

ACTRIC PAINT



SMK DATO' JAAFAR (CAT. 3: TERTIARY INSTITUTION) | FIELD: SCIENCE AND ENGINEERING

AGATHA NGEER, SEW WYN CHIAN, WAN YUAN YUN, WONG ZHI JIA

INTRODUCTION

Statistics show that food waste in Malaysia has increased from 13,050 tonnes per day in 2017 to 17,000 tonnes per day in 2022. These food wastes releases methane gas during decomposition, which leads to pollution and global warming. Not only that, the consumption of copper readily increased, from 1.5% in 2015 to 1.8% in 2021, which leads to the increase of mining activities that cause harm to the environment. In order to deal with these problems, ACTRIC PAINT has been created. It is a conductive paint with activated carbon valorised from fruit peels as its pigment and glue as its filler matrix.

OBJECTIVES

- In relation to Goal 12 of the Sustainable Development Goals, amount of food waste sent into landfills should be reduced.
- Reduced reliance on copper wires
- Commercialization opportunity with low cost due to abundance of resources
- Develop new innovation for renewable energy infrastructure



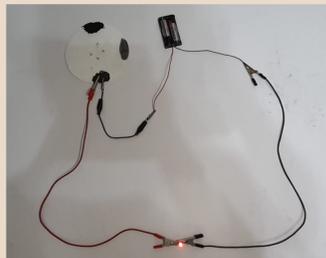
INTELLECTUAL PROPERTY

Research was conducted on Lens.org to verify the originality of the product, and it was found that there were no such existing product.



One (1) self-declared intellectual properties was awarded by MyIPO for the assets of this product. (LY2022J05234)

APPLICABILITY OF INNOVATION



ACTRIC PAINT in a circuit.

- . Applicable for:



Light Bulb



Blender



Water kettle



Stand Fan

Carrying out tests for ACTRIC PAINT with a circuit



SCIENTIFIC RESULT ON TESTING THE RESISTANCE OF CARBON PAINT(Ω)

Graphite (pencil lead)	Graphite powder + glue + water	Activated carbon + glue + water
12.4K	0.1 K	12.8K

Conclusion: The paint with the lowest resistance is the paint made of graphite powder + glue + water.

REFERENCES

1. Meikeng, Y. (2022, June 6). M'sians continue to waste food. The Star. <https://www.thestar.com.my/news/nation/2022/06/06/msians-continue-to-waste-food>
2. Azim, S. S., Satheesh, A., Ramu, K., Ramu, S., & Venkatachari, G. (2006b). Studies on graphite based conductive paint coatings. Progress in Organic Coatings, 55(1), 1-4. <https://doi.org/10.1016/j.porgcoat.2005.09.001>

AWARDS

This product has won two awards:

- Silver medal - 2019 Japan Design, Idea & Invention Expo (International)
- Gold medal - InnEx 2019(National)



Certificate for InnEx 2019



Certificate for JDIE 2019

COMMERCIALISATION POTENTIAL

The global activated carbon market size was valued at USD 4.77 billion in 2021, which is around RM 21.68 billion. ACTRIC PAINT is estimated to earn RM 1.55 billion because the activated carbon market share of Malaysia can be up to 7.15% of global market share.

SOCIAL IMPACTS

ACTRIC PAINT utilizes food waste, and is estimated to reduce the amount of food waste sent into landfills by 6.2 million tonnes in Malaysia, which reduces the methane gas released during the decomposition process of food waste in landfills by 16.7%. Not only that, it is also estimated to reduce the usage of copper by 54.62% since it reduces the reliance of society on copper wires. It is estimated that ACTRIC PAINT when mature will be able to provide job employments to 15,000 people, both directly and indirectly in the long run.

Members:



AGATHA NGEER



SEW WYN CHIAN



WAN YUAN YUN



WONG ZHI JIA

Mentor:



TEACHER WONG MINH CHJIAT ISABELLE