

Medicinal gases

Medicinal gases is defined as the preparation for intended and uses for the patient diagnosis and treatment during the emergency conditions.

Naturally many useful gaseous are present in the environment but due to our activities like society development, more deforestation, pollution etc ,cause lowering the concentration of the these gaseous.

So, need of medical gases preparation is very important for us for medically as well as experimentally.

The therapeutic gases include oxygen, nitrous oxide, helium, and nitrogen etc these gases are usually given to the pre-operate, intra-operate, and post-operate patients and to the patients in case of emergency.

Oxygen

Chemical formula- O₂.

Molar mass: 32 g/mol

Introduction - Oxygen are present in gases in the form of dioxygen with formula O₂.

Oxygen is the most abundant of all the elements on earth. Oxygen forms about 46.6% by mass of earth's crust. Dry air contains 20.946% oxygen by volume.

Naturally it is prepare by the green plants in the presence of light energy and it helps in our respiratory mechanism . In our body it is transported by the blood and participate in the metabolism.

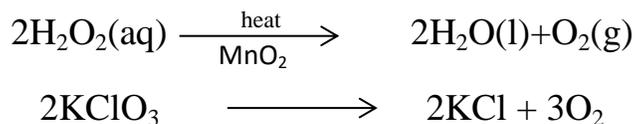
Oxygen is the most critical factor on the earth for most of the aerobics living organisms.

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Laboratory it is prepared by:

Hydrogen peroxide is readily decomposed into water and dioxygen by catalysts such as finely divided metals and manganese dioxide.



Industrially, dioxygen is obtained from air by first removing carbon dioxide and water vapour and then, the remaining gases are liquefied and fractionally distilled to give dinitrogen and dioxygen.

Properties-

- It is colourless diatomic gas.
- It is odourless and tasteless.
- Solubility -it is easily soluble in the water.

Uses/ Application-

- Oxygen is used in most of the surgical and emergency conditions to full the oxygen demand to body.
- In the COVID pandemic oxygen is most uses by the hospitals and nursing homes to treat the patients.

Storage conditions-

- Oxygen are stored in the oxygen cylinder (made by steel and aluminium alloys) at environmental conditions.
- Oxygen are very reactive towards the inflammable material so it is store away from inflammable material.

Carbon dioxide

Chemical formula- CO₂

Molar mass- 41.01 g/mol

- Carbon dioxide is the organic compound is used in the pharmaceutical production as a replacement to organic solvents and also applied in the production of superficial fluid chromatography or in PH control of waste water.
- It is commonly used as an insufflation gas for minimal invasive surgery like endoscopy to enlarge and stabilise body cavities to provide better visibility of the surgical analysis.

In laboratory it is prepared BY--

On commercial scale it is prepared by lime stone heating.



Properties--

- It is colourless gas. It can be obtained as a solid in the form of dry ice
- It is odourless and slightly sour in taste
- It is less soluble in water.

Uses-

- It is used as replacement solvent in the pharmaceutical industry.
- It is also used as PH controller in the water.
- It is also used in the soft drinks preparation.

Storage conditions

- Store in a cool, well-ventilated place. Store and use with adequate ventilation.
- Store only where **temperature** will not exceed 125°F (52°C)

Nitrous oxide

Chemical formula-N₂O

Molar mass- 44.03 g/mol

- Nitrous oxide is also known as laughing gas or dinitrogen oxide. It is used as anaesthesia during surgical process because it provide the pleasure or excitement sensation.
- Nitrous oxide are also used in some medicinal preparation.
- When inhaled in a small amount it causes mirth and euphoria. It is the world's number one inhaled anaesthetic as it works as a quick pain reliever. It can cause a narcotic effect at higher concentrations and lead to death by asphyxia.

Preparations:-

Nitrous oxide is prepared by heating

1. A solutions of ammonium nitrate acidified with HCL
2. Lead nitrate
3. Ammonium nitrite



Properties-

- It is the colourless gas
- It shows sweet smell and tasteless.
- It is insoluble in water.

Uses--

- It is used as anaesthesia during surgical process.
- It is used as oxidant for organic compounds.

Storage conditions: Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials.