

**THERMAL AND RADIATION AGING DEGRADATION
OF SELECTED MATERIALS**

MATERIAL	ALSO KNOWN AS	POTENTIAL FOR SIGNIFICANT AGING		RADIATION SENSITIVITY		TYPES OF EQUIPMENT (WITHIN WHICH MATERIAL MAY BE FOUND)																		
		10 YRS	40 YRS	RAIS GAMMA	BASIS	COILS	CONVERTERS	ELECTRONIC PERIPHERALS	HEATERS	INSTANT PACES & PAGES	LAMP SWITCHES	MOTORS	SENSORS	SPICES	THERMAL BLOCKS	VALVE OPERATORS	CONTROL BUSES	DIESEL GEN-SETS	AFTER CONTROL EQUIPMENT	PMS	SPACE EQUIPMENT	PER. CONTROL CENTERS	STATIONARY	
Integrated Circuits (IC) N-MOS				10 ³	Threshold					X								X			X			
Integrated Circuits (IC) C-MOS				10 ⁴	"			X										X	X		X	X		
Transistors				10 ⁴	"			X	X			X						X	X		X	X		
Diodes				10 ⁴	"			X	X			X						X	X		X	X		
Silicon-Controlled Rectifiers				10 ⁴	"			X	X			X						X	X		X	X		
Integrated Circuits (IC) Analog				10 ⁴	"			X	X			X						X			X			
Vulcanized Fiber		*	*	10 ⁵	"			X								X		X			X	X		
Fish Paper				10 ⁵	"			X	X	X	X	X						X	X		X	X	X	X
Polyester (unfilled)		*	*	10 ⁵	"	X		X	X		X	X		X				X	X		X	X	X	X
Nylon	Polyamide	*	*	10 ⁵	"	X	X	X	X	X	X	X			X	X		X	X		X	X	X	X
Polycarbonate				10 ⁶	"			X				X	X					X	X		X	X		
Polyimide				10 ⁶	"			X				X						X	X		X	X		
Chlorosulfonated Polyethylene	Hypalon		*	10 ⁷	Allowable	X		X				X							X	X		X		
Buna-N	NBR/Nitrile Rubber	*	*	10 ⁶	Threshold			X		X						X			X			X		
Integrated Circuits (IC) TTL				10 ⁶	"			X	X			X						X	X		X	X		
Bisallyl Phthalate	BAP			10 ⁶	"																			
Silicone Rubber				10 ⁶	"	X		X																

*Indicates that there is data available which shows a potential for significant thermal aging of the materials when exposed to normal operating conditions for either 10 or 40 years as indicated.

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MATERIAL	ALSO KNOWN AS	POTENTIAL FOR SIGNIFICANT AGING			RADIATION SUSCEPTIBILITY	
		10 YRS	40 YRS	UNITS MGRA	RANGE	
Polyethylene				10 ⁷	Allowable	
Nomex	Aramid			10 ⁸	24% Loss of Strength	
Resistors - Wire-Wound				10 ⁹	Threshold	
Resistors - Carbon Composition				10 ⁹	-	
Capacitors - Ceramic				10 ⁹	Allowable	
Capacitors - Glass				10 ⁹	-	
Capacitors - Mica				10 ⁹	-	
MMA Thermosetting Laminates, Grade HXPC				10 ⁹	-	
MMA Thermosetting Laminates, Grade HXP				10 ⁹	-	
MMA Thermosetting Laminates, Grade HPH				10 ⁹	-	
MMA Thermosetting Laminates, Grade HFC				10 ⁹	-	
MMA Thermosetting Laminates, Grade HI				10 ⁹	-	
MMA Thermosetting Laminates, Grade HEP				10 ⁹	-	
MMA Thermosetting Laminates, Grade HH				10 ⁹	-	
MMA Thermosetting Laminates, Grade CE				10 ⁹	-	
MMA Thermosetting Laminates, Grade C				10 ⁹	-	

[illegible]