

[Open Peer Review on Qeios](#)

Absolute Viscosity

Noureddine Ouerfelli¹

¹ University of Tunis El Manar

Potential competing interests: No potential competing interests to declare.

Absolute viscosity or **dynamic viscosity** (sometimes referred to as **shear viscosity**) (Pa·s) is obtained by dividing the **Shear stress** applied to a fluid (Pa) by its **shear rate** or **velocity gradient** (s^{-1})^[1].

It can be also called as **apparent viscosity** or **coefficient of viscosity** when it is considered as the tangential force per unit area ($\text{N}\cdot\text{m}^{-2}$) required to move one horizontal plane with respect to one of adjacent planes (at a velocity unity: $1\text{ m}\cdot\text{s}^{-1}$) when maintaining a unit distance (m) apart in the fluid. This definition is usually utilized in the case of the **non-Newtonian** fluids, when the shear resistance in a fluid is principally caused by inter-molecular friction exerted when adjacent layers of fluid attempt to slide by each other another. In these considerations, we can analyze the liquid behavior and fluid motion near solid boundaries and evaluate its resistance to gradual deformation by shear stress or tensile stress. In the case of **Newtonian fluids**, the definition of absolute viscosity is the origin of the shearing stress between the adjacent layers of a **non turbulent fluid** moving in straight parallel lines.

In the case of non pure liquids or multi components systems, we can treat the problem with the relative viscosity^[2].

References

1. [^] *Noureddine Ouerfelli. (2024). Dynamic Viscosity. doi:10.32388/2oyr03.*
2. [^] *Noureddine Ouerfelli. (2024). Relative Viscosity. doi:10.32388/938o0s.*