MUSEUM TEXTILE SERVICES

ASSESSING MODERN MATERIALS

Learning to characterize changes to modern materials in clothing and textile collections allows you to catch the early warning signs that indicate material is deteriorating.

Blistering – Small surface bubbles where there is physical or chemical distortion
Bloom – Growths on the surface as a result of additives migrating to the surface of the plastic
Crazing – Pattern (regular or irregular) of microscopic cracks either at the surface of the plastic or internally
De-lamination – Peeling apart of multi-layer plastics due to incompatibility as the layers degrade
Discoloration – Change in color produced by degrading plastics caused by UV light and environment
Warping – Distortions, often accompanied by weeping, that can result in cracking
Weeping – Surface liquid caused by migrating plasticizer or acidic degradation products

	Appearance											**Odor**	**Deterioration of nearby materials**	
Material	**Blistering**	**Bloom**	**Brittleness**	**Cracking**	**Crazing**	**Crumbling**	**De-lamination**	**Discoloration**	**Fraying**	**Warping**	**Weeping**	**Odor**	**Corrodes Metals****	**Disintegrates Paper *****
Cellulose nitrate	X	X		X	X			X		X	X	*Mothballs, camphor*	X	X
Casein					X			X				*Burnt milk/hair*		
Phenol formaldehydes				X								*Antiseptic soap*		
Regenerated cellulose (Rayon)												*Musty*		
Cellulose tri-acetate (Acetate)	X	X		X	X			X	X	X	X	*Vinegar, burning paper*	X	X
Poly vinyl chloride (PVC)								X		X	X	*Sharp and acidic, or sweet; new car seats*	X	X
Urea formaldehydes				X								*Formaldehyde, preserving fluid*		
Poly (methyl methacrylate)				X	X									
Polyamide (Nylon)			X					X	X	X		*Burnt hair or wool; celery*		
Polyethylene			X					X				*Wax, paraffin, candles*		
Polyethylene terephthalate (Polyester)								X				*Burning rubber, raspberry jam, cinnamon*		
Polyurethane (Spandex, Lycra)			X			X		X			X *	*Acrid, stinging odor, faint apple*		
Polyacrylonitrile (Acrylic)								X				*Sweet, fruity*		
Polypropylene			X					X	X	X		*Wax, candles*		

* Polyurethane foams

**Corrosion of metals caused by the gradual release of acids produced by materials when they start to degrade

***Disintegration of paper (ex. tissue, card) caused by the release of acidic vapors, which can attack the paper on the molecular level eventually leading to the breakdown and crumbling of the paper.

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