

# Nitrogen (N<sub>2</sub>)

## What is it and where does it come from ?

Nitrogen occurs naturally and is all around us in the air we breathe

### Properties:

Elemental Symbol	N
Chemical Formula	N <sub>2</sub>
% in the atmosphere	78.08%
Boiling Point	-196°C
Density (Air = 1)	0.967
Atomic Mass	14
Molecular Mass	28

Discovered by Daniel Rutherford (1772)

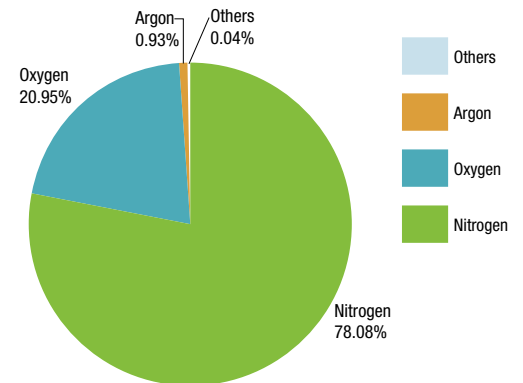
### Characteristics:

- One volume of liquid nitrogen expands to produce 694 volumes of gaseous nitrogen
- It is colourless – you can not see it
- It is odourless – you can not smell it
- It is tasteless – you can not taste it
- It is not toxic or flammable
- It is inert – it does not react with other elements under normal conditions

### Interesting facts about nitrogen:

- It is slightly lighter than air
- It does not support life
- It does not support combustion
- When measured by volume, nitrogen is the most widely used of all inorganic chemicals throughout the world today
- As a liquid, nitrogen is the coldest of the three main gases that make up the atmosphere. Its low temperature freezes food extremely quickly. This makes it very good for freezing delicate food like raspberries and strawberries which would turn mushy if frozen in an ordinary freezer like you have at home

### The air we breath



## **Nitrogen (N<sub>2</sub>)** **What can we use it for?**

Nitrogen is used in the manufacture of many things that we see, use and eat around the home everyday...

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### **Food Freezing**

- Liquid nitrogen is extremely cold (-196°C) and is used to quickly freeze many types of food such as burgers and raspberries

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### **Industrial Freezing**

- Liquid nitrogen is used to make old rubber components brittle so that they can be ground into a fine powder and recycled.

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### **Making Snow**

- Liquid nitrogen is mixed with water and compressed air in a special “gun” to make real snow for indoor events and competitions.

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### **Manufacturing Chemicals**

- Nitrogen is inert. It prevents fires and explosions during the manufacturing process. When making things that contain hazardous or flammable chemicals it is used to remove oxygen from the environment.
- Many of these chemicals find their way into cleaning products, air fresheners, perfumes, cosmetics and other household items.

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### **Food Packaging**

- Nitrogen is used as a preservative in Modified Atmosphere Packaging (MAP) for foods:
- It is used to exclude air and oxygen
- It is used to pack snacks and dried food such as bags of crisps and jars of coffee



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