This article investigated temperature variations of a polypropylene melt in the barrels of an injection moulding and a twin screw extruder under an isothermal state. The melt temperature profiles in the barrel of an injection moulding machine were observed to be different from those a twin screw extruder, this being associated with differences in the flows occurring in the barrels of each processing equipment. The major parameters influencing the melt temperature profiles were shear heating and heating conduction effects, residence time, flow length and the flow patterns of the flowing PP melt in the barrel.