

**Master
the elements.
Unleash
your potential.**

Until now, traditional sterilization methods have restricted your potential. With superior compatibility across a wider range of materials, the REV^{OX} method is changing that.

REV^{OX}TM
Sterilization Solutions

by Cantel Medical

MATERIALS COMPATIBILITY GUIDANCE

Information within this material compatibility guide is not intended to provide a rationale for the use of materials without proper qualification of materials. The information is intended only as a guide to successful material qualification.

Material compatibility guidance—Specific materials

	(*) = poor (**) = fair (***) = good (****) = excellent		(*) = poor (**) = fair (***) = good (****) = excellent	
Material	Single Use (1 or 2 cycles)	Comments	Resterilization (>10 cycles)	Comments
Thermoplastics				
Acrylonitrile butadiene styrene (ABS)	****	No change	****	No change after >10 cycles.
Polytetrafluoroethylene (PTFE)	****	No change	****	No change after >30 cycles.
Perfluoroalkoxy (PFA)	****	No change	****	No change after >30 cycles.
Polychlorotrifluoroethylene (PCTFE)	****	No change	****	No change after >10 cycles.
Polyvinyl fluoride (PVF)	****	No change	****	No change after >30 cycles.
Polyvinylidene fluoride (PVDF)	****	No change	****	No change after >30 cycles.
Ethylene tetrafluoroethylene (ETFE)	****	No change	****	No change after >10 cycles.
Fluorinated ethylene propylene (FEP)	****	No change	****	No change after >30 cycles.
Polyacetals (e.g., polyoxymethylene)	****	No change	****	No change after >30 cycles.
Polyacrylates (e.g., polymethylmethacrylate)	****	No change	****	No changes in extractable/ leachable after 4 cycles.
Polyamides (e.g., nylon)	****	No change	****	No change after >10 cycles.
Styrene-acrylonitrile (e.g., SAN)	****	No change	****	No change after >10 cycles.
High density polyethylene (HDPE)	****	No change	****	No change after >30 cycles.
Low density polyethylene (LDPE)	****	No change	****	No change after >4 cycles.
Tygon®	****	No change	****	No change after >10 cycles.
Polycarbonate (PC)	****	No change	****	No change after >30 cycles.
Polyesters, saturated	****	No change	****	No change after >30 cycles.
Polyethylene (PE)	****	No change	****	No change after >30 cycles.
Polyimides (e.g., polyetherimide)	****	No change	****	No change after >30 cycles.
Polyketones (e.g., polyetheretherketone)	****	No change	****	No change after >30 cycles.
Polypropylene (PP) natural	****	No change	****	No change after >30 cycles.
Polypropylene (PP) stabilized	****	No change	****	No change after >30 cycles.
Polystyrene (PS)	****	No change	****	No change after >10 cycles.
Polysulfones	****	No change	****	No change after >30 cycles.
Polyurethane (PU)	****	No change	****	No change after >10 cycles. Grade dependent for dehydrogenation cycles only.
Polyvinyl acetates (PVA)	****	No change	****	No change after >10 cycles.
Polyvinyl chloride (PVC)	****	No change	****	No change after >30 cycles.
PVC, plasticized	****	No change	****	No change after >30 cycles.
Polyetheretherketone (PEEK)	****	No change	****	No change after >10 cycles.
Polyethylene terephthalate (PET)	****	No change	****	No change after >30 cycles.
Ethyl vinyl acetate (EVA)	****	No change	***	Weight change after 10 cycles, device tested was foam. Indicates absorption.

Material compatibility guidance—Specific materials (continued)

Material	Single Use (1 or 2 cycles)	Comments	Resterilization (>10 cycles)	Comments
		(•) = poor (••) = fair (•••) = good (••••) = excellent		
		(•) = poor (••) = fair (•••) = good (••••) = excellent		
Thermosets				
Phenolics	••••	No change	••••	No change after >10 cycles.
Polyester, unsaturated	••••	No change	••	Peak deletion in FTIR observed after 10 cycles.
Polyimides (Kapton)	••••	No change	••••	No change after >10 cycles.
Polyurethanes	••••	No change	••••	No change after >10 cycles.
Adhesives				
Acrylic	••••	No change	••••	No change after >10 cycles.
Epoxy (non-peroxide cured)	•		•	Recommend the use of peroxide cured epoxy.
Fluoroepoxy	•••		•••	
Methacrylate	••••	No change	••••	No change after >30 cycles.
Urethane acrylate	••••	No change	••••	No change after >30 cycles.
Silicone	••••	No change	••••	No change after >30 cycles.
Ethyl-2-cyanoacrylate (Loctite® 4061)	••••	No change	••••	No change after >10 cycles.
Elastomers				
Butyl	•		•	
Ethylene propylene diene monomer (EPDM)	••••	No change	••••	No change after >30 cycles.
Natural rubber	••••	No change	••	Peak deletion in FTIR after 10 cycles.
Nitrile	••••	No change	••••	No change after >30 cycles.
Polyacrylic	••••	No change	••••	No change after >30 cycles.
FKM	• to ••••	Dependent on material grade	• to ••••	Dependent on material grade.
Viton®	• to ••••	Dependent on material grade	• to ••••	Dependent on material grade.
Silicone	••••	No change	••••	No change after >30 cycles.
Kalrez	••••	No change	••••	No change after >10 cycles.
Pebax	••••	No change	••	Peak deletion in FTIR observed after 10 cycles.
Styrenic block copolymers (e.g., styrene-butadiene-styrene, styrene-ethylene-butylene-styrene)	•	Peak deletion in FTIR	•	Peak deletion in FTIR observed after 10 cycles.
Neoprene rubber	•	Peak removed in FTIR observed	•	Peak deletion in FTIR observed after 10 cycles.
Urethane	••••	No change	••••	No change after >10 cycles. Grade dependent. For depyrogenation cycles only.
Polydimethylsiloxane (PDMS), uncured	••••	No change	••••	No change after >10 cycles.

Material compatibility guidance—Specific materials (continued)

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Metals (E.4.3)				
Aluminum Bare (7075)	••••	No change	••••	No change after >30 cycles.
Aluminum Alloy Black Anodize (5056)	••••	Slight change	••••	After >10 cycles, black anodize color turned silver. No corrosion.
Aluminum Bare (1100)	•••	Slight change	•••	Slight change.
Aluminum Alloy Black Anodize (1100)	•••	Slight change	•••	After >10 cycles, black anodize color turned silver. No corrosion.
Aluminum Bare (2024)	••	Slight corrosion observed	••	Corrosion observed.
Aluminum Alloy Black Anodize (6061)	••••	No change	••••	After >10 cycles, black anodize color turned silver. No corrosion.
Aluminum Bare (6061)	••••	No change	••••	After >10 cycles, black anodize color turned silver. No corrosion.
Aluminum Alloy Black Anodize (5056)	••••	Slight change	••••	After >10 cycles, black anodize color turned silver. No corrosion.
Brass (464)	••••	No change	••••	No change after >10 cycles.
Copper (CA-110)	••••	No change	••••	Slightly dull after >10 cycles.
Gold	••••	No change	••••	No change after >30 cycles.
Magnesium	•••	Slight color change	•	Corrosion observed after 5 cycles.
Nickel	••••	No change	••••	No change after >30 cycles.
Silver	••••	No change	••••	Slight color change after >10 cycles.
Stainless steel (304)	••••	No change	••••	No change after >30 cycles.
Stainless steel (316)	••••	No change	••••	No change after >30 cycles.
Stainless steel (430)	••••	No change	••••	No change after >30 cycles.
Mild Steel	••	Corrosion observed	•	Corrosion observed.
Hastelloy	••••	No change	••••	No change after >30 cycles.
Nitinol	••••	No change	••••	No change after >10 cycles.
Titanium (Grade 2)	••••	No change	••••	No change after >30 cycles.
Chromium	••••	No change	••••	No change after >10 cycles.

Material compatibility guidance—Specific materials (continued)

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Material	Single Use (1 or 2 cycles)	Comments	Resterilization (>10 cycles)	Comments
Ceramics/glasses				
Aluminum oxides	••••	No change	••	New peaks in FTIR observed after 10 cycles.
Silica	••••	No change	••••	No change after >30 cycles.
Zirconium oxides	••••	No change	••••	No change after >10 cycles.
Bioabsorbables				
Tissue and proteins	••••	No change after >2 cycles		Not tested above 2 cycles
Poly(lactic-co-glycolic acid) (PLGA) [Class 6 implantable]	••••	No change	••••	No change after >10 cycles.
Poly(lactic-acid) (PLA) [class 6 implantable]	••••	No change	••••	No change after >10 cycles.
Polyglycolic acid (PGA)	••••	No change	••••	No change after >10 cycles.
Other Materials				
Acrylic (acrylate polymer)	••••	No change	••••	No change after >10 cycles.
Cellulosics	••••	No change	••••	No change after >10 cycles.
Printed battery power source	••••	No change in voltage nor performance after >2 cycles		Not tested above 2 cycles
Printed circuit boards	••••	No change	••••	No change after >30 cycles.
Brushed electric motor	••••	No change after >2 cycles		Not tested above 2 cycles

NOTE—REVOX Sterilization Solutions provided the information in this table based on unpublished studies conducted in a REVOX Sterilization System. All polymers tested used the following measurements: mass, dimensions, and Fourier transform infrared spectroscopy (FTIR) scans. All metals tested used the following measurements: mass, dimensions, and ASTM-G31-72 (corrosion test).

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Products Tested

Enzyme sensors (glucose sensors)	Complex tubing sets	Stem cell culture plates	Inflatable prosthetics
ATP filters (depyrogenation required)	Blood filters	Synthetic ligaments	Fiber optics
Insulin pumps	Hemostats	Surgical drapes	Silver-coated products
Pre-filled syringes	Lyophilized proteins	Stents	Hydrogel
Injectable adhesives	Syringes	Drug coatings	Heart valves
Injectable drugs	Vials	Wound care applicators	Microbial culture plates
Injectable hormones	Wet decellularized porcine tissue	Goggles	Surgical tools
Combination devices	Dry collagen wound dressings	Incontinence devices	Endoscope valves
Balloon catheters	Bovine tissue	Wound dressings	Ablation devices
Catheters	Human tissue	Artificial joints	Pressure sensors
		Surgical markers	Crime scene materials
		Needles	

Electronics Tested

Batteries	Electrical connectors	RFID tags
• Alkaline	Electric motors	Fiber optic lights
• Lithium	• Brushed	Printed circuit boards
• Lithium ion	• Brushless	Flexible circuits
• Nickel metal hydride		
• Lithium ion polymer		

