

Effect of different configuration of intermediate materials for c-FRTP on impregnation properties

Kenya Morie, Masahiro Funahashi, Akio Ohtani and Asami Nakai.

Gifu University, Japan

Kyoto Institute of Technology, Japan

Continuous fiber reinforced thermoplastic (c-FRTP) has attracted attention in recent years because of not only the excellent specific rigidity and specific strength but recyclability and the secondary workability due to a feature of the thermoplastic resin as the matrix. However, unlike the thermosetting resin, it is very difficult to impregnate thermoplastic resin into continuous fiber bundles because of its high melt viscosity. In order to solve this problem, various intermediate materials have been developed. In intermediate material, resin materials is put in the vicinity of reinforcing fibers or reinforcement, therefore it is possible to shorten the impregnation time in molding. There are several kinds of intermediate materials with different configurations by different production process such as a comingled yarn in which reinforcing fibers and resin fibers are mixed, prepreg sheet, powder impregnated yarn or fabric, and reinforcing fibers covered with resin materials. However, effect of difference in configuration of intermediate materials on impregnation properties have not been clarified quantitatively. Therefore, the effect of different configuration of intermediate material on impregnation properties was examined in this study. Impregnation time and impregnating mechanism were investigated by cross-sectional observation.