Three types of friction are commonly modeled:

1) **Viscous friction**: a retarding force that is a linear relationship between the applied force & velocity.
   \[
   \vec{F}_f = \beta \frac{\text{d}\vec{v}}{\text{d}t}
   \]

2) **Static friction**: a retarding force that tends to prevent motion from beginning.
   \[
   F_f = \mu F_N \quad \text{or} \quad \vec{F}_f = \mu \vec{F}_N
   \]

3) **Coulomb friction**: a retarding force that has a constant magnitude with respect to the change of velocity, but the sign of the frictional force changes with the reversal of the direction of velocity.
   \[
   f_f = \mu N
   \]