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Superfine woven wool fabric labelling — Requirements for Super S code definition

Étiquetage des étoffes tissées de laine superfine — Exigences de définition de la codification Super S

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

ISO 18103 was prepared by European Committee for Standardization (CEN) in collaboration with ISO/TC 38, *Textiles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Introduction

This International Standard has been developed from a CEN Workshop Agreement, CWA 16336 published in September 2011,[3] which was itself based on the International Wool Textile Organization Fabric Labelling Code of Practice: Quality Definitions Relating to "Super S".[7]

The "Super S" classification for the fineness of wool in woven fabrics and garments goes back to the traditional English wool grading system as used by the trade in Bradford, England. The foundations of this system can be described as follows: a yarn, to be even and strong enough for weaving, must contain a certain minimum number of fibres in its cross section. Therefore, with coarse wool fibres it is possible to obtain only coarse yarns, while with the fine ones very thin yarns can be spun. This criterion is the basis of the wool fineness classification. If wool is classified as ''Super 120s", for example, it means that 1 pound of fibre will produce 120 hanks of yarn, each of which is 560 yards long. With a coarser wool the yarn would be thicker and the number of hanks lower (for instance 80), with a still finer wool on the contrary the hanks would be more numerous (for instance 150). At the beginning of this century, the International Wool Textile Organization (IWTO) officially and precisely codified the fineness classes by fixing for each one of them a maximum limit in microns of mean fibre diameter.

As wool is processed, the diameter of the original fibre used in producing a woven fabric may change due to structural modification of the fibre and the possible effects of chemicals used during processing, etc. Consequently, the mean fibre diameter of the fibre extracted from the fabric can be different from the mean fibre diameter of the fibre used to spin the yarn used in the fabric.

Wool weavers supply their clients with statements concerning the fineness and, on request, with "Super S" label to be sewn inside garments made with the "Super S" cloth. This is a voluntary label, but it has to correspond with the code of practice. The fine wool is very expensive, but with it light, soft fabrics of high wearability and elegance can be produced. A false classification is an act of unfair competition towards the honest producers and an unfair and deceptive practice to consumers. The whole chain of production for wool textiles from the grower through to the garment manufacturer will benefit from a proper understanding and application of the "Super S" code. In addition, retailers and consumers will be protected from fraud or misunderstandings which originate from ignorance of the classification system.

NOTE 1 pound is equivalent to 0,453 kg; 1 yard is equivalent to 0,914 m.

Superfine woven wool fabric labelling — Requirements for Super S code definition

1 Scope

This International Standard defines the requirements of the "Super S" labelling code for finished woven fabric made from pure virgin wool and the test method to determine this.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 137, *Wool — Determination of fibre diameter — Projection microscope method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
wool
fibre from sheep's or lambs' fleeces (*Ovis aries*)

Note 1 to entry: Although legislation in the European Union and in some other countries provides that the term "wool" may be used to indicate a mixture of fibres from sheep's or lambs' fleeces and the hairs of other animals such as alpaca, llama, camel, kashmir goat, angora goat, angora rabbit, vicuna, yak, guanaco, cashgora goat, beaver, and otter, the use of the term "wool" in the context of "Super S" labelling is restricted to fibres from sheep's or lambs' fleeces only.

3.2
pure virgin wool fabric
woven fabric produced wholly from shorn wool which has not previously been spun into yarn or felted nor previously incorporated into a finished product

4 "Super S" labelling code requirements

In the labelling of fabrics, the word Super (as in Super 100s for example) can only be used to describe woven fabrics made from pure virgin wool, and the "Super S" value is determined by, and shall not exceed the mean wool fibre diameter values indicated in Table 1.

For an explanation of the origin of the "Super S" classification, see Introduction (2nd paragraph).

Table 1 — "Super S" mean wool fibre diameter values

"Super S" value	Maximum mean fibre diameter[a]
Super 80s	19,50 µm (+0,25 µm tolerance)
Super 90s	19,00 µm (+0,25 µm tolerance)
Super 100s	18,50 µm (+0,25 µm tolerance)
Super 110s	18,00 µm (+0,25 µm tolerance)
Super 120s	17,50 µm (+0,25 µm tolerance)
Super 130s	17,00 µm (+0,25 µm tolerance)
Super 140s	16,50 µm (+0,25 µm tolerance)
Super 150s	16,00 µm (+0,25 µm tolerance)
Super 160s	15,50 µm (+0,25 µm tolerance)
Super 170s	15,00 µm (+0,25 µm tolerance)
Super 180s	14,50 µm (+0,25 µm tolerance)
Super 190s	14,00 µm (+0,25 µm tolerance)
Super 200s	13,50 µm (+0,25 µm tolerance)
Super 210s	13,00 µm (+0,25 µm tolerance)
Super 220s	12,50 µm (+0,25 µm tolerance)
Super 230s	12,00 µm (+0,25 µm tolerance)
Super 240s	11,50 µm (+0,25 µm tolerance)
Super 250s	11,00 µm (+0,25 µm tolerance)

[a] The +0,25 µm is the positive tolerance which has been established as inherent in the test method. The total tolerance of results is (+) or (–) 0,5 µm, but since the specification is concerned only with the maximum permissible diameter, the negative tolerance of 0,25 µm is not required.

Determination of mean fibre diameter values shall be carried out according to the test method indicated in Clause 5.

The inclusion of up to 5 % in weight of non-wool yarn for decorative effects is permitted.

NOTE It is appreciated that the tolerance for non-wool decorative fibres provided for in the legislation of the European Union and some other countries is greater than 5 %. However, in the context of "Super S" labelling it is felt that a tolerance of 5 % of non-wool yarn is more appropriate.

5 Test method for the determination of mean fibre diameter

5.1 Woven fabric sampling

The sampling is based on the selection of fabric pieces cut from either fabric or a garment. The samples shall be representative of the whole fabric or garment.

Take a minimum of three separate squares, each to be composed of different warp threads and weft threads, the size, with a tolerance of ±0,02 cm, depending on the mass per unit area of the fabric and in proportion to both thread type (colour, count) and warp/weft respective masses.

The size of each square shall be determined such that whole threads from the square fully pack the slot of the fibre microtome (as described in ISO 137).

NOTE The size could be between 3 cm × 3 cm and 5 cm × 5 cm.

Determination of mean fibre diameter values shall be carried out according to ISO 137 and the sampling shall be done as described here below.

5.2 Preparation of the test specimen (snippets)

The fabric samples shall be trimmed square to the warp and weft.

Unravel whole warp and weft threads from one fabric sample.

The snippet subsamples (test specimen) shall be obtained from whole unravelled warp and weft threads which have to be inserted in the fibre microtome (as described in ISO 137).

The snippets should be cut at approximately 0,4 mm length, using the appropriate fibre pusher (as described in ISO 137) and place on a slide.

Repeat the preparation of the snippets on other slides for the other fabric samples.

5.3 Test method

The determination of mean fibre diameter values shall be carried out according to ISO 137.

NOTE ISO 137 is a test method equivalent to IWTO-8.

The final result is calculated as the overall mean value of the mean value of each slide.

5.4 Precision data

Precision data are given in Annex B.

Annex A
(informative)

Example of labelling information to be provided by suppliers of fabric and garments

In order to promote a better understanding of the "Super S" descriptions throughout the supply chain and at consumer level, suppliers of fabric and garments described or labelled in accordance with this International Standard are recommended to provide the following information which should be maintained available on request.

a) name and address of manufacturer or supplier;

b) description of fabric in accordance with the provisions of this International Standard;

c) reference to this International Standard, i.e. ISO 18103.

Annex B
(informative)

Precision data

B.1 General

The Interwoollabs Membership was surveyed in 2012 regarding potential participation in a round trial using one or more of the available test methods (including IWTO-8-11).

NOTE The International Association of Wool Textile Laboratories (INTERWOOLLABS), which was set up in June 1969, aims are to develop co-operation between the Member laboratories, with a view to ensuring the most correct and uniform application of approved testing and sampling methods as set out by the International Wool Textile Organisation (IWTO) and to ensure that Member laboratories obtain accurate test results which have a high level of precision, in their application of those specific IWTO test methods and procedures.

The experimental design had to take in to account the very labour intensive projection microscope method (IWTO-8) and as a consequence the trial was limited to just four different fabrics with each being measured as a "blind" duplicate leading to each laboratory being supplied with eight samples for each testing method that the laboratory had nominated. The four fabrics used in the trial were all commercial worsted suiting material that would fit in the "Super S" range.

Fabric samples of 300 mm × 300 mm, with the warp and weft directions clearly labelled were supplied by an Italian weaver and CCMI. At the Faserinstitut in Bremen, these were packaged as sets of eight swatches (two from each of the four different fabrics) that were uniquely identified. Each participating laboratory was provided with a copy of the relevant test method as amended in 2011 and a set of the fabric samples. Where a laboratory had indicated it was prepared to test by more than one method, they were provided with a separate set of fabrics for each different method and were also provided with copies of all the relevant test methods that they were to follow.

The instructions provided to the laboratories were simply test each of the eight fabric samples in strict accordance with the test method(s) provided.

As it was not possible to fully disguise the duplicates from one another (other than giving them a different identification number), each laboratory was asked to provide the raw histogram data for each test specimen that was tested. In addition, as the new methods all required a weighted calculation to be performed to derive the overall mean fibre diameter for each fabric sample, each laboratory's calculation was verified before results were accepted into the analysis. Where errors in the calculation were made the laboratory was advised that the calculation was in error and they should check their calculation against what was stipulated in the test method and resubmit their data.

The statistical analysis and reporting followed the procedures laid down. The consigned values have been determined taken into account whole the results obtained from the participants and using the following statistical tests:

— COCHRAN (ISO 5725-2) for the repeatability;

— GRUBBS (ISO 5725-2) for the reproducibility.

The determination of the "z-score" values has been done according to ISO 13528.

B.2 Results

Results were received from 10 laboratories that tested in accordance with IWTO-8 (the projection microscope method).

The results for individual laboratories are summarized in Tables B.1 to B.4 for the four different fabrics.

Table B.1 — Mean fibre diameter for fabric sample 1

Laboratory	Repetition 1	Repetition 2	Mean value	Standard deviation	Z-score
1	17,14	17,16	17,15	0,01	−0,45
2	17,54	17,49	17,52	0,04	1,04
3	17,00	16,95	16,98	0,04	−1,16
4	17,49	17,37	17,43	0,08	0,69
5	17,04	17,10	17,07	0,04	−0,78
6	17,69	17,61	17,65	0,06	1,59
7	17,03	17,16	17,10	0,09	−0,67
8	16,99	17,09	17,04	0,07	−0,90
9	17,58	17,22	17,40	0,25[a]	0,57
10	17,43	17,36	17,40	0,05	0,55
		Mean (µm)	17,26		
		Repeatability, r (µm)	0,16		
		Reproducibility, R (µm)	0,70		
		Using robust algorithm A (ISO 13528):			
		"robust" mean (µm)	17,26		
		uncertainty type u_x (µm)	0,11		

[a] Individual values excluded from the final calculation due to Cochran test (ISO 5725-2).

Table B.2 — Mean fibre diameter for fabric sample 2

Laboratory	Repetition 1	Repetition 2	Mean value	Standard deviation	Z-score
1	14,22	14,20	14,21	0,01	−0,94
2	14,82	14,81	14,82	0,01	0,73
3	14,35	14,30	14,33	0,04	−0,62
4	14,85	14,95	14,90	0,07	0,97
5	14,04	14,14	14,09	0,07	−1,27
6	15,26	15,16	15,21	0,07	1,82
7	14,42	14,34	14,38	0,06	−0,47
8	14,18	14,22	14,20	0,03	−0,97
9	14,55	14,62	14,59	0,05	0,10
10	14,71	14,76	14,74	0,04	0,51
		Mean (µm)	14,55		
		Repeatability r (µm)	0,14		
		Reproducibility, R (µm)	1,04		
		Using robust algorithm A (ISO 13528):			
		"robust" mean (µm)	14,54		
		uncertainty type, u_x (µm)	0,16		