

**INVESTIGATIVE STUDY OF LEACHATE
DEGRADATION IN SOIL FROM BOTTOM
ASH AS FILLING EMBANKMENT IN ROAD
PAVEMENT**

MUHAMMAD ‘AZAM BIN ABDUL RAHIM

**BACHELOR OF CHEMICAL ENGINEERING
(ENVIRONMENT) WITH HONOURS**

UNIVERSITI TEKNOLOGI MARA

2022

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IN SOIL FROM BOTTOM ASH AS FILLING
EMBANKMENT IN ROAD PAVEMENT**

By

MUHAMMAD 'AZAM BIN ABDUL RAHIM

This report is submitted in partial fulfillment of the requirements
needed for the award of
Bachelor of Chemical Engineering (Environment) with Honours

**CENTRE FOR CHEMICAL ENGINEERING STUDIES
UNIVERSITI TEKNOLOGI MARA**

AUG 2022

ACKNOWLEDGEMENT

In the first place, I want to say Alhamdulillah and thanks to the God Almighty for him that allows and ease the journey during this report writing. Then, I would like to express my feelings and gratitude to those people that helped and giving me the guidance and chances to complete this report. Next, special expressions of gratitude is for my final year project supervisor, Dr. Norhusna binti Mohamad Nor, whose contributions are immeasurably a huge help in suggesting and guiding me throughout the coordination of report writing. Besides that, I would also like to acknowledge with much appreciation the important role of the staff of Chemical Engineering Lab for providing information regarding all about the facilities and assisting me throughout this final year project report. In addition, a special thanks to FYP coordinator, Ir. Dr. Noorzalila Muhammad Niza for giving the timeline and encouragement during the briefing of report. Be mindful of the fact, a special thanks goes to my friends who help me and gave suggestions about the report. Lastly, many thanks go to my parents and others that are not mentioned whose have given support in writing this final year project.

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ABSTRACT

The main objective of this research is to study the effect of leachate produced from bottom ash (BA) road filling embankment in soil via batch leaching test. Batch leaching test comprises of multiple compacted soil sample from three different borehole point, The soil sampling was done by hand auger to obtain every layer of soil and reach enough depth. Amount of soil from each location should be at least 2 kg to cater if any emergency happens. All samples of soil will be dried for 24 h in the oven to get rid of the unwanted water content in it. Every soil sample will be first filtered out through 212 μm before proceeding to mould the soil into cylindrical shape. The usage of automatic soil compactor will be the main key point of forming the shape and determining the Optimum Moisture Content (OMC). Batch leaching test of the finished samples will be executed in a tightly closed 2 L beaker in order to avoid reaction of outer air and disturbing the leaching process. Extraction fluid of glacial acetic acid diluted with deionized water will be prepared as required by the total number of extractions. Repetition of eluate renewal will be following the schedule set up until 63 d of leaching. The analyses of pH, conductivity and heavy metal were done to examine the Toxicity Characteristics Leaching Procedure (TCLP) of BA as filling embankment. Conductivity of the leachate produced is below the dangerous level which is under 100 $\mu\text{s}/\text{cm}$ for the contamination in water. Value of pH obtained are around 3-5 which alter the original acidity of the eluate due to the alkalinity of soil mixed with bottom ash. Heavy metal analysis is the crucial parameters in this research and the results recorded highest came from copper element 4.771 mg/L. The concern towards heavy metal is for the reason of possible contamination towards the soil and groundwater. All things considered, the research concludes that the bottom ash as filling embankment in road pavement are following the guidelines and regulation set by Department of Environment (DOE). Reusing of bottom ash as filling embankment is advantageous towards many sides and does not contaminate the groundwater.