

GLASS CAPILLARY TUBES FOR INFUSION & FLOW CONTROL



Glass has advantages over plastics and metals in certain applications.

Glass flow restrictors provide precise control of administered medication through the application of Poiseuille's Law with modern glass drawing technologies. The commercially available glass is:

- Producible with an inside diameter as small as $25\mu\text{m} \pm 1\mu\text{m}$ (micron)
- Dimensionally stable and uniform over a specific length
- Inert
- Non-reactive to drugs
- Custom-sized to IV tube sets
- Suitable for ETO / E-Beam / Gamma Radiation sterilization methods
- Economically produced to custom applications (sizes, geometries, lengths, lumens, bores.)
- Compatible with UV adhesive curing



This type of controlled drug delivery includes ambulatory or mobile infusion devices suitable for liquid and gas delivery. Their applications include:

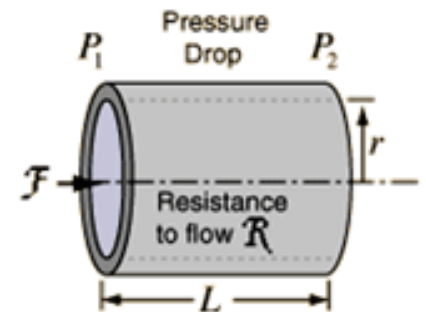
- Pain management
- Chemotherapy treatment
- Antibiotic administration
- Saline flush control in IV sets

Poiseuille's Law

Poiseuille's Law describes the principle that the volume of a homogeneous fluid passing per unit time through a capillary tube is directly proportional to both the pressure difference between its ends and to the fourth power of its internal radius, and inversely proportional to both its length and to the viscosity of the fluid.

$$\text{Volume Flowrate} = \mathcal{F} = \frac{P_1 - P_2}{\mathcal{R}} = \frac{\pi(\text{Pressure difference})(\text{radius})^4}{8(\text{viscosity})(\text{length})}$$

$$\text{Resistance to Flow } \mathcal{R} = \frac{8\eta L}{\pi r^4}$$



Supported with an automated process, the finished product can be 100% flow-checked and sorted to ensure compliance with specifications.