[Second Edition.]

PATENT SPECIFICATION

Application Date: March 12, 1934. No. 7784/34. **430,935**

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PROVISIONAL SPECIFICATION.

Improvements in and relating to the Concentration of Latex.

Communicated by:—RUBBER RESEARCH INSTITUTE of Malaya, of Kuala Lumpur, Federated Malay States, an institute organised under the laws of the Federated Malay States.

We, RUBBER PRODUCERS RESEARCH ASSOCIATION, a Body Corporate duly organised under the Laws of Great Britain, of 19, Fenchurch Street, London, E.C.3, do hereby declare the nature of this invention to be as follows:—

This invention relates to the concentration of rubber latex and has more especial reference to processes for the concentration of ammoniated field latex by creaming, wherein creaming agents, usually colloid substances, are added to the latex and cause its separation into an upper layer of concentrated latex cream and a lower layer containing the serum constituents.

It is usual to cream the latex for not more than 72 hours, and then to separate the cream for shipment, and the disadvantage of processes for the concentration of latex in this manner hitherto effected has been the tendency of the latex cream further to separate into layers on standing, and one object of the present invention is to provide a process for the concentration of latex by creaming which will give a stable and homogeneous product of maximum concentration in a short period.

In accordance with the invention a process for the concentration by creaming of ammoniated field latex involves the addition of a solution of tragon seed gum as creaming agent. this gum consisting essentially of the dissolved hemicellulose material found in the endosperm of the kernel of the locust or carob bean (Ceratonia Siliqua).

Another aspect of the invention by which a more highly concentrated and yet homogeneous and stable latex cream is obtained after a short period of treatment consists in increasing the pH value of the latex prior to treatment by augmenting the ammonia content, preferably to about 1.5% by weight of the dry rubber content thereof instead of the more usual 0.5%, tests having shown that with field latex ammoniated to this extent and treated with the creaming agent according to the present invention a concentrated latex of approximately 60% dry rubber is readily obtained which is homogeneous and stable in that it does not cream further on standing.

In the practice of the invention according to one example of the process, field latex containing approximately 35% dry rubber by weight is treated with aqueous ammonia until its ammonia (NH_3) content amounts to between 1.5% and 1.6% by weight, whereafter there is added to the latex a freshly prepared solution of tragon seed gum consisting of 3 parts of gum per 100 parts by weight of water, the solution being prepared by boiling the gum with water.

The proportions are advantageously 0.3 parts of tragon seed gum by weight per 100 parts of water in the latex, and during a period of 48 hours the latex separates into two portions, namely an upper layer of latex cream constituting about 55% of the original volume of latex and containing about 58.4% dry rubber content, and a lower layer constituted by a solution of serum substances in which, however, some rubber may be present.

The concentrated cream contains approximately 0.94% ammonia, and in spite of its high dry rubber content does not exhibit any tendency to re-cream on standing but remains homogeneous and stable and is consequently a very marketable product, easily handled by the consumer.

Apparatus in which the process can be conveniently carried out advantageously comprises a vessel with side taps so positioned that the cream can be run off without disturbing the serum underneath, thereby avoiding the disturbance and slight re-mixing of the serum and cream which is unavoidably attendant upon the use of a vessel having a single tap at the bottom. If desired also provision may be made for slightly heating the vessel so as to accelerate the creaming process and thereby reduce the time necessary to obtain a cream of the maximum concentration.

It is preferable in all cases to use a freshly prepared gum solution in the treatment owing to the fact that the solutions are unstable and, when left. deteriorate as creaming agents.

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By the process according to the present invention a creamed latex can be obtained after a short period, say 48 hours, having a high and definite dry rubber content and which is not liable to change appreciably by the time the latex reaches the consumer, the product being especially suitable for manufacturing processes where concentrated latex is usually employed.

Dated this 12th day of March, 1934.

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47, Victoria Street, Westminster,
London, S.W.1,
Agents for Applicants.

COMPLETE SPECIFICATION.

Improvements in and relating to the Concentration of Latex.

We, RUBBER PRODUCERS RESEARCH ASSOCIATION, a Body Corporate duly organised under the Laws of Great Britain, of 19, Fenchurch Street, London, E.C.3, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the concentration of rubber latex and has more especial reference to processes for the concentration of ammoniated field latex by creaming, wherein creaming agents, usually colloid substances, are added to the latex and cause its separation into an upper layer of concentrated latex cream and a lower layer or layers containing mainly serum constituents.

It has been proposed to concentrate rubber latex by adding thereto mucilages such as Carragheen moss, Iceland moss, and diagum, i.e. a powder prepared from the seed pod of the locust or carob tree, in certain circumstances as an aqueous extract, and heating the latex for some time at 40—60° C.

It is usual to cream the latex for not more than 72 hours, and then to separate the cream for shipment, and the disadvantage of processes for the concentration of latex in this manner hitherto effected has been the tendency of the latex cream further to separate into layers on standing, and one object of the present invention is to provide a process for the concentration of latex by creaming which will give a stable and homogeneous product of maximum concentration in a short period.

In accordance with the invention a process for the concentration by creaming of ammoniated field latex involves the addition of a solution of tragon seed gum as creaming agent, this gum consisting essentially of the hemi-cellulose material extracted from the seeds of the locust or carob bean (Ceratonia Siliqua).

The invention also provides as a further aspect, by which a more highly concentrated and yet homogeneous and stable latex cream is obtained after a short period of treatment, an increase in the pH. value of the latex prior to treatment by augmenting the ammonia content, preferably to about 1.5% by weight of the dry rubber content thereof instead of the more usual 0.5% tests having shown that with field latex ammoniated to this extent and treated with the tragon seed gum as creaming agent according to the present invention a concentrated latex of approximately 60% dry rubber is readily obtained which is homogeneous and stable in that it does not cream further on standing.

In the practice of the invention according to one example of the process, field latex containing approximately 35% dry rubber by weight is treated with aqueous ammonia until its ammonia (NH_3) content amounts to between 1.5% and 1.6% by weight, whereafter there is added to the latex a freshly prepared solution of tragon seed gum consisting of 3 parts of gum per 100 parts by weight of water, the solution being prepared by boiling the gum with water.

A swollen gum can be prepared in the cold but the dissolved gum is preferred.

The proportions are advantageously 0.3 parts of tragon seed gum by weight per 100 parts of water in the latex, and during a period of 48 hours the latex separates into two portions, namely an upper layer of latex cream constituting about 55% of the original volume of latex and containing about 58.4% dry rubber content, and a lower layer constituted by a solution of serum substances in which, however, some rubber may be present.

The concentrated cream contains approximately 0.94% ammonia, and in spite of its high dry rubber content does not exhibit any tendency to re-cream on standing but remains homogeneous and stable and is consequently a very marketable product, easily handled by the consumer.

Apparatus in which the process can be conveniently carried out advantageously comprises a vessel with side taps so positioned that the cream can be run off

without disturbing the serum underneath, thereby avoiding the disturbance and slight re-mixing of the serum and cream which is unavoidably attendant upon the use of a vessel having a single tap at the bottom. If desired also provision may be made for slightly heating the vessel so as to accelerate the creaming process and thereby reduce the time necessary to obtain a cream of the maximum concentration.

It is preferable in all cases to use a freshly prepared gum solution in the treatment owing to the fact that the solutions are unstable and, when left, deteriorate as creaming agents.

By the process according to the present invention a creamed latex can be obtained after a short period, say 48 hours, having a high and definite dry rubber content and which is not liable to change appreciably by the time the latex reaches the consumer, the product being especially suitable for manufacturing processes where concentrated latex is usually employed.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A process for the concentration of rubber latex by creaming, involving the addition as a creaming agent of tragon seed gum consisting essentially of the hemi-cellulose material extracted from the seeds of the locust or carob bean (Ceratonia Siliqua).

2. A process for the concentration of rubber latex according to claim 1, wherein, the *p*H. value of the latex is increased prior to the treatment to accelerate creaming and to stabilise the resultant cream.

3. A process for the concentration of field latex according to either of the preceding claims, wherein the ammonia content is augmented to about 1.5% by weight on the dry rubber content, prior to treatment to expedite the concentration.

4. A process according to any of the preceding claims, wherein the creaming agent consists of a freshly prepared solution of tragon seed gum containing about three parts of gum per 100 parts by weight of water.

5. The product obtained by the process according to any of the preceding claims comprising a concentrated latex cream containing about 60% dry rubber.

6. The process for the concentration of rubber latex by creaming substantially as described.

Dated this 25th day of February, 1935.

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2. A process for the concentration of rubber latex according to claim 1, wherein, the *p*H. value of the latex is increased prior to the treatment to accelerate creaming and to stabilise the resultant cream.

3. A process for the concentration of field latex according to either of the preceding claims, wherein the ammonia content is augmented to about 1.5% by weight on the dry rubber content, prior to treatment to expedite the concentration.

4. A process according to any of the preceding claims, wherein the creaming agent consists of a freshly prepared solution of tragon seed gum containing about three parts of gum per 100 parts by weight of water.

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