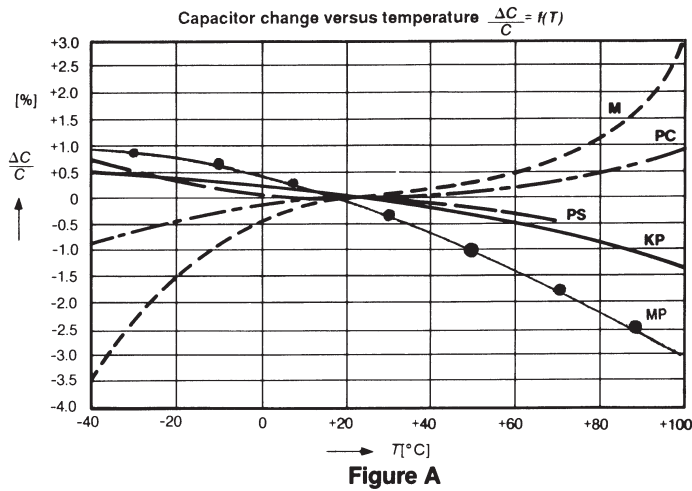
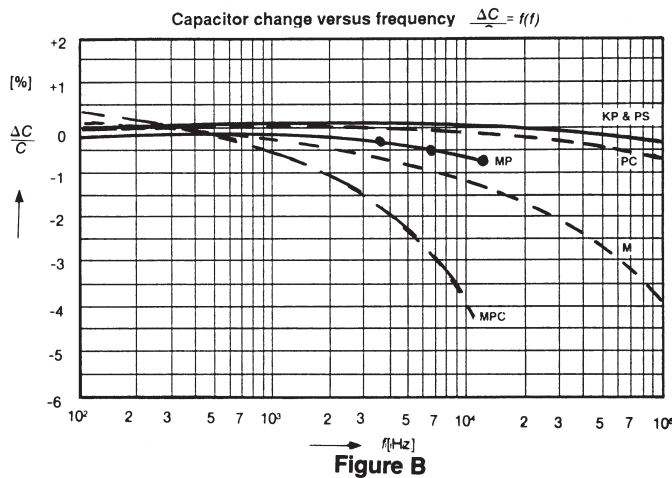


FILM DIELECTRIC COMPARISONS



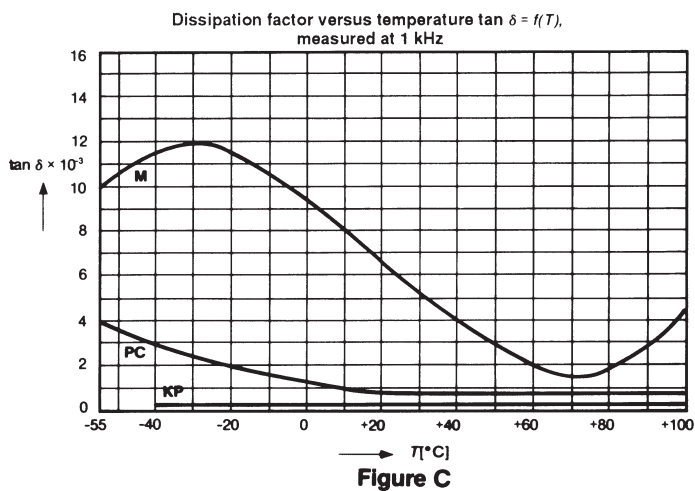
Film Dielectric Comparisons. Polypropylene (KP) film and aluminum foil capacitors have several important advantages when compared to polyester (M), polycarbonate (PC), and polystyrene (PS). The following explanation, illustrated by accompanying graphs, show polypropylene to exhibit superior capacitance stability with temperature and frequency, dissipation factor with temperature and frequency, and time constant with temperature.

The first graph, capacitance change versus temperature variation, shows typical parametric changes for polyester, polycarbonate, polystyrene, and polypropylene. Note the polypropylene dielectric is most stable through the entire temperature range, (see Fig. A).



The above shows polystyrene to be a very stable dielectric, but with a limited temperature range on the higher end of the temperature scale. This limitation is the chief disadvantage of the polystyrene construction as such capacitors may be destroyed or damaged with a wave soldering process. In most instances polystyrene dielectric has been displaced by polypropylene.

Observation of capacitance change versus frequency in Fig. B shows polypropylene to be much more stable than polyester and polycarbonate.



Even though the above graph extends only to 100,000 hertz, it should be stated the capabilities of polypropylene go into the mega hertz range.

Although dissipation factor is a function of ambient temperature and frequency, the graphs in Fig. C and Fig. D demonstrate the predominance of polypropylene with regard to quality.

FILM DIELECTRIC COMPARISONS

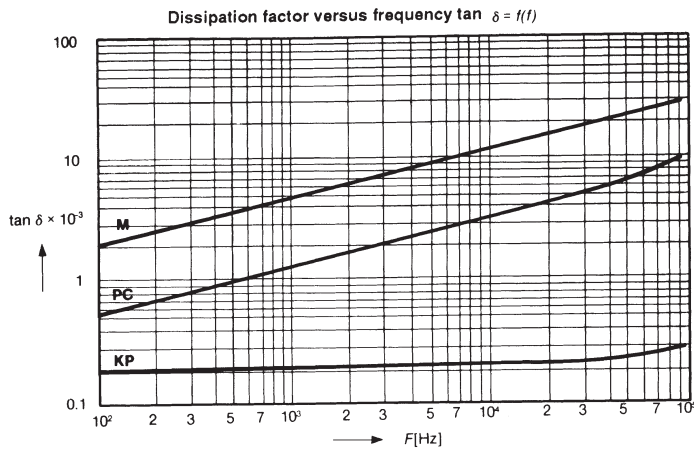


Figure D

Since dielectric resistance is subject to change with temperature and time constant is a product of IR and value, the graphs in Fig. E point out the improved insulation resistance of polypropylene as compared to the other dielectrics.

Time constant versus temperature $r = f(T)$

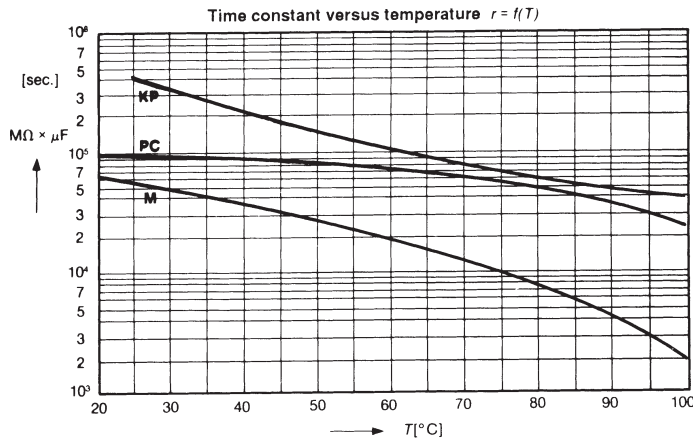


Figure E

Therefore, a given capacitance value using polypropylene has a vast improvement when compared to polyester and polycarbonate.