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Textiles – Methods for the removal of non-fibrous matter prior to quantitative analysis of fibre mixtures

Textiles – Méthodes d'élimination des matières non fibreuses, préalablement à l'analyse quantitative des mélanges de fibres

Technical Report 5090 was drawn up by Technical Committee ISO/TC 38, *Textiles*, and approved by the majority of its members. The reasons which led to the publication of this document in the form of a Technical Report are the following :

– the methods proposed are sometimes imprecise, and cannot, in the present state of knowledge, be improved;

– some methods are missing for the removal of certain non-fibrous materials;

– since methods for identification of non-fibrous materials are not available at present, it is not possible to decide whether removal has been total or not;

– certain methods can damage textile fibres without it being possible, at present, to assess the degree of damage.

Nevertheless, the necessity for making these methods available in the form in which they are given in this document has been unanimously recognised as urgent, notably for use with ISO 1833 and ISO 5088. On the other hand, experiments on these methods may ultimately remove the technical deficiencies cited above.

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0 INTRODUCTION

It is common practice for various additions to be made to fibres, yarns and fabrics for the purposes of assisting processing and manufacture or modifying the properties of the finished material. These usually result in appreciable increases in mass and often affect the solubility of the fibres. It must also be borne in mind that fibres generally contain a small proportion of naturally occurring non-fibrous substances. The removal of these non-fibrous substances is therefore necessary before conducting the procedure for quantitative chemical analysis specified in ISO 1833 and ISO 5088.

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The removal of certain types of non-fibrous matter, particularly when more than one substance is present, may demand the exercise of considerable chemical resource, and each material to be treated for removal of its non-fibrous matter should be regarded as an individual problem. The procedures suggested in this technical report do not pretend to be complete, and it should not be assumed that those described in the annex will have no effect on the physical and chemical properties of the textile materials concerned. Furthermore, these procedures are only applicable where the non-fibrous substances are known or can be identified with certainty.

For the purposes of this technical report, dyes are not considered as non-fibrous matter but as an integral part of the textile, and are not, therefore, mentioned. Some prints are made with resin bonded pigments which cannot be regarded as part of the fibre substance. They involve a greater addition of mass to the fibre than dyes and it would be desirable to remove them, but it is rarely if ever possible to do so. Similarly, certain finishes cannot be removed. In the present state of knowledge, quantitative analysis cannot, therefore, be carried out with the degree of accuracy provided for by ISO 1833.

It may be assumed that Soxhlet extraction under the conditions described in the annex will ensure adequate removal of oils, fat and waxes. With other non-fibrous substances, it is necessary, wherever possible, to check that removal is complete.

If the extraction in light petroleum as described in clause A.1 of the annex is conducted, it is not necessary to repeat this procedure as required by 1.6.2 of ISO 1833.

The contents of this document are intended for experimentation.

CAUTION — Since certain hazards are associated with reagents and solvents employed in the methods given below, these methods should be used only by persons acquainted with the hazards and the precautions to be taken.

1 SCOPE AND FIELD OF APPLICATION

This technical report describes procedures for the removal of certain commonly found types of non-fibrous substances from fibres. Fibres to which the procedures are applicable and those to which they are not applicable are listed in the table, in relation to the non-fibrous substances to be removed. The names of these fibres are defined in ISO 2076. Identification of the non-fibrous matter and of the fibres present is not covered by this technical report.

In certain cases, the elimination of all the added matter is impracticable. The quantity remaining should not effect the quantitative analysis; on the other hand it is essential to minimize the chemical degradation of the fibres.

2 REFERENCES

ISO 1833, *Textiles — Binary fibre mixtures — Quantitative chemical analysis.*

ISO 2076, *Generic names for man-made fibres.*

ISO 5088, *Textiles — Ternary fibre mixtures — Quantitative analysis.*

3 DEFINITION

For the purpose of this technical report, the following definition applies :

non-fibrous matter : Processing aids such as lubricants and sizes (but excluding jute-batching oils), and naturally occurring non-fibrous substances.

4 PRINCIPLE

Where possible, removal of non-fibrous matter by a suitable solvent.

NOTE — In many cases the removal of certain finishes involves their chemical modification. In addition, chemical degradation of the fibre substance cannot always be avoided.

5 APPARATUS

The apparatus required is part of the normal equipment of a chemical laboratory.