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Threshed tobacco — Determination of residual stem content

Tabac battu — Détermination de la teneur en côtes résiduelles

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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 12195 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Subcommittee SC 2, *Leaf tobacco*.

Annex A forms an integral part of this International Standard. Annexes B to D are for information only.

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Threshed tobacco — Determination of residual stem content

1 Scope

This International Standard specifies a method for the measurement of the stem content 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 of a sample of tobacco strips and passing it through a stem tester.

2 Definitions

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

2.1 stem: Main vein of a tobacco leaf.

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

2.3 strips: Long pieces of threshed or stripped lamina.

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

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

2.6 stem tester: Small-scale thresher and separating tower which threshes and classifies the residual stem from the lamina in a controlled manner.

2.7 stacked sieve-type shaker: Shaker which reproduces the circular and tapping motion given to test screens in sieving in a uniform manner.

3 Apparatus

3.1 Stem tester

The main operating features of the stem tester are given in 3.1.1 to 3.1.11, and are illustrated in figure 1.

3.1.1 Static pressure tapping apparatus and manometer

The tapping apparatus shall be fitted 254 mm above the flange, immediately above the doors of the separating tower and as flush as possible to the internal wall. This is to avoid air turbulence and thus erratic readings. The static tapping apparatus is illustrated in figure 2.

A suitable manometer with a full-scale range of at least 0 mmH₂O to 5 mmH₂O is fitted to the tapping apparatus and set to zero. It indicates the air velocity in the separating tower.

3.1.2 Stem-deflector plates

Two stem-deflector plates are required to stop free stem and "heavies" being kicked out of the thresher and lost to the test. The first is fitted to the end of the vibratory conveyor feeding into the top of the thresher housing; the second is fitted to the base of the thresher (see figures 3 and 4).

Damper C sited at the air-flow inlet below the thresher shall be removed (see 3.1.8).

3.1.3 Thresher, having the following characteristics.

Rows of thresher teeth	4
Teeth per row	31
Tooth dimensions	96,8 mm × 25,4 mm × 3,2 mm
Teeth spacing	3,2 mm

See figure B.1 and table B.1 for more details.

3.1.4 Thresher basket, having the following characteristics.

Hole size	19 mm diameter punched holes
Hole distribution	see figure B.2
Basket size	479,3 mm × 263,5 mm × 3,2 mm
Outside radius	154 mm

See figure B.2 and table B.2 for more details.

3.1.5 Shaft

Shaft speeds shall be as follows.

Thresher	(1 150 ± 20) r/min
Vibratory conveyor bearing	(450 ± 20) r/min
Winnower	(950 ± 20) r/min
Both tangential separator rotary air locks	(70 ± 5) r/min

3.1.6 Tobacco-strip conveyor, having the following characteristics.

Dimensions	2 438 mm × 457 mm × 152 mm
Cycle time	4 min
Sample delivery time	160 s
Belt speed	914 mm/min

3.1.7 Air-inlet vanes

The vanes shall be fixed securely in the following positions.

Top vane	34° to the horizontal
Middle vane	34° to the horizontal
Bottom vane	29° to the horizontal

3.1.8 Dampers, having the following settings and uses.

Damper A is sited downstream of the 14/24 tangential "lights" separator and is used to adjust the air flow through the separating tower.

Damper B is sited downstream of the 14/18 tangential "heavies" separator and shall be kept in the wide-open position to prevent stems building up in the tangential separator.

Damper C is sited at the air-duct inlet below the thresher and shall be removed to prevent deposits of free stem and "heavies" building up behind the closed or partly closed damper; a stem deflector plate is fitted at the base of the thresher (see 3.1.2). If required, a large-mesh screen can be fitted to the end of the air duct to trap any foreign matter picked up by the air flow; if fitted, it shall be kept clean.

Damper D is sited in the air duct after the thresher and shall be kept closed.

See figure 5 for the positions of these dampers.

3.1.9 Separating tower

The vibrating conveyor screen shall be of 20 mesh, wire diameter 0,36 mm, open area 51 %. The mesh is supported by a wire grid.

The vibrating conveyor screen shall have a 25,4 mm clearance at the point of exit from the separating tower to allow the "heavies" to pass through to the thresher.

The winnower selvedge shall clear the winnower housing by 6,4 mm to 9,5 mm.

3.1.10 Fan

The fan should be capable of providing an air-flow rate of over 119 m³/min at a pressure of 127 mmH₂O, but its speed may need adjusting to compensate for changes in air density at higher altitudes.

3.1.11 Discs

Strips for different tobacco types can differ in their bulk density and therefore require different sample masses to ensure a constant volume feed through the stem tester. This avoids overloading the thresher and separating tower, which would lead to variable and erratic results.

Tobacco types can also differ in the air-flow rate required to separate the stem from the strips. The separating tower needs to be set up to a different standard air flow for these tobaccos.

The air-flow rates are standardized by means of plastic discs which are described more fully in annex C, clause C.1, and their design is shown in figure C.1.

The recommended sample mass disc specifications together with their tolerances for the three major tobacco types are detailed in table 1.

Table 1 — Tobacco sample size and disc mass

Tobacco type	Sample mass g	Disc mass	
		Light mg	Heavy mg
Flue-cured	3 000 ± 300	328 ± 4	420 ± 4
Burley	3 000 ± 300	265 ± 4	328 ± 4
Cigar	1 000 ± 100	210 ± 4	290 ± 4

3.2 Stacked sieve-type shaker, 200 mm in diameter¹⁾

The test method can be extended by taking the stem product collected from the stem tester (3.1) and, after weighing, screening it into various size classes by means of a sieve-type shaker.

The stacked sieve-type shaker shall have the following characteristics.

Elliptical diameter	32 mm × 25 mm approx.
Frequency of shaking	280 r/min to 290 r/min
Hammer drop	33 mm ± 2 mm
Frequency of striking	150 r/min to 157 r/min

All sieves shall be of the standard size 203,2 mm in diameter and 50,8 mm deep. They are designed to nest together to form a stable sieve stack in the following order:

- a 2,38 mm slotted-plate screen (made to order) (see figure 6),
- 280 mm sieve,
- 1,70 mm sieve,
- pan.

1) An example of a suitable sieve shaker available commercially is the C.E. Tyler Ro-Tap, Mod. RH-19, Mod. B.

This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of the product named. Equivalent equipment may be used if it can be shown to lead to the same results.

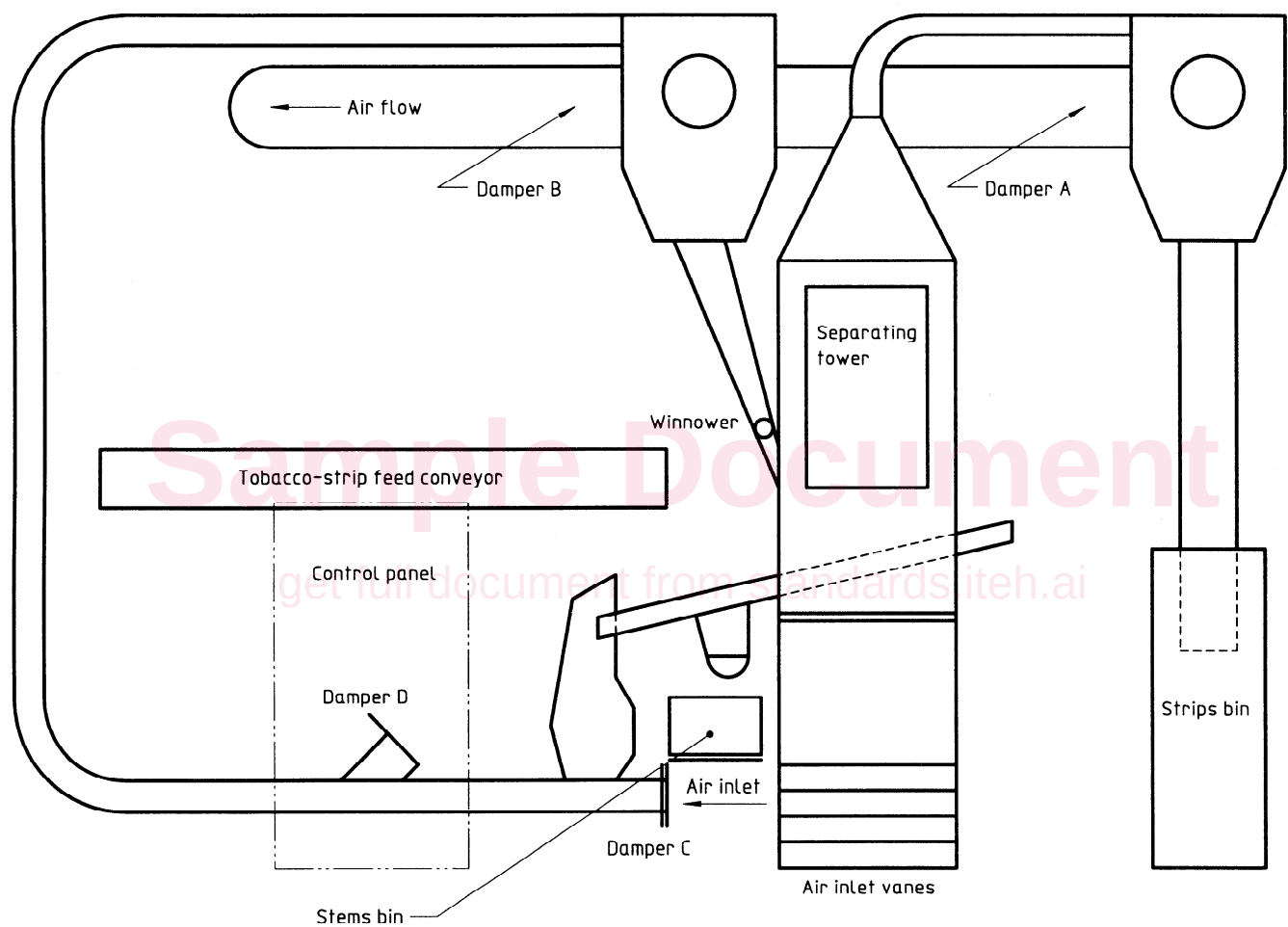
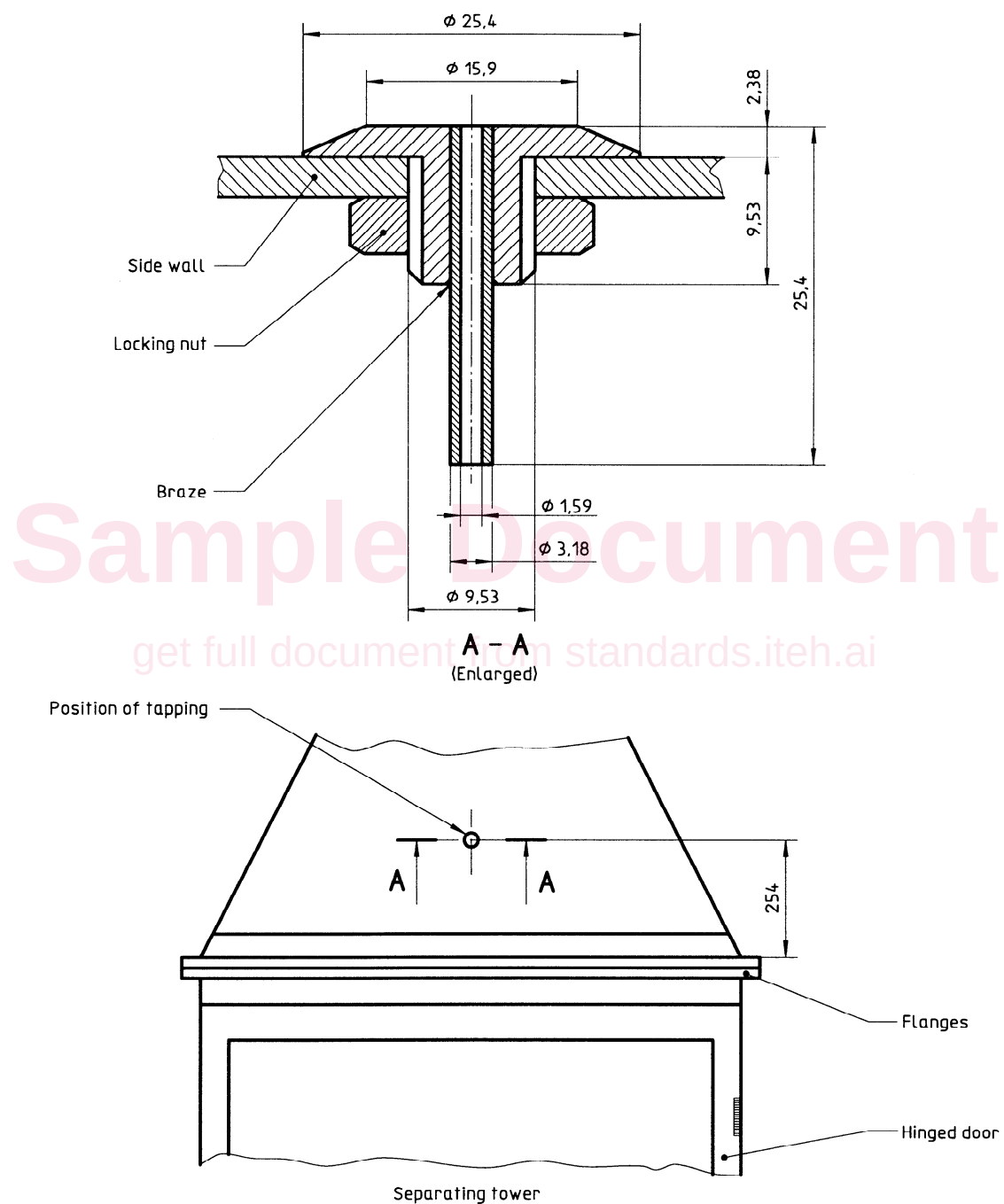


Figure 1 — Stem tester

Dimensions in millimetres

**Figure 2 — Standard static-pressure tapping apparatus**