

RESERVE COPY
PATENT SPECIFICATION

NO DRAWINGS

821872



Date of filing Complete Specification: Dec. 19, 1957.

Application Date: Dec. 19, 1956.

No. 38683/56.

Complete Specification Published: Oct. 14, 1959.

Index at acceptance:—Class 70, E6A.

International Classification:—C08c.

COMPLETE SPECIFICATION

Improvements in the Preservation of Latex

 We, THE BRITISH 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 invention (which invention has been communicated to us by KALYANARAMAIYER CHANDRASEKARAN, a British Subject of the Rubber Research Institute of Malaya, Kuala Lumpur, Malaya), for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to the preservation of Hevea Latex and Hevea Latex concentrates and utilises the addition of selenium compounds of dithiocarbamic acid, as long term preservatives.

20 Ammonia is the most commonly used preservative for long term preservation of latex concentrates at a level of 0.7% NH_3 . The object of the present invention is to obtain a well preserved concentrated latex containing less than 0.5% NH_3 by the addition of a selenium dialkyl dithiocarbamate such as, for examples, selenium diethyl dithiocarbamate or selenium dimethyl dithiocarbamate. Without this addition latex containing less than 0.5% NH_3 would quickly deteriorate and eventually coagulate.

30 One of the characteristic chemical changes accompanying this deterioration is a comparatively rapid development in the latex of volatile fatty acids. The volatile fatty acid content, usually referred to as V.F.A.No., is expressed as the number of grams of potassium hydroxide equivalent to the volatile fatty acids in that amount of latex containing 100 g. of total solids. The V.F.A.No. is an important index of the degree of preservation of Hevea Latex.

40 When latex is preserved with 0.7% NH_3 , much of this ammonia has to be removed or rendered inactive when the latex is used in
[Price 3s. 6d.]

many manufacturing processes. Moreover the ammonia is responsible for undesirable chemical changes during storage. It is therefore a great advantage to preserve latex with as little ammonia as possible.

One of the advantages of preserving latex by adding a selenium compound is that the amount of ammonia required can be reduced to as little as 0.15% in the presence of very small amounts of the selenium compound. In general ammonia is used, according to this invention, within the limits 0.15% to 0.25% and the selenium compound used within the limits 0.04% to 0.2%.

Because of its relatively low pH, latex containing 0.2% ammonia is not as mechanically stable as latex preserved with 0.7% ammonia and for some purposes it is desirable to keep the mechanical stability within certain limits as measured in accordance with the ASTM method, designation D 1076—54 T, 16. This is a test method in which a standard degree of coagulation of the latex is brought about by standard conditions of mechanical agitation. The result of the test is expressed as the time in seconds taken for the standard degree of coagulation to take place. The addition of a small amount of an anionic surfactant such as an ammonium soap, for example ammonium laurate to the ammoniated field latex before concentrating or to the concentrated latex will increase the mechanical stability to meet current specifications, the amount of surface active agent used for this purpose being within the limits 0.01% and 0.1%.

EXAMPLE 1.

Field latex from the Experiment Station of the Rubber Research Institute of Malaya, was ammoniated to 0.3% NH_3 and concentrated by centrifuging according to standard practice. This process removes more than half of the serum (in which the ammonia is dissolved) and consequently the ammonia content of the centrifuged concentrate is

much reduced. The ammonia content of the concentrate was increased to 0.2% by weight and 0.03% by weight of ammonium laurate was added. Selenium dimethyl dithiocarbamate was added as a dispersion in water to the concentrated latex in the proportions 0.05% and 0.10% by weight as shown in

Table 1, where the results of tests in comparison with those given by ammoniated latex without the selenium compound are also given.

The dispersion of selenium dithiocarbamate is made up as follows:—

15	Selenium dimethyl dithiocarbamate	20 parts by weight
	Water containing 0.2% Ammonia	79.5 " " "
	Ammonium laurate or other dispersing agent	0.5 " " "

TABLE 1

Selenium dimethyl-dithio-carbamate as Latex Preservative

% Selenium Compound on Latex	% Ammonia on latex	% Ammonium Laurate on Latex	Age in days	V.F.A. No.	Mechanical Stability (secs.)
Nil	0.7	0.03	10	0.02	1125
			30	0.02	1820
			90	0.02	2125
0.05	0.20	0.03	10	0.02	78
			30	0.02	885
			90	0.02	1045
0.10	0.20	0.03	10	0.02	80
			30	0.02	710
			90	0.02	840
Nil	0.20	0.03	10	0.26	Coagulated on stirring
			30	Coagulated	



05/20 The results clearly show that latex preserved with 0.20% ammonia with as little as 0.05% of selenium dimethyl dithiocarbamate is excellently preserved and that good mechanical stability is obtained in the presence of 0.03% ammonium laurate.

of the Rubber Research Institute of Malaya was treated with 0.30% ammonia and 0.05% of ammonium laurate, and centrifuged according to standard practice. The centrifuged concentrate was ammoniated to 0.2% ammonia by weight. 0.1 to 0.2% of selenium dimethyl dithiocarbamate was added to the concentrated latex and results of observation on storage are given in Table 2.

25

EXAMPLE 2.

Field latex from the Experiment Station

35



TABLE 2

Selenium dimethyl-dithio-carbamate as Latex Preservative

% Selenium Compound on Latex	% Ammonia on Latex	% Ammonium Laurate on field Latex before centrifuging	Age in days	V.F.A. No.	Mechanical Stability (secs.)
Nil	0.70	0.05	10	0.01	2265
			30	0.01	2430
			90	0.01	3310
0.10	0.20	0.05	10	0.01	930
			30	0.01	1315
			90	0.02	1510
0.20	0.20	0.05	10	0.01	380
			30	0.02	1120
			90	0.03	900
Nil	0.20	—	10	0.35	Coagulated on stirring

WHAT WE CLAIM IS:—

1. A process for the preservation of Hevea Latex concentrate containing less than 0.5% and more than 0.15% ammonia by the addition of a selenium alkyl dithiocarbamate.
2. A process for the preservation of Hevea Latex concentrate according to the preceding claim in which the selenium compound is selenium dimethyl dithiocarbamate or selenium diethyl dithiocarbamate.
3. A process for the preservation of Hevea Latex concentrate according to either of the preceding claims in which the amount of ammonia is between 0.15% and 0.25% by weight.
4. A process for the preservation of Hevea Latex concentrate according to Claim 3 in which the preservative is between 0.04% and 0.2% by weight selenium dimethyl dithiocarbamate.
5. A process for the preservation of Hevea Latex concentrate according to Claim 4, containing in addition between 0.01% and 0.1% of a surfactant.
6. A process for the preservation of Hevea Latex concentrate according to Claim 5 in which the surfactant is an ammonium soap such as ammonium laurate.
7. A process for the preservation of Hevea Latex concentrate substantially as described.
8. A Hevea Latex concentrate when preserved by the process substantially as described.

O'DONNELL, LIVSEY & CO.,
Chartered Patent Agents,
47, Victoria Street, London, S.W.1,
Agents for Applicant.

PROVISIONAL SPECIFICATION

Improvements in the Preservation of Latex

We, THE BRITISH 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 this invention (which invention has been communicated to us by KALYANARAMAIYER CHANDRASEKARAN, a British Subject of the Rubber Research Institute of Malaya, Kuala Lumpur, Malaya), to be described in the following statement:—

This invention relates to the preservation of Hevea Latex and Hevea Latex concentrates and utilises the addition of selenium compounds of dithio-carbamic acid, as long

term preservatives.

Ammonia is the most commonly used preservative for latex concentrates at a level of 0.7% NH₃ on the latex for long term preservation. The object of this present invention is to obtain a well preserved low ammonia content concentrate of good quality.

According to the present invention field latex is ammoniated to 0.3% NH₃ and centrifuged according to standard practice within 24 hours. The centrifuged concentrate is then ammoniated to 0.2% NH₃ on latex by weight. 0.05 to 0.1% by weight of selenium dimethyl or diethyl dithio-carbamate is added as a 20% dispersion in water contain-





821,872

3



TABLE 2

Selenium dimethyl-dithio-carbamate as Latex Preservative

% Selenium Compound on Latex	% Ammonia on Latex	Ammonium Laurate on field Latex before centrifuging	Age in days	V.F.A. No.	Mechanical Stability (secs.)
Nil	0.70	0.05	10	0.01	2265
			30	0.01	2430
			90	0.01	3310
0.10	0.20	0.05	10	0.01	930
			30	0.01	1315
			90	0.02	1510
0.20	0.20	0.05	10	0.01	380
			30	0.02	1120
			90	0.03	900
Nil	0.20	—	10	0.35	Coagulated on stirring

WHAT WE CLAIM IS:—

1. A process for the preservation of Hevea Latex concentrate containing less than 0.5% and more than 0.15% ammonia by the addition of a selenium alkyl dithiocarbamate.
2. A process for the preservation of Hevea Latex concentrate according to the preceding claim in which the selenium compound is selenium dimethyl dithiocarbamate or selenium diethyl dithiocarbamate.
3. A process for the preservation of Hevea Latex concentrate according to either of the preceding claims in which the amount of ammonia is between 0.15% and 0.25% by weight.
4. A process for the preservation of Hevea Latex concentrate according to Claim 3 in which the preservative is between 0.04% and 0.2% by weight selenium dimethyl dithiocarbamate.
5. A process for the preservation of Hevea Latex concentrate according to Claim 4, containing in addition between 0.01% and 0.1% of a surfactant.
6. A process for the preservation of Hevea Latex concentrate according to Claim 5 in which the surfactant is an ammonium soap such as ammonium laurate.
7. A process for the preservation of Hevea Latex concentrate substantially as described.
8. A Hevea Latex concentrate when preserved by the process substantially as described.

O'DONNELL, LIVSEY & CO.,

Chartered Patent Agents,

47, Victoria Street, London, S.W.1,

Agents for Applicant.

PROVISIONAL SPECIFICATION

Improvements in the Preservation of Latex

We, THE BRITISH 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 this invention (which invention has been communicated to us by KALYANARAMA IYER CHANDRASEKARAN, a British Subject of the Rubber Research Institute of Malaya, Kuala Lumpur, Malaya), to be described in the following statement:—

This invention relates to the preservation of Hevea Latex and Hevea Latex concentrates and utilises the addition of selenium compounds of dithio-carbamic acid, as long

term preservatives.

Ammonia is the most commonly used preservative for latex concentrates at a level of 0.7% NH₃ on the latex for long term preservation. The object of this present invention is to obtain a well preserved low ammonia content concentrate of good quality.

According to the present invention field latex is ammoniated to 0.3% NH₃ and centrifuged according to standard practice within 24 hours. The centrifuged concentrate is then ammoniated to 0.2% NH₃ on latex by weight. 0.05 to 0.1% by weight of selenium dimethyl or diethyl dithio-carbamate is added as a 20% dispersion in water contain-

ing 0.2% ammonia and 0.5% of ammonium laurate or other suitable dispersing agent.

The mechanical stability of 0.2% NH_4 concentrate preserved with selenium compounds of dithio-carbamic acids may be low.

Addition of 0.03 to 0.05% Lauric acid to the ammoniated field latex before centrifuging or to the concentrated latex will improve the mechanical stability to meet current specifications.

10

EXAMPLE 1.

Field latex from the Experiment Station of the Rubber Research Institute of Malaya, was ammoniated to 0.3% NH_4 and centrifuged according to standard practice. The centrifuged concentrate was ammoniated to 0.2% ammonia by weight and 0.03% of

ammonium laurate added. 0.05 and 0.10% of selenium dimethyl dithio-carbamate were added as a dispersion to the concentrated latex and results of observation on storage are given in Table 1.

20

TABLE I

Selenium dimethyl-dithio-carbamate as Latex Preservative

% Selenium Compound on Latex	% Ammonia on Latex	% Ammonium Laurate on Latex	Age in days	V.F.A. No.	Mechanical Stability (secs.)
Nil	0.7	0.03	10	0.02	1125
			30	0.02	1820
			90	0.02	2125
0.05	0.20	0.03	10	0.02	78
			30	0.02	885
			90	0.02	1045
0.10	0.20	0.03	10	0.02	80
			30	0.02	710
			90	0.02	840
Nil	0.20	0.03	10	0.26	Coagulated on stirring
			30	Coagulated	

EXAMPLE 2.

Field latex from the Experiment Station of the Rubber Research Institute of Malaya was treated with 0.30% ammonia and 0.05% of ammonium laurate, and centrifuged according to standard practice. The centrifuged

concentrate was ammoniated to 0.2% ammonia by weight. 0.1 to 0.2% of selenium dimethyl dithiocarbamate was added to the concentrated latex and results of observation on storage are given in Table 2.

30

TABLE 2

Selenium dimethyl-dithio-carbamate as Latex Preservative

90 L

% Selenium Compound on latex	% Ammonia on latex	% Ammonia Laurate on field Latex before con- trifuging	Age in days	V.F.A. No.	Mechanical Stability (secs.)
Nil	0.70	0.05	10	0.01	2265
			30	0.01	2430
			90	0.01	3310
0.10	0.20	0.05	10	0.01	930
			30	0.01	1315
			90	0.02	1510
0.20	0.20	0.05	10	0.01	380
			30	0.02	1120
			90	0.03	900
Nil	0.20	—	10	0.35	Coagulated on stirring

O'DONNELL, LIVSEY & CO.,
Chartered Patent Agents,
47, Victoria Street, London, S.W.1,
Agents for Applicant.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1959.
Published by The Patent Office, 25, Southampton Buildings, London, W.C.2, from which
copies may be obtained.