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AMENDMENT 1
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Tobacco and tobacco products — Determination of the width of the strands of cut tobacco

AMENDMENT 1

Tabac et des produits du tabac — Détermination de la largeur des brins de tabac haché

AMENDEMENT 1

Reference number
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This document was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Subcommittee SC 1, *Physical and dimensional tests*.

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Tobacco and tobacco products — Determination of the width of the strands of cut tobacco

AMENDMENT 1

6.5.1

Insert a reference to the new Annex C at the end of 6.5.1, as follows:

> A new measurement method of the width of the strands of cut tobacco based on digital image processing is illustrated in Annex C.

Annex C

Add a new informative Annex C as follows:

Annex C
(informative)

Measurement method of the width of the strands of cut tobacco based on digital image processing

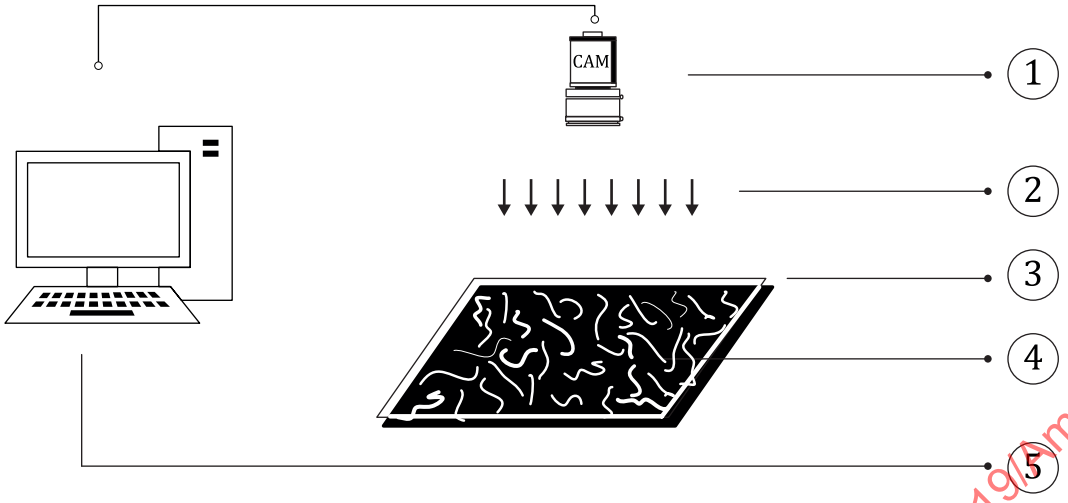
C.1 Principles

Taking into consideration the fact that the tobacco strands samples have a uniform cut width, 30 strands of at least 10 mm long are taken from the total test portion and the width of each strand is measured by a camera and an image processing system by measuring the orthogonal distance of the edges of the strand in a section of the strand, where the edges are approximately parallel.

It has been shown that this method delivered comparable results to this document.

C.2 Apparatus

C.2.1 Diagram of a camera with image processing system



Key

1 camera system
2 uniform LED light
3 sample holder
4 strands of cut tobacco
5 computer

Figure C.1 — Diagram of a camera with image processing system

C.2.2 Requirements

C.2.2.1 Light: Illumination over the sample holder shall be uniform.

C.2.2.2 Camera: color camera with CCD or CMOS sensor, and the resolution is at least 5000000.

C.2.2.3 Lens: Distortion rate shall be less than 1,0.

C.2.2.4 Imaging precision: Precision of image process system is at least 0,05 mm.

C.2.2.5 Imaging field: Imaging field dimensions shall be slightly larger than 100 mm × 150 mm.

C.2.2.6 Sample holder: Sample holder with dimensions at least 100 mm × 150 mm, make sure 30 strands of cut tobacco can be placed without any over lapping.

C.3 Determination procedure

C.3.1 Switch on the instrument, adjust and calibrate it according to the instructions of the instrument manufacturer.

C.3.2 Select at least 30 strands of cut tobacco, each with a minimum length of 10 mm and a uniform cut width.

C.3.3 Randomly put them on sample holder without any overlap. When securing the strands, take care to avoid stretching. Artificial damage to the strands should be avoided.

C.3.4 Complete the determination procedure using the image processing system.

C.4 Single calculations

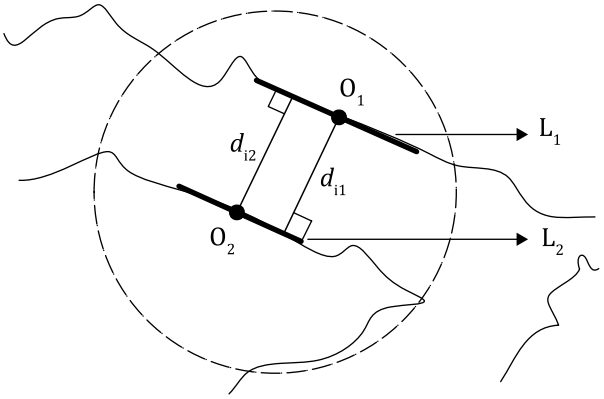


Figure C.2 — Sketch map of one of the width determination point from an entire strand

The width value, W of one strand of cut tobacco shall be calculated according to Formulae (C.1) and (C.2). On the basis of the precision of 0,05 mm, L_1 and L_2 are a pair of approximately parallel edges when centre distance between O_1 and O_2 should be within reasonable range.

$$d_i = \frac{(d_{i1} + d_{i2})}{2} \tag{C.1}$$

$$W = \frac{\sum_{i=1}^{n} d_i}{n} \tag{C.2}$$

where

On the basis of the precision of 0,05 mm:

— L_1 and L_2 are a pair of line segment which is approximately parallel;

— O_1 and O_2 are the midpoints of L_1 and L_2, respectively;

d_{i1} is the distance from O_1 to L_2;

d_{i2} is the distance from O_2 to L_1;

d_i is the width value of the determination point;

n is the number of points selected for width determination, the measurement data of one strand is valid when n is at least 5;

W is the width value of the cut tobacco.

Calculate the average of width value of these 30 strands of tobacco as the width value of this batch.

C.5 Expression of results

Calculate the arithmetic mean and standard deviation of obtained widths of all 30 strands in a batch to the nearest 0,01 mm and 0,001 mm, respectively.

Bibliography

Add a new bibliographical entry:

[3] Beitr. Tabakforsch. Int. 28 (2019) 278-285