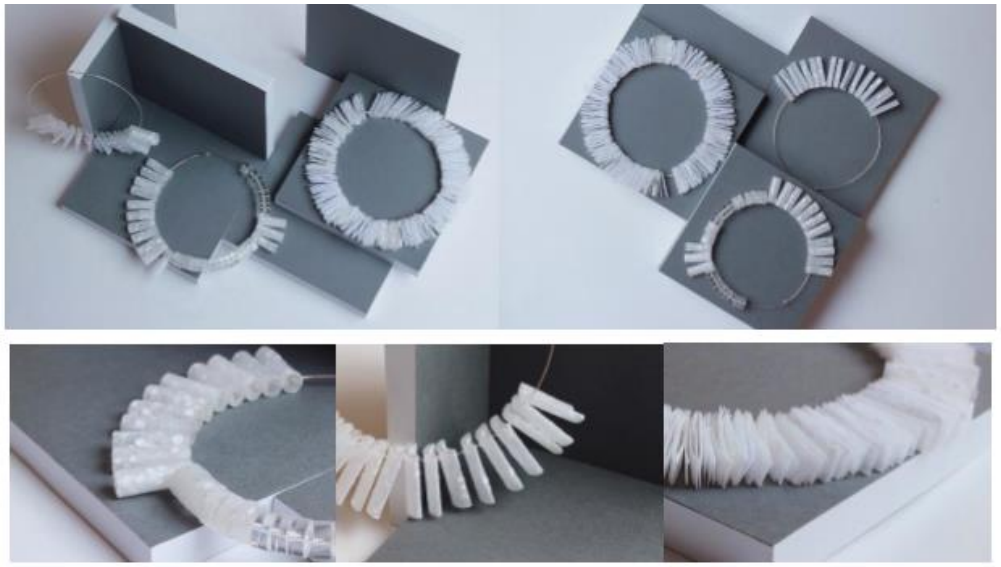

Figure 6. Results of Bloombogus Prototyping Products

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