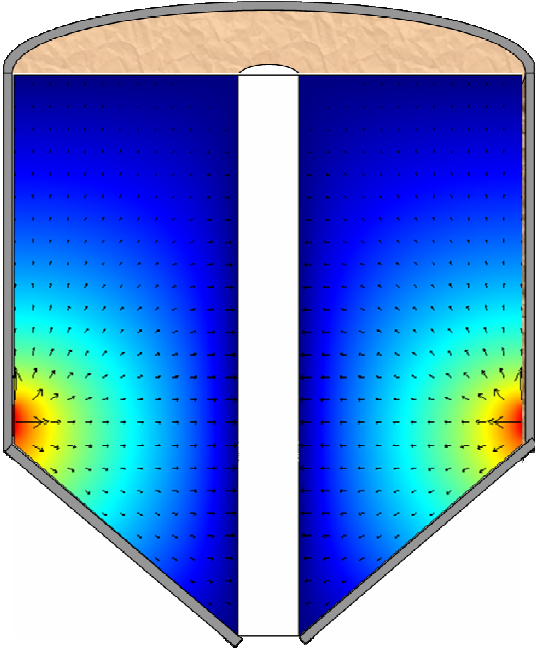


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# Permeability

## Material Flow Solutions, Inc.

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*Predicting gas pressures in equipment*

**Permeability (air flow rate).** Permeability is the superficial velocity of gas or fluid passing through the bulk material when the pressure drop across the material equals the weight density of the bulk solid. It can be thought of as an incipient fluidization velocity, except it is measured as a function of the stress applied to the bulk material. The value of the permeability extrapolated to zero stress is identically equal to the incipient fluidization velocity.

Permeability data is used to determine the pressure drops in packed bed operation. It is also used to determine the limiting flow rates where the resistance to gas flow is the key limiting factor to solids flow. With an understanding of permeability, engineers can calculate the necessary de-aeration time and/or installation parameters of air-flow-aid devices

in the equipment to achieve required process flow rate and/or break bridges and ratholes that are negatively affecting the system.

At Material Flow Solutions, Inc. we measure the permeability of your material to assist you in designing or retrofitting a new or existing solids flow processing system when your primary goal is to “get it right the first time.”

**PRACTICAL APPLICATIONS** of data regarding material **Permeability** include, but are not limited to:

- ✿ Predicting limiting rate from bins
- ✿ Predicting fluidization effects
- ✿ Predicting de-aeration times in equipment
- ✿ Predicting segregation tendencies
- ✿ Predicting briquette breakage