Patented Sept. 26, 1939

2,174,287

UNITED STATES PATENT OFFICE

2,174,287

TANNING AGENTS AND PROCESS OF PRODUCING SAME

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No Drawing. Application November 6, 1937, Serial No. 173,113. In Germany November 12, 1936

8 Claims. (Cl. 260—49)

This invention relates to new tanning agents and a process of producing same.

In Patent 2,036,161 there is described a process for the production of tanning agents by causing dihydroxydiphenyl sulphones to react with water-soluble salts of sulphurous acid and formaldehyde substances (i. e., formaldehyde itself or substances supplying formaldehyde) preferably by heating the reagents with water under increased pressure and at temperatures above 100° C.

I have now found that especially valuable tanning agents can be obtained by combining the condensation products obtainable according to the said specification with substances obtainable by the reaction of condensation products of phenols and ketones with salts of sulphurous acid and formaldehyde or agents yielding formaldehyde. It is of special advantage to use, for combination with the condensation products obtainable according to the said specification, the products obtainable by the reaction of beta.beta-di-(4-hydroxyphenyl)-propane with sulphites and formaldehyde.

The two components may either be merely mixed with each other or heated together in admixture with each other. For example the formation of an entirely uniform mass may be caused by heating to temperatures up to about 95° C. The relative proportions may vary infinitely. For example from 70 to 85 per cent of the components described in the said Patent No. 2,036,161 may be combined with from 30 to 15 per cent of the second component, or the ratio may be 50:50 or 95:5 or 1:99. The most favorable ratio depends on the nature of the initial materials and the purpose for which the product is to be used. The two components may be separately adjusted to the desired acidity and then mixed or they may be first mixed and then, if desired after the heating, brought to the desired acidity.

The tanning agents are distinguished by very good solubility, high speed of diffusion and good through-tanning power, which effects very uniform and thorough tanning. In this respect the tanning agents are still better than those obtainable according to the said Patent No. 2,036,-161. The plumping action of the tanning agents is excellent and better than that of the components. The color of mineral-tanned leather (in particular chrome leather) is rendered lighter in a very good manner by them. The tanning agents may be adjusted to a weaker acidity than is usually the case with synthetic tanning agents and they are therefore especially suitable for use together with vegetable tanning extracts. The tanning agents may be used with special advantage for the preparation of upper leather fast to light and for tanning reptile hides.

The following examples will further illustrate how the said invention may be carried out in practice but the invention is not restricted to these examples. The parts are by weight.

Example 1

250 parts of dihydroxydiphenyl sulphone are introduced into a solution of 120 parts of anhydrous sodium sulphite and 160 parts of 30 per cent formaldehyde in 500 parts of water. The mixture obtained is heated at 150° C. for 36 hours and the resulting brown solution is acidified with 120 parts of 78 per cent sulphuric acid and boiled up. The mixture is then made up to 1250 parts with water.

228 parts of beta.beta-di-(4-hydroxyphenyl)-propane are heated with a solution of 252 parts of sodium sulphite and 200 parts of 30 per cent formaldehyde in 750 parts of water for several hours on the water bath until a sample remains clear upon acidification. The alkaline solution is acidified with 252 parts of 78 per cent sulphuric acid, boiled and made up to 1600 parts with water.

500 parts of the product prepared according to paragraph 1 are mixed with 170 parts of the product obtained according to paragraph 2. This mixture may be used as such, as for example for the preparation of fine upper leather, or after it has been brought to a pH-value of 3 by the addition of ammonium formate, sodium acetate or sodium glycolate. The two components may also be used in any other relative proportions.

Instead of the above-mentioned tanning component prepared while using beta.beta-di-(4-hydroxyphenyl)-propane, substances obtainable in a similar way may be used; these may be obtained by the action of sulphites and formaldehyde on condensation products which have been formed for example from phenol and methyl-ethyl-ketone, phenol and acetophenone, phenol and cyclohexanone, ortho-cresol and acetone, ortho-cresol and methyl-ethyl-ketone, ortho-cresol and acetophenone or meta-cresol and acetone.

Example 2

The solutions prepared according to paragraphs 1 and 2 of Example 1 which have not yet been acidified with sulphuric acid are mixed with each other in the ratio of 5:1. The mixture is then acidified with the amount of sulphuric acid equivalent to the sulphite present and boiled up.

Example 3

160 parts of di-(4-hydroxy-3-methylphenyl)-methyl-phenylmethane (obtainable by the condensation of 2 molecular proportions of ortho-cresol with 1 molecular proportion of aceto-phenone) are heated for 10 hours at from 80° to 90° C. together with a solution of 126 parts of sodium sulphite in 400 parts of water and 100 parts of 30 per cent formaldehyde. The solution is acidified with 115 parts of 78 per cent sulphuric acid, boiled up and then made up to 1000 parts with water.

500 parts of this product are mixed with 500 parts of the alkaline solution prepared according to paragraph 1 of Example 1. The mixture is acidified with 210 parts of 78 per cent sulphuric acid, boiled up and concentrated to 1000 parts.

What I claim is:

1. The process for producing tanning agents, which comprises combining a condensation product obtainable by causing a dihydroxydiphenylsulphone to react with a water-soluble salt of sulphurous acid and a formaldehyde substance, with a substance obtainable by the reaction of a condensation product of a phenol and a ketone with a salt of sulphurous acid and a formaldehyde substance.

2. The process for producing tanning agents, which comprises combining a condensation product obtainable by heating a dihydroxydiphenylsulphone together with a water-soluble salt of sulphurous acid, a formaldehyde substance and water at a temperature above 100° C. under elevated pressure, with a substance obtainable by the reaction of a condensation product of a phenol and a ketone with a salt of sulphurous acid and a formaldehyde substance.

3. The process for producing tanning agents, which comprises combining a condensation product obtainable by causing a dihydroxydiphenylsulphone to react with a water-soluble salt of sulphurous acid and a formaldehyde substance, with a substance obtainable by the reaction of beta.beta-di-(4-hydroxyphenyl)-propane with a salt of sulphurous acid and a formaldehyde substance.

4. The process for producing tanning agents, which comprises combining a condensation product obtainable by heating a dihydroxydiphenylsulphone together with a water-soluble salt of sulphurous acid, and a formaldehyde substance and water at a temperature above 100° C. under elevated pressure, with a substance obtainable by the reaction of beta.beta-di-(4-hydroxyphenyl)-propane with a salt of sulphurous acid and a formaldehyde substance.

5. Tanning agents obtainable by combining a condensation product obtainable by causing a dihydroxydiphenylsulphone to react with a water-soluble salt of sulphurous acid and a formaldehyde substance, with a substance obtainable by the reaction of a condensation product of a phenol and a ketone with a salt of sulphurous acid and a formaldehyde substance.

6. Tanning agents obtainable by combining a condensation product obtainable by heating a dihydroxydiphenylsulphone together with a water-soluble salt of sulphurous acid, a formaldehyde substance and water at a temperature above 100° C. under elevated pressure, with a substance obtainable by the reaction of a condensation product of a phenol and a ketone with a salt of sulphurous acid and a formaldehyde substance.

7. Tanning agents obtaining by combining a condensation product obtainable by causing a dihydroxydiphenylsulphone to react with a water-soluble salt of sulphurous acid and a formaldehyde substance, with a substance obtainable by the reaction of beta.beta-di(4-hydroxyphenyl)-propane with a salt of sulphurous acid and a formaldehyde substance.

8. Tanning agents obtainable by combining a condensation product obtainable by heating a dihydroxydiphenylsulphone together with a water-soluble salt of sulphurous acid, a formaldehyde substance and water at a temperature above 100° C. under elevated pressure, with a substance obtainable by the reaction of beta.beta-di-(4-hydroxyphenyl)-propane with a salt of sulphurous acid and a formaldehyde substance.

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