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TEXTILE MATERIAL

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This invention relates to sizing yarn contain-
ing organic derivatives of cellulose and more par-
ticularly to the provision of a size which does not
modify the original characteristics of the yarn
and which is readily and substantially complete-
ly removable therefrom.

Textile thread or yarn formed of organic deriv-
atives of cellulose, such as cellulose acetate, have
been, prior to the instant invention, sized with a
composition comprising boiled linseed oil and a
drying agent. When such a size was used, it
was found that after the removal of the same,
the thread did not possess its original character-
istics. The thread, after the removal of the size,
and particularly if the size had been on the thread
for some time, was characterized by a special
sensitiveness toward saponifying agents (de-
acetylation) and the usual agents, such as boil-
ing soap solution, that were employed for de-
lustering. In a number of cases the effects of the
partial de-acetylation gave rise to streaks in dye-
ing and also gave irregular delustering effects.

The degree of modification of the properties
of the thread sized with a dried cooked linseed oil
base of the type previously mentioned is a direct
function of the quantity of size on the thread and
the period of time during which it remains there-
on.

I have found that by sizing thread formed of
an organic derivative of cellulose with a size sub-
stantially free from driers and siccatives and com-
prising a blown linseed oil and an anti-oxidizing
agent, the properties of the thread, after the re-
moval of the size, are substantially the same as
those possessed by the thread prior to the appli-
cation of the size, whereby the above-mentioned
disadvantages may be overcome.

It is therefore an object of this invention to
provide a sizing composition for textile fibres, such
as artificial thread formed of an organic deriva-
tive of cellulose, which does not modify the origi-
nal properties of said thread, particularly in so
far as the dyeing and delustering thereof is con-
cerned.

Another object of this invention is to provide
a sizing composition substantially free from
driers and siccatives and comprising blown lin-
seed oil and an anti-oxidizing agent.

A further object of this invention is to provide
thread, yarn, etc. sized with the compositions
aforementioned.

Other objects will appear from the following
description and appended claims.

As is apparent from the aforementioned ob-
jects, the instant invention in one of its aspects

contemplates a sizing composition for thread
formed of an organic derivative of cellulose which,
in addition to possessing the highly desirable
properties of quick setting and easy and complete
removability from the yarn, is further and par-
ticularly characterized in that it does alter the
characteristics of the thread, especially with re-
spect to dyeing and delustering.

In accordance with the instant invention these
objects are achieved by utilizing as the size a
composition which is free from any drier and
siccative.

The sizing composition contemplated by the
instant invention comprises a blown drying oil
or an oil of the varnish type, specifically blown
linseed oil. It is to be noted that by blowing
linseed oil it is possible to prepare an oil which
is capable of drying on the thread as rapidly
as cooked or boiled linseed oil without requiring
the addition of siccatives or other oxidation or
polymerization catalysts, the presence of which
is detrimental to thread formed of an organic
derivative of cellulose.

In the preferred embodiment of the invention
an anti-oxidant is added to the blown oil,
whereby subsequent formation of compounds of
a peroxide nature in the oil applied to the thread
is inhibited. Likewise, by the incorporation of
an anti-oxidant in the blown oil, the harmful
effects on the thread by any compounds of a
peroxide nature produced accidentally in the
blowing operation are counteracted.

As an anti-oxidant, it is obvious that numerous
materials may be used. Satisfactory results have
been obtained when o-hydroxyl diphenyl, di-
phenylamine, phenylalpha-naphthylamine, hy-
droquinone, etc. are employed as the anti-oxidant.

The quantity of anti-oxidant may vary within
wide limits. Satisfactory results have been se-
cured when the quantity of anti-oxidant was less
than 1% by weight based on the crude linseed
oil. In actual practice good results were secured
when approximately 0.1% to 0.2%, more or less,
of the anti-oxidant based on the linseed oil was
used.

The preferred composition consisting of blown
linseed oil and anti-oxidant, as shown by the
specific example hereafter set forth, may, if de-
sired, be dissolved in an appropriate volatile sol-
vent or it may be dispersed in any suitable
vehicle to constitute the final sizing composition.

In order to more fully explain the instant in-
vention, the following illustrative example is
given:

Example.—75 kgs. of crude linseed oil having

an acid index of 2 are heated to a temperature below 100° C. while air is blown therein until the acid index is increased to at least 100% of its original value and the iodine index drops to below 150. Subsequently, 100 grams of hydroquinone are added.

Cellulose acetate threads are then sized with this composition per se or in the form of a solution in an appropriate solvent or in the form of an emulsion in an appropriate vehicle, the ratio of the charge being of the usual figure of 5:9.

In order to clearly show the effects of the size on acetate yarn, a fabric was manufactured having three bands of warp of the types hereafter set forth.

The first band was composed of thread sized in accordance with the instant invention.

The second band was composed of thread sized with cooked linseed oil containing a siccative in accordance with the prior art.

The third band was composed of non-sized thread.

When this fabric was desized at the end of several days in a soap bath at 75° C. to 80° C., all the bands dyed in practically equal shades. It should be noted nevertheless that on band 1 (and naturally on band 3) the desizing was complete at lower temperatures, for example 60° C.

When this fabric was desized only at the end of a certain time, for example 2 months, and it was dyed either with basic dyestuffs or with acetate dyestuffs, bands 1 and 3 had the same shade and band 2 had a darker shade.

When, at the end of the same time, this fabric was subjected to a treatment in which it was boiled in a 2% soap bath containing 0.3 gram Na_2CO_3 per 10 grams acetate thread (Rhodiaseta), the volume of which is at least 30 times the weight of the merchandise, bands 1 and 3 showed no appreciable deacetylation whereas band 2 was distinctly saponified, the comparative characteristics of these bands being shown by dyeing them with Diamine FF blue which did not dye bands 1 and 3 and which dyed band 2 irregularly.

When the time of storage was prolonged, for example 1 month, before desizing, the difference between the behavior of bands 1 and 3 on the one hand and band 2 on the other was still more pronounced.

In addition, it should be noted that the boiling treatment delustered band 2 irregularly and more intensely than bands 1 and 3.

From the foregoing it is apparent that, when textile materials, such as artificial thread formed of an organic cellulose derivative, such as cellulose acetate, are sized with the composition constituting one phase of the instant invention, after the removal thereof the original properties of the thread are in no wise altered. In other words, the desized thread possesses the same qualities of dyeing, delustering and resistance to deacetylation as the original thread.

Instead of blowing the oil with air, it is also within the scope of this invention to blow it with oxygen, ozone, etc.

Though the invention is described with particular reference to thread formed of an organic derivative of cellulose, it is not restricted thereto. It is equally applicable to textile fibers and threads of all kinds.

Since it is obvious that various changes and modifications may be made in the specific de-

tails above described, this invention is not restricted thereto except as defined in the appended claims.

I claim:

1. Textile fibers or threads sized with a composition substantially free from siccatives and consisting of a blown drying oil of the varnish oil type and an anti-oxidant.

2. Textile fibers or threads sized with a composition substantially free from siccatives and consisting of blown linseed oil and an anti-oxidant.

3. Artificial fibers or threads sized with a composition substantially free from siccatives and consisting of a blown drying oil of the varnish oil type and an anti-oxidant.

4. Artificial fibers or threads sized with a composition substantially free from siccatives and consisting of blown linseed oil and an anti-oxidant.

5. Artificial fibers or threads formed of an organic derivative of cellulose sized with a composition substantially free from siccatives and consisting of a blown drying oil of the varnish oil type and an anti-oxidant, said composition being characterized in that upon removal thereof the fibers or threads possess the same characteristics with respect to dyeing and delustering as they had prior to the application of the size.

6. Artificial fibers or threads formed of an organic derivative of cellulose sized with a composition substantially free from siccatives and consisting of blown linseed oil and an anti-oxidant, said composition being characterized in that upon removal thereof the fibers or threads possess the same characteristics with respect to dyeing and delustering as they had prior to the application of the size.

7. Artificial fibers or threads formed of cellulose acetate sized with a composition substantially free from siccatives and consisting of a blown drying oil of the varnish oil type and an anti-oxidant, said composition being characterized in that upon removal thereof the fibers or threads possess the same characteristics with respect to dyeing and delustering as they had prior to the application of the size.

8. Artificial fibers or threads formed of cellulose acetate sized with a composition substantially free from siccatives and consisting of blown linseed oil and an anti-oxidant, said composition being characterized in that upon removal thereof the fibers or threads possess the same characteristics with respect to dyeing and delustering as they had prior to the application of the size.

9. An artificial thread formed of cellulose acetate and sized with a composition substantially free from siccatives and consisting of a blown drying oil of the varnish oil type and an anti-oxidant in an amount not exceeding 1% by weight based on said oil, said composition being characterized in that upon removal thereof the thread possesses the same characteristics with respect to dyeing and delustering as it had prior to the application of the size.

10. An artificial thread formed of cellulose acetate and sized with a composition substantially free from siccatives and consisting of a blown linseed oil and an anti-oxidant in an amount not exceeding 1% by weight based on said oil, said composition being characterized in that upon removal thereof the thread possesses the same characteristics with respect to dyeing and delustering as it had prior to the application of the size.

11. An artificial thread formed of cellulose acetate and sized with a composition substantially free from siccatives and consisting of a blown linseed oil and an anti-oxidant in an amount of approximately 0.1% to 0.2% by weight based on said oil, said composition being characterized in that upon removal thereof the thread possesses the same characteristics with respect to dyeing and delustering as it had prior to the application of the size. 5
12. An artificial thread formed of cellulose acetate and sized with a composition substantially free from siccatives and consisting of a blown linseed oil and an anti-oxidant in an amount of approximately 0.1% to 0.2% by weight based on said oil, said composition being characterized in that upon removal thereof the thread possesses the same characteristics with respect to dyeing and delustering as it had prior to the application of the size. 5
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