

MODULE -6

Hydrotreating and Hydrocracking

Q1: What is hydrodesulfurization?

A1: In this process sulfur is converted to hydrogen sulfide (H₂S) Added hydrogen breaks carbon-sulfur bonds & saturates remaining hydrocarbon chains.

Q2: what is hydrocracking?

A2: Distillate hydrocracking is a refining process for conversion of heavy gas oils and heavy diesels or similar boiling-range heavy distillates into light distillates (naphtha, kerosene, diesel, etc.) or base stocks for lubricating oil manufacture. The process consists of causing feed to react with hydrogen in the presence of a catalyst under specified operating conditions: temperature, pressure, and space velocity.

Q3: What are the catalyst used in hydrotreating?

A3: Cobalt molybdenum : sulfur removal & olefin saturation
Nickel molybdenum: nitrogen removal & aromatic saturation

Q4: What are the catalyst used in hydrocracking?

A4: Crystalline silica alumina base with a rare earth metal deposited in the lattice
Platinum, palladium, tungsten, and/or nickel.

Q5: What is UNIONFINING?

A5: It is a fixed bed catalytic process developed by UOP adopted for diesel Hydro-desulphurization.

Q6: Why Hydro processing ?

A6: Need to increase automotive fuel yield & quality .Petroleum fractions contain organic Sulfur, Nitrogen etc. which cause Increased air pollution Equipment corrosion. Difficulties in further processing (catalyst poisoning etc.)

Q7: what are the main reaction involve in hydrocracking?

A7: Hydrocracking reactions can be divided into two groups: (1) desulfurization and denitrification hydrogenation of polyaromatics and monoaromatics are favored by the hydrogenating function of the catalyst (metals) and (2) hydrodealkylation, hydrodecyclization, hydrocracking, and hydroisomerization reactions are promoted by the acidic function of the catalyst (support).

Q8: What is H-Oil process?

A8: This is used for desulphurising and demetallising residue as well as the produce low sulphur cat cracker feed stocks. It has the advantage of functioning as hydro desulphurization unit or hydrocracker unit.

This uses ebullatedbed in which feed stock and hydrogen pass upward through catalyst bed.

Q9: What is Union Oil process?

A9: This is also called Uni-cracking Hydro Desulphurization process. it is a fixed bed catalytic process mainly suitable for atmosphere and vacuum residue. In this process formation of light fractions is not allowed, and the process is conducted at relatively low operating conditions.