Claims

1. A preparation of sodium bicarbonate from carbon dioxide comprises of the following steps:
    a. Prepare a solution of sodium compound by weighing a specified amount of sodium compound chosen from either sodium carbonate or sodium hydroxide or combination thereof and dissolving it in deionized water;
    b. Prepare ammonia solution by weighing a specified amount of ammonia and dissolving it in deionized water;
    c. Mix the solution obtained from a. and b. together at temperature-controlled conditions wherein the final concentration of mixed solution is between 1 to 10 mol/liter for sodium compound and between 1 to 5 mol/liter for ammonia;
    d. Release carbon dioxide into the mixture obtained from c. at controlled conditions of flow rate, time, temperature, and pressure, resulting in sodium bicarbonate product with white solid property; and
    e. Filter the product obtained from d. out of solution and let it dry at room temperature.

~~2. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 wherein sodium compound is chosen from either sodium carbonate or sodium hydroxide or combination thereof.~~

~~3.~~2. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 ~~to 2~~ wherein the concentration of carbon dioxide is between 99.5 to 99.9% by volume.

~~4.~~3. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 to ~~3~~2 wherein the rate for feeding carbon dioxide into the mixed solution of sodium compound and ammonia solution is 0.1 to 0.5 liter/minute per the total liquid amount of 0.2 liter.

~~5.~~4. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 to ~~4~~3 wherein the preferred duration for feeding carbon dioxide into the mixed solution of sodium compound and ammonia solution is between 1 to 10 hours.

~~6.~~5. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 to ~~5~~4 wherein the preferred temperature for the preparation of sodium compound, ammonia solution or during the feeding of carbon dioxide into a mixed solution of sodium compound and ammonia solution is between 20 to 60 degree Celsius.

~~7.~~6. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 to ~~6~~5 wherein the preferred pressure during the feeding of carbon dioxide into a mixed solution of sodium compound and ammonia solution is between 0.1 to 0.5 MPa (1 to 5 bar).

~~8.~~7. The preparation of sodium bicarbonate from carbon dioxide according to claim 1 to ~~7~~6 wherein a filtration of sodium bicarbonate product out of solution additionally comprises of a product wash using organic solvent after the filtration.

~~9.~~8. The preparation of sodium bicarbonate from carbon dioxide according to claim ~~8~~7 wherein organic solvent is alcohol organic solvent.

~~10.~~9. The preparation of sodium bicarbonate from carbon dioxide according to claim ~~9~~8 wherein the alcohol organic solvent is ethanol.