

## **The Softer-side of Polyurea Elastomer Coatings**

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### **ABSTRACT**

Spray polyurea elastomer systems are rapid curing coatings that can be applied in adverse climates where other coating types may immediately fail. Polyurea elastomers are typically hard coatings with high tensile strengths. Typical polyurea prepolymers have a high NCO content and are reacted with an amine blend with a high amine content. These formulations result in a hard coating. Hard coatings are acceptable for the majority of polyurea applications. However, some applications require soft flexible coatings with high elongation. Polyurea coatings with these physical properties are challenging to manufacture with typical aromatic polyurea prepolymers. Lowering the NCO content of the prepolymer allows the preparation of lower hardness coatings. Unfortunately, the lower the NCO content the higher the viscosity of the prepolymer. Low NCO prepolymers with high viscosity are difficult to spray with typical plural component spray equipment. This presentation will discuss the preparation of several low hardness polyurea coatings. The chemistry of the commercial prepolymers has been optimized to enhance specific coating properties, such as tensile strength, elongation and tear resistance. Lowering the hardness of a polyurea coating may compromise other physical properties. Properties of the low hardness coatings such as chemical resistance, solvent resistance, abrasion resistance, low temperature impact resistance, and high temperature resistance have been tested and will be discussed.