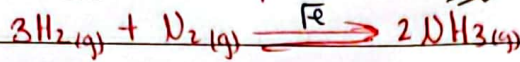


Industry of ammonia "Haber process"

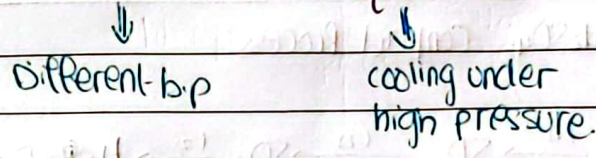


prepara
for plants

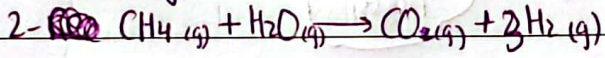
NH = -ve

How to obtain:-

① Nitrogen:- Fractional distillation of liquid air



② Hydrogen:- 1- cracking of alkanes. (organic)



-181.02
21% O₂
0.9% Ar
0.03% CO₂
0.01% H₂
0.06% others

Essential Conditions:-

1- Temp. 400-450°C

400°C - 450°C

less than:-

more than:-

Disadv:-

Adv:- - higher yield of NH₃
- shift forward to the exo side

- shift backward to the endo side

Adv: faster yield

Disadv:- - slower rate
particles lose h.c. so less effective collisions per unit time.

2- Pressure 200 atm^o

Adv:- - more yield of NH₃
shift forward to the side with fewer gas moles.
- faster rate

Disadv:-

- risk of explosion.
- expensive.

3- Fe catalyst

add excess H₂ and N₂
return back to converter
Remove NH₃ immediately
By cooling