PATENT REQUEST: STANDARD PATENT

I/We, the Applicant(s)/Nominated Person(s) specified below, request I/We be granted a patent for the invention disclosed in the accompanying standard complete specification.

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[54] Invention Title:
Aqueous Composition for Pretanning Pelts or Retanning Leather

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Ciba Specialty Chemicals Holding Inc.

By:

Registered Patent Attorney

IRN: 381051

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Notice Of Entitlement

I, John David O'Connor, of 31 Market Street, Sydney, New South Wales, 2000, Australia, Patent Attorney for the Applicant/Nominated Person in respect of an application entitled:

Aqueous Composition for Pretanning Pelts or Retanning Leather

state the following:-

The Applicant/Nominated Person has entitlement from the actual inventor as follows:

The Applicant/Nominated Person is the assignee of the actual inventor.

The Applicant/Nominated Person is the applicant of the basic application listed on the Patent Request.

The basic application listed on the Patent Request is the first application made in a Convention country in respect of the invention.

DATED 16 June 1997

John David O'Connor
AQUEOUS COMPOSITION FOR PRETANNING PELTS OR RETANNING LEATHER

1. An aqueous composition for pretanning pelts or retanning leather, comprising
   (A) a hydroxyalkylphosphine compound,
   (B) an anionic aromatic syntan,
   (C) water and optionally
   (D) an acid.

8. An aqueous composition according to any one of claims 1 to 7, including as component
   (B) a compound selected from the group consisting of

   (I) condensation products of sulfonated phenol or cresol and formaldehyde,
   (II) condensation products of naphthalenesulfonic acid and formaldehyde,
   (III) formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulfones with
         (hydroxy)arylsulfonic acids,
   (IV) formaldehyde condensation products of sulfo-containing aromatic hydroxy
        compounds with aralkyl halides,
   (V) urea-formaldehyde condensation products of phenols and phenolsulfonic acids,
   (VI) reaction products of phenol and a sulfonating agent in a molar ratio of
        (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,
   (VII) condensation products of sulfonated diaryl ethers and formaldehyde,
   (VIII) condensation products of sulfonated bi- or terphenyls and formaldehyde,
   (IX) condensation products of 4,4'-dihydroxydiphenyl sulfone and sulfonated 4,4'-
        dihydroxydiphenyl sulfone with formaldehyde,
A process for pretanning pelts or for retanning leather, which comprises treating a pickled pelt or a pretanned leather in an aqueous liquor comprising

(A) tetrakis(hydroxymethyl)phosphonium sulfate,

(B) an anionic aromatic syntan selected from the group consisting of

(i) condensation products of sulfonated phenol or cresol and formaldehyde,

(ii) condensation products of naphthalenesulfonic acid and formaldehyde,

(iii) formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulfones with (hydroxy)aryl sulfonic acids,

(iv) formaldehyde condensation products of sulfo-containing aromatic hydroxy compounds with aralkyl halides,

(v) urea-formaldehyde condensation products of phenols and phenolsulfonic acids,

(vi) reaction products of phenol and a sulfonating agent in a molar ratio of (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,

(vii) condensation products of sulfonated diaryl ethers and formaldehyde,

(viii) condensation products of sulfonated bi- or terphenyls and formaldehyde,

(ix) condensation products of 4,4'-dihydroxydiphenyl sulfone and sulfonated 4,4'-dihydroxydiphenyl sulfone with formaldehyde,

(x) formaldehyde condensation products of diaryl ether sulfonic acid and 4,4'-dihydroxydiphenyl sulfone, and

(xi) formaldehyde condensation products of phenol with aryl sulfonic acids or hydroxy aryl sulfonic acids,

(C) water and optionally

(D) an acid.
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Invention Title: Aqueous Composition for Pretanning Pelts or Retanning Leather

The following statement is a full description of this invention, including the best method of performing it known to me/us:-
Aqueous composition for pretanning pelts or retanning leather

The present invention relates to an aqueous composition for pretanning pelts or retanning leather, a process for pretanning pelts or retanning leather, and also the leather treated by the present process.

Mineral and especially chrome pretanning and tanning have great importance for the production of leather and furs. However, the chromium salt treatment baths involved present great problems, since the wastewaters have to be cleaned or disposed of at great cost. These ecological difficulties have driven the search for alternative processes which, on the one hand, are ecologically safer and, on the other, match the mineral tannages in the leather qualities achieved.

It is well known that leather can be tanned with glutaraldehyde without use of chromium salts, but the appreciably higher price mitigates against the general application of this method in many cases. In addition, the yellowing of glutaraldehyde-tanned leather is sometimes a disadvantage, for example in those cases where the leather is subsequently to be dyed only in light shades, if at all.

It is also known to tan leather with anionic aromatic syntans, in which case, however, the attainable shrinkage temperature does not meet all the requirements.

It has further been reported that leather has been treated with hydroxyalkylphosphine compounds, optionally together with a phenol and a mineral, vegetable or aldehydic tanning agent.

None of these processes makes it possible to produce leather which will comply with consumer requirements in all aspects.

It has now been found that aqueous compositions comprising a mixture of a hydroxyalkylphosphine compound and an anionic aromatic syntan are highly useful for pretanning pelts or retanning leather, the use of mineral salts being completely unnecessary.

Surprisingly, the shrinkage temperature is adequate and the leathers treated with such a mixture have firmer structure than leathers treated only with a hydroxyalkylphosphine
compound, with advantageous consequences for further processing, for example for shaving to the desired thickness or for splitting.

The present invention accordingly provides an aqueous composition for pretanning pelts or retanning leather, comprising
(A) a hydroxyalkylphosphine compound,
(B) an anionic aromatic syntan,
(C) water and optionally
(D) an acid.

The aqueous composition of the invention provides very good results in pretanning, and the leather has a high shrinkage temperature. The pretanning may be followed by a non-mineral tannage, especially a tannage without the use of chromium salt, to produce wet white leather material, in which case an aqueous composition of the invention is again used with advantage for that purpose. However, it is also possible to use other, customary retanning compositions.

Suitable hydroxyalkylphosphine compounds (A) are generally compounds of the formula

\[
[\text{HO}-\text{R}-\text{P}-(\text{R}')_n\text{X}_y]^{\ominus}
\]  

(1)

where
- \( R \) is alkyl or alkenyl having 1 to 24 carbon atoms,
- each \( \text{R}' \) is independently of the other(s) alkyl or alkenyl having 1 to 24 carbon atoms or \( \text{R}-\text{OH} \),
- \( \text{X}^{\ominus} \) is an anion,
- \( x \) is the valence of \( \text{X} \),
- \( n \) is 2 or 3, and
- \( y \) is 0 or 1, subject to the proviso that the sum of \( \text{n+y} \) is 2 or 4.

Preferred hydroxyalkylphosphine compounds (A) are those of the formula
where
R is alkyl or alkenyl having 1 to 24 carbon atoms,
R₁, R₂ and R₃ are each independently of the others alkyl or alkenyl having 1 to 24 carbon atoms or R-OH and
X⁻ is an anion.

R₁, R₂ and R₃ preferably each have 1 to 24 carbon atoms, and particularly suitable compounds among these are those in which R₁, R₂ and R₃ are each hydroxyalkyl having 1 to 4 carbon atoms.

Particular preference is given to using tetrakis(hydroxymethyl)phosphonium salts.

The anion X⁻ may be any inorganic or organic anion, for example a nitrate, fluoride, phosphonate, carbonate, formate, acetate or propionate, but it is preferably chloride, bromide, phosphate or especially sulfate.

The particularly preferred hydroxyalkylphosphine compound (A) is tetrakis(hydroxymethyl)phosphonium sulfate.

The hydroxyalkylphosphine compounds are known, for example from WO-A-93/06249, or are preparable by methods known per se.

Suitable anionic aromatic syntans (B) includ for example those which are obtainable by condensation of sulfonated aromatic compounds alone or together with further, usually unsulfonated, aromatic compounds with formaldehyde and/or urea.

Examples of suitable aromatic compounds are naphthalene, biphenyl, terphenyl, phenols, cresols, 4,4'-dihydroxydiphenyl sulfone, β-naphthol, dihydroxybenzenes, resorcinol, 2,2'-bis(hydroxyphenyl)propane and diaryl ethers, such as diphenyl ether and ditolyl ether, which were optionally sulfonated in a manner known per se.

Particularly suitable anionic aromatic syntans are the following compounds:
condensation products of sulfonated phenol or cresol and formaldehyde,
condensation products of naphthalenesulfonic acid and formaldehyde,
formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulfones with (hydroxy)arylsulfonic acids,
formaldehyde condensation products of sulfo-containing aromatic hydroxy compounds with aralkyl halides,
urea-formaldehyde condensation products of phenols and phenolsulfonic acids,
reaction products of phenol and a sulfonating agent in a molar ratio of (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,
condensation products of sulfonated diaryl ethers and formaldehyde,
condensation products of sulfonated bi- or terphenyls and formaldehyde,
condensation products of 4,4'-dihydroxydiphenyl sulfone and sulfonated 4,4'-dihydroxydiphenyl sulfone with formaldehyde,
formaldehyde condensation products of diaryl ether sulfonic acids and 4,4'-dihydroxydiphenyl sulfone, and
formaldehyde condensation products of phenol with arylsulfonic acids or hydroxyarylsulfonic acids.

These condensation products are present in the form of the free acids, preferably in the form of the sulfonic acids, or in the form of salts, especially in the form of the lithium, potassium or especially sodium salts.

These condensation products are known, for example from Ullmann's Enzyklopaedie der technischen Chemie Vol. 16, (4), 138 to 140 (1979), or are preparable by the processes described in the references cited therein.

Suitable acids (D) include not only inorganic but also organic acids, for example hydrochloric acid, sulfuric acid, formic acid, acetic acid, citric acid, lactic acid, oxalic acid, benzoic acid, phthalic acid, phenolsulfonic acid, phenolpolysulfonic acid or naphthalenesulfonic acid. Preference is given to using an organic acid, especially acetic acid or formic acid. If the solutions of the anionic aromatic syntans already have the desired pH as a consequence of the acid groups present therein, component (D) can be dispensed with, if desired.

Preferred aqueous compositions of the invention comprise, based on the total mixture, 1 to 30, preferably 2 to 20, % by weight of component (A),
10 to 75, preferably 20 to 55, % by weight of component (B), sufficient acid to set a pH between 0.5 and 6.8, and water to make up to 100 %.

Of these compositions, those are particularly preferred which comprise, based on the entire mixture, 2 to 20 % by weight of component (A), 20 to 55 % by weight of component (B), sufficient acid to set a pH between 1 and 6.5, and water to make up to 100 %.

Based on the mixture of tanning agents (A) and (B), the proportion of component (A) is preferably between 5 and 95 % by weight and the proportion of component (B) is preferably between 5 and 95 % by weight.

The aqueous composition of the invention is advantageously prepared by dissolving component (A) in water at a temperature of between 15 and 60 °C and then admixing the resulting clear solution with component (B) and optionally an acid (D).

The aqueous composition thus obtained is liquid and has good stability in storage.

The aqueous composition of the invention is of itself an excellent pretanning agent for all hides and skins and is very particularly useful as a starting material for producing wet white leathers and furs. Pretanning may be followed by tanning, in which case an aqueous composition of the invention is advantageously again used for this purpose.

Pelts are preferably pretanned using 1 to 10 % by weight, especially 2 to 5 % by weight, of the aqueous composition of the invention, based on the weight of the pelt.

When the aqueous compositions of the invention are used for retanning leather, it is likewise preferable to use 1 to 10 % by weight, especially 2 to 5 % by weight, based on the weight of the leather.

The present invention accordingly further provides a process for pretanning pelts and/or for retanning leather, which comprises treating a pickled pelt or a pretanned leather in an aqueous liquor comprising (A) a hydroxyalkylphosphine compound,
(B) an anionic aromatic syntan,
(C) water and optionally
(D) an acid.

The process of the invention is preferably carried out using an aqueous liquor comprising
(A) tetrakis(hydroxymethyl)phosphonium sulfate,
(B) an anionic aromatic syntan selected from the group consisting of
(I) condensation products of sulfonated phenol or cresol and formaldehyde,
(II) condensation products of naphthalenesulfonic acid and formaldehyde,
(III) formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulphones with (hydroxy)aryl sulfonic acids,
(IV) formaldehyde condensation products of sulfo-containing aromatic hydroxy compounds with aralkyl halides,
(V) urea-formaldehyde condensation products of phenols and phenolsulfonic acids,
(VI) reaction products of phenol and a sulfonating agent in a molar ratio of (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,
(VII) condensation products of sulfonated diaryl ethers and formaldehyde,
(VIII) condensation products of sulfonated bi- or terphenyls and formaldehyde,
(IX) condensation products of 4,4'-dihydroxydiphenyl sulphone and sulfonated 4,4'-dihydroxydiphenyl sulphone with formaldehyde,
(X) formaldehyde condensation products of diaryl ether sulfonic acid and 4,4'-dihydroxydiphenyl sulphone, and
(XI) formaldehyde condensation products of phenol with arylsulfonic acids or hydroxyaryl sulfonic acids,
(C) water and optionally
(D) an acid.

There is no need for further additions to the treatment liquor.

The pretanning is carried out for example by treating the pickled pelt material with the aqueous composition of the invention at a temperature between 15 and 45°C and a pH between 1 and 7.5 for 1 to 12 hours. for example in a rotating drum.

The resulting material can then be dewatered in a conventional manner and shaved or split to the desired thickness and thereafter be tanned in a conventional manner with a mineral tanning agent or preferably, to produce wet white material, with vegetable or synthetic
tanning agents. This retanning can likewise be carried out with the aqueous composition of
the invention, for example by treating the pretanned leather with the aqueous composition
of the invention at a temperature between 15 and 45°C and a pH between 1 and 7.5 for 1 to
12 hours, for example in a rotating drum.

Given appropriate process management, the present process can also be used to produce
ready-tanned leathers.

With the present process, the use of mineral salts can be completely dispensed with.

In the methods and examples which follow, parts and percentages are by weight.

Example 1: 51 parts of naphthalenesulfonic acid are heated with 45 parts of
dihydroxydiphenyl sulfone, 30 parts of water and 16 parts of formaldehyde (37 %) at 105 to
110°C for about 2 hours until the condensate forms a clear solution in water. Then 50 parts
of sodium hydroxide solution (30 %) are added to set a weakly acidic pH, followed by 193
parts of tetrakis(hydroxymethyl)phosphonium sulfate (25 %) and 5 parts of formic acid
(85 %).

The result is a clear, light-coloured solution having a pH of 2.0 to 3.0. The solids content is
40 % by weight. The solution is stable in storage for at least 1 month even at 35°C and is
highly useful for pretanning and retanning leather.

The naphthalenesulfonic acid used is obtained by heating 520 parts of naphthalene and
560 parts of concentrated sulfuric acid at 140 to 160°C for several hours until the reaction
product is completely soluble in water.

The dihydroxydiphenyl sulfone used is obtained by heating 540 parts of phenol and 180
parts of 60 % oleum at 170 to 180°C for 3 hours and distilling off the excess phenol.

Example 2: 500 parts of molten phenol are slowly admixed with 440 parts of 66 % oleum
at 60-70°C and then sulfonated at 100°C for 1 hour. The phenolsulfonic acid formed is then
slowly heated to 160 to 165°C in a vacuum of about 11 to 13 mm, so that only little phenol
distils off, and held at that temperature until 1 g of the condensation product renders 3.5 to
3.7 cm³ of 1N sodium hydroxide solution neutral to congo red. The condensation product
formed in this way is admixed with 90 to 100 parts of phenol, and after the phenol has been
thoroughly mixed in, the reaction mass is again slowly put under a vacuum and heated in a
vacuum at 165°C until 1 g of the condensation product renders only 2.7 to 2.5 cm³ of 1N sodium hydroxide solution neutral to congo red.

100 parts of this condensation product are carefully melted with 54 parts of 30 % sodium hydroxide solution and admixed with 22 parts of 37 % formaldehyde solution and then condensed at 100 to 105°C for a sufficiently long time (about 6 hours) until a sample, diluted with a little water, remains clear on acidification with dilute sulfuric acid to pH 3.5.

The reaction mass is then diluted with 30 parts of water and admixed with 205 parts of tetrakis(hydroxymethyl)phosphonium sulfate (25 %), 3.6 parts of formic acid (85 %) and 8 parts of phenolsulfonic acid (65 %).

The product is a clear, light-coloured solution having a pH of 4.5 to 5.5. The solids content is 40 % by weight. The solution is stable in storage for at least 1 month even at 35°C and is highly useful for pretanning and retanning leather.

**Example 3:** Example 2 is repeated with the 54 parts of 30 % sodium hydroxide solution replaced by an equivalent amount of lithium hydroxide, likewise affording a solution which is stable in storage and useful for pretanning and retanning leather.

**Example 4:** 478 parts of 20 % oleum are added with stirring to 500 parts of molten phenol while cooling to ensure that the temperature does not exceed 70°C. This is followed by sulfonation at 105°C for 1 hour. The phenolsulfonic acid formed is then slowly heated under a reduced pressure of 11 to 13 Torr to 150 to 155°C, and this temperature is maintained until 1 g of the condensation product renders 3.8 to 4.0 cm³ of 1N sodium hydroxide solution neutral to congo red.

100 parts of the resulting hydroxyphenyl sulfone (poly) hydroxyphenyl sulfone monosulfonic acid are melted with 42 parts of water at 90°C and admixed with 14.4 parts of urea. After cooling to 55°C, 38.4 parts of formaldehyde (37 %) are added dropwise over 2 hours and stirred for about a further 4 hours until the condensate forms a clear solution in water.

The reaction product obtained is rendered weakly acidic with 37.2 parts of potassium hydroxide solution (50 %). Then 232 parts of tetrakis(hydroxymethyl)phosphonium sulfate (25 %) and 42 parts of acetic acid (75 %) are added.
The product is a clear, light-coloured solution having a pH of 2.5 to 3.5. The solids content is 43% by weight. The solution is stable in storage for at least 1 month even at 35°C and is highly useful for pretanning and retanning leather.

**Example 5:** 55 parts of phenolsulfonic acid are mixed with 25 parts of dihydroxydiphenyl sulfone, 35 parts of water and 56 parts of 30% sodium hydroxide solution and then admixed with 61.5 parts of 37% formaldehyde solution and condensed at 100 to 105°C for a sufficiently long time (about 6 hours) until a sample which has been diluted with a little water remains clear on acidification with dilute sulfuric acid to pH 3.5.

The reaction mass is then admixed with 232.5 parts of tetrakis(hydroxymethyl)phosphonium sulfate (25%), 3.6 parts of formic acid (85%) and 5 parts of sulfuric acid (40%).

The product is a clear, light-coloured solution having a pH of 4.0 to 5.0. The solids content is 34% by weight. The solution is stable in storage for at least 1 month even at 35°C and is highly useful for pretanning and retanning leather.

**Example 6:** 100 parts of a pickled calf pelt are treated with 3% of the composition prepared in Example 1 in a rotating drum at 25°C for 3 to 6 hours, while pulverized sodium bicarbonate or sodium formate is used to set the pH to 6.0.

The resulting wet white leather is dewatered and shaved to the desired thickness. This leather is highly suitable for retanning with mineral, vegetable or synthetic tanning agents.

The leather can also be retanned with the same composition prepared in Example 2 to obtain a leather which has been tanned without heavy metal.
WHAT IS CLAIMED IS:

The claims defining the invention are as follows:

1. An aqueous composition for pretanning pelts or retanning leather, comprising
   (A) a hydroxyalkylphosphine compound,
   (B) an anionic aromatic syntan,
   (C) water and optionally
   (D) an acid.

2. An aqueous composition according to claim 1, including as component (A) a compound
   of the formula

   \[ [\text{HO-R-P-P'}_{n}X_{y}]^{\Theta} \]  \hspace{1cm} (1)

   where
   \( R \) is alkyl or alkenyl having 1 to 24 carbon atoms,
   each \( R' \) is independently of the other(s) alkyl or alkenyl having 1 to 24 carbon atoms
   or \( R-OH \),
   \( X^{\Theta} \) is an anion,
   \( x \) is the valence of \( X \),
   \( n \) is 2 or 3, and
   \( y \) is 0 or 1, subject to the proviso that the sum of \( n+y \) is 2 or 4.

3. An aqueous composition according to claim 1, including as component (A) a compound
   of the formula

   \[
   \begin{bmatrix}
   R_{2} \\
   \text{HO-R-P-P'}_{1} \\
   R_{3}
   \end{bmatrix}^{n} \hspace{1cm} (2)
   \]

   where
   \( R \) is alkyl or alkenyl having 1 to 24 carbon atoms,
   \( R_{1}, R_{2} \) and \( R_{3} \) are each independently of the others alkyl or alkenyl having 1 to 24 carbon
   atoms or \( R-OH \) and
X is an anion.

4. An aqueous composition according to claim 3, including as component (A) a compound of the formula (2) where R, R₁, R₂ and R₃ each have 1 to 4 carbon atoms.

5. An aqueous composition according to claim 4, including as component (A) a compound of the formula (2) where R₁, R₂ and R₃ are each hydroxyalkyl having 1 to 4 carbon atoms.

6. An aqueous composition according to claim 5, including as component (A) a tetrakis(hydroxymethyl)phosphonium salt.

7. An aqueous composition according to claim 6, including tetrakis(hydroxymethyl)phosphonium sulfate as component (A).

8. An aqueous composition according to any one of claims 1 to 7, including as component (B) a compound selected from the group consisting of

(I) condensation products of sulfonated phenol or cresol and formaldehyde,

(II) condensation products of naphthalenesulfonic acid and formaldehyde,

(III) formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulfones with (hydroxy)arylsulfonic acids,

(IV) formaldehyde condensation products of sulfo-containing aromatic hydroxy compounds with aralkyl halides,

(V) urea-formaldehyde condensation products of phenols and phenolsulfonic acids,

(VI) reaction products of phenol and a sulfonating agent in a molar ratio of (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,

(VII) condensation products of sulfonated diaryl ethers and formaldehyde,

(VIII) condensation products of sulfonated bi- or terphenyls and formaldehyde,

(IX) condensation products of 4,4'-dihydroxydiphenyl sulfone and sulfonated 4,4'-dihydroxydiphenyl sulfone with formaldehyde,

(X) formaldehyde condensation products of diaryl ether sulfonic acids and 4,4'-dihydroxydiphenyl sulfone, and

(XI) formaldehyde condensation products of phenol with arylsulfonic acids or hydroxyarylsulfonic acids.
9. An aqueous composition according to any one of claims 1 to 8, including component (B) in the form of the lithium, potassium or especially sodium salt.

10. An aqueous composition according to any one of claims 1 to 9, including as component (C) an organic acid, especially acetic acid or formic acid.

11. An aqueous composition according to any one of claims 1 to 10, comprising, based on the total mixture,
   1 to 30 % by weight of component (A),
   10 to 75 % by weight of component (B),
   sufficient acid to set a pH between 0.5 and 6.8, and
   water to make up to 100 %.

12. An aqueous composition according to any one of claims 1 to 11, comprising, based on the total mixture,
   2 to 20 % by weight of component (A),
   20 to 55 % by weight of component (B),
   sufficient acid to set a pH between 1 and 6.5, and
   water to make up to 100 %.

13. An aqueous composition according to any one of claims 1 to 12, comprising, based on the mixture of tanning agents (A) and (B), 5 to 95 % by weight of component (A) and 5 to 95 % by weight of component (B).

14. A process for pretanning pelts or for retanning leather, which comprises treating a pickled pelt or a pretanned leather in an aqueous liquor comprising
   (A) a hydroxyalkylphosphine compound,
   (B) an anionic aromatic syntan,
   (C) water and optionally
   (D) an acid.

15. A process for pretanning pelts or for retanning leather, which comprises treating a pickled pelt or a pretanned leather in an aqueous liquor comprising
   (A) tetrakis(hydroxymethyl)phosphonium sulfate,
   (B) an anionic aromatic syntan selected from the group consisting of
   (I) condensation products of sulfonated phenol or cresol and formaldehyde,
condensation products of naphthalenesulfonic acid and formaldehyde,

formaldehyde condensation products of 4,4'-dihydroxydiphenyl sulfones with (hydroxy)arylsulfonic acids,

formaldehyde condensation products of sulfo-containing aromatic hydroxy compounds with aralkyl halides,

urea-formaldehyde condensation products of phenols and phenolsulfonic acids,

reaction products of phenol and a sulfonating agent in a molar ratio of (phenol):(SO₃) within the range from 1:1.1 to 1:2.2,

condensation products of sulfonated diaryl ethers and formaldehyde,

condensation products of sulfonated bi- or terphenyls and formaldehyde,

condensation products of 4,4'-dihydroxydiphenyl sulfone and sulfonated 4,4'-dihydroxydiphenyl sulfone with formaldehyde,

formaldehyde condensation products of diaryl ether sulfonic acid and 4,4'-dihydroxydiphenyl sulfone, and

formaldehyde condensation products of phenol with arylsulfonic acids or hydroxyarylsulfonic acids,

water and optionally

an acid.

16. A process for pretanning pelts or for retanning leather, which comprises treating the pickled pelt material or the pretanned leather with an aqueous composition according to any one of claims 1 to 13 at a temperature between 15 and 45°C and a pH between 0.5 and 6.8 for 1 to 12 hours.

17. A process according to any one of claims 14 to 16, wherein the pickled pelt material or the pretanned leather is treated with 1 to 10 % by weight, based on the weight of the leather or pelt, of an aqueous composition comprising, based on the total mixture, 1 to 30 % by weight of hydroxyalkylphosphine compound, 10 to 75 % by weight of an anionic aromatic syntan, sufficient acid to set a pH between 1 and 6.5 and water to make up to 100 %.

18. A process according to claim 17, wherein the pickled pelt material or the pretanned leather is treated with 4 to 8 % by weight, based on the weight of the leather or pelt, of an aqueous composition comprising, based on the total mixture, 2 to 20 % by weight of hydroxyalkylphosphine compound,
20 to 55% by weight of an anionic aromatic syntan, sufficient acid to set a pH between 1 and 6.5, and water to make up to 100%.

19. A process for pretanning pelts or for retanning leather, substantially as hereinbefore described with reference to any one of the Examples.

20. The leather material tanned according to any one of claims 14 to 19.

21. An aqueous composition for pretanning pelts or retanning leather, substantially as hereinbefore described with reference to any one of the Examples.

Dated 16 June, 1997
Ciba Specialty Chemicals Holding Inc.

Patent Attorneys for the Applicant/Nominated Person
SPRUSON & FERGUSON
Aqueous Composition for Pretanning Pelts or Retanning Leather

Abstract

Described is an aqueous composition for pretanning pelts or retanning leather comprising
(A) a hydroxyalkylphosphine compound,
(B) an anionic aromatic syntan,
(C) water and optionally
(D) an acid.

The leather pretanned or tanned with this aqueous composition has good whiteness and a high shrinkage temperature.