Question:

We are looking for a system that will provide a Class IV repair and be NSF compliant? What can we use to restore our drinking water system?

Answer:

WaterLine™ FS from Inspar Robotic Technologies

Pipeline Integrity Systems
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Inspar Robotic Technologies Inc. is the only pipeline rehabilitation systems manufacturer to offer a fully structural, NSF compliant sprayed in place lining system for the rehabilitation of potable water pipelines.

WaterLine™ products are a 100% solid polyurea with no VOC's, CFC's and endocrine disruptors. They are designed to be applied using Inspar's patented SIPP™ Robotic process and provide exceptional resistance to chemicals, abrasion and impact. Rapid set and minimal site footprint get projects done quicker with less disruption.

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Inspar Robotic Technologies Inc.
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The Glass Transition Temperature Advantage

Inspar's polymer lining systems are based on aromatic ***Polyurea*** elastomer technology which is amorphous in nature, not crystalline like polyurethane systems. This amorphous nature is similar to that of epoxy type systems except that these Inspar systems do not have a true glass transition temperature. Instead, 2 distinct T_g's can be noted, one corresponding to the melting point of the soft block in the polymer and the other corresponding to the melting point of the hard block in the polymer. This is also unlike other aliphatic based polyurea lining systems.

From Dynamic Mechanical Spectroscopy evaluations of typical Inspar polyurea lining systems, a low temperature T_g is noted at about -50°C with a high temperature T_g of about 230°C to 260°C. The response curve between these two points remains relatively flat. This would be the performance range, temperature wise, for an Inspar polyurea system. In lay terms, these lining systems would tend to show some significant stiffening at temperatures less than -50°C with some polymer softening, or possible decomposition, at temperatures above 230°C to 260°C.

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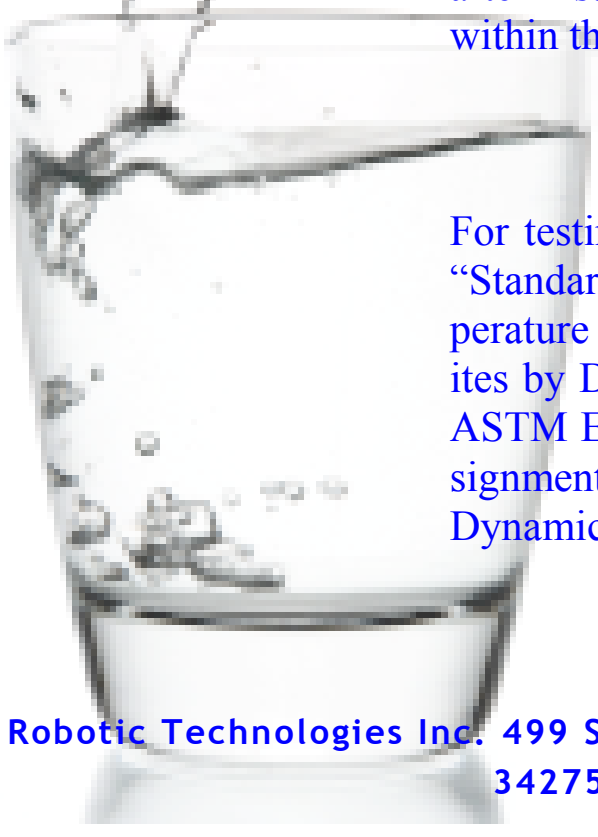

Competitive aliphatic based polyurea lining systems like the few being advertised heavily in the today's water infrastructure rehabilitation market, have one T_g at about 80°C. This translates to the fact that these lining systems may tend to "flow" after installation leading to varying liner thickness within the host pipe over time.

For testing purposes, either ASTM D7028 - 07e1 "Standard Test Method for Glass Transition Temperature (DMA Tg) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)" or ASTM E1640 - 09 "Standard Test Method for Assignment of the Glass Transition Temperature By Dynamic Mechanical Analysis" is used.

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