No. 10416

MULTILATERAL

International Convention on the standardization of methods of wine analysis and evaluation (with annexes). Done at Paris on 13 October 1954

Authentic text: French.

Registered by France on 7 April 1970.

MULTILATÉRAL

Convention internationale pour l'unification des méthodes d'analyse et d'appréciation des vins (avec annexes). Faite à Paris le 13 octobre 1970

Texte authentique : français.

Enregistrée par la France le 7 avril 1970.

[TRANSLATION — TRADUCTION]

INTERNATIONAL CONVENTION [1] ON THE STANDARDIZATION OF METHODS OF WINE ANALYSIS AND EVALUATION

The Contracting Parties, having recognized the need

— to standardize methods of wine analysis and evaluation with a view to:

— facilitating interpretation of the results of analyses of wines in international trade;

— permitting stricter control of the quality of wines;

— contributing to the development of scientific research in this field;

— and to provide for permanent international co-operation in the study of such methods with a view to permitting their revision from time to time;

Have agreed as follows:

[1] Came into force on 14 June 1957, i.e., six months after the deposit with the French Government of the instruments of ratification of the following five States, in accordance with article 8:

State	*Date of deposit*
Spain	6 March 1956
France	30 October 1956
Portugal	31 October 1956
Turkey	14 November 1956
Greece	14 December 1956

Subsequently, the Convention came into force for each of the following States six months after the deposit of its instrument of ratification of accession (*a*):

State	*Date of deposit*		*Date of entry into force*	
Austria	15 January	1957	15 July	1957
Italy	8 March	1957	8 September	1957
Chile	28 May	1957	28 November	1957
Morocco	14 November	1957 *a*	14 May	1958
Yugoslavia	21 May	1958	21 November	1958
Federal Republic of Germany [a]	24 July	1959	24 January	1960
Argentina	24 January	1968 *a*	24 July	1968
South Africa	15 February	1968 *a*	15 August	1968

[a] With the following reservation : [TRANSLATION — TRADUCTION]
"In ratifying this Convention, the Federal Republic of Germany considers that it retains the inviolable right to analyse wines, at any time and with all the care for accuracy required in the various circumstances, using methods other than those provided for in annex A to the Convention and, on the basis of the results of such analyses, to take the measures deriving from German legislation"; and with a declaration that the Convention will apply to *Land Berlin*, effective from 24 January 1960.

Article 1

Each Contracting Party undertakes to introduce into its national regulations on the control of wines in international trade the definitions and the methods of analysis specified in annex A to this Convention.

Article 2

Establishments authorized to do so by the Governments of the Contracting Parties shall issue analysis certificates in conformity with the specifications in annex A mentioned in article 1.

Since the number and nature of factors to be determined in wine analysis vary in accordance with the purpose in view, the two model analysis certificates which constitute annex B to this Convention shall not be binding. However, certificate No. 1 should be used whenever possible. Furthermore, the factors to be determined in the analysis of wines in international trade must be stipulated when trade conventions or agreements are prepared.

Article 3

The Contracting Parties recognize the desirability of adopting the methods of wine analysis indicated in annex A as official methods applicable within each country.

Article 4

They agree to exchange with each other texts of laws, decrees and regulations concerning wines and their methods of analysis, and to indicate which establishments are authorized to issue analysis certificates. All such documents and data shall also be sent to IWO.

Article 5

There shall be established under IWO a sub-committee on the standardization of methods of wine analysis and evaluation, which shall normally meet once a year. Its mandate shall be:

(1) to carry on studies with a view to supplementing and keeping up to date the definitions and methods of wine analysis established in annex A;

(2) to draft technical instructions;

(3) to give its opinion on maximum and minimum quantities of certain constituents of wine;

(4) to consider any amendments to the annexes proposed by one or more of the Contracting Parties.

The sub-committee shall submit the results of its work to the IWO Committee, which alone is authorized to take decisions.

Article 6

Any dispute concerning interpretation of the provisions of this Convention or difficulties regarding its application not settled through negotiation shall be referred to the IWO Committee, which shall endeavor to effect conciliation or instruct the sub-committee provided for in article 5 above, or a small sub-committee composed of one expert from each of the States concerned and one appointed by IWO, to do so.

The endeavour to effect conciliation shall be made having regard to all relevant documents and evidence and after the parties have been heard. A report on it shall be prepared and brought to the attention of each of the States concerned by the Director of IWO.

If the endeavour to effect conciliation fails, and after all other ways and means of settlement have been exhausted, they may, as a last resort, have recourse to the International Court of Justice.

They shall undertake to bear in equal shares the cost of these procedures.

Article 7

This Convention shall replace, in relations between States which have ratified it, the Convention on the Unification of the Methods of Analysis of Wines in International Commerce, signed at Rome, on 5 June 1935.

Article 8

This Convention shall remain open for signature until 1 May 1955.

It shall be ratified as soon as possible in accordance with each Contracting State's constitutional rules. Instruments of ratification shall be deposited with the Government of France, which shall advise each signatory State and IWO of the date of their receipt.

This Convention shall enter into force six months after five States have deposited their instruments of ratification and, for each of the other signatory States, six months after it has deposited its own instrument of ratification.

This Convention shall be open for accession by any other State. Such accession shall take effect six months after receipt of the instrument of accession by the Government of France, which shall give notice of receipt to each of the other signatory or acceding States and to IWO.

Article 9

Any contracting or acceding State may, at any time, notify the Government of France that this Convention is applicable not only to its own territory but also to all or part of the territories for whose international relations it is responsible.

Any Contracting or acceding State shall have the right, when depositing its instrument of ratification or accession, to declare that it makes its own application of this Convention conditional on ratification or accession by certain specifically designated States.

Article 10

This Convention may be denounced by any Contracting or acceding State, either for its own territory or for all or part of the territories for whose international relations it is responsible; it shall bring its denunciation to the notice of the Government of France, which shall immediately inform the other signatory or acceding States and IWO thereof.

Such denunciation shall take effect, with regard only to the State concerned and the territories mentioned in it, one year from the date of its receipt by the Government of France.

IN WITNESS WHEREOF the respective Plenipotentiaries have signed this Convention, done in a single copy which shall be deposited in the archives of the French Ministry of Foreign Affairs. A copy shall be sent to each signatory or acceding State and to IWO.

DONE at Paris, 13 October 1954.

For France:	ANT. PINAY
For Austria:	ALOIS VOLLGRUBER
For Chile:	JUAN B. ROSSETTI
For the Federal Republic of Germany:	Dr. WILHELM HAUSENSTEIN
For Greece:	R. RAPHAËL
For Italy:	P. QUARONI
For Luxembourg:	ROBERT ALS
For Portugal:	MARCELLO GONÇALVES NUNES DUARTE MATHIAS
For Spain:	El Conde DE CASA ROJAS
For Switzerland:	SALIS
For Turkey:	N. MENEMENCIOGLU
For Yugoslavia:	S. MAKIEDO

ANNEX "A"

DEFINITIONS AND METHODS OF ANALYSIS

Wine analysis involves a preliminary evaluation and a physical and chemical analysis.

The preliminary evaluation consists of an organoleptic examination, stability tests and a microbiological examination.

The organoleptic examination consists of an evaluation of colour, clarity and sediment content (with a description thereof, as appropriate) and tasting (odour and flavour).

The stability tests are subdivided into stability on exposure to air and stability on exposure to cold.

The microbiological examination includes testing for stability on exposure to oven heat, microscopic examination of the wine and sediment, microorganism count and identification.

Physical and chemical analysis: The following text includes a definition of the terms used in preparing international analysis certificates and a description of the methods acknowledged to be the most accurate and most consistent with the definitions adopted.

Simpler but as a rule slightly less accurate methods which could also be used, particularly for analysing wine intended for national markets, are indicated under the heading "Rapid analysis methods".

An indication of the method used in each analysis must appear on the analysis certificate.

N.B. Clear wine shall be used for the analysis. If the wine is cloudy, it shall first be filtered through paper in a covered funnel. A mention of this operation shall appear on the analysis certificate.

DENSITY

Definition. The density of a wine at 20° is the ratio of the mass of a given volume of the liquid at 20 °C to the mass of the same volume of water at 4 °C.

Wine density may also be expressed as the ratio of the mass of a given volume of the liquid at 20° to the mass of the same volume of water at the same temperature.

The mode of expression selected shall always be specified on the analysis certificates by the notation:

$$d^{20^\circ}_{20^\circ} \quad \text{or} \quad d^{20^\circ}_{4^\circ}$$

Methods of determination. Pycnometry: results correct to within 0.0001.

Rapid analysis. By means of an aerometer or hydrostatic balance. Results correct of within 0.0003.

ALCOHOL CONTENT

Definition. Volumetric alcohol content equals the number of litres of ethyl alcohol in 100 litres of wine, both volumes being measured at a temperature of 20 °C. Alcohol content may be expressed in grammes per litre at 20°.

Methods of determination. The wine shall be distilled in its natural state and the resulting highly alkaline distillate redistilled. The second distillation shall be made up to the original volume. The density of this distillate shall be determined by pycnometry.

Rapid analysis. A quantity of lime water sufficient to exceed neutralization by 10 to 20 per cent shall be added to the wine. The alcohol content of the distillate made up to the original volume shall be determined by aerometry, refractometry or hydrostatic balance.

Chemical methods for determining alcohol content shall also be accepted, particularly in the analysis of liquids with a low alcohol content, such as unfermented wine and certain musts.

Pending the desired preparation and adoption of an international density/

alcohol content and refractive index/alcohol content correlation table, the density of the distillate and the name of the table used for determining alcohol content from it shall be indicated on the analysis certificate.

Alcohol content shall be determined to the nearest 0.05° in exact analysis and the nearest 0.1° in rapid analysis.

TOTAL DRY EXTRACT

Definition. Total dry extract of wines is the total of all substances which, in given physical conditions, do not volatilize. The physical conditions must be such that the substances composing the extract undergo minimum change.

Non-reducing extract is total dry extract minus total sugars.

Reduced extract is total dry extract diminished by total sugars less one gramme (if there is more than one gramme per litre), by potassium sulphate less one gramme (if there is more than one gramme per litre), by mannite, if any, and by all chemical substances that may have been added to the wine.

The extract is expressed in grammes per litre and should be determined to the nearest 0.5.

Extract residue is the non-reducing extract minus fixed acidity, expressed as tartaric acid.

Methods of determination. Direct determination. The following method, as yet little used, shall be tested: weigh the residue obtained upon evaporation of the wine, previously spread over a spiral of blotting paper, at reduced pressure and 70° under specified conditions.

Rapid analysis. Densimetric method. The 20°/20° density of the "alcohol-free residue" shall first be calculated according to the Tabarié formula by subtracting from the 20°/20° wine density, increased by one, the 20°/20° density of the water-alcohol mixture of the same alcoholic strength.

As a check, and only in the case of saccharose-free wines, the density of this "alcohol-free residue" may be determined directly by removing the alcohol from a given quantity of wine by distillation and making up the residue to the original volume with water. The difference between the densities found for the "alcohol-free residue" by these methods should be less than 0.0004.

Pending establishment of an average table as consistent as possible with direct measurement data, the Plato table, 20°/20° saccharose solution densities, has been provisionally selected as the conventional conversion table for the density of the "alcohol-free residue" expressed as dry extract weight.

REDUCING SUGARS

Definition. Reducing sugars are all sugars with ketone or aldehyde groups contained in wine which reduce Fehling's solution.

Methods of determination. (1) *Clarification of the wine* (provisional processes) — Process using lead acetate on neutralized and dealcoholized wine, the excess lead being removed by sodium oxalate, or mercuric oxide process.

(2) *Dosage* (process using Fehling's solution) — The quantity of cuprous oxide precipitated by an excess of Fehling's solution over the clarified wine shall be determined by gravimetry or titrimetry. Direct titrimetry with methylene blue as end-of-reaction indicator shall be used as a rapid analysis process.

The quantity of reducing sugars is expressed as grammes of invert sugar per litre. It should be determined to the nearest 0.5.

SACCHAROSE

The liquid obtained by clarification of the wine shall be tested for saccharose by hydrolysing with hydrochloric acid or saccharose and measuring the increase in reducing power resulting from the hydrolysis.

Only that quantity of hydrolysable sugar in excess of two grammes per litre shall be considered saccharose. This limit shall be increased to four grammes in the case of wines containing more than fifty grammes of sugar per litre.

ASH

Definition. Ash is all residue after incineration of the solids obtained upon evaporation of the wine carried out in such a way that all the cations (except ammonium) are in the form of carbonates and other mineral anhydrides.

Method of determination. Incineration of wine extract at between 500° and 550° until combustion of the carbon is complete.

The weight of the ash shall be expressed in grammes per litre and determined to within 0.03 g.

ALKALINITY OF ASH

Definition. Alkalinity of the ash is the sum of the cations, other than ammonium, combined in the organic acids of the wine.

A distinction may be made between water-soluble alkalinity and insoluble alkalinity.

The alkalinity per gramme of ash (or figure of alkalinity) shall be determined by dividing the total alkalinity, expressed as grammes of potassium carbonate, by the weight of the ash.

Method of determination. Titrimetry by sulphuric acid back-titrated after heating, using methyl orange as indicator.

Expression of results. Ash alkalinity shall be expressed as milliequivalents per litre, determined to the nearest 0.5, and as grammes of potassium carbonate per litre.

POTASSIUM

Method of determination. The potassium content shall be determined by weighing the potassium perchlorate, after destruction of the organic matter by the nitric acid and mercury method or by nitroperchloric destruction.

As a rapid method, the process of precipitating potassium in the form of potassium bitartrate shall be used.

Expression of results. The quantity of potassium shall be expressed as milliequivalents per litre and as grammes of potassium bitartrate per litre. It shall be determined to the nearest 0.1 grammes per litre.

TOTAL ACIDITY

Definition. Total acidity is the sum of titratable acids when the wine is brought to pH 7 by the addition of a titrated alkaline solution. Carbon dioxide and free combined sulphurous anhydride are not included in total acidity.

Carbon dioxide shall be removed from the wine by cold agitation in a vacuum.

Methods of determination. Potentiometric titrimetry.

Titrimetry using bromothymol blue as an end-of-reaction indicator shall be used as a rapid analysis process.

Expression of results. Total acidity shall be expressed as milliequivalents per litre and determined to the nearest unit. Total acidity may also be expressed as the weight of the fixed acid conventionally selected by each country for its domestic use. The nature of the acid shall in all cases be specified on the analysis certificate.

VOLATILE ACIDITY

Definition. Volatile acidity is formed by the amount of fatty acids of the acetic series found in wines in either the free or the salified state.

Methods of determination. The separation of volatile acids shall be achieved by means of steam distillation and vapour rectification. The wine shall be acidified with a crystal of tartaric acid (approximately 0.5 grammes for 20 ml) before distillation. All necessary precautions shall be taken to avoid the presence of carbon dioxide in the distillate. The indicator used shall be phenolphthalein. The acidity of the distilled free and combined sulphurous anhydride is not included in the volatile acidity and must be deducted from the acidity of the distillate.

Expression of results. Volatile acidity shall be expressed as milliequivalents per litre in the case of international trade and determined to the nearest 0.2. Volatile acidity may also be expressed as the weight of the acid conventionally selected by each country for its domestic use. The nature of this acid shall in all cases be indicated on the analysis certificate.

TARTARIC ACID

Methods of determination. The tartaric acid shall be precipitated in the form of calcium racemate, which shall be purified by means of a second precipitation. The calcium racemate content shall be determined by oxidimetry.

For rapid analysis, the tartaric acid shall be precipitated in the form of potassium bitartrate in the presence of a pH 3.5 buffer mixture. The tartaric acid content shall be determined by titrimetry.

Expression of results. The tartaric acid content shall be expressed as milliequivalents per litre and as potassium bitartrate.

SUCCINIC ACID

Methods of determination. After expulsion of the alcohol, the extractive matters shall be oxidized with sulpho-permanganic mixture, the volatile acids expelled by steam distillation and the succinic acid separated by ether extraction. The succinic acid extracted shall be determined by argentometry.

In the case of wines containing more than 20 grammes of sugar per litre, sulpho-permanganic oxidation shall be preceded by a preliminary ether extraction.

SULPHATES

Methods of determination. Precipitation of barium sulphate on wine previously freed of sulphurous anhydride by air-free boiling, and weighing.

The Marty limits method shall be used as a rapid analysis method.

Expression of results. The sulphate content shall be expressed as milliequivalents per litre and as grammes of potassium sulphate per litre. Determination shall be to the nearest 0.05 g.

CHLORIDES

Method of determination. Argentometry following nitro-permanganic oxidation preceded by clarification with baryta (Georgeakopoulos process).

Expression of results. The chloride content shall be expressed as milliequivalents or as grammes of sodium chloride per litre. Determination shall be to the nearest 0.05 g.

TOTAL PHOSPHORUS

Methods of determination. Following nitric oxidation and incineration, the phosphoric acid shall be precipitated in a nitric medium in the form of ammonium phosphomolybdate. This salt shall then be titrated with an excess of soda in the presence of formol; the excess soda shall be titrated with hydrochloric acid in the presence of phenolphthalein.

Expression of results. Total phosphorus content shall be expressed as milliequivalents of phosphoric acid and as grammes of P_2O_5 per litre. It should be determined to the nearest 0.01 grammes per litre.

SULPHUROUS ANHYDRIDE

Definition. Free sulphurous anhydride is sulphurous anhydride in the form of SO_2 and mineral combinations SO_3H_2, SO_3H^-, and SO_3^{--}.

Combined sulphurous anhydride is the difference between total sulphurous anhydride and free sulphurous anhydride.

Methods of determination. (1) *Free anhydride.* Potentiometric titrimetry. As a rapid method, the Ripper (white and rosé wines) and Ripper-Benvegnin (red wines) methods shall be used.

(2) *Total anhydride.* Haas or Marcille-Dubaquié-Flanzy-Deibner-Bénard method.

As a rapid method, the double Ripper method shall be used, the Benvegnin lighting apparatus being used in the case of red wines.

Expression of results. The sulphurous anhydride content shall be expressed as milligrammes of sulphurous anhydride per litre and determined to the nearest 10 milligrammes.

ANNEX "B"

MODEL OF OFFICIAL WINE ANALYSIS AND EVALUATION CERTIFICATES

Analysis certificate No. 1 covers determination of the essential and most characteristic elements of the composition of the wine. In general, this relatively simple analysis is sufficient to permit effective control of wine quality.

Analysis certificate No. 2 includes the elements in analysis certificate No. 1 and a large number of other elements. Together they constitute a very detailed

analysis which may be adopted in particular for the purpose of scientific research.

Each element in the analysis has been allocated a reference number in order to avoid any error in translation from one language to another. Numbers below 100 relate to elements shown in certificates Nos. 1 and 2. Numbers above 100 have been allocated to elements shown in certificate No. 2 only.

WINE ANALYSIS AND EVALUATION CERTIFICATE No. 1

Organoleptic examination:

1. Colour
2. Clarity-sediment
3. Tasting: odour and flavour

Wine stability tests:

4. Stability on exposure to air
5. Stability on exposure to cold

Microbiological examination:

6. Stability on exposure to oven heat
7. Microscopic examination of wine and sediment

Physical and chemical analysis:

8. Density of wine
9. Density of non-alcoholic residue
10. Alcohol content
11. Total dry extract by densimetry
12. Reducing sugars
13. Saccharose
14. Ash
15. Alkalinity of ash
16. Potassium
17. Total acidity
18. Volatile acidity
19. Fixed acidity
20. pH
21. Tartaric acid
22. Lactic acid
23. Citric acid
24. Sulphates
25. Chlorides
26. Free sulphurous anhydride
27. Total sulphurous anhydride

28. Detection of antiseptics and antibiotics by biological method
29. Detection of extraneous colouring matter

Interpretation and conclusion

WINE ANALYSIS AND EVALUATION CERTIFICATE No. 2

(Detailed analysis)

Organoleptic examination:

1. Colour
2. Clarity-sediment
3. Tasting: odour and flavour

Wine stability tests:

4. Stability on exposure to air
5. Stability on exposure to cold

Microbiological examination:

6. Stability on exposure to oven heat
7. Microscopic examination of wine and sediment
101. Microorganism count and identification

Physical analysis:

8. Density of wine
9. Density of non-alcoholic residue
102. Refractive index of wine
103. Refractive index of non-alcoholic residue
104. Polarimetric deviation

Chemical analysis:

10. Alcohol content by volume
105. Alcohol in grammes per litre
106. Methanol
107. Higher alcohols
11. Total dry extract by densimetry
108. Total dry extract by weighing
109. Non-reducing extract
110. Reduced extract
111. Remainder of extract
12. Reducing sugars
13. Saccharose

112. Reducing sugars/polarimetric deviation
113. Pentoses and pentosans
14. Ash
114. Water-soluble ash
15. Alkalinity of ash
115. Alkalinity of water-soluble ash
116. Alkalinity of a gramme of ash
16. Potassium
117. Calcium
118. Magnesium
119. Sodium
120. Iron
121. Aluminium
122. Zinc
123. Manganese
124. Copper
125. Arsenic
126. Lead
127. Ammonia
128. Total nitrogenous compounds expressed as nitrogen
129. Amino acids
17. Total acidity
18. Volatile acidity
19. Fixed acidity
20. pH
21. Tartaric acid
22. Lactic acid
130. Malic acid
23. Citric acid
131. Succinic acid
24. Sulphates
25. Chlorides
132. Total phosphorus expressed as phosphoric acid
133. Glycerol
134. Butanediol
135. Sorbitol
136. Mannitol
137. Gums and pectins
138. Total tannoids
139. Permanganate content
140. Tannins
141. Natural colouring matter
142. Total esters
143. Neutral esters

144. Acid esters
145. Acetic esters
146. Ethanal
26. Free sulphurous anhydride
27. Total sulphurous anhydride
28. Detection of antiseptics and antibiotics by biological method
147. Fluorine
148. Total bromine
149. Boric acid
150. Artificial edulcorants
29. Extraneous colouring matter
151. Caramel
152. Detection of ferrocyanide and hydrocyanic acid
153. Carbon dioxide pressure (in the case of sparkling wines)

Interpretation and conclusion