

Field of use

Pharmaceutical, Chemical,
Textile industry

Current state of technology

Prototype developed
and tested

Intellectual property

patent application number:
PCT/EP2020/076186

Developed by

University of Ljubljana,
Faculty of Mechanical
Engineering

Reference:

UL20200782021P

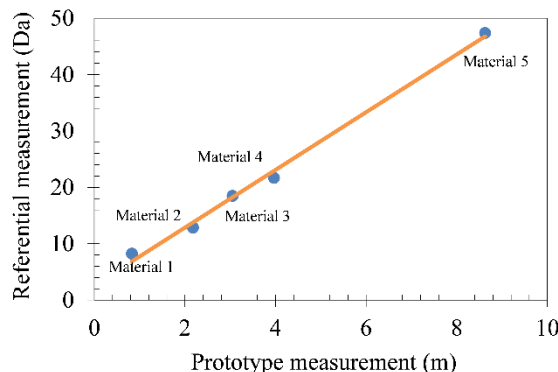
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Background

The permeability is a porous material property that describes how easily can fluids penetrate through the sample material. Many products require determination of their permeability. It is the main property of filter and membrane materials, and a very influential property for textiles, freeze-dried products, etc. A precise and rapid measurement of the permeability is therefore crucial in many applications in the fields of freeze-dried products (pharmaceutical and food industry), textile industry, filter and membrane material manufacturers, additive manufacturing (3D printing), artificial bone implants, composite producers... The currently available methods for measuring permeability have issues, if fragile and arbitrarily shaped samples need to be analysed.

Description of the Invention

This innovation provides in-situ determination of the permeability. Materials are not extracted for measurement, which is very important for fragile materials. The method is non-destructive and non-invasive. The samples can be used afterwards without limitations. The designed and fabricated prototype can determine the permeability of an arbitrary material at various fluids, temperatures, pressures and flow rates, therefore the measured permeability can be acquired at any desired outside conditions.

Main Advantages

- quick measurement (< 1 sec.)
- real-time measurement
- suitable for inline measurements
- non-invasive, non-destructive method
- appropriate also for fragile materials
- liquid or gas working fluid
- usable for: filters, membranes, freeze-dried products, textiles, composites, artificial bone scaffolds...

