# THE EXTENSION OF THE VIBRATORY SHAPE-SORTING TECHNIQUE TO SMALLER PARTICLE SIZES

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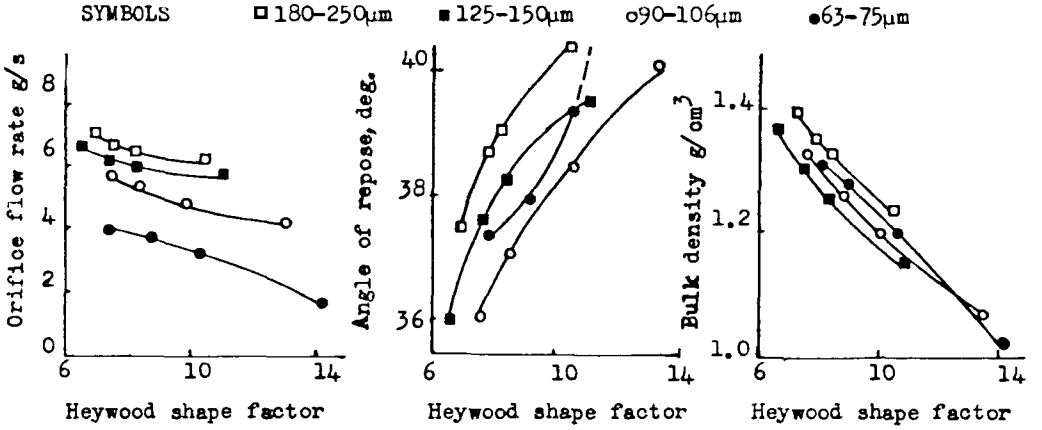
Vibratory shape-sorting of sand grains and of lactose granulations has been reported previously (Ridgway & Rupp;Ridgway & Scotton),but the smallest size fraction then used was 250μm.By using a polished deck in place of the matt-surfaced one supplied by the manufacturers (Jeffrey-Galion Ltd.Johannesburg) and by varying the frequency of the alternating current drive, using a frequency changer designed for electric motor speed variation(Model PL101 frequency controller Platt Power Transmission, Oldham)the minimum size that can be shape-sorted has been reduced to well below 50um.Work is still proceeding, and it appears that shape sorting at 20μm may be possible.Fine sand (Buckland Ltd.Reigate)was sieved into 32-45μm,63-75μm,90-106μm and larger size fractions,each of which was then shape-sorted into 13 shape fractions.The shaped fractions were quantified according to their Heywood shape factors,initially using a Quantimet image-analysing computer(system 30)but later by means of a sonic digitiser linked to a small computer(PMS Instruments Ltd.Slough).

A number of bulk properties were then examined for their behaviour with respect to particle shape:these included the poured and tamped bulk densities and the Hausner ratio,the angle of repose,the rate of flow through an orifice under gravity,and the shear strength using an annular shear cell.

The bulk density did not vary greatly with particle size,but shape had a strong effect, becoming the dominant variable as the size was reduced.The flowability of the material was markedly less for the angular particles and here also shape was the most important determinant at small particle sizes.

The graphs show,as a function of size and shape,the variation of flow rate through an orifice,the angle of repose and the bulk density.

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Ridgway,K.and Rupp,R.(1969) J.Pharm.Pharmac.21,Suppl.30S-39S
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