

ABSTRACT

This present disclosure relates to processes and apparatuses for benzene and/or toluene methylation under conditions of low temperatures in one of a vapor phase, a liquid phase or a mixed vapor-liquid phase, in an aromatics complex for producing paraxylene. More specifically, the present disclosure relates to a process is provided for producing a xylene isomer comprising reacting oxygenates with an aromatic feedstock comprising toluene and/or benzene in a methylation zone operating under alkylation conditions including one of a vapor, a liquid phase or a mixed vapor-liquid phase in the presence of a catalyst to provide a product stream comprising the xylene isomer.

Figure 1