

ESTERIFICATION OF 2,5-FURANDICARBOXYLIC ACID (FDCA)

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In polymer industries, an effort of replacing petroleum-based monomer into bio-based monomer is increasing rapidly during last century. One of interest is replacing terephthalic acid (TPA) compound, which is well-known as petroleum products, into 2,5-furandicarboxylic acid (FDCA) compound which comes from biomass stock. According to previous work on direct polymerization involving FDCA which resulted low molecular weight and low melting temperature of polymer, FDCA is converting into 2,5-furandicarboxyl ester before polymerization. Several trials have been done, including variation of alcohol (methanol, ethanol), reagent (TEA, dimethylsulphate), solvent (DMSO, ethylene chloride, acetonitrile), catalyst (H_2SO_4 , H_3PO_4 , DMP), washing solution (water, acetonitrile), and reaction condition (with/out sieving, 2 hr-3 days, 0-300 °C). The range of yield extends from 25-98%, and the most suitable method is using TEA and dimethylsulphate with water washed having 70% yield.