Research Work Title

Production of Ethylene Oxide Catalyst

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Abstract

Ethylene oxide is a crucial and extensively utilized petrochemical product, prompting numerous petrochemical companies worldwide to consider its production. The Ag/αAl2O3 catalyst is employed in the partial oxidation process of ethylene-to-ethylene oxide in petrochemical plants. This catalyst, a supported heterogeneous catalyst, exhibits significant influence on catalytic performance through its physical and chemical properties, such as surface area, pore volume, and silver dispersion. Global production of ethylene oxide currently exceeds 12 million tons, with over half of it being utilized to produce ethylene glycol, a precursor to various polyester derivatives including fibres, bottles, and films. The production process began on a 12 kg scale in Mahshahr, with the catalyst being loaded and tested in industrial conditions within the reactor of an industrial unit. Subsequently, Poya Pajohesh Company oversaw the industrial-scale production of catalysts. Presently, the unit operates at a capacity of 750 kg per day, with potential for scaling up to 1 ton per day. The industrial production stages of ethylene oxide catalysts encompass initial support pre-treatment, washing, drying, and degassing of alpha alumina support to enhance absorption. This is followed by dry impregnation of the active ingredient on the base of alpha alumina and calcination, culminating in the packing of the catalyst.