United States Patent Office

3,253,980

Patented May 31, 1966

3,253,980

AMINOTRIAZINE PERHYDRATES OXIDATIVE HAIR COMPOSITIONS

Günther Klinge, Rheinhausen, and Roland Schnürch, Dusseldorf-Holthausen, Germany, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany

No Drawing. Filed July 29, 1963, Ser. No. 298,450
Claims priority, application Germany, Aug. 8, 1959, T 17,066
2 Claims. (Cl. 167—88)

The invention relates to agents for the oxidizing treatment of human hair, and, more particularly, to such agents containing aminotriazine perhydrates. It is a continuation-in-part of our application Serial Number 44,878, filed July 25, 1960, and now abandoned.

Human hair is treated with oxidizing agents for a variety of purposes, for instance for bleaching hair blond, for dyeing of hair with so-called oxidizing dyes and as fixatives in the preparation of permanent waves, especially of cold waves.

The oxidizing component in such preparations predominantly is carbamide perhydrate (percarbamide) which offers a number of advantages over other oxidizers. On account of its solid state, carbamide perhydrate is easily incorporated and can be added to the hair dye or bleach immediately before application of the same. As compared to sodium perborate, which also is employed, the advantage of percarbamide resides in the latter's better oxidizing effect which, with the perborate, either cannot be attained at all or, under certain conditions, can be attained only by application of comparatively large quantities.

However, the agents using percarbamide display the disadvantage that the latter decomposes after a short period of time during storage, especially at higher temperatures and at high humidity. Thus, the hair treating agent has at best an impaired effect, or else loses its effect entirely.

It has now been found that these disadvantages can be overcome by the use of the agents according to this invention. The novel agents for oxidizing treatment of human hair are characterized by a content of amino-1.3.5-triazine perhydrate and exhibit not only a vastly improved effect, but also are of superior stability and can be stored for long periods of time.

Amino-1.3.5-triazine perhydrates applicable are especially those which contain at least two amino groups in the triazine component, as for instance, 2.4-diamino-6-phenyl-1.3.5-triazine. Preferably, however, the particularly easily obtained perhydrate of melamine is employed. A process for the production of these aminotriazine perhydrates has been described in assignee's patent No. 3,055,-897, issued September 25, 1962, entitled, "Process for the Production of Triazine Perhydrate Compounds."

In the case of melamine perhydrate, the H_2O_2 content is approximately 21 percent by weight as a maximum, corresponding to equimolar amounts of melamine and H_2O_2. However, products having a lesser H_2O_2 content can be used in the agents according to the present invention, as obtained according to the manner of production of the aminotriazine perhydrates. Also, mixtures of several aminotriazine perhydrates can be employed, if and when desired. As stated above, the oxidizing component of the air treating agents usually is added to these immediately before application. With the high stability of the aminotriazine perhydrates, however, it is feasible, for instance in the case of dyeing agents, to use solid

powdered mixtures which contain the aminotriazine perhydrate together with the oxidation dyes, e.g., the sulfates or chlorohydrates of toluylene diamine, m-toluylene diamine, aminophenol, aminodiphenyl amine, and similar compounds. Other customary ingredients of hair treating agents can be present in these mixtures, for instance thickeners, e.g., gum tragacanth, polyacrylic acid esters, polyvinyl pyrrolidone, methyl cellulose, carboxymethylcellulose or alginates; further, surface active substances may be present in these mixtures, such as alkyl sulfates, alkylaryl sulfates, or others. These mixtures are rendered ready for use by addition of a certain quantity of water or of alcohol diluted with water. The stability of the triazine perhydrates which, as mentioned above, is high, can even be improved by the addition of suitable stabilizers, such as magnesium silicate, monosodium phosphate, sodium pyrophosphate, phenacetin, or others. When the components other than aminotriazine perhydrate are in aqueous solution or in emulsion and the perhydrate is added only immediately before application, the incorporation of stabilizers is superfluous.

Furthermore, the hair treating agents contain other customary ingredients, depending on the end use. Such ingredients may be fatty alcohols, wool fat, cholesterol, plant extracts, e.g., camomile, chard and others, and also may contain perfumes.

The outstanding stability of the aminotriazine perhydrates is evident from the example of melamine perhydrate (molar ratio of melamine to H_2O_2 equaling 1:1), as shown in Table 1 below. In that table, column 1 gives the test number, column 2 shows the test temperature, column 3 the length of time of the tests, column 4 shows the loss of active oxygen in melamine perhydrate, whereby in Tests 1–3 unstabilized melamine perhydrate had been used, whereas in Test 4 a preparation had been used to which 10 percent $NaH_2PO_4 \cdot H_2O$ had been added. Column 5 shows the loss of active oxygen in a stabilized percarbamide, as available on the market.

TABLE 1

Test No.	Temp., °C.	Time, hrs.	Percent loss of active oxygen	
			Melamine perhydrate	Percarbamide
1	48	120	0.3	100
2	48	720	2.1	100
3	82	5	12.0	100
4	82	5	4.0	100

The invention now will be further illustrated by the following examples. However, it should be understood that these are given merely by way of explanation, not of limitation, and that numerous changes may be made in the details without departing from the spirit and scope of the invention as hereinafter claimed.

Example 1

Melamine perhydrate, powdered for the purpose of incorporation in a hair dye, was stored at a temperature of 48° C. and at a relative humidity of 100 percent in paper bags with polyethylene liners. After 30 days' storage under the above conditions, the melamine perhydrate was mixed into the hair dyeing cream, and the latter applied to the hair. The dyeing effect obtained therewith practically showed no difference from the effect obtained with

a cream in which freshly made melamine perhydrate had been incorporated. Percarbamide, subjected to the same conditions, had practically lost its effect after four days.

Example 2

45 g. of a hair dyeing agent in cream form, containing fatty alcohol, fatty alcohol sulfates and water, and as dyes p-tolylene diamine sulfate and diamino anisol sulfate, were mixed with 0.6 g. melamine perhydrate and applied to human hair at room temperature. After allowing the cream to act on the hair for 20–25 minutes, hair colorings were obtained which could be gotten only by applying a multiple thereof of sodium perborate, i.e., 5 grams.

The cream was prepared by melting 100 parts by weight mixed cetyl and stearyl alcohols at 70° C. and stirring into the melt at 80° C. 100 parts 30 percent ammonium lauryl sulfate. After this mixture had become homogeneous, 600 parts water at 80° C. were stirred in, followed by a mixture consisting of

	Parts
Water	100
2.4-toluylene diamine sulfate	10
2.4-diamino anisol sulfate	0.3
Ammonia (25%)	5

Then, 5 parts sodium sulfite, dissolved in 20 parts water were added. After cooling and continued homogenization 5 more pants 25% ammonia were added, and the mixture brought to 1,000 parts by addition of water. All parts given are by weight.

Example 3

45 g. of an oil-in-water emulsion, alkalized with ammonia and containing fatty alcohols, alcohol sulfates, wool fat and water, were mixed with 12 g. melamine perhydrate and used for rendering human hair blond. After allowing this agent to act on the hair for 20–30 minutes, the hair thus treated was of a good blond color which corresponded to that obtained by substituting percarbamide for melamine perhydrate under otherwise equal conditions. Sodium perborate, even when used in an excess, lightened the air thus treated but little.

The hair treating agent was prepared by melting at 70° C. 100 parts mixed cetyl and stearyl alcohols with 20 parts lanolin, and stirring into this mix at 80° C. 100 parts 30% ammonium lauryl sulfate. After the viscous emulsion had become fully homogeneous, 700 parts water at 80° were added in portions, and the cream cooled to 40° C. with agitation. Then 30 parts ammonia (25%) were stirred in, and the emulsion made up to 1,000 parts with water. All parts listed are by weight.

Example 4

A powdery mixture consisting of

	G.
2.4-toluylene diamine sulfate	1.0
2.4-diamino anisol sulfate	0.03
Sodium pyrophosphate, anhydrous	3.0
Melamine perhydrate	8.0
Methyl cellulose	2.0

was mixed with 100 ml. water and well stirred several times. The slightly viscous liquid was applied to the hair for dyeing at body temperature in the customary manner. After an application time of 20 minutes, gray hair obtained a dark brown to black color. It is to be noted that substantially 133 parts melamine perhydrate are present, calculated on 100 parts of the total ingredients other than water.

Example 5

Hair was treated with a cold wave agent, consisting of a 6 percent aqueous thioglycolic acid solution, adjusted to a pH of 9.6 with ammonia. In order to fix the now wavy hair, an aqueous solution or suspension, respectively, containing 2 percent melamine perhydrate, was applied. After allowing the latter to act for approximately 10 minutes, an elastic and permanent wave was obtained.

We claim as our invention:

1. A composition for the oxidative treatment of human hair consisting of 2.4-toluylene diamine sulfate and 2.4-diamino anisol sulfate as oxidizing dyes, anhydrous sodium pyrophosphate, methyl cellulose, in aqueous solution, and, as a stable oxidizer, 1 to 133 parts by weight, calculated on 100 parts of said dyes, sodium pyrophosphate and methyl cellulose, of a compound selected from the group consisting of melamine perhydrate and 2.3-diamino-6-phenyl-1.3.5-triazine perhydrate.

2. A composition for the oxidative treatment of human hair containing a stable oxidizer and comprising oxidation dyes and thickeners, surface-active agents and plant extracts, said stable oxidizer consisting of 1 to 133 parts by weight, calculated on 100 parts of the other ingredients named exclusive of water, of a compound selected from the group consisting of melamine perhydrate and 2.3-diamino-6-phenyl-1.3.5-triazine perhydrate.

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JULIAN S. LEVITT, *Primary Examiner.*

VERA C. CLARKE, *Assistant Examiner.*