



## » TECHNICAL BULLETIN

# MEDICAL DEVICE DISINFECTION—HOW TO PREVENT CRACKING AND CRAZING

## Understanding polymer performance is key to minimizing disinfectant-related failures

Healthcare devices must perform flawlessly in a myriad of challenging environments and engineers must be certain their devices can withstand increasingly potent disinfectants, which have begun to outstrip the performance of traditional polymers. Additionally, the wide variability of environments that medical devices might see, which can range from home to hospital, mean devices must be able to withstand varying disinfectant strengths, exposure levels and frequencies.

These factors make choosing the right material more important than ever for enhanced durability and longer product life. When it comes to material selection and options, you need a strong partner that understands both polymers and the demands of the healthcare environment.

Avient has served the healthcare industry for decades with a full portfolio of innovative materials and services. Whether you are designing for a medical device housing or a surgical device in the operating room, we offer solutions to meet a wide variety of performance specifications and application needs.

### DISINFECTANT-RELATED DAMAGE ON POLYMER HOUSINGS

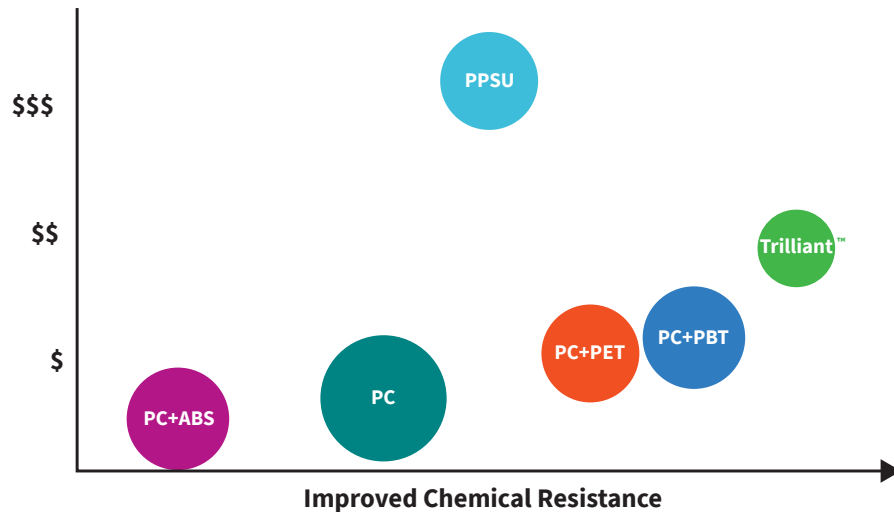
Strong chemicals used to reduce hospital-acquired infections can damage equipment and result in material failures, such as:

- Stress cracking
- Crazing
- Discoloration

### CHEMICAL RESISTANCE REQUIREMENTS VARY BY ENVIRONMENT

- Patient/exam rooms
- Operating and radiology rooms
- Reception areas
- Home (patient equipment & devices)

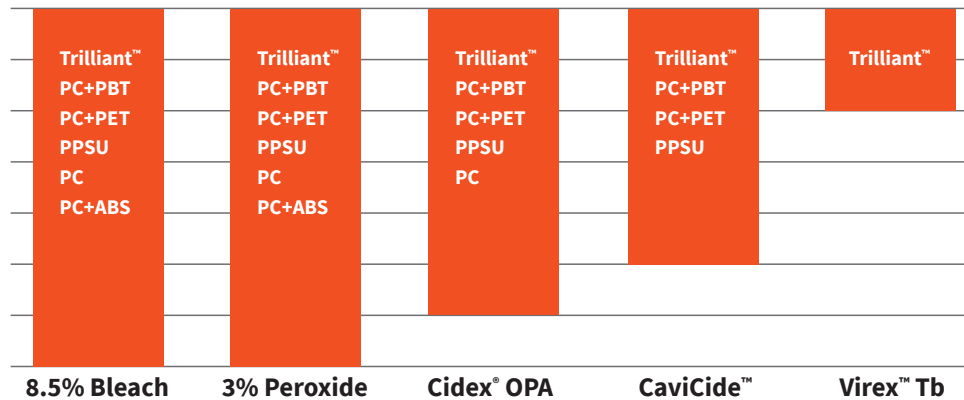
An independent lab tested the following polymers with various disinfectants to help customers choose the material suitable to their specific application requirements.



### SOLUTIONS DESIGNED TO ADDRESS EVOLVING NEEDS

Determining the appropriate polymer for the job can prevent product failures, thereby reducing service calls, product returns and warranty claims for manufacturers.

#### Material Compatibility with Various Disinfectants



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#### TEST METHOD

Fifteen bars of each material were placed into jigs at 1% and 2% strain. Three bars were treated with five different commercially available hospital disinfectants once every 24 hours for three days. This procedure was completed by placing one 1/2 inch section of rayon gauze at the apex of each bar, and soaking the gauze with the disinfectant to saturate the material. The bars were then evaluated each

day for visual changes. After three days of exposure to the hospital disinfectants, a 20x magnified image was taken of each set of bars to demonstrate the effect of the chemical.

Visual inspection of the bars was used to classify the bars based on the amount of crazing or cracking which occurred. Fully fractured bars were given the lowest rating.

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