ECE 309 M.M. Yovanovich

Typical Ranges of Prandtl Numbers for Selected Fluids

The Prandtl number is a dimensionless group defined as

$$\mathrm{Pr} = \frac{\text{molecular diffusion of momentum}}{\text{molecular diffusion of heat}} = \frac{\nu}{\alpha} = \frac{\mu C_p}{k}$$

Fluid	**Pr**
Liquid metals	$0.004 - 0.030$
Gases	$0.7 - 1.0$
Water	$1.7 - 13.7$
Light organic fluids	$5 - 50$
Oils	$50 - 100,000$
Glycerin	$2000 - 100,000$

The Prandtl number depends on the temperature of the substance.