

Abstract

The present invention provides an alkylation reaction apparatus, which is characterized by comprising n reactors, in said n reactors, there are m reactors including the first reactor that are those having three reaction zones as defined below; according to the flow direction order of alkylation reaction streams, said three reaction zones are an x reaction zone, a y reaction zone and a z reaction zone respectively; based on the mixing intensity, the mixing intensity of the y reaction zone > the mixing intensity of the x reaction zone > the mixing intensity of the z reaction zone, wherein $n \geq 1$ and $n \geq m$. The present invention also provides an alkylation reaction system comprising the aforementioned alkylation reaction apparatus, and a liquid acid catalyzed alkylation reaction process by using the aforementioned alkylation reaction apparatus or the aforementioned alkylation reaction system.

Figure 3