TECHNICAL REPORT

ISO TR 8452

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Raw tobacco — Determination of chlorophyll residues content (green index)

Tabac matière première — Détermination de la teneur en résidus de chlorophylle (indice vert)

Reference number
ISO/TR 8452:1992(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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

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Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 8452, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Sub-Committee SC 2, *Leaf tobacco*.

This document is issued as a Technical Report of type 2 because results of collaborative studies could not be included for lack of participating laboratories.

Annex A of this Technical Report is for information only.

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Raw tobacco — Determination of chlorophyll residues content (green index)

1 Scope

This Technical Report describes a method which permits the rapid characterization of the degree of transformation of tobacco by estimating the "residual green" due to chlorophyll and its derivatives, which are not broken down during treatment of the tobacco (drying, fermentation, ageing).

This method is applicable to all types of raw tobacco, Oriental, Virginia, Burley and Black tobacco, in leaf or strip form.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this Technical Report 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 6488:1981, *Tobacco — Determination of water content (Reference method).*

3 Principle

Measurement of the optical density of powdered tobacco, prepared under standard conditions, by reflectance spectrometry (diffuse reflection).

4 Apparatus

4.1 Balance, capable of weighing to the nearest 0,05 g.

4.2 Chopping machine, for samples (automatic feed and cutting) or **disc cutter**.

4.3 Conditioned test cell.

4.4 Ball mill.

4.5 Press, for the preparation of powder tablets.

NOTE 1 A suitable device is given in annex A.

4.6 Spectrometer, with reflectance device.

5 Procedure

5.1 Sample preparation

5.1.1 Coarse conditioning of the tobacco for chopping

Place approximately 200 g of tobacco, in leaf or strip form, in a conditioning atmosphere for moistening (relative humidity of 90 %).

Adjust the duration of the conditioning in such a way that the water content of the tobacco is

for Black and Burley tobacco: about 25 %,

for Oriental and Virginia tobacco: about 15 %.

Cut the tobacco into shreds of 0,8 mm width.

5.1.2 Fine conditioning of the cut tobacco

The target moisture, H_e, is

for Black and Burley tobacco: 15 %,

for Oriental and Virginia tobacco: 12 %.

Determine the initial moisture content of the cut tobacco, H_i, by azeotropic distillation in accordance with ISO 6488.

Weigh, to the nearest 0,05 g, about 100 g of cut tobacco, m_i, and place it in a conditioning atmosphere for slow drying (relative humidity of 55 %).

Take the tobacco away from the conditioning atmosphere when its mass m_e is

$$m_e = m_i \times \frac{100 - H_i}{100 - H_e}$$

5.1.3 Preparation of the powder

After conditioning, pass the cut tobacco through the disc cutter (4.2), so as to obtain a coarse powder.

Crush 6 g of homogenized coarse powder.

The final particle size of the powder shall be $\geqslant$ 80 %, passed through a sieve with 0,315 mm^2 mesh (to guarantee good cohesion of the powder tablet). The crushing time should generally be 3 min.

5.2 Preparation of the powder tablet

Weigh, to the nearest 0,05 g, 1,8 g of powder.

Using this amount, make a tablet 5 mm thick with the aid of the equipment described in annex A (or any other equipment suitable for use with the spectrometer used).

5.3 Determination

Measure the optical density (OD) of the tobacco tablet at 625 nm, 662,5 nm and 700 nm in relation to a reference tablet of magnesium carbonate ($MgCO_3$).

6 Expression of results

The green index, I_v, is given by the formula

$$I_v = \left(OD_{662,5} - \frac{OD_{625} + OD_{700}}{2} \right) \times 100$$

The range of I_v of completely transformed tobaccos is as follows:

Black:	0 to 10
Burley:	0
Virginia:	0 to 3
Oriental:	0 to 5

Annex A
(informative)

Device used for making powder tablets

A suitable apparatus is shown in figures A.1 and A.2. Figure A.3 shows the underside of a tablet.

Dimensions in millimetres

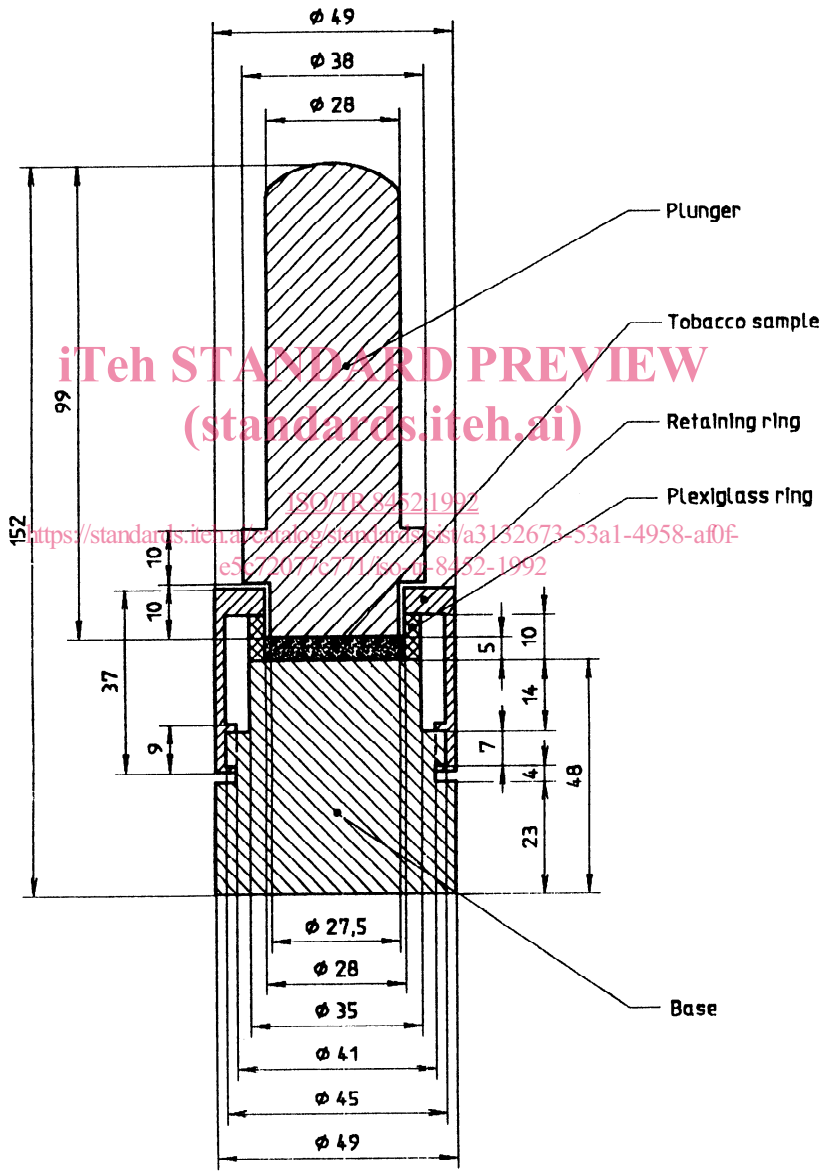

Figure A.1 — Cross-section of apparatus

Figure A.2 — Apparatus for making powder tablets

Figure A.3 — Underside of the tablet on which the reflectance measurements are taken

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Descriptors: tobacco, chemical analysis, determination of content, chlorophyll, spectrometric method.

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