

DEFINING OF THE LIMIT CONDITION FOR THE IN VACUUM DILUTE PHASE PNEUMATIC CONVEYING – CLOGGING CONSTANT

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Abstract: Calculation of a pneumatic conveying system requires definition from the beginning of a Theoretical Mixing Ratio. At the present time the value of this mixing ratio is a recommended one for a given product and does not exist a way for to predict from the beginning the Clogging Mixing Ratio, for some well defined dynamic conditions. Through the present research paper it is proposed a solution for to predict from the beginning this Clogging Regime Mixing Ratio. The correlation between the Mixing Ratio, Clogging Constant of the Product and Similarity Criterion Fr (Froude number) were checked. At the present time, the Clogging Constant of a product is expressed in the same way as the Mixing Ratio is, and this is [kg of product / kg of air] or is only identified as a Constant K , dimensionless. By the present study, we found out that in this correlation occurs also the cross sectional area of the conveying pipe. Interpretation of the experimental results showed the fact that the Clogging Constant must be expressed as [kg of product / kg of air / m² of pipe section area, which can be interpreted as the permeability of the product, rather than mixing coefficient.

Key words: pneumatic conveying ; mixing ratio; clogging constant.

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