


Revision Workshop 2016

CHEMISTRY

Chemical Industry

GDE 12% | IEB 0%


- Fertilisers



Fertilisers

PROCESSES

- Fractional distillation of air: **Nitrogen**
- Extracting **hydrogen** from fossil fuels
- Haber Process: **Ammonia**
- Ostwald Process: **Nitric Acid**
- Contact Process: **Sulphuric Acid**
- Combining chemicals to form **fertilisers**



Fertilisers

QUICK HINT FOR THE "ACID-MAKING" PROCESS

Breathe > Breathe > Drink


$O_2 > O_2 > H_2O$

Not this acid!

- Ostwald Process:

$$NH_3 + O_2 > NO + O_2 > NO_2 + H_2O > HNO_3$$
(not balanced)
- Contact Process:

$$S + O_2 > SO_2 + O_2 > SO_3 + \underline{H_2SO_4} > \underline{H_2S_2O_7} + H_2O > 2H_2SO_4$$
(Oleum) (not balanced)



Fertilisers

N:P:K (%)

The **N : P : K** is



- The ratio *by mass* of those 3 primary nutrients

The **%** is

- The percentage *by mass* of the entire bag that is made up of those 3 elements

So what is the rest?

- Filler** – e.g. sand, gypsum, chopped up mealie cobs! (inert substances)

Fertilisers




LO3

Eutrophication

- Problem = **over-fertilising**
- Solution = use the **right amount** at the right time

Organic vs Inorganic

- Inorganic** - cheaper and more nutrient rich, but danger of over-fertilising. Perhaps less enviro-friendly
- Organic** – more expensive to get the required quantity, less nutrient rich, but recycled therefore enviro-friendly

General Fertilisers Hints & Tips

- Learn the primary nutrients and their roles
- Practise a few N:P:K questions
- Argue LO3 questions **systematically** and **logically**
- Impact on **environment** and **humans**
- Make as many points and **mark allocation** (+1)
- Remember **Chem principles in context**
- Keep advantages and disadvantages **simple and clear**

XL@SCIENCE