

# CATALYTIC REFORMING

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- Catalytic reforming process is employed to reform low octane naphthas into premium quality motor fuels.
- To produce high yields of aromatics , to make high quality aviation gasoline and to produce LPG.

# CHEMICAL REACTIONS

- ❖ Reforming reactions are basically the following types.
  - Dehydrogenation of naphthenes to aromatics.
  - Dehydrocyclization of paraffins to aromatics.
  - Hydrocracking
  - Isomerization
  - Demethylation and dealkylation

# REACTION IN CATALYTIC REFORMING

## ❖ DESIRABLE REACTION

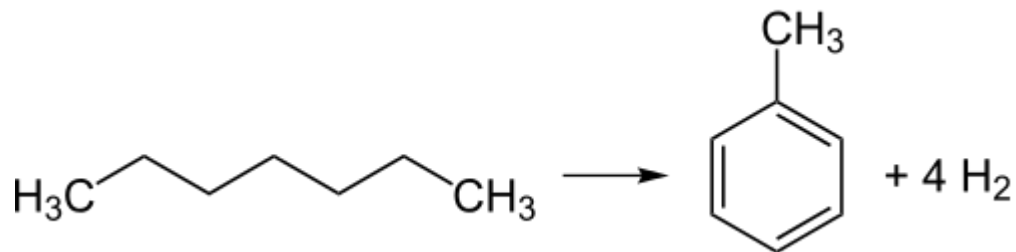
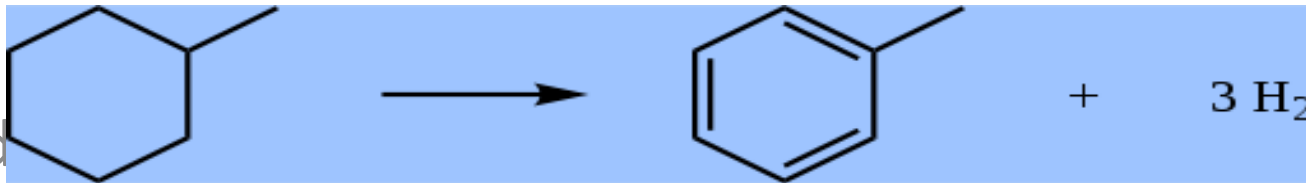
- Dehydrogenation
- Dehydrocyclization
- Isomerization

## ❖ NON DESIRABLE REACTION

- Hydrocracking

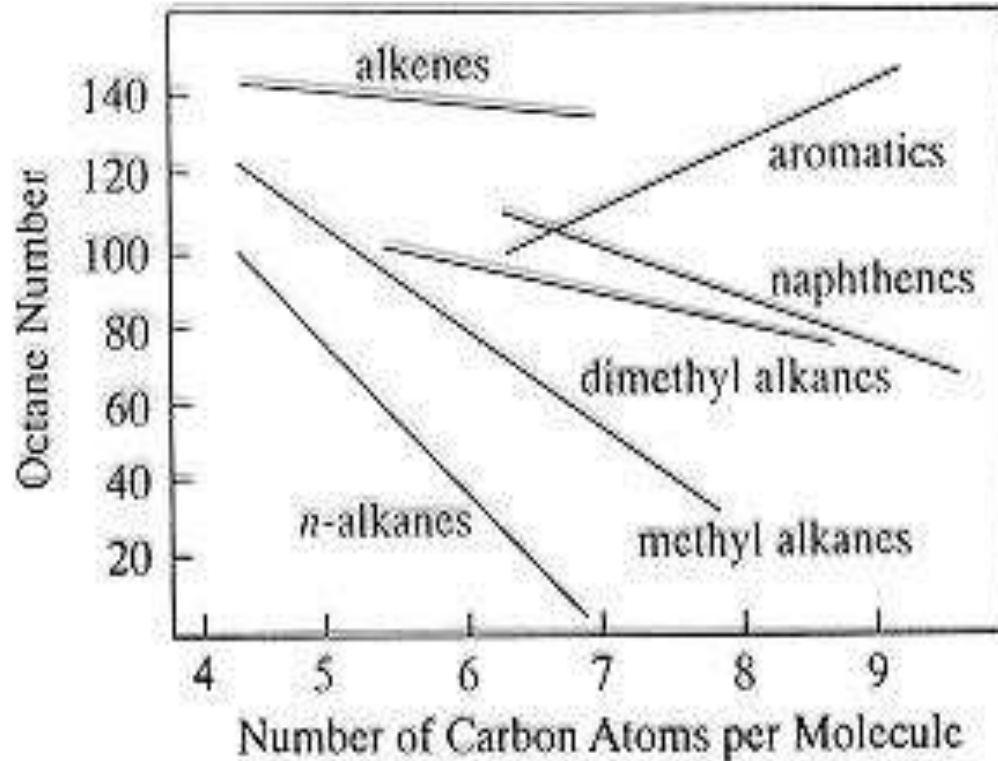
# REFORMING REACTIONS

❖ Dehydrogenation of naphthenes to aromatics.





# Catalytic Reforming



Octane number versus carbon number for important hydrocarbon groups in reforming

# Catalytic Reforming

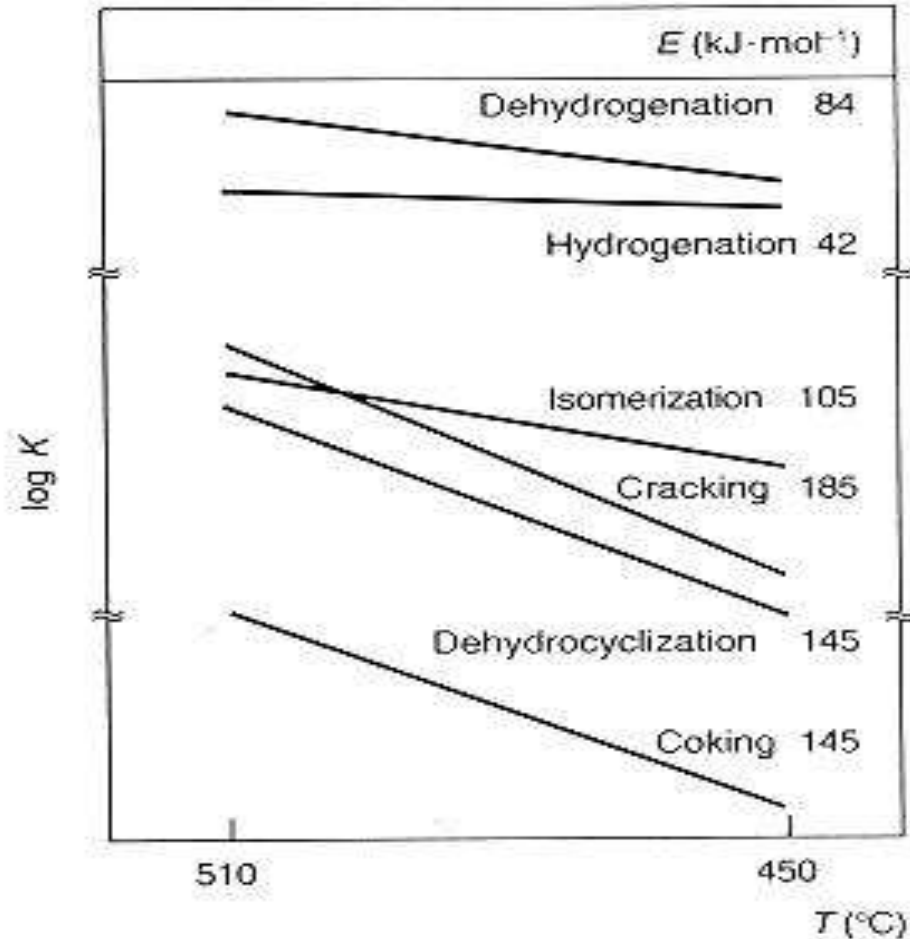


Figure  
4.32

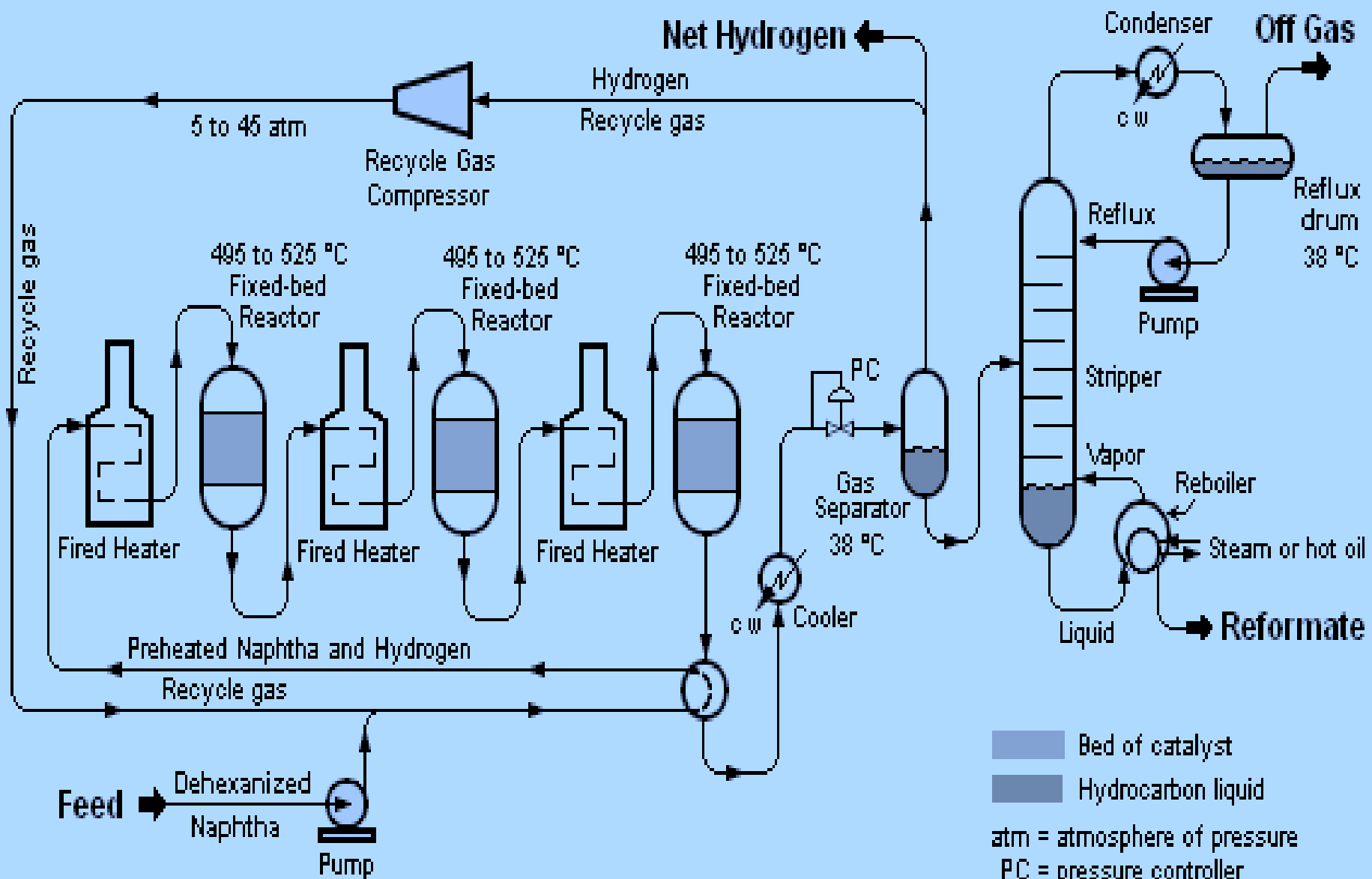
*Influence of temperature on reaction rate.*



REACTION	TEMPRETURE	PRESSURE
Dehydrogenation of naphthenes to aromatic	High	Low
Isomerisation of naphthenes	Intermediate	Intermediate
Dehydrocyclistion of paraffins to aromatics	High	Low
Hydrocracking	High	High

# TYPES OF CATALYTIC REFORMERS

- ❖ Semi-Regenerative Fixed Bed reactors
- ❖ Cyclic Fixed Bed Reformers
- ❖ Continuous Reformers



# PROCESS VARIABLES

- ❖ Reaction temperature
- ❖ Space velocity
- ❖ Reaction pressure
- ❖ H<sub>2</sub>/HC ratio
- ❖ Feedstock Characteristics

# REACTION TEMPERATURE

- ❖ By simply raising or lowering reactor inlet temperature, operators can raise or lower the octane number of the product.
- ❖ Since all the reactor inlet temperatures are not necessarily identical, it is commonly accepted to consider the Weighted Average Inlet Temperature .

# REACTOR PRESSURE

• Increase in pressure desirable for the hydrocracking reaction

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❖ Low pressure is desirable for the aromatization reaction.

❖ But we do not operate the reactor at very low pressure because other thing is also keep in mind .

❖ If we operate the reactor at very low pressure it results in fast coking of the catalyst .

Thanks