

Comparison of Corrosion and Wear Resistant Barrel Coatings and Their Failure Behavior  
Under Acidic Conditions

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Surface coatings are commonly used in many industries including oil and gas with the aim of hardening the part surfaces to improve wear resistance without compromising the corrosion resistance. Sucker rod pumps employ several parts with coated surfaces as well, including the pump barrels. Both standardized surface modifications and specialty applications for pump barrels are readily available in the market for different well conditions, including extreme well solids and H<sub>2</sub>S or CO<sub>2</sub> service. These service conditions can be detrimental for pump performance if the appropriate coating is not used. In addition, well treatment methods such as acidizing can deteriorate some coatings, reducing performance and in severe cases causing pump failures. This study focuses on the structure of 6 different standardized and specialty coatings on sucker rod pump barrels with an experimental study on their degradation in acidic environments, while familiarizing the reader with the recommended service conditions.