



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

**MD. NASIR MD. ISA
(99190981)**

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**Faculty of Mechanical Engineering
Universiti Teknologi Mara (UiTM)**

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

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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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