

Effect of Scale Formation on the Direct Chlorination Process Parameters in Ethylene Dichloride (EDC) Production

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ABSTRACT : The effect of fouling due to scale formation in the shell side of a direct chlorination reactor on some process parameters i.e. heat transfer coefficient, EDC selectivity and amount of cooling water flow in the shell side of the reactor is investigated. The results obtained revealed that when the scale formation increases, EDC selectivity and heat transfer coefficient decrease while the amount of water needed to cool the reaction increases.

1. INTRODUCTION

In this era of increasing use of plastics and simultaneous increase in the health and environmental concerns, the vinyl chloride industry is of particular interest. The principal use of vinyl chloride (VC) is in the production of polyvinylchloride (PVC), and the principal use of (PVC) is in the production of a wide variety of useful plastic material, such as floor tile, pipes and electrical insulations⁽¹⁾.

In the state company for petrochemical industries the vinyl chloride monomer (VCM) production process is carried out from ethylene dichloride (EDC) which is an important intermediate in many other industries.

EDC is a colorless, oily liquid which is primarily used to produce (VCM). It is also employed in chlorinated solvent manufacture and ethylene amines production. About 8% of EDC produced in the United