



## 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 combine to make proper material selection paramount to ensuring excellent durability in medical housings.

Choosing the right material is now more important than ever. When it comes to material selection and options, you need a strong partner that understands both polymers and the demands of the healthcare environment.

PolyOne has provided the healthcare industry with a full portfolio of innovative solutions for over 25 years. Whether you are designing for an at-home CPAP machine, or a surgical device in the operating room, PolyOne offers solutions with a range of performance specifications to address a variety of customer needs.

### DISINFECTANT-RELATED DAMAGE ON POLYMER HOUSINGS

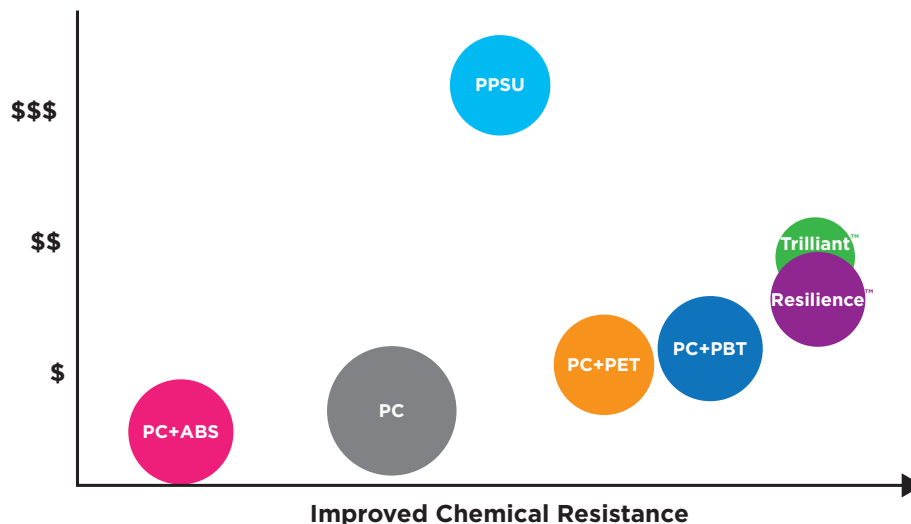
Strong chemicals used to reduce hospital-acquired infections can damage equipment.

- Stress cracking
- Crazing
- Discoloration

### CHEMICAL RESISTANCE REQUIREMENTS VARY BY ENVIRONMENT

- Patient/exam rooms
- Operating and radiology rooms
- Reception areas
- Home

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

Disinfectant	Resilience™	Trilliant™	PC+PBT	PC+PET	PPSU	PC	PC+ABS
8.5% Bleach	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
3% Peroxide	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
Cidex™ OPA	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
Cavicide™ OPA	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
Virex™ Tb	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

#### 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.