





























































Capacitors with Dielectrics,	(FIXED CHARGE)
Capacitance: increases	• $C = \kappa C_{\circ}$
Charge: remains constant	$\bullet Q = Q_{\circ}$
Potential difference: decreases	• $\Delta V = \frac{\Delta V_{\circ}}{\kappa}$
Energy: decreases	• $U = \frac{U^{\circ}}{\kappa}$
Electric field: decreases	• $\vec{E} = \frac{\vec{E} \cdot}{\kappa}$
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(41)			
Sama Dialastria	Table 26.1 Approximate	e Dielectric Constants a	nd Dielectric Strengths
Some Dielectric	of various materials at Roo	Dialoctria Constant #	Disloctric Strongtha (106 V/m
Constants and		1 000 50	o o
	Air (dry) Bakelite	1.000 59	3
Dielectric Strengths	Eused quartz	4.9	24
	Mylar	3.9	7
	Neoprene rubber	67	19
	Nylon	3.4	14
	Paper	3.7	16
	Paraffin-impregnated paper	3.5	11
	Polystyrene	2.56	24
	Polyvinyl chloride	3.4	40
	Porcelain	6	12
	Pyrex glass	5.6	14
	Silicone oil	2.5	15
	Strontium titanate	233	8
	Teflon	2.1	60
	Vacuum	1.000 00	—
	Water	80	—
	<sup>4</sup> The dielectric strength equals the maximum electric field that can exist in a dielectric without electrical breakdown These values depend strongly on the presence of impurities and flaws in the materials.		
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