Impact Hardening Wrist Guard

- Protective equipment that benefits from the innate properties of shear thickening fluids providing the user a full range of motion and strength upon impact.
Shear-Thickening Fluids (STF)

- Silica Particles in Polyethylene Glycol
- Non-Newtonian Fluid
  - Changes viscosity
  - Like a liquid when moved gently
  - Like a solid when moved rapidly
Drop Test

None  Standard Wrist Guard  Shear-Thickening Fluid
Customer Need and Market

- Amateur to professional athletes
- Personal Protective Equipment

Athletic Goods Manufacturing Industry:
- 2009 Revenue: $14.3 billion
- 2009 Demand: $18.4 billion
- Sell to 50% Retailers, 35% Wholesalers, 10% Schools, 5% Sporting Associations
Benchmarking

- STF formed in sheets 3mm-9mm thick
- 4 layers of Kevlar soaked in STF equivalent to 14 layers “neat” Kevlar
  - Prevents fibers from stretching
  - Transfers force across the surface
- Lacrosse chest guard made from Silica in Silicone Oil
QUESTIONS?
Thank you