QUICK CALCULATIONS AND CONVERSIONS

DESCRIPTION

Coefficient of Lubricant Friction or Duty Parameter is proportional to Viscosity x Speed/Load

- **λ=H/S**, where **λ** = Specific Film Thickness, H = Minimum Film Thickness,
  S = Composite average surface roughness
  Full Film Lubrication **λ** > 3
  Mixed Film Lubrication 1< **λ** < 3
  Boundary Lubrication **λ** < 1
- Approximately SUS = Kinematic Viscosity @ 40 °C / 5
- Viscosity (cSt) = Dynamic Viscosity (cP) / Density (g/cc)
- Arrhenius law: Oxidation rate doubles for every 10 °C rise in temperature.

GEAR OILS

- Erichello Method:
  Viscosity @ 40 °C = 7000÷√**V**1
  V1 = Pitch line velocity of the lowest speed gear in feet per minute (fpm) = 0.262 x speed (pinion RPM) X pinion diameter (inches)
- If ambient at 95 °F increase jump ISO Grade by one step.
- If ambient at 122 °F increase ISO Grade by two.

SIMPLIFIED VISCOSITY SELECTION FOR WORM AND HYPOID GEARS

Speed RPM	Worm ISO VG	Hypoid ISO VG
600 – 3600	460	460
Under 600	680	460