

TECHNICAL POLYMERS MED RANGE

Chemical resistance



CHEMICAL RESISTANCE OF ARKEMA'S MEDICAL-GRADE TECHNICAL POLYMERS

As healthcare technology continues to advance, the need for high performance medical grade polymers will increase. Arkema, having been a key player in the healthcare market, recognizes the importance of thoroughly understanding the chemical resistance profile of its Medical Grade Technical Polymers. In order to ensure optimal material selection for its customers, Arkema has conducted a chemical resistance study with the top chemical agents commonly used in hospitals and other healthcare settings along with its Medical Grade Technical Polymers.

TABLE 1 - List of chemical agents

Main category	Chemical composition	CAS numbers	Commercial products (Hospital)
Bleach	Sodium hypochlorite 11-15% diluted at 0.2%	7681-52-9	10% bleach solution
			Clorox Bleach
			Dispatch
			Dispatch™ Hospital cleaner
			Disinfectant with bleach
			Sani-cloth™ Bleach Wipe
			Alcavis Bleach Wipe 1:10
H ₂ O ₂	Hydrogen peroxide (30%) and peracetic acid (38-40%- diluted at 5%)	7722-84-1 and 79-21-0	Accel TB wipes
			Ecolabs oxycede
			Virox
IPA	2-propanol 100%	67-63-0	Isopropyl alcohol (or propan-2-ol or isopropanol)
			70% IPA solution
Phenol	CRESYL (10% hexylene glycol + 1% orthobenzylparachlorophenol + 0.1% O-phenylphenol)	59-50-7 and 90-43-7 and 120-32-1	Wex-cide 128
			Precise
			Sporicidin
			Precise™ Hospital Foam cleaner disinfectant
			Sporicidin™
QAC (Anti-infective agent)	Benzethonium chloride 98% diluted at 0.3%	121-54-0	Sanicloth HB wipe
			Sanicloth Super
			Sanicloth AF3
			Virex TB
Glycol Ether	2-butoxyethanol 99% diluted at 5%	111-76-2	Cavicide
Detergent	Chlorohexidine digluconate 30% diluted at 1%	18472-51-0	Aniospray 29
			Clinell detergent wipe
			Cidex (2.4% glutaraldehyde)
			Cidex OPA
DMSO	Dimethyl sulfoxide 99%	67-68-5	-

Table 2 demonstrates the qualitative performance of chemical resistance based on surface aspect (the appearance of cracks) and coloration. Environmental stress cracking resistance tests (ESCR) were performed using elliptical Bergen jig, which applies a range of strains to a single sample bar and injected plates immersed into the indicated chemical agent at room temperature (23°C) for 24 hours.




Table 3 demonstrates the solvent absorption of all the medical grades based on standard ASTM D543. Sample injected plates (1 mm thickness) were immersed in the designated solvent. The samples were maintained at room temperature (23°C) until the swelling reached a complete saturation of the material (approximately 1,300 hours). The weight absorption was measured regularly by removing the sample from the solvent, wiping it and weighing.

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