A parallel plate air filled capacitor has a capacitance of 3F. The separation between the plates tripled and wax is inserted between them. The new capacitance is 6F. What is the dielectric constant of the wax?

\[
C_1 = \frac{\varepsilon_0 A}{d} = 3 \text{F}
\]

\[
C_2 = K_e \frac{\varepsilon_0 A}{3d} = 6 \text{F}
\]

\[
K_e \left( \frac{\varepsilon_0 A}{d} \right) = 18 \text{F}
\]

\[
K_e = 6
\]

\[
K_e (3 \text{F}) = 18 \text{F}
\]