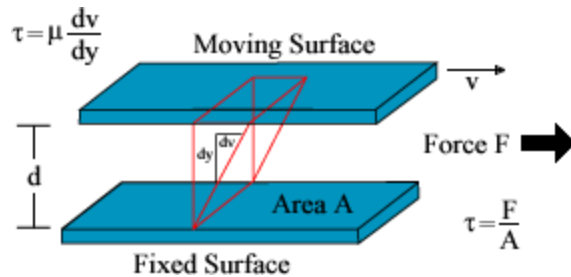


Liquid Data

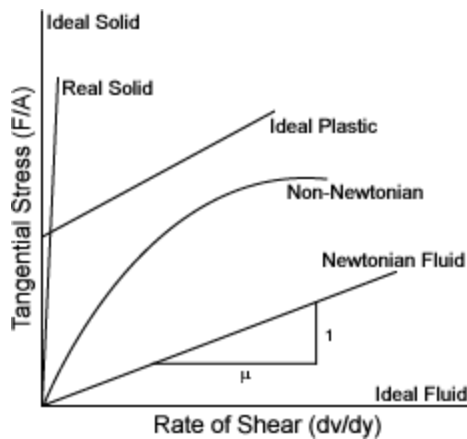
- Fluid Classifications

Fluid Classifications

All fluids can be classified as either Newtonian or non-Newtonian. The difference lies in the relationship between the fluid's tangential stress (friction force between the layers per unit surface) and the shear rate or gradient (difference in speed between the layers divided by the distance between them). If the relationship is linear and the fluid has zero stress at zero velocity gradient then it is Newtonian. If not, it is non-Newtonian, and is further classified into one of various subdivisions based on the curve of their stress vs. their velocity gradient.



For non-Newtonian fluids, the velocity gradient is dependent on the viscosity; that is, the fluid has a higher or lower stress depending on its velocity. Based on these qualities, the fluid can be given its sub classification.



NEWTONIAN	
<p>Water</p> <p>Most salt solutions in water</p> <p>Light suspensions of dye</p> <p>Kaolin (clay slurry)</p> <p>High-viscosity fuels</p> <p>Gasoline</p> <p>Kerosene</p> <p>Most motor oils</p> <p>(see below for motor oils with additives)</p> <p>Most mineral oils</p>	
NON-NEWTONIAN	
<p>YIELD PSEUDOPLASTIC, BINGHAM PLASTIC, YIELD DILATANT</p>	
<p>Clay</p> <p>Mud</p> <p>Tar</p> <p>Sewage sludge</p> <p>Digested sewage</p> <p>High concentrations of asbestine in oil</p> <p>Thermoplastic polymer solutions</p>	
PSEUDOPLASTIC	
<p>Sewage sludge</p> <p>Paper pulp</p> <p>Grease</p> <p>Soap</p> <p>Paint</p> <p>Printer's ink</p> <p>Starch</p> <p>Latex solutions</p> <p>Most emulsions</p>	

DILATANT	
Feldspar Mica Clay Beach sand Quicksand Starch in water	<p style="text-align: center;">Tangential Stress (F/A)</p> <p style="text-align: center;">Rate of Shear (dv/dy)</p>
THIXOTROPIC - RHEOPECTIC	
Inks Most paints Carboxymethyl cellulose Silica gel Greases Asphalt Starch Bentonite Gypsum solutions in water Thixotropic - decreases viscosity over time Rheopectic - increases viscosity over time	<p style="text-align: center;">Tangential Stress (F/A)</p> <p style="text-align: center;">Rate of Shear (dv/dy)</p>