

JOINT FAO/WHO FOOD STANDARDS PROGRAMME  
CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

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HARMONIZATION OF NAMES AND FORMAT FOR PRINCIPLES IDENTIFIED IN CXS 234

(Prepared by Brazil)

## BACKGROUND

1. In its 42nd session, CCMAS<sup>1</sup> noted that the same principle is often identified in different ways, and there is not consistency in what information should be captured in the principle. It was agreed that Brazil would prepare a discussion paper to consider harmonization of names and format for principles identified in CXS 234 (an update of [CX/MAS 17/38/6](#) Annex 3) as well as how to harmonize provision names (e.g. moisture content vs moisture). It was also noted that when considering the names for the principles in CXS 234, consideration should be given to how much space there will be in the database.

## CONSIDERATION OF SOME KEY ISSUES

2. When studying this matter, Brazil took into account the following factors to formulate concrete recommendations for the way forward.

### General Guideline

3. The name principle mentions only the description of the technique related to determining the test result. The techniques used for sample preparation, extraction and separation were not included.

### Definitions

4. To harmonize the descriptions of analytical techniques, the following definitions for analytical techniques were considered:

- **Colorimetric:** technique that only involves colour reaction and visual observation, without the use of equipment.
- **Spectrophotometry:** technique whose equipment uses light absorption, for example: UV-Vis (*Ultraviolet-Visible*) spectrophotometry, infrared, atomic absorption, ICP (*Inductively Coupled Plasma*).
- **Sensory:** technique that uses the senses (odor, taste, visual, texture) to determine the provision.
- **Volumetry:** technique that determines volume without the use of another determining technique, such as titration. In the case of tests where titration is used, it is not called as volumetry.
- **Calculation:** when the determination is the result of a calculation based on test result(s). In this case, the provisions used are specified.

### Criteria Used

#### Assays Whose Results Are Method Dependent (Type 1 Methods)

5. Description in the “provision” of the factor that makes it dependent, for example: temperature, conversion factor.

6. Description only of the analytical technique used to obtain the “provision” result, since the other information is described in the methods designated as type 1. Therefore, the following were not included: equipment, solvents or reagents used, for example.

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<sup>1</sup> REP23/MAS para. 51

7. For tests that involve the development of microorganisms at a certain temperature, this temperature was included in the “provision” description.

*Examples:*

- *humidity at 105°C – Gravimetry*
- *Protein (Nx6.25) – Titrimetry and calculation*
- *Carbohydrates – Calculation based on the results of moisture, protein (factor 4), fat (factor 9), ash and dietary fibre*
- *Artificial dye (qualitative) – Colorimetric*
- *Drained net weight – Gravimetry*
- *Strange Matters – Visual*
- *Lipids – Gravimetry*

Assays Whose Results Are Independent of the Method (Type 2 Methods)

8. For instrumental tests, the technique used must refer to the main equipment used, for example: for separation, and the detector used for determination.

*Examples:*

- *Nitrate – UV-Vis (Ultraviolet-Visible) spectrophotometry*
- *Manganese – inductively coupled plasma optical emission spectrophotometry*
- *Potassium – potentiometry with selective electrode*
- *Mercury – atomic absorption spectrophotometry with cold vapor generator*
- *Aflatoxin M1 – high performance liquid chromatography with fluorescence detector*
- *Fatty acids - gas chromatography with flame ionization detector*

Additional Information

9. Considering the acceptance of the criteria described above, it is considered necessary to remove information such as: “ashing”, “ceramic filter filtration”, “complexometry”, “centrifugation”, “distillation”, “enzymatic”, “flotation”, “single sulfation”, “sieving”.

## **RECOMMENDATIONS**

10. CCMAS43 is invited to consider:

- the approval of the criteria described in this document to name the principles (paras 5 – 9);
- the proposed version of the harmonized principles presented in Appendix I;
- if it is necessary to establish a specific EWG to continue this work to identify for each provision in CXS 234 the related principle and if there is principle to be included in the list; and
- the abbreviation agreed for each principle identified, when necessary for space reasons.

**The proposed version of the harmonized principles**

1. Anodic Stripping Voltametry
2. Atomic Absorption Spectrophotometry
  - . Hydride generation
  - . Direct graphite furnace
  - . Flame atomic absorption
  - . Graphite furnace
  - . Cold Vapour
3. Brix
4. Carbon Isotope Ratio Mass Spectrometry
5. Centrifugation % value
6. Colorimetry
7. Conductimetry
8. Confocal Laser Scanning Microscopy
9. Densitometry
10. DNA Comet Assay
11. Electrophotometry
12. Eletrometric
13. Enzimatic
14. Fluorimetry
15. Gas Chromatography
  - . FID (*Flame Ionization Detector*)
  - . MS/MS (*Tandem Mass Spectrometry*)
  - . TCD (*Thermal Conductivity Detector*)
  - . FTD (*Flame Thermionic Detector*)
  - . FPD (*Flame Photodiode Detector*)
  - . ECD (*Electron Capture Detector*)
16. Gravimetry
  - . Ashing at 550°C
  - . Ashing at 825°C
  - . Drying at 87°C
  - . Drying at 88°C
  - . Drying at 103°C
  - . Drying at 110°C
  - . Drying at 120°C
  - . Drying at 130°C
  - . Rose-Gottlieb
  - . Weibull-Berntrop
  - . Schmid-Bondzynski- Ratslaff
17. Inductively Coupled Plasma

- . OES (*Optical Emission Spectrometry*)
- . MS (*Mass Spectrometry*)
- 18. Immunoaffinity Column
- 19. Immunoassay
- 20. Ion Exchange Chromatography
- . Pulsed Amperometric Detection
- 21. Liquid Chromatography
- . Fluorescence
- . MS/MS (*Tandem Mass Spectrometry*)
- . RI (Refractive index)
- . Pulsed amperometry
- . FLD (*Fluorescence Detector*)
- . UV (*Ultraviolet*)
- 22. Microbioassay
- 23. Microscopy
- 24. Microscopy (Howard Mould Count)
- 25. Nephelometry
- 26. Nuclear Magnetic Resonance Spectroscopy
- 27. Photometry
- 28. Photostimulated Luminescence
- 29. Polarimetry
- 30. Pycnometry
- 31. Refractometry
- 32. Spectrometry
- . Stable isotope mass
- . Fluorescence
- . ESR (*Electron Spin Resonance*)
- 33. Thermoluminescence
- 34. Thermometry
- 35. Thin Layer Chromatography
- 36. Titrimetry
- . Karl Fischer
- . Kjeldahl
- . Lane & Enyon
- . Wijs
- 37. Turbidity
- 38. Visual examination
- 39. Volumetry

**Abbreviations:**

ECD	Electron Capture Detector
ESR	Electron Spin Resonance

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FID	Flame Ionization Detector
FLD	Fluorescence Detector
FPD	Flame Photodiode Detector
FTD	Flame Thermionic Detector
ICP	Inductively Coupled Plasma
MS	Mass Spectrometry
MS/MS	Tandem Mass Spectrometry
OES	Optical Emission Spectrometry
RI	Refractive Index
TCD	Thermal Conductivity Detector
UV	Ultraviolet
UV-Vis	Ultraviolet-Visible