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Leaf tobacco — Determination of strip particle size

Tabac en feuilles — Détermination de la taille des particules de strips

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ISO 12194:1995(E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 12194 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Subcommittee SC 2, *Leaf tobacco*.

Annexes A to C of this International Standard are for information only.

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Leaf tobacco — Determination of strip particle size

1 Scope

This International Standard specifies a method for the measurement of the particle size of strips of leaf tobacco.

It is applicable to strips arising from the operation of threshing or hand-stripping leaf tobacco, which can be from any tobacco type including flue-cured, burley and cigar tobacco.

The test method consists of taking a sample of strips and passing it over a four-tray quality-control shaker.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 lamina: Area between the veins of a tobacco leaf.

3.2 strips: Long pieces of threshed or stripped lamina.

3.3 threshing: Removal of the stem and side veins of tobacco leaves by mechanical means.

3.4 stripping: Removal of the stem from tobacco leaves, leaving the halves of the leaf more or less intact.

3.5 quality-control shaker: Apparatus that separates the strips into five particle sizes by passing them over four screens.

4 Apparatus

4.1 Quality-control shaker

The quality-control shaker consists of a feedband conveyor, four sieving trays, and a fines-collection bin, all of which are mounted on a robust frame. Separation is carried out by vibrating the four trays, each of which is fitted with a different mesh screen. These are arranged above each other in such a way that particles falling through one screen are exposed to at least 660 mm of the next screen. Any strips passing over a screen are automatically collected in separate bins at the end of each shaker screen. A diagram of the general design of the quality-control shaker is shown in figure 1.

4.2 Sieving screens

4.2.1 The four screens fitted to the quality-control shaker should be of wire mesh, constructed from stainless steel in accordance with the specification given in ISO 3310-1. The screens shall have the dimensions given in table 1. Diagrams of the screen set-up are shown in annex A.

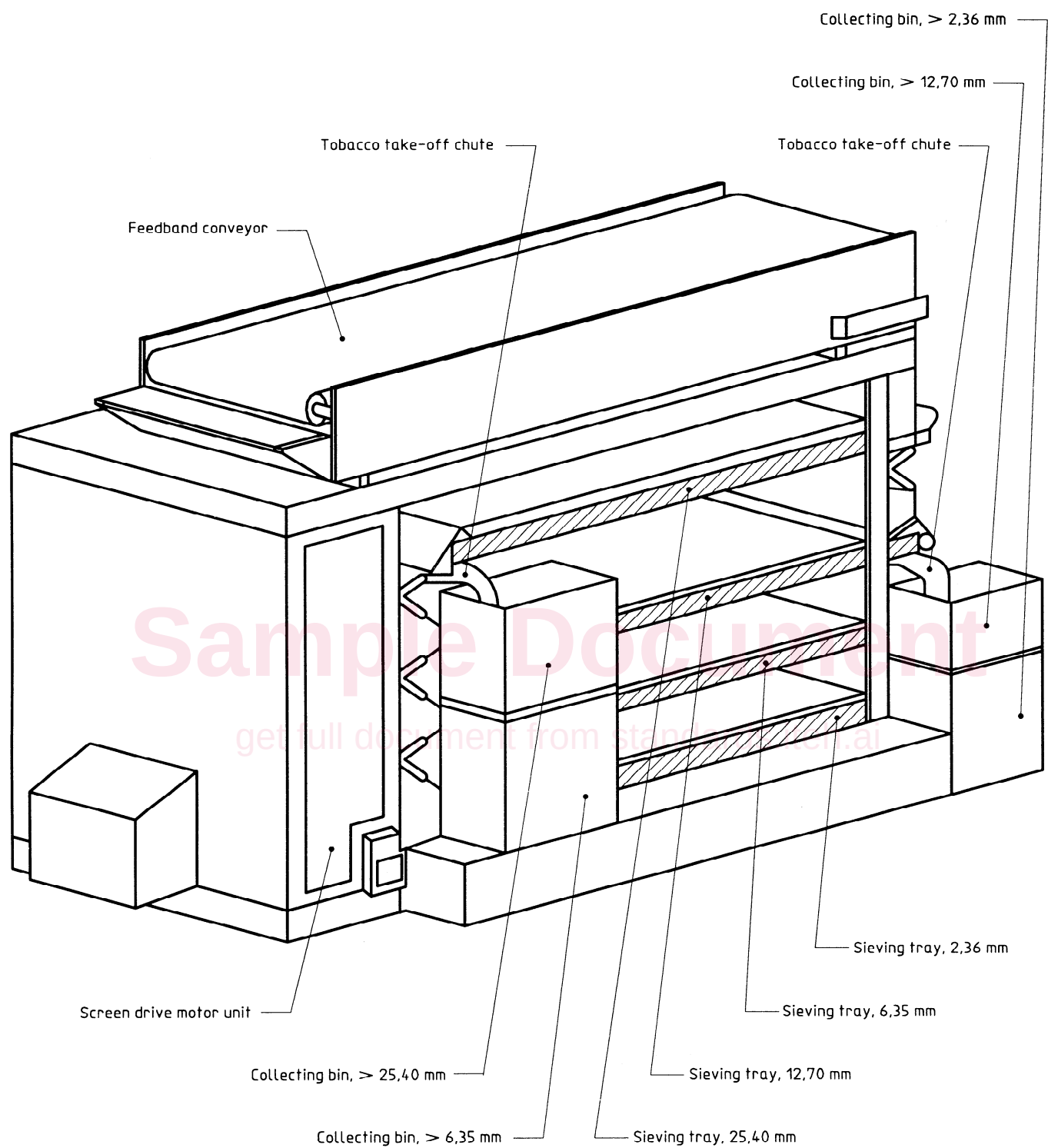


Figure 1 — General design of the quality-control shaker

Table 1 — Dimensions of screens

Size mm	Sieve opening mm	Wire diameter mm	Open area %
25,40 × 25,40	25,40	3,80	75,9
12,70 × 12,70	12,70	2,67	68,3
6,35 × 6,35	6,35	1,82	60,3
2,36 × 2,36	2,36	1,00	49,0

NOTE — All screens are single crimp except for the 2,36 mm × 2,36 mm screen which is plain weave.

4.2.2 The frequency of vibration of the screens shall be set at (525 ± 5) vibrations per minute. This is accomplished by changing the pulleys on the motor and/or the eccentric drive shaft to give a drive shaft speed of (525 ± 5) r/min. The speed of this shaft should be checked with a tachometer.

4.2.3 The stroke of each screen shall be $(13,1 \pm 1,2)$ mm as measured by the use of a stroke diagram. The method is described in annex B. The measurements shall be taken whilst the drive shaft is running at (525 ± 5) r/min.

On any one machine, the stroke should remain constant. If the measured strokes are found to be outside the tolerance, then check that there is no slackness in the drive mechanism and that the suspension mountings are secure (very small amounts of slack in a key can cause considerable loss of motion).

Errors in stroke might also be due to incorrect tray mass or spring stiffness.

4.3 Feedband

Adjust the feedband so that the sample of tobacco covering the band will be discharged in (450 ± 5) s.

4.4 Collecting bins

Ensure that each collecting bin has the same net mass.

4.5 Breaker bars

The quality-control shaker (4.1) should be fitted with breaker bars to break up any lumps of lamina that fall from the feedband. Diagrams showing examples of the bars are shown in annex C.

5 Sampling

5.1 The sample mass for flue-cured cigarette lamina and for burley lamina shall be $(3\,000 \pm 300)$ g for each, and the sample mass for cigar lamina shall be $(1\,000 \pm 100)$ g.

If the mass of the sample is outside the appropriate limits, reject the sample and draw a fresh one. If the sample is within limits, record the mass and pass it on for testing.

5.2 The majority of strip samples for particle-size testing are taken at the end of the threshing line as a quality-control measure. The moisture content of the samples generally ranges from 16 % to 20 %.

Tobacco strips for testing may also be sampled from the exit of the redryer and from the packed case or hogshead. Samples may also be taken and tested before and after blending of the strips during cigarette manufacture.

The sampling and handling of dry lamina shall be carried out carefully to avoid degradation.

6 Procedure

Ensure that sieve screens (4.2) are free of tobacco particles and that the tared collection bins (4.4) are correctly placed at the discharge outlets.

Spread the sample evenly over the entire surface of the feed conveyor. Start the sieve and then the feedband (4.3).

When the total sample has passed over the top screen, pass a soft brush gently over the breaker bars (4.5) and then over the top screen, thus freeing all trapped particles of tobacco and allowing them to pass over the remaining screens. Repeat for the remaining screens. Stop the sieve and feedband when all the tobacco has been collected in the tared bins.

Weigh the collected samples to the nearest gram. Record each mass under the headings:

on the 25,40 mm screen

on the 12,70 mm screen

on the 6,35 mm screen

on the 2,36 mm screen

below the 2,36 mm screen

Check that the sum of the individual masses is within ± 50 g of the initial sample mass. If this is not so, discard the test and repeat with a new sample.

Express the individual masses as a percentage of the sum of the individual masses. Do not calculate the percentages using the initial mass of the sample.