



**THE FLUIDIZATION OF GROUP C PARTICLES:
THE EFFECT OF BINARY MIXTURE**

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A thesis submitted in partial fulfillment of the requirements for the award
of Bachelor Engineering (Hons) (Mechanical)

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MARCH 2002

ACKNOWLEDGEMENT

*In The Name Of Allah Almighty And The Most Merciful and Blessings
Be Upon His Messenger Prophet Muhammad S.A.W and His Companions.*

Assalamualaikum w.b.t.

I am thankful to Allah S.W.T the Almighty for his divine inspirational guidance, which had helped me in completing this final project report. I would like to convey my sincere thanks to my KJM 565 (Final year project) advisor, Cik Normizar Bt Anuar for her constructive guidance and patience in fulfilling our aspiration in completing this final project. I also would like to thanks to En Aziz Md. Salleh, Lab Assistant for explanation, experiment and demonstration of the lab equipments and machineries regarding to this lab report. Also, my thankful to En. Ahmad Dahari and En. Sopi for their kindness in helping me to complete this project. Finally, to my family for their support, caring and understanding during the completion this final project report.

Last but not least, I would like to thank all those who had contributed to my final project, directly or indirectly.

Wassalam.

Rosdan Ramli

ABSTRACT

Experimental works to study the fluidization of group C particles in term of the effect of binary mixture were carried out. This binary mixtures which consist of fines group C glutinous flour and group B sand particles were fluidized in a fluidized bed with a diameter and height of 0.05m and 0.9m respectively. In this experiment, two methods of mixing were used. The first method was performed by mixing the flour with sand randomly and the second method was carried out by placing the sand as a separate layer at the bottom and the cohesive particles on top of the sand in the column. Three different percentages of a sand were used i.e. 10%^{w/w}, 20%^{w/w} and 30%^{w/w} and preliminary experiments where the properties of base element such as bulk density, tapped density, aerated density as well as sieve analysis of the sand and glutinous flour used were also obtained. The experiment indicated that application of different mixing method could lead to different behaviour of fluidization. It was found that random mixing method gives better fluidization quality compared to layered mixing method as the weight percent of added sand increase. The higher value of minimum fluidization velocity, U_{mf} was obtained compared to predictions as proposed by Carmen-Kozeny. Also, there are other parameters such as the ratio of bed expansion at minimum fluidization, $(H_t/H_s)_{mf}$ and bed voidage at minimum fluidization ε_{mf} also were studied in supporting the results above.

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