CONFERENCE PROCEEDING

CROOILSE: Eco-Crayon from Used Cooking Oil

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ABSTRACT

Cooking oil is one of the goods that is often consumed by Indonesians, especially for household needs, such as cooking. The Central Statistics Agency and the Indonesian Palm Oil Entrepreneurs Association noted that demand for palm cooking oil, especially from households, tends to increase every year. The high level of cooking oil consumption results in more used cooking oil being produced. Used cooking oil can cause problems for the environment if not treated properly. Problems resulting from used cooking oil include damage to aquatic ecosystems, pollute the soil, and can clog waterways. Islamic boarding schools are one of the contributors to used cooking oil. This is due to the use of cooking oil which is high enough to supply the food needs of the many boarding school residents. In general, used cooking oil in Islamic boarding schools still cannot be processed properly. Based on these problems, the aim of this research is to make eco-crayons that use used cooking oil as an innovation for processing used cooking oil in Islamic boarding schools. Crayons are one of the equipment that are popular with students at the boarding school because using them can develop their creativity. The research results obtained are eco-crayons that have bright colours, are long lasting and easy to use. Thus, the presence of Crooilse can reduce used cooking oil waste and make it a useful tool for students.

Keywords: *crayon, eco-crayon, used cooking oil, boarding school*

INTRODUCTION

Cooking oil is an item that is often consumed by Indonesian people, especially for household needs such as cooking. The Central Statistics Agency and the Indonesian Palm Oil Entrepreneurs Association noted that demand for palm cooking oil, especially from households, tends to increase every year. In 2020, the need for cooking oil increased by 17.35 million tons or an increase of 3.6% compared to the previous year of 16.75 million tons. The high level of cooking oil consumption has resulted in more and more used cooking oil being produced. It is estimated that consumption of 13 million tons of cooking oil will produce 3 million tons of used cooking oil.

Used cooking oil is cooking oil that has been used several times for cooking. Used cooking oil can cause problems for the environment if it is not processed properly. This is because it contains many compounds that are carcinogenic. Problems arising from used cooking oil include damage to aquatic ecosystems, polluting the soil, and can block the respiratory tract. Used cooking oil absorbed in the soil can pollute the soil and cause a decrease in soil fertility levels and has been proven to affect the mineral content of clean water (Damayanti et al., 2020)

Islamic boarding schools are one of the contributors to used cooking oil. This is due to the high use of cooking oil to supply the food needs of many Islamic boarding school residents. In general, used cooking oil in Islamic boarding schools cannot be

processed properly. Large quantities of used cooking oil are generally thrown into rubbish dumps or waterways, without any further processing or utilization, so they can pollute the environment.

In fact, processing used cooking oil can be done because the triglyceride content contained in it can be processed into various types of products through several process stages (Arbianzah, 2019). Efforts that have been made so far include converting used cooking oil into dishwashing soap, air freshener, biodiesel, and basic ingredients for making candles. However, there are many drawbacks to using used cooking oil for these items. This is due to certain factors, including the tendency to leave residue (Hanjarvelianti & Kurniasih, 2020), it is difficult to control the very strong aroma of used cooking oil (Nurfidah Dwitiyanti & Puji Suharman, 2020), candles made from used cooking oil have a shorter lifespan, burning time compared to ordinary candles, so this innovation not yet effective.

Utilizing used cooking oil as another raw material can be an alternative solution to problems that is worth considering. One of them is making oil-based crayons. This is because used cooking oil has a higher viscosity compared to other crayon base ingredients (Muhammad & Yudhana, 2019). This makes used cooking oil crayons easier to use and produces smoother painting results.

Based on these problems, the aim of this research is to make eco-crayons made from used cooking oil as an innovation for processing used cooking oil in Islamic boarding schools. Crayons are a tool that is popular among students in Islamic boarding schools because using them can develop their creativity. Crooilse (Crayon Base On Cooking Oil Waste) is an eco-crayon innovation created to overcome one of these crucial problems, so that it can easily minimize the increase in used cooking oil waste in Islamic boarding school environments. Thus, the presence of Crooilse can reduce used cooking oil waste and make it a useful tool for students.

METHODOLOGY

Some of the main components needed to make Crooilse are used cooking oil, stearic acid, mono sorbitan, and dye, while the tools needed are filter paper, beaker glass, stirrer, stove, and mold. The first step is to filter 100 ml of used cooking oil using filter paper so that there are no cooking residues left. Then heat the filtered used cooking oil using low heat. Once the oil is hot enough, add 45 grams of stearic acid until it melts while stirring until smooth. Next add 30 grams of sorbitan monostearate and wait for it to melt. After that, natural plant-based powder is added as a colour binder. then wait 1 to 2 minutes. Once the colours are mixed, remove the solution from the stove. Next, wait until the solution has cooled and is half hard, then add 3 to 5 drops of food colouring until evenly distributed. Once completely mixed, reheat the oil mixture over low heat. Finally, pour the melted solution into the mold and wait for it to harden.

RESULTS AND DISCUSSION

Result

The research results obtained show that Crooilse has its own characteristics compared to crayons on the market. The characteristic difference between these crayons is their color. It can be seen from the appearance that the colours used tend to be bright or can be called pastel colours, the resulting colours are almost similar to coloured pencils.

The colouring used is natural powdered colouring from plant extracts such as turmeric powder, butterfly pea flower, charcoal, and coffee, as a colour binder so that the crayon colour is more even and additional colouring from food colouring. After being filtered and cleaned, used cooking oil will be mixed with sodium monostearate and stearic acid, which is a saturated fatty acid obtained from animal fat. This mixture will produce an oil solid that looks almost like paraffin, and is quite dense in texture. The oil solid will be light yellow before colouring is applied due to the influence of the colour of used cooking oil as the base ingredient. This solid will undergo two heating processes, namely mixing the solidifying agent, and then mixing the colour. This is done so that the crayons have a texture that does not break easily and colours that don't break. The crayons will be left for approximately 24 hours in the mold to ensure that the crayon texture is not too soft when packaged. After packaging, the colours ready to be tested are obtained, including yellow, green, blue, brown, and grey.

Discussion

The results obtained from 20 respondents were summarized. There are five criteria that will be assessed from respondents' points and comments. The criteria assessed are colour, shape, smoothness, strength, and comfort.

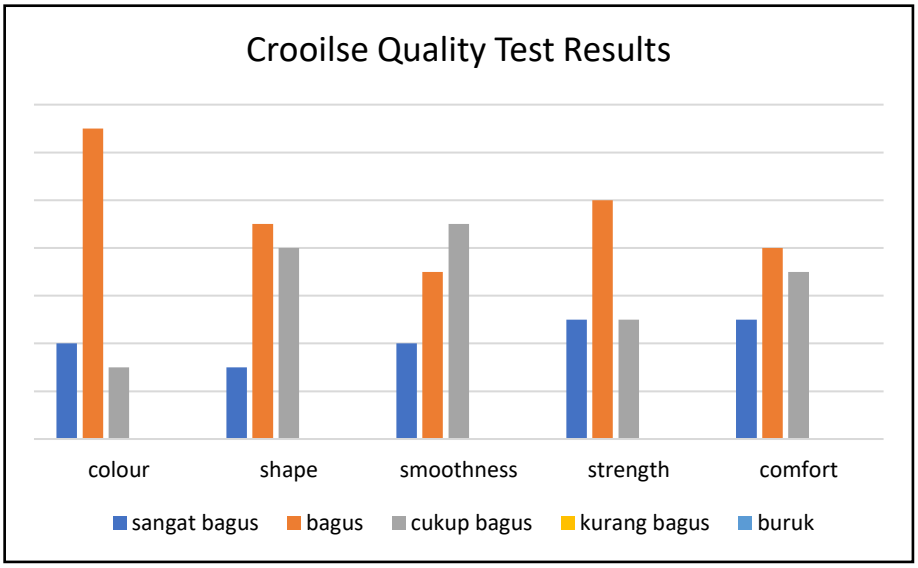

Figure 1. Quality Test Chart

The number of points given by respondents for each assessment criterion is compared with the maximum points, namely 100, as a measure of product quality. The first criterion regarding crayon colour, obtained a total of 79 points out of 100, which means the crayon colour is quite good. Comments obtained from respondents included sufficient colour density except for grey, crayon colours easily degraded compared to other colours, and limited colour variations. The second criterion regarding the shape of the crayon, obtained points of 80 out of 100, which means the shape of the crayon is quite good. There were suggestions from respondents to change the shape of Crooilse like crayons in general to increase the comfort of the crayons. The third criterion discusses the smoothness of the colour and physicality of the crayon, obtained

points of 85 out of 100, which means it is smooth enough to be used. In this criterion there are no comments from respondents. The fourth criterion discusses comfort, getting 82 points out of 100, which means the crayons are quite comfortable to use. comments about this assessment criteria generally discuss the slightly oily texture of the crayons when used. The last criterion discusses the strength of the crayon, getting points of 80 out of 100, which means that the strength of the crayon is strong enough to be used. There are no comments from respondents regarding this criterion. From the collected assessments and comments of the respondents, it can be concluded that Crooilse crayons are of adequate quality for use but still have several shortcomings that need to be improved.

CONCLUSION

Using crayons made from used cooking oil is a good choice because they have bright colours, are long lasting and easy to use. Therefore, crayons made from used cooking oil can be an eco-crayon innovation to minimize the increase in used cooking oil waste in Islamic boarding school environments. Thus, the presence of Crooilse can reduce used cooking oil waste and make it a useful tool for students.

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