

CHEMISTRY STUDY MATERIALS FOR CLASS 10

(NCERT Based: Revision of Chapter -02)

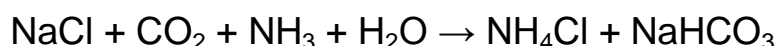
GANESH KUMAR

DATE:- 12/10/2020

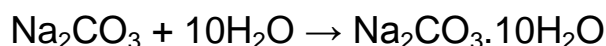
Acids, Bases and Salts

WASHING SODA/DECA HYDRATED SODIUM CARBONATE/ $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

Sodium carbonate is manufactured by the thermal decomposition of sodium hydrogen carbonate obtained by Solvay process.



The sodium carbonate obtained in this process is dry. It is called soda ash or anhydrous sodium carbonate. Washing soda is obtained by rehydration of anhydrous sodium carbonate.



Since there are 10 water molecules in washing soda, hence it is known as Sodium carbonate decahydrate.

Sodium carbonate is a crystalline solid and it is soluble in water when most of the carbonates are insoluble in water.

USE OF SODIUM CARBONATE:

- + It is used in cleaning of cloths; especially in rural areas.
- + In making of detergent cake and powder.
- + In removing permanent hardness of water.
- + It is used in glass and paper industries.

Water of crystallization: Many salts contain water molecule and are known as hydrated salts. The water molecule present in salt is known as water of crystallization.

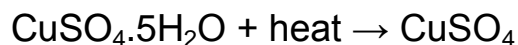
Examples:

FERROUS SULPHATE HEPTAHYDRATE ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$)

The green colour of Ferrous sulphate heptahydrate; commonly known as ferrous sulphate; is due to the presence of 7 molecules of water in it.

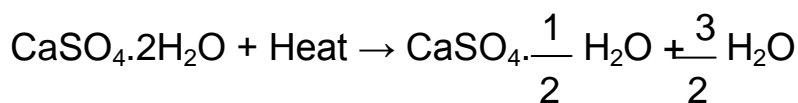
COPPER SULPHATE PENTAHYDRATE (CuSO₄·5H₂O)

Blue colour of copper sulphate is due to presence of 5 molecules of water. When copper sulphate is heated, it loses water molecules and turns into grey-white colour, which is known as anhydrous copper sulphate. After adding water; anhydrous copper sulphate becomes blue again.

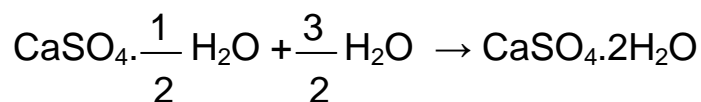


PLASTER OF PARIS

Plaster of Paris is obtained by heating of gypsum, a hydrated salt of calcium.



After addition of water Plaster of Paris is again converted into Gypsum.



Plaster of Paris is used in making of toys, designer false ceiling, etc.

Doctors use Plaster of Paris to set the fractured bone.

INTEXT QUESTIONS PAGE NO. 33

Question 1: What is the common name of the compound CaOCl₂?

Answer: The common name of the compound CaOCl₂ is bleaching powder.

Q 2: Name the substance which on treatment with chlorine yields bleaching powder?

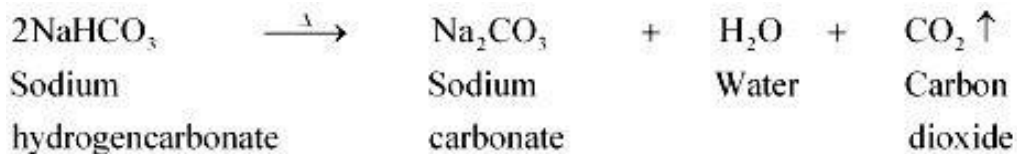
Answer: Calcium hydroxide [Ca (OH)₂], on treatment with chlorine, yields bleaching powder.

Q 3: Name the sodium compound which is used for softening hard water.

Answer: Washing soda (Na₂CO₃·10H₂O) is used for softening hard water.

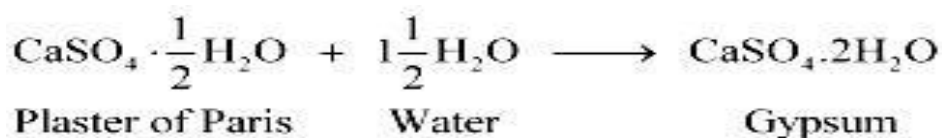
Q 4: What will happen if a solution of sodium hydro carbonate is heated? Give the equation of the reaction involved.

Answer: When a solution of sodium hydro carbonate (sodium hydrogen carbonate) is heated, sodium carbonate and water are formed with the evolution of carbon dioxide gas.



Q 5: Write an equation to show the reaction between Plaster of Paris and water.

Answer: The chemical equation for the reaction of Plaster of Paris and water can be represented as



EXERCISE QUESTIONS PAGE NO 34 and 35

Q 1: A solution turns red litmus blue, its pH is likely to be

- (a) 1 (b) 4 (c) 5 (d) 10

Answer: (d) Bases turn red litmus blue and acids turn blue litmus red. Basic solution has a pH value more than 7. Since the solution turns red litmus blue, its pH is likely to be 10.

Q 2: A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains

- (a) NaCl (b) HCl (c) LiCl (d) KCl

Answer: (b) The solution contains HCl.

Q 3: 10 ml of a solution of NaOH is found to be completely neutralized by 8 ml of a given solution of HCl. If we take 20 ml of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralize it will be

- (a) 4 ml (b) 8ml (c) 12 ml (d) 16 ml

Answer : (d) 16 ml of HCl solution will be required.

Q 4: Which one of the following types of medicines is used for treating indigestion?

- (a) Antibiotic (b) Analgesic (c) Antacid (d) Antiseptic

Answer : (c) Antacid is used for treating indigestion.
