

# Nitric Acid

## Properties of Nitric Acid

Nitric Acid displays the properties of a strong acid and it is a powerful [oxidising agent](#).

## Reactions of Nitric Acid

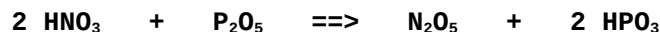
Cuprous Oxide,  $\text{Cu}_2\text{O}$  reacts with dilute Nitric Acid,  $\text{HNO}_3$ , in the cold to form a solution of Cupric Nitrate,  $\text{Cu}(\text{NO}_3)_2$ , and Copper,  $\text{Cu}$ .



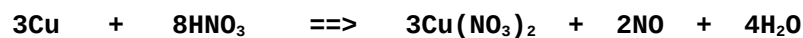
Cuprous Oxide,  $\text{Cu}_2\text{O}$  reacts with concentrated Nitric Acid,  $\text{HNO}_3$ , or with dilute Nitric Acid,  $\text{HNO}_3$ , on heating, when the Cuprous Oxide,  $\text{Cu}_2\text{O}$  dissolves with evolution of Nitric Oxide,  $\text{NO}$ .



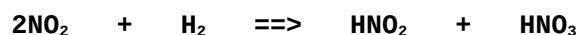
**Dinitrogen Pentoxide**,  $\text{N}_2\text{O}_5$ , is best prepared by dehydrating concentrated Nitric Acid,  $\text{HNO}_3$ , by Phosphorus Pentoxide,  $\text{P}_2\text{O}_5$ .



**Nitric Oxide**,  $\text{NO}$  is prepared by the action of Copper,  $\text{Cu}$ , or Mercury,  $\text{Hg}$ , on dilute Nitric Acid,  $\text{HNO}_3$ , and was called Nitrous Air.



Nitrogen Dioxide,  $\text{NO}_2$ , is a mixed acid anhydride and reacts with water to give a mixture of nitrous and nitric acids.



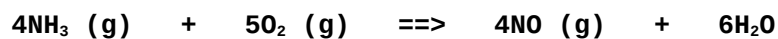
If the solution is heated the nitrous acid decomposes to give nitric acid and nitric oxide.



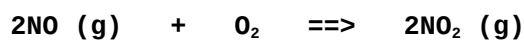
Sulphur Dioxide, SO<sub>2</sub>, and Nitrogen Oxides, NO<sub>x</sub>, are toxic acidic gases, which readily react with the Water, H<sub>2</sub>O in the atmosphere to form a mixture of Sulphuric Acid, H<sub>2</sub>SO<sub>4</sub>, Nitric Acid, HNO<sub>3</sub>, and Nitrous Acid, HNO<sub>2</sub>, . The dilute solutions of these acids which result give rain water a far greater acidity than normal, and is known as [Acid Rain](#).

Nitrates are the salts of nitric acid, and are strong oxidising agents.

The [Oswald](#) Process is the three stage process by which Nitric Acid, HNO<sub>3</sub>, is manufactured. Firstly, Ammonia, NH<sub>3</sub>, is oxidised, at high temperature (900 deg.C.) over a platinum-rhodium catalyst, to form Nitrogen Monoxide, NO.



The Nitrogen Monoxide, NO, cools and reacts with oxygen, O<sub>2</sub>, to produce Nitrogen Dioxide, NO<sub>2</sub>.



Finally, the Nitrogen Dioxide, NO<sub>2</sub> reacts with Water, , and Oxygen, O<sub>2</sub>, oxygen to produce Nitric Acid, .

