

Table 1.1. Shear Rates Typical of Familiar Materials and Processes (Steffe, 1996)*

Situation	Shear Rate (1/s)	Application
Sedimentation of particles in a suspending liquid	$10^{-6} - 10^{-3}$	Medicines, paints, spices in salad dressing
Leveling due to surface tension	$10^{-2} - 10^{-1}$	Frosting, paints, printing inks
Draining under gravity	$10^{-1} - 10^1$	Vats, small food containers, painting and coating
Extrusion	$10^0 - 10^3$	Snack and pet foods toothpaste, cereals, pasta, polymers
Calendering	$10^1 - 10^2$	Dough sheeting
Pouring from a bottle	$10^1 - 10^2$	Foods, cosmetics, toiletries
Chewing and swallowing	$10^1 - 10^2$	Foods
Dip coating	$10^1 - 10^2$	Paints, confectionery
Mixing and stirring	$10^1 - 10^3$	Food processing
Pipe flow	$10^0 - 10^3$	Food processing, blood flow
Rubbing	$10^2 - 10^4$	Topical application of creams and lotions
Brushing	$10^3 - 10^4$	Brush painting, lipstick, nail polish
Spraying	$10^3 - 10^5$	Spray drying, spray painting, fuel atomization
High speed coating	$10^4 - 10^6$	Paper
Lubrication	$10^3 - 10^7$	Bearings, gasoline engines

* Steffe, J.F. 1996. [Rheological Methods in Food Process Engineering, second edition.](#) Freeman Press, East Lansing, MI 48823.