MEASUREMENT OF WATER ACTIVITY IN TOBACCO PRODUCTS, FIBRE-BASED MATRICES AND TOBACCO DERIVED PRODUCTS WITH (b) (4)

Purpose

To measure water activity (a_w) in tobacco products, fibre-based matrices and tobacco derived products.

Applies to

(b) (4)

General information

Water activity is a measure of whether there is sufficient (b) (4) available for microorganisms to grow in the sample matrix. Generally, bacteria can grow on the sample surface if a_w is 0.9 or higher, but with other growth conditions also need to be met. The definition of water activity allows it to vary between zero (0) in an anhydrous matrix and one (1) in pure water, free of salts, and other soluble substances.

When measuring the products, the matrix is generally measured as it is. This is because it is often of interest to know whether microorganisms can grow on the surface of the product. For example, whether chewing tobacco should be ground or not.

The method description is designed to be used for measuring water activity in tobacco products and fibre-based matrices with a (b) (4) It also describes the measurement of water activity in the same matrices with (b) (4) .

For the measurement and reporting of analysis results, refer to the instructions for the relevant laboratory, see analysis below.

Principle of the method

(b) (4)

(b) (4)

Tunable Diode Laser

(b) (4)

Dewpoint

(b) (4)

Method scope, measurement range, and measurement uncertainty

(b) (4)

Measurement uncertainty

(b) (4)

Dewpoint

(b) (4)

Literature references

(b) (4)

Internal reference documents (available upon request)

(b) (4)

Risk assessment and safety instructions

Summarised risk assessment

When measuring water activity using the method and instructions, only small volumes of (b) (4) are used, and otherwise only substances with no systemic health hazards.

Hazard and precautionary statements

(b) (4)

(b) (4)

Equipment

Apparatus

(b) (4)

Chemicals, reagents and solvents

(b) (4)

Reference material

(b) (4)

Sample handling

Sample storage and preparation

Samples should be stored in a refrigerator, unless the sample is to be measured straight away.

(b) (4)

Sample amount

The minimum amount of sample for measurement (duplicate samples), and remeasurement with duplicate samples is:

(b) (4)

Analysis

Calibration and verification of apparatus

(b) (4) (available upon request).

Sample stability

(b) (4)

Analytical procedure

(b) (4) (available upon request).

Special instructions

(b) (4)

The temperature difference between sample and measurement chamber

(b) (4)

Special instructions - TDL

(b) (4)

Special instructions - Dewpoint

(b) (4)

Check of the temperature difference between sample and measurement chamber – Dewpoint

(b) (4)

Documentation

(b) (4)

Data

Collection and storage of data

(b) (4)

Calculations

(b) (4) .

Quality assurance

Check of linear offset

(b) (4)

Reproducibility test

(b) (4)

Duplicate/triplicate samples

Dewpoint

(b) (4)

TDL

(b) (4)

(b) (4)

Maximum permissible difference between the highest and lowest measured values	Duplicate samples	Triplicate samples
(b) (4)		

If the response in a sample is higher than the highest standard

(b) (4)

Reporting of analysis results

(b) (4)

Revision history

(b) (4)

Person responsible

Director APS

Validation – (b) (4)

Validation report

(b) (4)

Specificity

Cross-validation

(b) (4)

Interferences

(b) (4)

(b) (4)

(b) (4)

Table 1.

(b) (4)

Precision within the laboratory

(b) (4)

Table 2.

(b) (4)

Reproducibility

(b) (4)

Table 3.

(b) (4)

Accuracy and Bias

(b) (4)

Linearity

(b) (4)

Chart 1. Linearity.

Robustness

The ability of TDL to measure on a matrix which interferes with the dewpoint instrument

(b) (4)

Measurement uncertainty

Measurement range

(b) (4)

Comments

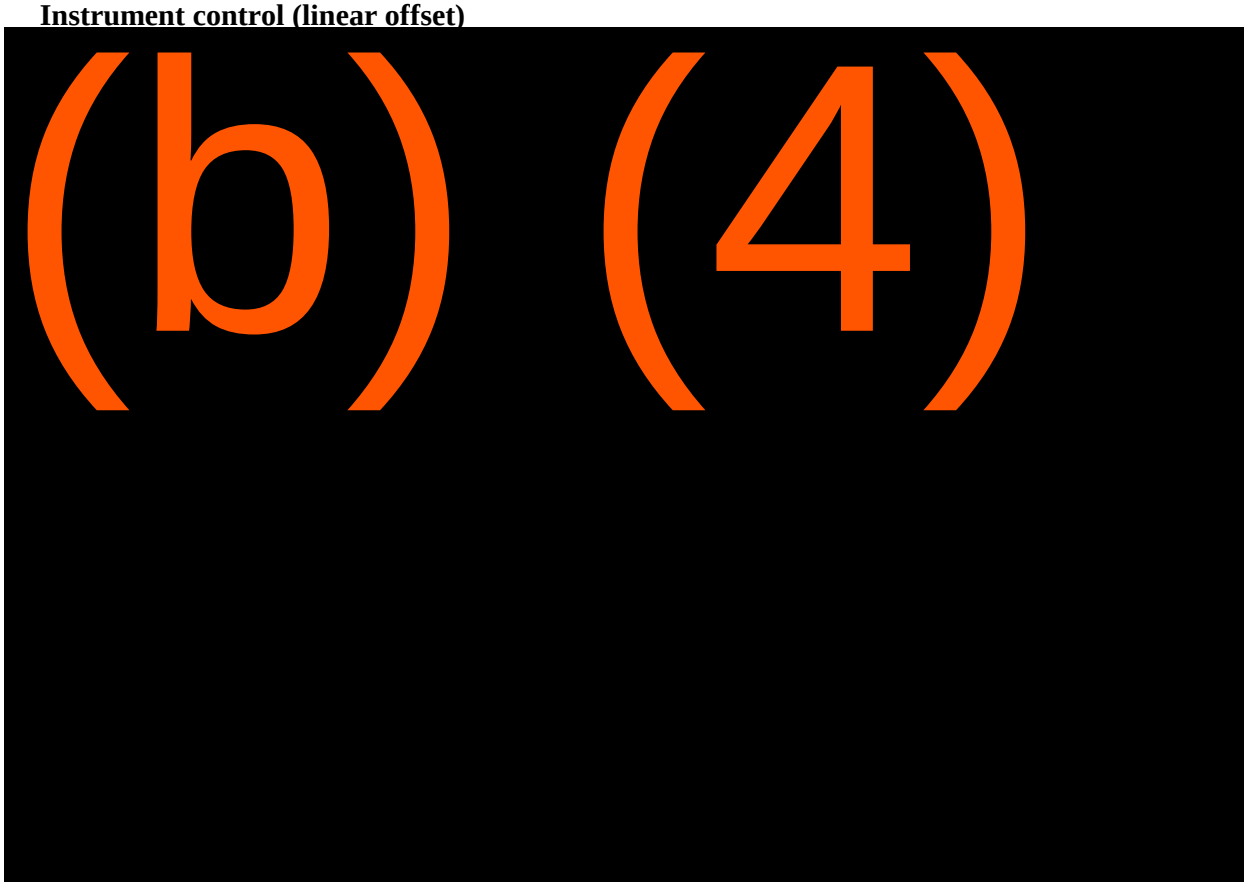
(b) (4)

Appendices

(b) (4)

Appendix 1 Validation – (b) (4)

Instrument control (linear offset)



Validation report

Specificity

Interferences

(b) (4)

Repeatability

(b) (4)

Table 1.

(b) (4)

(b) (4)

Precision within the laboratory

(b) (4)

Table 2.

(b) (4)

(b) (4)

Reproducibility

(b) (4)

(b) (4)

Accuracy

(b) (4)

Linearity

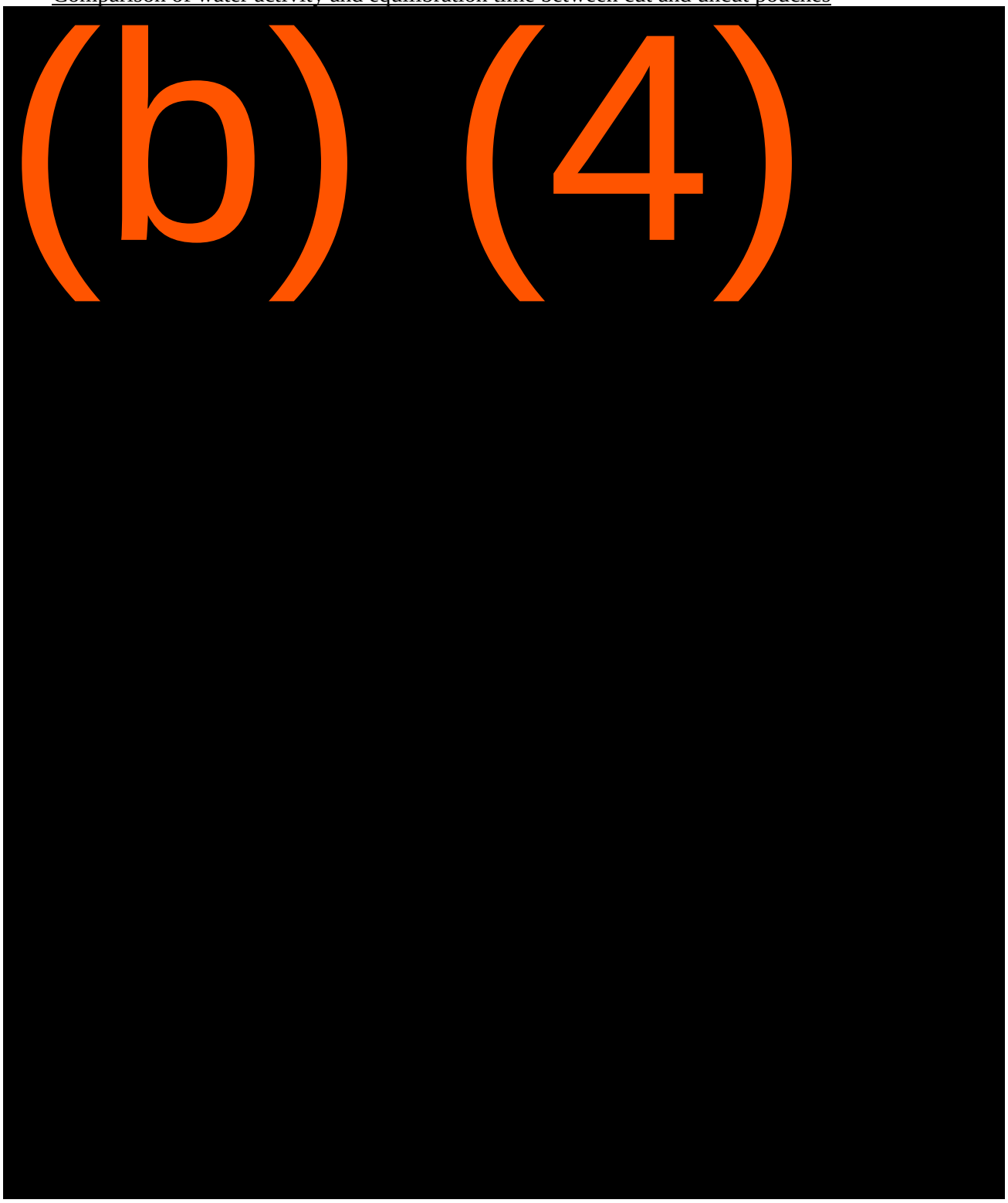
(b) (4)

Chart 1. Linearity.

(b) (4)

Robustness

Comparison of water activity and equilibration time between cut and uncut pouches



(b) (4)

Measurement uncertainty

(b) (4)

Significance of temperature

(b) (4)

Measurement range

(b) (4)

Comments

(b) (4)

Appendix 2.

(b) (4)

(b) (4)

(b) (4)

Measures for various risk levels

(b) (4)

Personal protective equipment

(b) (4)

Protective gloves:

(b) (4)

Respiratory protection:

Unless otherwise specified in the safety data sheet, respiratory protection should be used for substances or mixtures for the below-mentioned hazard types in conjunction with specific H-statements. (b) (4)

(b) (4)

Measures for Hazard types E and F

(b) (4)

Summarised risk assessment of the method

(b) (4)

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Risk mitigation measures:

(b) (4)

Substances hazardous to the environment:

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Flammable substances:

(b) (4)