Reynolds number

Reynolds number is a dimensionless number characterizing the behavior of flowing liquid. According to its value, we can deduce whether the flow will be laminar or turbulent.

It is calculated using this formula [1]:

$$R = \frac{\rho \cdot d \cdot v}{\eta},$$

where ρ is the density of a liquid that has a viscosity value of η that is flowing through a tube of diameter d at speed v. Critical Reynolds number values are determined experimentally for different types of pipes and different types of fluids. If the value of Reynolds number is lower than the critical value corresponding to the given order, the flow is laminar. If the value of Reynolds number is higher, the flow is turbulent.[1] Around the critical value, which is typically around 1000 in straight smooth vessels, there is a transition region between evident laminar and evident turbulent flow.[2]

Links

Related articles

- Laminar flow
- Turbulent flow

Reference

1. NAVRÁTIL, Leoš – ROSINA, Jozef, et al. *Medicínská biofyzika.* 1. edition. Praha : Grada, 2005. 524 pp. ISBN 80-247-1152-4.
2. GUYTON, Arthur C – HALL,. *Textbook of Medical Physiology.* 11. edition. Elsevier, 2006. 0 pp. ISBN 978-0-7216-0240-0.