



## TECHNICAL TIP

### OVERVIEW OF STERILIZATION TECHNOLOGY COMPARISON

	Ethylene Oxide	Gamma	Electron Beam	X-ray
<b>Methodology</b>	Penetration of sterilant gas into packaged product	Irradiation of product using photons from radioisotope	Product sterilized using ionizing energy from electron beam	Products sterilized using ionizing energy from Rhodotron electron beam
<b>Efficacy</b>	Process efficacy confirmed by biological indicators and/or process monitoring	Process parameters confirmed by dosimetry	Process parameters confirmed by dosimetry	Process parameters confirmed by dosimetry
<b>Penetration</b>	Requires gas permeable packaging and product design	Good penetration complete even at high densities (> 0.4 gm/cc)	Efficient penetration at bulk densities between 0.05 – 0.30 gm/cc	Excellent penetration for all product types
<b>Material Compatibility</b>	Very few material compatibility concerns Liquids are generally not recommended	Compatible with most materials; plastics need to be evaluated Avoid acetals, PTFE (teflon), unstable polypropylene Additives are available to correct issues.	Negative effects are frequently less pronounced or eliminated	Similar to gamma, however negative effects are frequently less pronounced or eliminated
<b>Turnaround Time</b>	Days: Conventional = 9-10 days. EOExpress® = one day	Hours: time varies based on dose requirements	Minutes: time varies based on dose requirements	Hours: time varies based on dose requirements
<b>Process</b>	Complex process: Variables include exposure time, temperature, humidity and EO concentration  Non-process variables impacting lethality include load density, packaging, and winter shipping conditions.	Simple process: Variables include time in the cell and isotope load	Complex process: Variables include scan height, processing speed, number of passes, and orientation to the beam	Moderately complex process: Variables include processing speed, number of passes and number of pallets on conveyor
<b>Product Handling</b>	Traditional processing: pallets are transferred between stages via fork truck or conveyor system  EOExpress® processing: entire process takes place in the sterilization chamber	Aluminum totes/pallets with product placed in pre-determined loading pattern	Aluminum carriers with product placed in pre-determined loading pattern, or boxes placed directly onto conveyor	Products processed via pallets, in pre-determined loading pattern

#### FOR MORE INFORMATION

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