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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Textiles — Fibres and yarns — Determination of commercial mass of consignments —

Part 2 : Methods for obtaining laboratory samples

Textiles — Fibres et fils — Détermination de la masse commerciale d'un lot —

Partie 2: Méthodes d'obtention des échantillons pour laboratoire

Reference number
ISO 6741-2:1987 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6741-2 was prepared by Technical Committee ISO/TC 38, *Textiles*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Textiles — Fibres and yarns — Determination of commercial mass of consignments —

Part 2 : Methods for obtaining laboratory samples

0 Introduction

This document forms part 3 of a four-part International Standard prepared by ISO/TC 38, *Textiles*.

Part 1: Mass determination and calculations.

Part 2: Methods for obtaining laboratory samples.

Part 3: Specimen cleaning procedures.

Part 4: Values used for the commercial allowances and the commercial moisture regains. (Technical Report.)

The terminology used in this International Standard is in accordance with ISO 6348.

Most contracts of sale between buyer and seller specify either that the invoice mass of a consignment shall be determined by an independent third party, or that the seller's figure may be subject to an independent third-party check. This part of ISO 6741 describes the methods which are to be used by the independent third party in these cases. The figure for the commercial mass which results from the application of the procedures in this part of ISO 6741 either becomes the invoice mass of the consignment or is compared with the declared invoice mass plus or minus the tolerance agreed between the buyer and seller.

It is not intended that the methods in this part of ISO 6741 necessarily be used by the seller to establish his invoice mass.

The methods described in this part of ISO 6741 are, for the most part, destructive.

1 Scope and field of application

This part of ISO 6741 specifies methods for obtaining laboratory samples for mass determination by one of the methods given in ISO 6741-1. The method appropriate for particular fibres is indicated in ISO 6741-4

The procedures comprise:

Nature of consignment	Procedure described
Bulk staple in bales	Hand sampling (two methods) Core sampling
Tow and strands in bales and cases	
Unsupported wound or coiled packages of raw silk, tow sliver, top or yarn in containers	Hand sampling
Yarn wound on supports	Cutting method Winding (four methods)

When a replicate sample is required for other tests or as a precaution against misadventure, the mass taken during sampling shall be doubled and the sample shall then immediately be halved to provide the two samples.

2 References

ISO 6348, *Textiles — Determination of mass — Vocabulary*.

ISO 6741, *Textiles — Fibres and yarns — Determination of commercial mass of consignments*

— Part 1: *Mass determination and calculations*.

— Part 4: *Values used for the commercial allowances and the commercial moisture regains*. (Technical Report.)

3 Principle

Laboratory samples are taken from the containers in the consignment samples obtained as specified in ISO 6741-1 and placed in stoppered, air-tight vessels for subsequent processing.

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4 Apparatus

Air-tight vessels, of low hygroscopicity and known mass, capable of holding the material being tested. For example, a stoppered glass jar or a clean, grease-free polyethylene bag of minimum thickness 70 μm , inside a second similar polyethylene bag, is sometimes used. In the latter case, both bags shall be sealed and free of holes.

5 Sampling procedure

Sample, preferably immediately after weighing each container in the consignment sample as specified in 6.2 of ISO 6741-1, in accordance with 5.1, 5.2 or 5.3, as appropriate.

5.1 Consignments of bulk staple in bales

5.1.1 Method A

Remove the bale wrappers. Take samples from the bale in such a manner that

- each sample is taken from the appropriate zone described below;
- no more than 30 s elapse between the exposure of a sample and its confinement in an air-tight vessel (clause 4).

Samples may be taken with a hook, but any handling shall be carried out with gloves of an impervious material.

Consider the bale as being made up of two zones, inner and outer, both of about the same volume (see figure 1). The dimensions of the inner zone shall be 80 % of those of the bale, i.e. the thickness of the outer layer represents 10 % of the corresponding dimension of the bale.

a) From the outer zone take 12 samples, each weighing about 5 g, two being taken from each face at randomly different positions and depths within the layer.

b) From the inner zone take a further six samples, each weighing about 10 g. Consider the inner zone to be made up of six equal layers (see figure 2), three layers above and three layers below the centre line of the bale, and take one sample at random from each of these layers.

As each sample is taken from the bale, place it immediately into a pre-weighed, air-tight vessel. There should finally be about 120 g of fibre in the vessel.

5.1.2 Method B

Remove the bale wrappers.

Use a hand sampling method similar to that described in 5.1.1.

Employ three distinct points of sampling situated on a diagonal line of the parallelepiped constituted by the bale and positioned at 20 %, 50 % and 80 % of its length. Take one sample, mass at least 150 g, at each point and place it immediately into a pre-weighed, stoppered, air-tight vessel (clause 4). The mass of the staple in the vessel should finally be about 500 g.

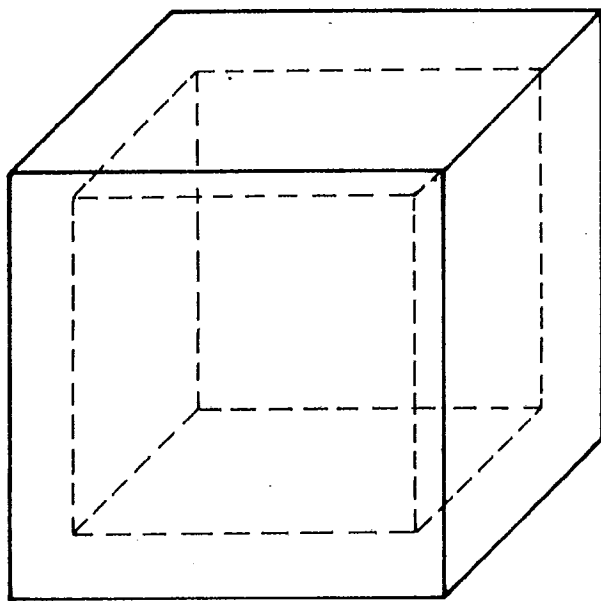


Figure 1 — Zones of a bale

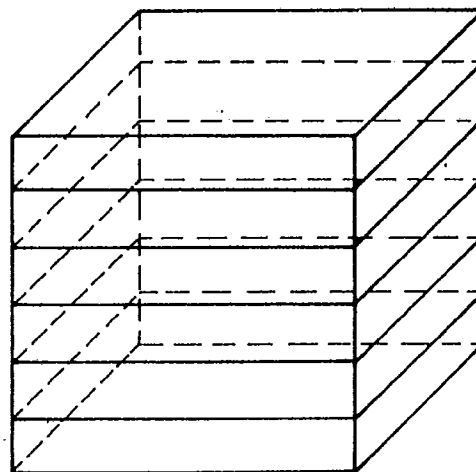


Figure 2 — Layers of inner zone

5.1.3 Method C

Select and use one of the following methods¹⁾.

5.1.3.1 Method C.1

Use a core sampler with a non-rotating coring tube with manual pressure. The diameter of the cutting tip (which shall be sharp to achieve good bale penetration) shall be 12 to 25 mm and the tube length shall be 600 ± 20 mm.

Clear the point of tube penetration and insert the corer in a direction which is parallel to the sides of the bale in the direction of compression to a depth of not less than 47 % of the bale length.

Extract not less than 35 core samples at random from the consignment sample in accordance with table 1. Place the samples from each bale immediately into a pre-weighed, stoppered, air-tight vessel. Use either one vessel per bale or, if a global sample is to be used, one or more large vessels between which all the cores from all the containers are equally divided.

Table 1 — Coring programme for bales, method C1

Number of bales in the consignment sample	Number of cores per bale	Number of cores from each face of the bale*
1	35	18/17
2	18	9/9
3	12	6/6
4	9	5/4
5	7	4/3
6	6	3/3
7, 8	5	3/2
9, 10, 11	4	2/2
12 to 17	3	2/1
18 to 34	2	1/1
35 and above	1	1/0

* Core alternately through the cap and base.

5.1.3.2 Method C2

Use a core sampler with a non-rotating coring tube with mechanical pressure. The diameter of the cutting tip (which shall be sharp to achieve good bale penetration) shall be 18 ± 1 mm²⁾ and the tube length shall be sufficient to achieve a depth of penetration of at least 90 % of the bale length.

Clear the point of tube penetration on the base of the bale and insert the corer in a direction which is parallel to the sides of the bale in the direction of compression to the full depth of the tube.

Extract not less than 20 core samples at random from the consignment sample in accordance with table 2. Place the samples from each bale immediately into a stoppered, air-tight vessel.

Use either one vessel per bale or, if a global sample is to be used, one or more large vessels between which all the cores from all the containers are equally divided.

In the case of high-density bales (more than 450 kg/m^3), special equipment shall be employed. The commercial mass of high-density bales can nevertheless be determined by partial or complete removal of wrappers, followed by methods B, C1 and C2.

Table 2 — Coring programme for bales, method C2

Number of bales in the consignment sample	Number of cores per bale
1	20
2	10
3	7
4	5
5, 6	4
7, 8, 9	3
10 to 19	2
20 and above	1

5.1.3.3 Method C3

Use a core sampler with a non-rotating coring tube with manual pressure. The diameter of the cutting tip (which shall be sharp to achieve good bale penetration) shall be 25 ± 1 mm and the tube length shall be 600 ± 20 mm.

Clear the point of tube penetration and insert the corer in a direction which is parallel to the sides of the bale in the direction of compression to a depth of about 90 % of the bale length.

Extract from each bale the number of cores indicated in table 3. Place the samples from each bale immediately into a pre-weighed, stoppered, air-tight vessel (clause 3). Use either one vessel per container or, if a global sample is to be used, one or more large vessels between which all the cores from all the containers are equally divided.

Table 3 — Coring programme for bales, method C3

Number of bales in the consignment sample	Number of cores per bale	
	Bale mass 150 to 250 kg	Bale mass above 250 kg
1	3	5
2	3	4
3	3	4
4 to 11	2	3
12 and above	1	2

1) Methods C1 and C2 are based upon the IWTO manual and machine coring procedures respectively.

2) The interested parties may agree to use a cutting tip with a diameter between 12 and 25 mm.

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5.2 Consignments of tow and strands in bales or cases

As with staple fibre, wear impervious gloves when handling the material.

5.2.1 Method D

Take a sample of about 30 g from the material at the top of the bale or case. Take three further samples, each of about 20 g, from the interior of the bale, at points P, Q, and R in a middle layer of the bale shown in figure 3. One point is at the centre of the layer and the other two half-way between the centre and the surface of the bale. Access to this middle layer may be obtained either by winding off or by lifting off the upper layers.

Take a fifth sample (of about 30 g) from the material at the bottom of the bale or case.

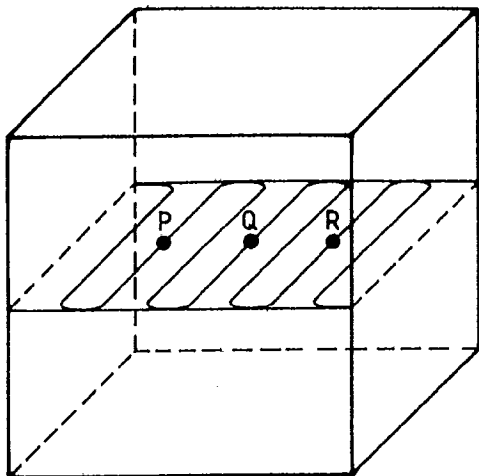


Figure 3 — Tow in bale

Take the samples immediately after exposing the surface concerned, with a maximum delay of 30 s. As each sample is taken from a single bale or case, place it immediately into a pre-weighed air-tight vessel (clause 3). There should finally be about 120 g of fibre in the vessel.

5.3 Consignments of tow, sliver or top delivered as wound or coiled packages in containers

5.3.1 Method E

Tow, sliver and top may be delivered as wound or coiled packages, with or without support or wrapping, with a number of such packages in each container of the consignment.

From each of the containers to be sampled take one package (two in the case of wool) entirely at random, and from a different part of each container.

For supported packages, determine the total mass of the supports and wrappings to permit the calculation of the net mass of the container (see sub-clause 6.2 of ISO 6741-1).

As for staple, wear impervious gloves when handling the material.

Unwrap each unit package and immediately take about 30 g of fibre (60 g in the case of wool) from its outer surface. Then cut or divide each package in order to reach its middle and take 60 g (120 g in the case of wool) from here. Continue cutting or dividing to the end of each package and take a final 30 g sample (60 g in the case of wool). Place each sample immediately into a pre-weighed air-tight vessel (clause 4) within 30 s of exposure. There should finally be about 120 g fibre (480 g in the case of wool, half from each package) in the vessel.

5.4 Consignments of yarn on packages

From each of the containers to be sampled take one package at random, and from a different position in each container.

5.4.1 Method F

Rapidly cut the yarn from each package with a sharp knife, the cut being made in an approximately axial plane.

5.4.1.1 Packages of mass 250 g or less

Immediately place the yarn cut from each of the packages into a pre-weighed air-tight vessel (clause 4). Carry out the laboratory test on the entire package.

5.4.1.2 Packages of mass more than 250 g

Lay flat the yarns cut from each of the packages. Take six sub-samples of approximately 40 g very rapidly at various depths and immediately place all together in an air-tight, tared vessel (clause 4). Take these six sub-samples from six different layers, one on the outside, another on the inside and the four others equally distributed between the two. Carry out the laboratory test on the global sample.

5.4.2 Method G

The following method may, by agreement, be adopted as the alternative to method F in order to reduce yarn wastage when the consignment comprises large packages (over 1,5 kg).

Weigh the sample packages to within 0,1 %.

Reel all the yarn from each package through a length-measuring device at a speed not exceeding 200 m/min with a reeling tension in the range 0,4 to 0,6 cN/tex. The length-measuring device shall consist of a hard, smooth measuring roller of uniform diameter not less than 100 mm, on the shaft of which a revolution counter is mounted, and against which a roller of softer material is pressed with a force of at least 10 cN per cm of the line of contact between the two rollers.

Whilst reeling the yarn, take six samples, each of mass about 40 g, at positions distributed approximately equally throughout

each package. Measure the length of each sample, and the length of yarn between it and the next sample, to within 0,1 %. Take the first and the last samples from the beginning and from the end of the package.

Immediately place each sample into a pre-weighed air-tight vessel (clause 4).

5.4.3 Method H

From every group of three packages, wind a maximum of 400 g per package. The laboratory samples shall be taken from the external surface of two packages and from the inside of the third package. The mass of the laboratory samples shall be calculated from the difference in mass of the package before and after winding, disregarding and change in moisture content of the yarn.

5.4.4 Method J

If the package weighs less than 250 g, unwind all the yarn from the package as a single laboratory sample. Otherwise unwind, in turn, six sub-samples each of mass about 40 g equally distributed through the package.

Take a sample from each package by unwinding and immediately place the sample into a pre-weighed air-tight vessel (clause 4).

5.4.5 Method K

5.4.5.1 Packages of mass 250 g or less

Weigh the package, including the support, to an accuracy of 0,05 g. Unwind all the yarn using a wrap reel. Weigh the sup-

port to an accuracy of 0,05 g. Record the difference between the two masses.

5.4.5.2 Packages of mass more than 250 g

Wind onto a wrap reel six successive sub-samples, each of mass about 40 g, from positions spaced equally through the package. Weigh the package to an accuracy of 0,05 g immediately before and immediately after winding each sub-sample; the mass change is the mass of the sub-sample. Record the total mass of the six sub-samples.

The recorded mass is the mass of the sample, free from any discrepancy due to moisture on winding.

5.5 Consignments of yarn and raw silk delivered in containers which carry a number of skeins

5.5.1 Method L

From each of the containers to be sampled, take at least 350 g in at least three skeins from different positions within the container, and place the skeins together into a pre-weighed air-tight vessel (clause 4).

5.6 Unspecified consignments

5.6.1 Method Z

Some other sampling procedure agreed between the interested parties for use when the other methods described in this part of ISO 6741 are not suitable.

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