order to be able to use them efficiently to manufacture said polymeric compounds without negatively impacting their aspect.

More specifically, another goal of the present invention is to curb the increase of colour of aromatic peroxides during their storage period.

Summary

The present disclosure namely results from the unexpected findings, by the inventors, that the use of at least hydrogen peroxide is able to improve the colour stability over time of at least one aromatic peroxide as defined hereinafter (i.e. to curb the evolution of colour of said aromatic peroxides) and also to decrease the colouration due to said aromatic peroxides.

Therefore, in an aspect, the present disclosure relates to a composition comprising:

a) at least one aromatic peroxide comprising at least one aromatic ring and at least one peroxo -O-O- function in its structure; preferably the aromatic ring is connected to said peroxo function by a covalent bond, a carbonyl group or an alkyl group comprising from 1 to 20 carbon atoms;
the aromatic peroxide being present in said composition at a concentration ranging from 30 to 99.9% by weight relative to the total weight of the composition,

b) at least hydrogen peroxide, being preferably at a concentration ranging from 0.1 to 10% by weight relative to the total weight of the composition, the weight ratio of the hydrogen peroxide to the aromatic peroxide being preferably comprised between 1:20000 and 1:40, more preferably between 1:2000 and 1:50, and even more preferably between 1:800 and 1:80.

The composition of the present disclosure displays a better colour stability over time under standard storage conditions than a composition comprising only the aforementioned aromatic peroxide(s), especially at room temperature, and especially in the dark.

In more detail, the composition according to the present disclosure exhibits a significant lower APHA colour value than the same composition comprising only the aforementioned aromatic peroxide(s) over a period of time of at least 5 days, in particular of at least 15 days, especially of at least 20 days, preferably of at least 30 days, more preferably of at least 50 days and even more particularly over at least 90 days, under standard storage conditions, especially at room temperature, and especially in the dark.

According to the present disclosure, the expression “room temperature” stands for a range of temperatures from 0°C to 50°C, preferably from 10°C to 40°C, more preferably from 15°C to 30°C, even more preferably from 20°C to 30°C.

According to the present disclosure, the expression “in the dark” means that the composition is protected from light, and in particular is protected from ultraviolet (UV) radiations.

According to the present disclosure, the APHA colour is a colour standard named after the American Public Health Association and defined by the standard ASTM D1209, and more precisely ASTM D1209-05(2011). The APHA colour is a colour scale, sometimes also called “yellow index”, which makes it possible to evaluate the quality of specimens that are pale to yellowish in colour. The APHA colour is measured using a colorimeter with a standard range of from 0 to 1000 APHA.

The colour of the composition according to the present disclosure can be assessed with a spectral colorimeter such as the one sold under the name LICO 620, by Hach company.

In other words, the addition of at least hydrogen peroxide is able to decrease or to stabilize the APHA colour value of the aforementioned aromatic peroxide(s).

The colour stability of the composition of the present disclosure helps to minimize the risks that there is an unwanted colour occurring from the aromatic peroxides, due to their time of storage, to the targeted polymeric compounds.

As a consequence, the composition of the present disclosure can efficiently be used for the preparation of polymer, in particular polystyrene, or polymer resins, preferably a polymer ester resin, without altering their example, i.e. without unintentionally tinting them.

More precisely, the use of at least hydrogen peroxide is able to significantly curb the evolution of colour of aromatic peroxides with time, especially at room temperature.

It also means that the addition of at least hydrogen peroxide is able to extend the time of said aromatic peroxides usages in applications, especially at room temperature.

As a consequence, the use of at least hydrogen peroxide is able to restore the economic value of the aromatic peroxides since they can be stored under standard conditions for extended period of times without experiencing a significant and inacceptable colour development.

In another aspect, the present disclosure also relates to a method for the preparation of the aforementioned composition comprising mixing at least one aromatic peroxide, as previously defined, and at least hydrogen peroxide.

As mentioned previously, the composition exhibits an enhanced colour stability.

In another aspect, the the disclosure also deals with the use of a composition as previously defined in order to prepare a polymer, preferably styrenic polymers, or a polymer resin, in particular a polymer ester resin, said polymer ester resin being preferably chosen in the

group consisting of unsaturated polyester resin, acrylic resin, methacrylic resin and vinyl ester resin, more preferably chosen in the group consisting of unsaturated polyester resin and vinyl ester resin.

In details, the composition of the present disclosure can be used efficiently for the polymerization reaction of styrenic polymers, vinyl ester resins or poly(meth)acrylates, or as a curing agent for the preparation of thermoset polyesters, namely unsaturated polyesters resins.

Another example of the present disclosure is the use of at least hydrogen peroxide to improve the colour stability of at least one aromatic peroxide, in particular at room temperature.

Preferably, one of the example of the present disclosure is to use at least hydrogen peroxide in order to curb the evolution of colour of aromatic peroxides.

In another aspect, there is provided the use of at least hydrogen peroxide in order to improve the colour stability or to decrease APHA value of at least one aromatic peroxide, said aromatic peroxide being as defined above.

In another aspect, there is provided a polymer resin composition comprising:

- at least one composition as defined above,
- at least one polymer resin as defined above, preferably selected from the group consisting of unsaturated polyester resins.

Other subjects and characteristics, examples and advantages of the disclosure will emerge even more clearly on reading the description and the example that follows.

In the text herein below, and unless otherwise indicated, the limits of a range of values are included in that range, in particular in the expressions “between” and “ranging from … to …”.

Moreover, the expression “at least one” used in the present description is equivalent to the expression “one or more”.

The term “polymerization” encompasses both homo- and copolymerization of one or more of the involved unsaturated monomers.

As intended herein, the term “comprising” has the meaning of “including” or “containing”, which means that when an object “comprises” one or several elements, other elements than those mentioned may also be included in the object. In contrast, when an object is said to “consist of” one or several elements, the object is limited to the listed elements and cannot include other elements than those mentioned.

Brief description of the drawings

Figure 1 represents the measurements of APHA values versus time for compositions A-B illustrated in Table 1 at a temperature of 40°C in the dark.

Figure 2 represents the measurements of APHA values versus time for compositions A-B illustrated in Table 1 at 25°C in the dark.

Figure 3 represents the measurements of APHA values versus time for compositions A1-C1 illustrated in Table 2 at 40°C in the dark.

Figure 4 represents the APHA values versus time measured at a temperature of 40°C, and in the dark, of a composition comprising Luperox® P and 1% by weight of hydrogen peroxide.

Composition