Reynolds-number

The Reynolds-number is defined as :

$$Re = \frac{airdens * vl * D}{eta}$$

In this formulae ,D is a for the flow characteristic length-dimension.
For a channel with a circular circumference the diameter D is chosen.

eta = dynamic viscosity in Nsec/m^2

$$eta = eta(0) * \sqrt{\frac{T * (1 + C/T(0))}{T(0) * (1 + C/T)}}$$

In which for air : eta(0) = 1.72 10^-5 Nsec/m^2 (Pa.s)
T(0) = 273 Degrees Kelvin
C = 113

Airmassflow Ql = airdens.* vl * pi/4 * D^2 = airdens(intake) * Pumpvolume

airdens*vl*D = airdens(intake)*Volp / (pi/4 * D)

airdens(intake) =

After substitution :

$$Re = \frac{1.293 *273/(273+tambient) * 1/pambient*Volp}{pi/4 * D * eta(0) * \sqrt{\frac{T * (1 + C/T(0))}{T(0) * (1 + C/T)}}}$$

In practice, Re-numbers of 2 * 10^-5 and higher proved to
be sufficient for horizontal pneumatic transport, depending on the properties of the product to be transported.