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ELIMINATION OF BLACK SPECKS FROM
TEXTILE YARN

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This invention relates to a method of eliminat-
ing black specks and stains from viscose rayon
yarn.

The formation of dark specks on viscose rayon
yarn has led to a great deal of study and research
to develop a speck-free yarn. While it has been
understood that the specks are caused by the
presence of lead in the spinning bath, which is
picked up by the yarn and converted to dark
specks when the lead reacts with sulfide ions in
the desulfuring step of the process, many propo-
sals to alleviate this condition have proven in-
effective or uneconomical for commercial use.
The elimination of lead from the bath is quite
impossible in view of the large amounts of lead
pipes, tanks and other lead equipment installed.
The dissolution of lead from the yarn prior to
the formation of the insoluble lead sulfide has
not proven effective or economically sound.

It is, therefore, an object of this invention to
provide an improved spinning bath composition
which will substantially prevent the formation
of dark specks in the finished yarn. Other ob-
jects will be apparent from the following descrip-
tion and the appended claims.

The objects of this invention are accomplished
by incorporating in any of the usual acid salt
spinning baths, used in the viscose rayon process,
from 0.01% to 0.1% of the weight of the bath
of a salicyl compound of the group consisting of
salicylic acid, salicylaldehyde, salicylal ethanol-
amine, disalicylal ethylene diamine and disali-
cylal propylene diamine. Less desirable but
nevertheless effective compounds which may be
used are dimethyl glyoxime, diacetone alcohol,
alpha benzoin oxime and ammonium nitroso-B-
phenylhydroxylamine (cupferron). Of the com-
pounds listed, those containing at least 20%
oxygen are more effective, and those containing
aldehyde oxygen are preferred.

The formation of dark specks seems to be
definitely tied in with the presence of soluble
lead in the bath which precipitates on the gel
yarn and is not removed by washing. Presence
of lead in this form can be easily determined by
analyzing the bath sludge for lead, and it has
been shown by numerous tests that the amount
of lead in the sludge can be reduced to one tenth
or less by the addition of about 0.05% of one of
the above listed compounds to the bath. To-
gether with this reduction of lead in the bath
sludge, finished yarns substantially free from
specks are produced.

The introduction of the compounds above-
mentioned to the acid salt spinning baths, which

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may or may not contain zinc sulfate, glucose or
other ingredients sometimes used therein, is
simply made since all of these compounds except
disalicylal ethylene diamine are soluble therein.
To incorporate disalicylal ethylene diamine it is
first dissolved in dilute aqueous caustic solution,
neutralized with sulfuric acid or bath liquor, and
then this resulting solution is added to the bath.
Spinning of the viscose is conducted in the usual
manner and the yarn produced subjected to the
customary washing, desulfuring and, if desired,
bleaching treatments and dried.

Since many different embodiments of the in-
vention may be made without departing from the
spirit and scope thereof, it is to be understood
that the invention is not limited by the specific
illustrations except to the extent defined in the
following claims.

What is claimed is:

1. In the process of spinning viscose rayon into
an acid salt bath, the improvement of incorporat-
ing solely in the bath from 0.01% to 0.1% of a
salicyl compound of the group consisting of sali-
cyl acid, salicylaldehyde, salicylal ethanol-
amine, disalicylal ethylene diamine and disali-
cylal propylene diamine the quantities of salicyl
compound employed in the process being suit-
able to avoid the formation of lead specks in the
finished yarn without otherwise changing the
properties of the yarn.

2. In the process of spinning viscose rayon into
an acid salt bath, the improvement of incorporat-
ing solely in the bath from 0.01% to 0.1% of
salicylic acid the quantities of salicyl compound
employed in the process being suitable to avoid
the formation of lead specks in the finished yarn
without otherwise changing the properties of the
yarn.

3. In the process of spinning viscose rayon into
an acid salt bath, the improvement of incorporat-
ing solely in the bath from 0.01% to 0.1% of
salicylaldehyde the quantities of salicyl compound
employed in the process being suitable to avoid
the formation of lead specks in the finished yarn
without otherwise changing the properties of the
yarn.

4. In the process of spinning viscose rayon into
an acid salt bath, the improvement of incorporat-
ing solely in the bath from 0.01% to 0.1% of
salicylaethanolamine the quantities of salicyl
compound employed in the process being suitable
to avoid the formation of lead specks in the
finished yarn without otherwise changing the
properties of the yarn.

5. In the process of spinning viscose rayon into

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an acid salt bath, the improvement of incorporating solely in the bath from 0.01% to 0.1% of disalicylal ethylene diamine the quantities of salicyl compound employed in the process being suitable to avoid the formation of lead specks in the finished yarn without otherwise changing the properties of the yarn.

6. In the process of spinning viscose rayon into an acid salt bath, the improvement of incorporating solely in the bath from 0.01% to 0.1% of disalicylal propylene diamine the quantities of salicyl compound employed in the process being suitable to avoid the formation of lead specks

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in the finished yarn without otherwise changing the properties of the yarn.

References Cited in the file of this patent

5 UNITED STATES PATENTS

Number	Name	Date
2,129,709	Schuetz et al.	Sept. 13, 1938

OTHER REFERENCES

10 Die Kunstliche Seide, 5th edition Erster Ergänzungsband (1931) by Dr. K. Suvern; page 146, paragraph 273.