Expert Analysis

- The majority of expert analysis did not accurately predict strength
  - Correlation was negligible for most gears
  - Color and clarity had the greatest correlation on average
    - Correlation of 0.13 for both on average
    - Color and clarity in analysis were closely related
  - High correlation during multiple interactions near weld line
    - Clarity and color main components
    - Temperature and injection rate had little relation to strength
    - May be applicable as this is the expected form of interaction

Shrinkage

- Changing dimensions from shrinkage can cause issues with quality
  - Warping and cracking due to external loads
  - Deformation could be outside of acceptable quality tolerances
- Residual stresses overcome structural integrity
- Optimize process parameters to minimizing shrinkage
  - Shrinkage decreases with melt temperature

Pressure

- Pressure drop in sprue calculated using Poiseuille flow equation
  - Assumed steady state, fully developed flow with uniform viscosity
  - Moldflow™ results fall within calculated pressure range

Pressure in Sprue During Injection