



Catalyst in Industry (review: in perspective of india)

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ABSTRACT

The main aim of a successful industry is to produce its product cost effective and competitive in market. Keeping this consideration catalyst play an important role in chemical industry particularly in production of polymers. To get the best output of a catalyst different special field like organic analytic inorganic scientists work together.

I. INTRODUCTION

In the chemical industry and industrial research, catalyst play an important role. Different type of catalysts are in constant research and development to fulfil industrial need as well to fulfil economic, political and environment demands..

The consistently expanding research have prompted a circumstance where the use of the three parts of catalysis that is homogeneous, heterogeneous and bio are very significant

CATALYSTS IN MASS PRODUCTION

ZnOCr₂O₃

Production of methanol is an important industry today and methanol is one of the largest volume carbonylation products. The process uses syngas as feedstock. The most **important reaction based on methanol is its decomposition to yield CO and H₂. And this can be used in production of fuel gas. Methanol on large scale is produced using sulfur resistant ZnOCr₂O₃ catalyst.**

Fe

Industrial production of ammonia is done using Fe (Haber process) as main catalyst. It is the first catalyst developed to cater the production of ammonia. Industry uses it as promoted iron catalyst, promoter can be K₂O, Al₂O₃ and CaO but the main catalyst is iron(Fe).

Aluminum silicates

Aluminum silicates has its great importance in petrochemical industries. Aluminum silicate is a mixture of aluminum and silicon dioxide, and other substance is zeolite which is used in catalytic cracking of petroleum hydrocarbon to produce small hydrocarbon like ethylene propene that is widely used in producing polymers.

Vanadium (V)

Industrial growth of a country is observed by its amount of consumption of sulfuric acid.

Over the years vanadium is used as a catalyst to produce sulfuric acid by contact process. For this quality and size of vanadium determines the output of sulfuric acid production. Presence of arsenic, chlorides, fluorides and carbon monoxides reduces the yield of sulfuric acid.

Platinum (Pt) and Alumina (Al₂O₃)

This combination is used for the dehydrogenation of alkanes. Alkane is dehydrogenated by platinum producing alkenes, these alkenes then absorbed by the alumina present in the mixture. This is used for the production of butene from butane, propene from propane etc. These alkenes are then further used in for the production of polymers and rubber industries.

Nickel (Ni)

Nickel is widely used in hydrogenation of unsaturated hydrocarbons .this a good example of heterogenous catalyst . it converts ethane into ethane. Alkanes are fuel gases hence nickel is used for the production of synthetic gases (syngas) as a fuel source.

Research and development of catalyst

In India CSIR, National Chemical Laboratories in Pune, National Environmental Engineering Research Institute, Nagpur , Indian Institute of Chemical Technology in Hyderabad, National Center for Catalysis Research (NCCR) Chennai. Indian Institute of Petroleum in Dehradun, Central Salt and Marine Chemicals Research Institute in Bhavnagar or Central Fuel Research Institute in Dhanbadaim are haing the leading research laboratories working for the development of catalyst .

II. CONCLUSION

For the industrial revolution , cost effective invention of catalyst causing less damage to environment has to be generated.use of polymer is fast growing in everyday life now a days,for this a ecofriendly catalyst(biodegradable) is needed.

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