

Petronas Abrasion Testing

Purpose	Test reinforced thermoplastic pipes and the associated termination fittings for abrasion resistance to sand and fluid flow at high velocities
Method	<p>Target Flowing Velocities: Over 8ft/sec (Critical Steel Velocity) Target % Sand: 10%</p> <p>Sections of Reinforced Thermoplastic Pipe (RTP) is looped around the exit and entrance of a pump suitable to provide the acceptable flow rates for testing. End terminations should be raw steel and Fortron lined steel to see the impact of the sand on both surfaces as well as the pipe itself.</p> <p>The pumps should be run with a water slurry with sand at the desired concentration. The pump impeller will witness severe erosion and the test should be performed until slippage of fluid around the impeller dramatically slows the flow and the test is stopped</p> <p>Nylon and Fortron Lined Samples of Pipe were inserted in the test loop and Fortron lined and raw steel couplings were inserted</p>
Results	<p>Inch pipe was used for the test and ran a a flow rate of 4 gallons per minute which equates to just over 8ft/sec velocity</p> <p>After 72 hours of flow the pump impeller became so eroded that it no longer would flow. The pipe was split open and inspected and there was no indication of wear in either the nylon or Fortron lined pipe samples</p> <p>The impeller was completely eroded (aluminum construction) and the raw steel couplings indicated severe wear. The Fortron lined coupling experienced very little wear</p>
Conclusion	<p>Nylon and Fortron liners do not exhibit any significant abrasion wear. Raw steel couplings did exhibit abrasion wear and Fortron lined couplings.</p> <p>Specialty RTP suggests in areas of high velocity and high sand or solids the couplings should be constructed from Stainless Steel because coatings (zinc Chromate or Fortron) will eventually wear and cannot be relied on for long term corrosion resistance</p>



Pump Set Up



Test Loop with Nylon and Fortron Liners



Eroded Pump Impeller



Nylon Before



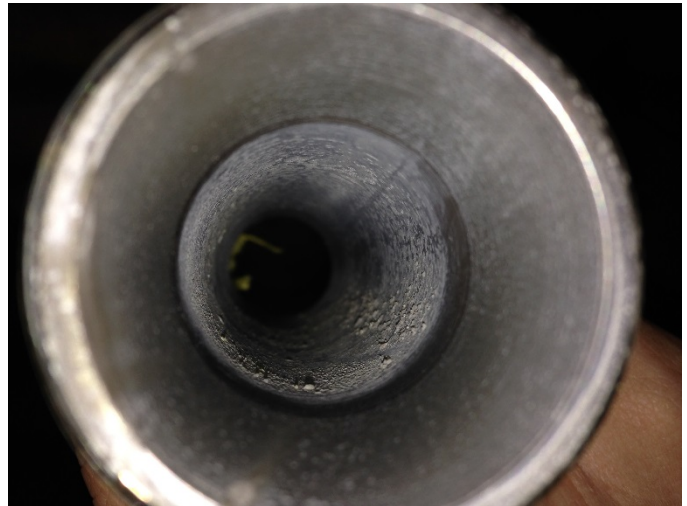
Nylon After



Fortron Remained Un-affected after Testing



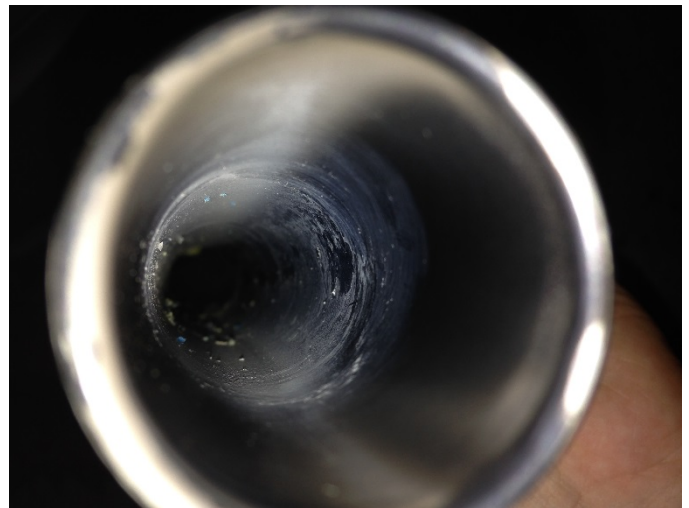
New Coupling



Eroded Coupling after Testing



Fortron Coated Coupling New



Fortron Coated Coupling after Testing
Slight Erosion