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- (54) Title: PROCESS FOR PRODUCTION OF NICKEL CARBONATE"

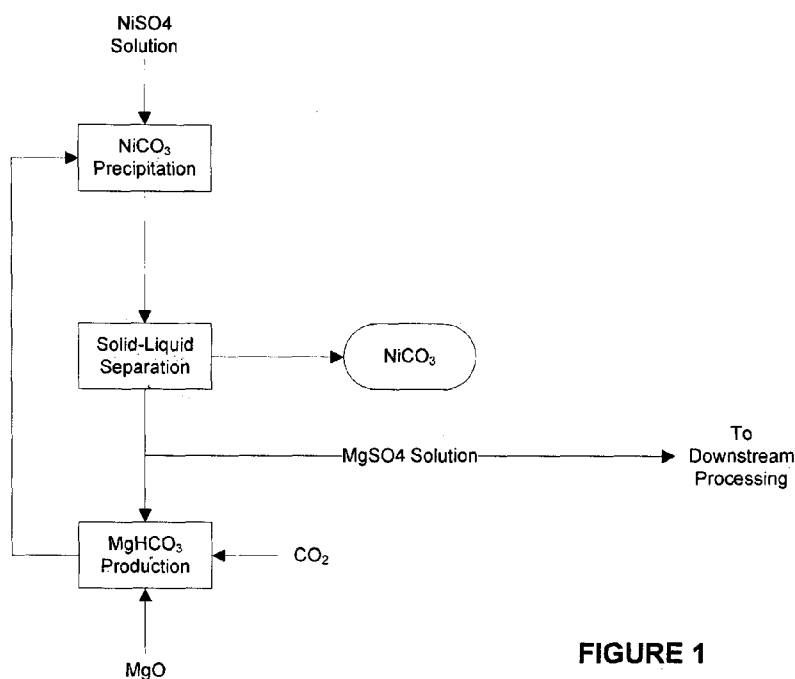


FIGURE 1

- (57) Abstract: The present invention refers to a process for production of nickel carbonate comprising the following steps: a) Preparing a magnesium salt solution; b) Contacting said solution with a stream of gaseous CO₂, keeping pH between 4 and 10 and temperature between 0 and 100°C, during up to 5 hours; c) Contacting the mixture of step b) with a nickel sulphate solution, producing a mixture; d) Performing a separation of liquid and solid portions of said mixture; e) Feeding step a) with said liquid portion. This process recycles the reagent used for producing nickel carbonate and yields a final product that is easy to handle and transport.



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Descriptive Patent Report for a Patent of Invention for **“PROCESS FOR PRODUCTION OF NICKEL CARBONATE”**

FIELD OF THE INVENTION

The present invention refers to a process for production of nickel carbonate from magnesium bicarbonate comprising steps that considers the recycling of the reagent used for producing nickel carbonate. Also, this process yields a final product that is easy to handle and transport. This process is particularly suitable for Mining Industry.

BACKGROUND OF THE INVENTION

The nickel carbonate is a light green powder, odorless solid, dissolve in dilute acid and aqueous ammonia, but not in water and, which, upon drying, ranges in size from a fine powder to agglomerated hard lumps. This compound is mainly used to manufacture other nickel salts, nickel catalysts, pigments and additive of ceramics.

There are some known processes for preparation nickel carbonate from different sources. However, such paths do not consider recycling of reagent and a precipitation step.

DETAILED DESCRIPTION OF THE INVENTION

The following detailed description does not intend to, in any way, limit the scope, applicability or configuration of the invention. More exactly, the following description provides the necessary understanding for implementing the exemplary modalities. When using the teachings provided herein, those skilled in the art will recognize suitable alternatives that can be used, without extrapolating the scope of the present invention.

The process of the present invention, as shown on figure 1, comprises the following steps:

- a) Preparing a magnesium salt solution;
- b) Contacting said solution with a stream of gaseous CO₂, keeping pH between 4 and 10 and temperature between 0 and 100°C, during up to 5 hours;
- c) Contacting the mixture of step b) with a nickel sulphate solution, producing a mixture;
- d) Performing a separation of liquid and solid portions of said mixture;

e) Feeding step a) with said liquid portion.

The magnesium salt solution is preferably a magnesium sulphate solution.

In order to favor gas-liquid gas contact, the contact of said solution with a stream of gaseous CO_2 preferably occurs in a packet column can be used or any other equipment that provides good contact between said solution and the stream of gaseous CO_2 .

And the magnesium salt solution pH must be kept between 4 and 10, preferably 5 and 7. In this case, a neutralizing agent can be used, preferably a magnesium oxide. But any other one can be used as known by a person skilled on the art for this purpose.

The temperature must be kept between 0 and 10°C , preferably 10 and 30°C , since lower temperatures favor the production of MgHCO_3 .

And the residence times must be up to five hours, preferably up to one hour.

The MgHCO_3 solution resulting from the contacting said solution with a stream of gaseous CO_2 , preferably respecting the operation parameters here described, is contacted with a nickel sulphate, producing a mixture containing liquid and solid portions, MgSO_4 solution and NiCO_3 precipitation, respectively.

The liquid and solid portions must be separated by any equipment or method capable of perform a solid-liquid separation.

The liquid portion, being a bleed of that MgSO_4 solution, is sent back to step a) for producing more MgHCO_3 .

The process for obtaining nickel carbonate of the present invention provides some benefits that follow:

- This process recycles the reagent used for producing nickel carbonate and yields a final product that is easy to handle and transport.
- Production of a cheap, easy to handle and transport, intermediate nickel product (NiCO_3);
- Increase synergies with other areas within Vale;
- Reduces costs of downstream processing of nickel;
- Exploit low-grade or small nickel deposits.

CLAIMS

1. Process for production of nickel carbonate comprising the following steps:
 - a) Preparing a magnesium salt solution;
 - b) Contacting said solution with a stream of gaseous CO₂, keeping pH between 4 and 10 and temperature between 0 and 100°C, during up to 5 hours;
 - c) Contacting the mixture of step b) with a nickel sulphate solution, producing a mixture;
 - d) Performing a separation of liquid and solid portions of said mixture;
 - e) Feeding step a) with said liquid portion.
2. Process according to claim 1, wherein the magnesium salt solution is a magnesium sulphate solution.
3. Process according to claim 1 or 2, wherein the contact of the magnesium salt solution with a stream of gaseous CO₂ occurs in a packet column.
4. Process according to claim 1, 2 or 3, wherein a neutralizing agent can be used in step b to keep pH between 4 and 10.
5. Process according to claim 4, wherein the neutralizing agent is magnesium oxide

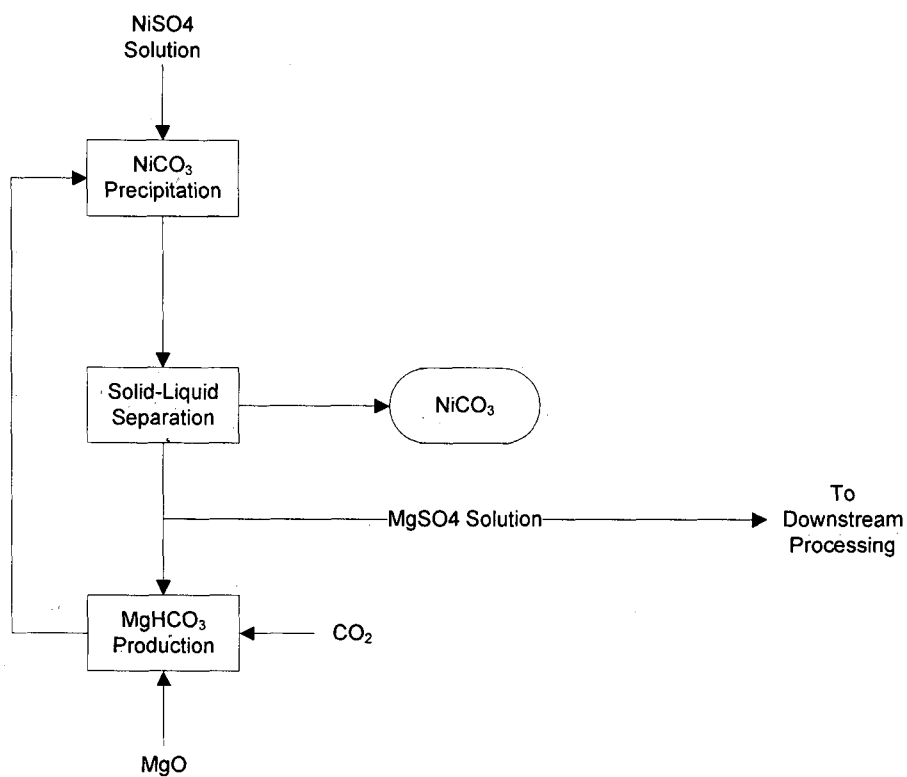


FIGURE 1