

P. Table: Properties of materials used in nuclear physics experiments²⁰

See also Table 9.05.F for atomic and nuclear properties of materials.

Material	Chemical name or type	Composition	Density (g/cm ³)	Volume resistivity (Ω cm)	Manufacturer
Aquadag	Colloidal graphite dispersion in isopropyl alcohol	C, H, O (varies)			Acheson Colloids
Celluloid	Cellulose acetate	(C ₉ H ₁₃ O ₇) _n	1.23–1.34	10 ¹⁰ –10 ¹⁴	
Cymel	Melamine and formaldehyde condensation product	C, H, O, N (varies)			American Cyanamid
Formvar	Polyvinyl $\left\{ \begin{array}{l} \text{alcohol} \\ \text{acetate} \\ \text{formal} \end{array} \right.$	C, H, O (varies)	1.21–1.23		Monsanto
Grafoil	graphite film	C	1.6–1.8		Union Carbide
Havar		Fe (17.9%), Co (42.5%), Cr (20.0%), Ni (13.0%), W (2.8%), Mo, Mn, C, Be (traces)	8.3		Hamilton Watch
Hevimet		W (90%), Ni (7.5%), Cu (2.5%)	16.9–17.2		General Electric
Kapton ^a	Polyamide film	(C ₂₂ H ₁₀ N ₂ O ₄) _n	1.08–1.14		Du Pont
Kel-F	Chlorotrifluoroethylene polymer	(CF ₂ CHCl) _n	2.10–2.13	1.2 × 10 ¹⁸	3M
Lucite (Plexiglas)	Acrylic (methyl methacrylate) resins	(C ₅ H ₈ O ₂) _n	1.18–1.19	> 10 ¹⁴	Du Pont, Rohm and Haas
Mica ^b	Muscovite (white mica)	K ₂ O·3Al ₂ O ₃ ·6SiO ₂ ·2H ₂ O	2.76–3.0		
Mylar ^c	Polyester film	(C ₁₀ H ₈ O ₄) _n	1.38–1.40	10 ¹⁴	Du Pont
Nylon	Polyamides	(C ₁₂ H ₂₂ N ₂ O ₂) _n	1.08–1.14	10 ¹² –10 ¹⁵	Du Pont
Polyethylene (polythene)		(CH ₂ :CH ₂) _n	0.910–0.965	> 10 ¹⁶	
Polystyrene (styron)		(C ₆ H ₅ CH:CH ₂) _n	0.98–1.10	> 10 ¹⁶	Dow Chemical
Teflon	Tetrafluoroethylene resin	(CF ₂) _n	2.1–2.2	> 10 ¹⁸	Du Pont
VYNS	Polyvinylchloride-acetate copolymer (solution)	CH ₂ CHCl (90%), CH ₂ CHO ₂ CCH ₃ (10%)	1.36		Union Carbide
Zapon	Nitrocellulose in a blend of hydrocarbon solvents	C, H, O, N (varies)			Glidden

^aFormerly known as H-Film. This material is ≈ 50 times more resistant to radiation damage than Mylar.^c^bMany types of mica are known; the one listed is merely typical.^cMylar suffers radiation damage at doses greater than about 5×10^8 rads: A. M. Koehler *et al.*, Nucl. Instrum. Methods **33**, 341 (1965).