

# CODEX ALIMENTARIUS COMMISSION



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: [codex@fao.org](mailto:codex@fao.org) - [www.codexalimentarius.org](http://www.codexalimentarius.org)

**Agenda Item 5.3**

**CX/MAS 26/45/8 Add.1**

**March 2026**

**Original Language Only**

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

Forty-fifth Session

Budapest, Hungary

9 – 13 March 2026

### **REVIEW OF METHODS OF ANALYSIS IN CXS 234**

#### **SUGARS AND HONEY WORKABLE PACKAGE**

##### **Comments in reply to CL 2026/4-MAS**

Submitted by:

*Australia, Canada, Chile, Colombia, Ecuador, Egypt, European Union, Indonesia,  
Iraq, Peru, Philippines, Rwanda, the United States of America (USA), and  
the International Commission for Uniform Methods of Sugar Analysis (ICUMSA)*

### **Background**

This document compiles comments received through the Codex Online Commenting System (OCS) in response to CL 2026/4-MAS issued in January 2026. Under the OCS, comments are compiled in the following order: general comments are listed first, followed by comments on specific sections.

### **Explanatory notes on the Annex**

The comments submitted through the OCS are hereby annexed and presented in tabulated format.

## ANNEX

## GENERAL COMMENTS

COMMENT	MEMBER / OBSERVER
<p>General comments:</p> <p>This review along with other workable package reviews relate to methods from a commodity committee 'Adjourned sine die' decades ago. This review highlighted 'the challenges for CCMAS in dealing with issues related to Codex committees and/or task forces that had been adjourned sine die, dissolved, abolished or were working by correspondence'. Where the methods of analysis related to these committees/commodities/provisions had little opportunity to be updated or improved as the industry and methods evolved.</p> <p>In this Workable package report, there is several 'classical' method reviews culminating in 'New method proposals' e.g. Honey /Sugars added (for sugar profile): EN 17958; Sugars - Invert sugars (as reducing sugars) generally; Sugars – Sulphur Dioxide: US FDA Method C-004.04 by LC-MSMS. Where the proposal is for, some classical methods to be retained only as a Type IV as means of 'transitioning out' from the industry and trade without too much disruption, while new method options proposed for inclusion as Type IV as a means of 'transitioning in' methods. So, the transitions 'in' and 'out' are expected to be a process, but hopefully 'in the spirit of existing guidance ensuring that any exceptional deviation was sufficiently justified from a technical standpoint and that such exceptions did not become the norm'.</p> <p>Specific comments are presented below.</p>	Australia
<p>Canada appreciates the complexity involved in the review of the honey and sugars methods and recognizes the effort taken to prepare the report of the EWG. Canada has reviewed the CL focused on the review of the methods used to address provisions in the sugars and honey commodity group and has provided the following comments below for consideration.</p> <p>While it is recognized that the commodities were combined in an effort to reduce the number of lines in the standard and to simplify the tables, there is some concern that the commodities in the middle of the listing will be lost to users. Canada suggests that it would be beneficial to retain the listing of commodities as it exists presently in CXS 234.</p>	Canada
<p>Ecuador agradece y apoya el trabajo realizado por el EWG para actualizar y de esta manera armonizar los métodos analíticos conforme a los criterios de desempeño del Codex. El país recomienda priorizar métodos colaborativamente validados, métodos que tienen definido y validado un Límite de Cuantificación (métodos-LOQ) y métodos instrumentales cuando existan alternativas más específicas y robustas. Considerando la realidad del país, y de países cercanos de la región, se recomienda que cuando un método tradicional continúe ampliamente utilizado y validado o verificados en laboratorios acreditados, este se podría mantener como tipo IV, siempre que se identifique como método empírico destinado para una matriz, o para un subconjunto de producto en específicos.</p> <p>Comentarios específicos- Azúcares: Con respecto al dióxido de azufre el país recomienda mantener AOAC 962.16 (Monier-Williams modificado) únicamente para matrices con LMR &gt;50 mg/kg. También incluir métodos más sensibles cuando el LMR sea ≤10 mg/kg. Se apoya el reemplazo de ICUMSA GS 1-3 por GS 1-5 como tipo I y la inclusión HPLC-PAD como tipo II más específico. Se recomienda mantener la ICUMSA GS 1-2 como método de referencia tipo III. Se recomienda también mantener los métodos tradicionales ISO 5377, ISO 1741, ISO 1742 y ISO 5809 como Tipo I cuando exista validación respaldada.</p> <p>Comentarios específicos- Miel: el país apoya la inclusión de la AOAC 962.19 como método Tipo I, el método TS 13360 puede ser una alternativa catalogada como tipo IV si se presentan datos de validación interlaboratorio. La AOAC 980.323 puede mantenerse como</p>	Ecuador

COMMENT	MEMBER / OBSERVER
<p>tipo II y se apoya la inclusión del IHC 5 (HPLC-UV) como tipo III por mayor especificidad y selectividad. Mantener la AOAC 958.09 como Tipo I e incluir la IHC 6.1 como método alternativo tipo III o IV dependiendo de la revisión de la validación. La AOAC 998.12 debe mantenerse como método de referencia, el CEN EN 17958 puede incluirse como método alternativo tipo III, se recomienda eliminar la AOAC 978.17 por reemplazo técnico (obsolescencia).</p>	
<p>The EUMS welcome the clustering of provisions for similar commodities, which improves readability of the table.</p> <p>The Standard for sugars (CXS 212-1999) has provisions for invert sugar (% m/m) for several types of sugar. The related methods for verifying compliance with the provisions currently listed in CXS 234-1999 determine invert sugar as the sum of reducing sugars by reduction of cupric ions to cuprous oxide. They are empirical Type I methods and not specific for glucose and fructose but determine all reducing sugars present, which may lead to an overestimation of 'invert sugar'. The suggestion to endorse HPLC or enzymatic methods, which are specific for the determination of glucose and fructose, as Type IV methods next to the already endorsed Type I copper reduction methods is not compatible with the concept of a Type I method, which, by definition, is the only method for establishing the accepted value of the item measured.</p> <p>The EUMS are sceptical of the proposal of the EWG to keep the Type I methods and introduce Type IV methods for the same provision as this co-existence undermines the concept of Type I methods. The EUMS would favour either a continuation of the use of the already endorsed Type I methods together with a revision of the relevant provision to 'invert sugar expressed as reducing sugars', or the endorsement of HPLC or enzymatic methods for the determination of the sum of glucose and fructose as Type II/III methods.</p> <p>The EWG expressed concern regarding the precision of ICUMSA GS2-35 for the determination of sulphur dioxide as it appears inappropriate for verifying compliance with the limits given in the General Standard for Food Additives (CXS 192-1995) for certain sugar products. The EWG used the values for reproducibility (R) given for GS2-35 to calculate RSDR(%) values and compared them with the target RSDR(%) value for the SO<sub>2</sub> limit values given in CXS 192. However, the abstract of GS2-35 published on the ICUMSA website states that "...the absolute difference between two results obtained under reproducibility conditions should not be more than...". This suggests that the value for reproducibility is reported, which is 2.8 times the reproducibility standard deviation (2.8*sR). If sR is used instead of R, GS2-35 seems to fulfil the precision requirements. Similar considerations apply to GS2-33. Therefore, the EUMS is of the opinion that the fitness for purpose of GS2-33 and GS2-35 should be re-evaluated by the Endorsement WG.</p> <p>Specific comments:</p> <p>For several provisions in CXS 12-1981 (Honey) validated methods developed by the International Honey Commission (IHC) exist and the EUMS support their endorsement by CCMAS.</p> <p>The provision "Sugars added (for sugar profile)" in CXS 234 is ambiguous. CXS 12 has provisions and respective limit values for glucose, fructose and sucrose. Consequently, the provision name should state either "Sugar profile" or "Glucose, fructose, sucrose".</p> <p>The proposed EN 17958 (Determination of the <math>\delta^{13}\text{C}</math> value of mono- (fructose and glucose), di-, and trisaccharides in honey by liquid chromatography-isotope ratio mass spectrometry) is not a sugar profiling method. The results do not allow to assess compliance as CXS 12 has no provisions for carbon isotope ratios of individual sugars. However, in conjunction with threshold values published by Elflein &amp; Raetzke (Apidologie 2008, 39 (5), 574-587) the method is indeed useful for detecting sugar syrup addition. However, the Elflein &amp; Raetzke threshold values are part of a scientific publication and have no official status.</p> <p>Minor remarks related to suggested methods, method principles and method typing will be provided during the endorsement WG.</p> <p>The EUMS do not favour the suggestion to endorse methods for the specific determination of invert sugar (glucose plus fructose) as Type IV methods next to the determination of invert sugar by defining Type I methods.</p>	<p><b>European Union</b></p>

COMMENT	MEMBER / OBSERVER
<p>It could be considered and discussed at CCMAS to move from Type I to rational methods (Type II/III) for the determination of invert sugar, and in this case to change the provision name from “invert sugar” to “invert sugar (sum of glucose and fructose)”. In case there is no agreement on the change, the provision name should be made more specific by re-naming it to “invert sugar (as reducing sugar)” as already proposed by the EWG.</p>	
Agree	Iraq
<p>Rwanda agrees to endorse the recommendations of the EWG to retain, include, amend and/or revoke the methods in CXS 234-199 for different provisions on the commodities of sugars and honey.</p> <p>Rationale: By aligning the methods of analysis in national standards with the codex methods will strengthen mutual food control systems with other countries and will reduce technical barriers to trade and quality disputes for the concerned commodities</p>	Rwanda
<p>The United States notes the coexistence of type I and IV methods for the same commodity and provision pair for:</p> <ol style="list-style-type: none"> <li>1. Acidity in Honey <ol style="list-style-type: none"> <li>a. Type I method AOAC 962.19</li> <li>b. Type IV method TS 13360</li> </ol> </li> <li>2. Diastase activity <ol style="list-style-type: none"> <li>a. Type IV method IHC method</li> <li>b. Type I method AOAC 958.09</li> <li>c. AOAC 958.09 and IHC 6.1 are not a single method published jointly by two or more SDOs as a single document and should not be separated by a vertical bar ( ). The two methods have different reagent volumes, different sample masses, etc and do not contain identical text.</li> </ol> </li> <li>3. Invert sugar (as reducing sugars) <ol style="list-style-type: none"> <li>a. ICUMSA GS 1-5 as type I</li> <li>b. ICUMSA GS 1-3 as type IV</li> </ol> </li> </ol> <p>As stated in the Information Document: Guidance on Process for Submission, Consideration and Endorsement of Methods, Section 3.9 subsection v. states "Under exceptional circumstances, a Type IV method can be endorsed when there is an existing Type I method for the same commodity and provision if there is a justifiable reason." The United States is not aware of any exceptional circumstances that would justify the coexistence of Type I and IV methods for the above commodity and provision pairs and would prefer for CCMAS to choose a single Type I method in these cases.</p>	USA

### SPECIFIC COMMENTS

COMMENT							MEMBER / OBSERVER
Commodity	Provisions	Method	Principle	Type	Codex Standard	Committee	Participant Comments
Honey	Acidity	MAFF Validated Method V19 J. Assoc. Public Analysts (1992) 28 (4) 171-175 <b>AOAC 962.19</b>	<u>Titrimetry</u>	I	CXS 12-1981	CCS	<p>COMMENT: In our laboratory, "TS 13360 standard" method is validated and employed for this analysis. This method has the same principle <u>with</u> ours.</p> <p>COMMENT: Suggestion to include the Method AOAC 962.19. Validation data available.</p> <p>NEW METHOD PROPOSED AOAC 962.19</p>
<p><b>MAFF Validated Method V19 J. Assoc. Public Analysts (1992) 28 (4) 171-175 <b>AOAC 962.19</b></b></p> <p>MAFF methods are published in the Journal of the Association of Public Analysts (JAPA), JAPA does not seem to have a separate method, but rather is a publisher of the MAFF methods. As a result, we suggest that it could be written as MAFF V19 in JAPA as the established Type I method.</p> <p>Recognizing that AOAC 962.19 is not the same as MAFF V19, they should not be identified as identical, and while TS 13360 has been proposed it has not been possible to confirm it is the same as MAFF V19</p>							Canada
<p><b>COMMENT: In our laboratory, "TS 13360 standard" method is validated and employed for this analysis. This method has the same principle with ours.</b></p> <p>Colombia sugiere incluir: Chapter 44. p.32.Official Methods of Analysis Association of Analytical Chemist, AOAC 962.19, 20th Edition. Invima. DETERMINACIÓN DE ACIDEZ TOTAL EN MIEL DE ABEJAS. PO04-DS-403-P196 Official</p> <p>Este parámetro controla la acidez libre de la miel, puede considerarse un indicador indirecto de fermentación y de estabilidad microbiológica. Es conveniente monitorear este parámetro, pues valores altos podrían asociarse a malas prácticas de cosecha y almacenamiento generando sabores agrios, afectando la aceptación sensorial y la conformidad con CXS 12 1981. Método viable.</p>							Colombia
<p><b>COMMENT: Suggestion to include the Method AOAC 962.19. Validation data available.</b></p> <p>De acuerdo con la propuesta</p>							Peru
<p><b>Acidity</b></p> <p><b>Free acidity</b></p> <p><b>NEW METHOD PROPOSED AOAC 962.19</b></p> <p>The provision corresponds to Free Acidity</p>							Chile

COMMENT										MEMBER / OBSERVER
<b>Honey</b>	<b>Acidity</b>	<b>TS 13360</b>	<b>Titrimetry</b>	<b>I or IV</b>	CXS 12-1981	CCS	NEW METHOD PROPOSED			
<b>Acidity</b> Free Agregar una nueva fila que diga(add new line): Commodity: Honey Provisions: Free Acidity Method: IHC 4 Principle: Titrimetry(potenciometry) Type: II Codex standard CXS 12-1981 committe:CCS Participan Comments: Chile: New Method Proposed The provision corresponds to Free Acidity										Chile
<b>I or IV</b> Type I methods are considered to be defining methods, so addition of other methods, unless they are technically identical is not generally supported. When a Type I method exists, a truly exceptional reason is required to justify the addition of a Type IV method for the determination of a provision in a specific commodity.										Canada
<b>Honey</b>	<b>Hydroxymethylfurfural</b>	<b>AOAC 980.23</b>	<b>Spectrophotometry</b>	<b>II</b>	CXS 12-1981	CCS	Provision included in CXS 12			
<b>AOAC 980.23</b> Methods requiring calculations are generally identified as Type I methods (e.g., AOAC 980.23).										Canada
<b>Spectrophotometry</b> --UV Clarify the principle of the method since the detection system is UV. Type III.										Chile
<b>Honey</b>	<b>Hydroxymethylfurfural</b>	<b>IHC 5</b>	<b>HPLC-UV</b>	<b>III</b>	CXS 12-1981	CCS	NEW METHOD PROPOSED			
<b>III</b> II										Chile

COMMENT							MEMBER / OBSERVER
NEW METHOD PROPOSED							Chile
Clarify the principle of the method since the detection system is UV. Type III.							
Honey	Diastase activity	IHC Method for determination of diastase activity with Phadebas, 2009 except that the incubation time should be increased from 15 to 30 minutes	<b>Enzymatic</b>	IV	CXS 12-1981	CCS	<p>COMMENT: Is not the method <u>include</u> in CXS 12-1981 Annex 2.2.2, where <u>indicate the Method AOAC 958.09</u>, which we agree with. Suggest to <u>include</u> also the Method IHC 6.1 Determination of diastase activity after Schad.</p> <p>COMMENT: Members should also read Honey Diastase Activity discussed at CCMAS32 REP 11/MAS (2011) paragraph 43 (well after Standard CXS 12-1981 development and the last CCS7 meeting in Feb. 2000), plus the detailed discussion at CCMAS34 under 'Agenda Item 5: Discussion Paper - Update Reference of Methods of Analysis and Related Texts' along with the CCMAS34 CRD 7 submission, with decision reported in CCMAS34 REP13/MAS(2013) paragraph 45 and culminated in the current CXS 234 entry</p>
<p><b>IHC Method for determination of diastase activity with Phadebas, 2009 except that the incubation time should be increased from 15 to 30 minutes</b></p> <p>Add 6.2 and delete Method for determination of diastase activity with Phadebas, 2009 except that the incubation time should be increased from 15 to 30 minutes</p> <p><b>Reference of Methods of Analysis and Related Texts' along with the CCMAS34 CRD 7 submission, with decision reported in CCMAS34 REP13/MAS(2013) paragraph 45 and culminated in the current CXS 234 entry</b></p> <p>OK. The method corresponds to 6.2 and the principle of visible detection (620 nm) must be detailed. IHC 6.2. is method validated type II</p>							Chile
<b>Enzymatic</b>							Chile
Spectrophotometry-VISIBLE)							

COMMENT	MEMBER / OBSERVER
<b>IV</b> Delete IV add II	Chile
<b>CCS</b> Colombia sugiere incluir: Methods of Analysis of AOAC International. Edición 20 de 2016. Método AOAC 980.23. Hydroxymethylfurfural in Honey. DETERMINACION DEL CONTENIDO DE HIDROXIMETILFURFURAL EN MIEL DE ABEJAS PO04-DS-403-P197, la ventaja de este método es que cuantifica el indicador HMF, este compuesto se produce de la degradación de azúcares aumentando cuando la miel se calienta o se almacena durante mucho tiempo, determinar el contenido de diastasa solamente en mieles sin procesar presenta inconvenientes por la diferencia inclusive entre variedades de miel	Colombia
<b>COMMENT: Is not the method include in CXS 12-1981 Annex 2.2.2, where indicate the Method AOAC 958.09, which we agree with. Suggest to include also the Method IHC 6.1 Determination of diastase activity after Schad.</b> Este parámetro evalúa la actividad de la enzima diastasa en la miel y puede considerarse un indicador sensible de frescura y de exposición al calor durante el procesamiento y almacenamiento. Es conveniente monitorear este parámetro, pues valores bajos podrían asociarse a sobrecalentamiento o miel envejecida, reduciendo el valor comercial y la percepción de calidad, aun cuando no evidencie directamente la adición de jarabes. Método, viable.	Colombia
<div> <div>Honey</div> <div>Diastase activity</div> <div>AOAC 958.09   IHC 6.1</div> <div>Enzymatic</div> <div>!</div> <div>CXS 12-1981</div> <div>CCS</div> <div>AOAC 958.09 included in CXS 12-1981</div> <div>NEW METHOD PROPOSED</div> <div>IHC 6.1 validation data available</div> </div>	
<b>AOAC 958.09   IHC 6.1</b> AOAC 958.09 and IHC 6.1 are not identical (diastase activity)	Canada
<b>Enzymatic</b> Spectrophotometry- VISIBLE)	Chile
<b>IHC 6.1 validation data available</b> OK	Chile



COMMENT								MEMBER / OBSERVER
Honey	Moisture	AOAC 969.38B <b>I</b> <b>or</b> MAFF Validated Method V21 <b>I J. Assoc. Public Analysts (1992) 28 (4) 183-187</b>	Refractometry	I	CXS 12-1981	CCS	COMMENT: These methods are suitable for the specified matrix. Includes validation studies	
<b>AOAC 969.38B <b>I</b> <b>or</b> MAFF Validated Method V21 <b>I J. Assoc. Public Analysts (1992) 28 (4) 183-187</b></b> Este parámetro determina el contenido de agua en la miel y puede considerarse un indicador directo de estabilidad frente a la fermentación por levaduras osmófilas. Es conveniente monitorear este parámetro, pues valores elevados podrían asociarse a procesos incompletos o a malas condiciones de almacenamiento que permiten el aumento de la humedad, incrementando el riesgo de fermentación, formación de gas y defectos sensoriales, lo que afectaría la aceptación del consumidor y el cumplimiento de CXS 12 1981. Método, viable.								Colombia
<b>AOAC 969.38B <b>I</b> <b>or</b> MAFF Validated Method V21 <b>I J. Assoc. Public Analysts (1992) 28 (4) 183-187</b></b> delete: I or I J. Assoc. Public Analysts (1992) 28 (4) 183-187 add: IHC 1 The method The AOAC and MAFF N° V21 methods are already standardized and identical; it is not necessary to include a reference to Journal JAPA for MAFF. IHC 1 is identical method. Including IHC 1 is an identical method.								Chile
<b>COMMENT: These methods are suitable for the specified matrix.</b> Philippines support the amendment and inclusion of J. Assoc. Public Analysts (1992) 28 (4) 183-187								Philippines
<del>Honey</del>	<del>Sample preparation</del>	<del>AOAC 920.180</del>	<del>-</del>	<del>-</del>	CXS 12-1981	CCS	COMMENT: AOAC 969.38B Method is appropriate and identified in CXS12-1981 but lacks an associated provision. It should be listed as a complementary method as needed.	
<b><del>AOAC 920.180</del></b> Este procedimiento define cómo se prepara la muestra de miel para análisis y puede considerarse un factor clave para asegurar la representatividad y confiabilidad de todos los resultados analíticos posteriores. Es conveniente controlar estrictamente este procedimiento, pues desviaciones en la homogenización, toma de alícuotas o acondicionamiento podrían asociarse a errores sistemáticos o a una variabilidad excesiva, afectando la interpretación de los parámetros de calidad y autenticidad. Método, viable.								Colombia



COMMENT							MEMBER / OBSERVER
Honey	<del>Sugars added (for sugar profile)</del>	AOAC 998.18	<del>Carbon isotope ratio mass spectrometry</del>	I	CXS 12-1981	CCS	<p>COMMENT: AOAC 998.18 is not identified in 22<sup>nd</sup> Ed. AOAC Official Methods. To retain this commodity/provision listing, AOAC 977.20 should be considered for endorsement as a Type IV method as it is listed in CXS 12 and provides a "profile" of sugars, but no validation data is available, nor has any performance criteria been established.</p> <p>COMMENT: It explains sample preparation procedure, however it is not a quantification method. Primary method should be AOAC 998.12.</p> <p>COMMENT: Recommendation: Include new LC-IRMS-based method: CEN EN 17958:2024 (European Committee for Standardisation): Detection of sugar syrup addition in honey (C3 and c4 plants).</p>
<p><del>Sugars added (for sugar profile)</del></p> <p>Este parámetro evalúa la presencia de azúcares procedentes de plantas C4 en la miel mediante la medición de la razón isotópica de carbono y puede considerarse un indicador directo de posible adulteración con jarabes de caña o maíz. Es conveniente monitorear este parámetro, pues valores que indiquen porcentajes aparentes de C4 por encima del umbral podrían asociarse a la adición intencional de jarabes, comprometiendo la autenticidad del producto, la confianza del consumidor y la conformidad con las exigencias del Codex para miel. Método, sometido a consulta.</p>							Colombia
<p><b>COMMENT:</b> AOAC 998.18 is not identified in 22<sup>nd</sup> Ed. AOAC Official Methods. To retain this commodity/provision listing, AOAC 977.20 should be considered for endorsement as a Type IV method as it is listed in CXS 12 and provides a "profile" of sugars, but no validation data is available, nor has any performance criteria been established.</p> <p>Los métodos para autenticidad siguen siendo muy costosos y demandan tiempo de implementación considerándose un bloqueo técnico, existe un enfoque como opción alternativa, que en varios países se viene implementando en relación a la trazabilidad en la composición característica de elementos según sea la región donde se produzca y para Colombia se podría considerar su implementación. En ese sentido el enfoque mencionado utiliza la tecnología ICP OES, esta herramienta permite definir una huella mineral típica de las mieles auténticas de cada región y, con modelos estadísticos, detectar muestras mucho más escasas en minerales.</p>							Colombia

COMMENT							MEMBER / OBSERVER
<b>Honey</b>	<b>Sugars added (for sugar profile)</b>	<b>AOAC 998.12</b>	<b>HPLC-DAD</b>	<b>II</b>	CXS 12-1981	CCS	COMMENT: Recommended reference method. NEW METHOD PROPOSED
<b>Sugars added (for sugar profile)</b> Sugars added to honey (authenticity)							Australia
<b>HPLC-DAD</b> Indonesia proposes amending the analytical principle to Liquid Chromatography-Mass Spectrometry (LC-MS). This adjustment ensures technical alignment with AOAC Official Method 998.12, which specifically relies on a mass spectrometer as the recommended instrument for this analysis.							Indonesia
<b>HPLC-DAD</b> EA-IRMS							Australia
<b>CCS</b> Provision does not appear appropriate for AOAC 998.12 and we suggest the provision as stated in CXS 12, 'Sugars added to honey (authenticity)'. The principle needs amendment to Elemental Analysis – Isotope Ratio Mass Spectrometry 'EAIRMS'. Note, there is a replicate entry under provision 'Sugars added: detection of corn and cane sugar products'							Australia
<b>COMMENT: Recommended reference method.</b> Philippines support AOAC 977.20 as new proposed method. In accordance to CXS 12-1981							Philippines
<b>NEW METHOD PROPOSED</b> Ok							Chile
<b>Honey</b>	<b>Sugars added (for sugar profile)</b>	<b>CEN EN 17958</b>	<b>LC-IRMS</b>	<b>III</b>	CXS 12-1981	CCS	COMMENT: Alternative or supportive method to 998.12 NEW METHOD PROPOSED
<b>Sugars added (for sugar profile)</b> Sugars added to honey (authenticity)							Australia
<b>COMMENT: Alternative or supportive method to 998.12</b> Provision doesn't appear appropriate for method and we suggest principle 'Sugars added to honey (authenticity)' as it appears in CXS 12-1981. Method should be updated to 'EN 17958							Australia

COMMENT								MEMBER / OBSERVER
<b>NEW METHOD PROPOSED</b> Principle is HPLC-IRMS								Chile
<b>Honey</b>	<b>Sugars added (for sugar profile)</b>	<b>AOAC 977.20</b>	<b>LC-RI</b>	<b>IV</b>	CXS 12-1981	CCS	NEW METHOD PROPOSED	
<b>Sugars added (for sugar profile)</b> Sugars content – Fructose, Glucose ,Surose (Sugar profile)								Australia
<b>AOAC 977.20</b> Method AOAC 977.20 was identified by CCS as the method for sugar profile, however if AOAC 998.12 (correction from 998.18) which uses stable carbon isotope ratio method is selected, should the method specify which of the alternative methods identified within AOAC 998.12 be used? If AOAC 998.12 is Type I (owing to the need for a calculation), addition of other methods is not generally supported.								Canada
<b>LC-RI</b> HPLC-RI								Chile
<b>CCS</b> We believe the only method listed to fulfil the ‘Sugars content – Fructose, Glucose, Sucrose’ plus ‘Sugar profile’ provisions in CXS 12-1981 is ‘AOAC 977.20’								Australia
<b>NEW METHOD PROPOSED</b> Philippines support AOAC 977.20 as new proposed method. In accordance to CXS 12-1981								Philippines
<b>NEW METHOD PROPOSED</b> Ok								Chile
<b>Honey</b>	<b>Sugars added:- detection of corn and cane sugar products</b>	<b>AOAC 978.17</b>	<b>Carbon isotope ratio mass spectrometry</b>	<b>I</b>	CXS 12-1981	CCS	COMMENT : AOAC 978.17 has been replaced by AOAC 998.12. Update method to AOAC 998.12 and retype Type I typing. Change principle to “Stable isotope mass spectrometry” to be consistent with the listings for fruit juices and nectars.	
<b>Sugars added: detection of corn and cane sugar products</b> Sugars added to honey (authenticity)								Australia
<b>Sugars added: detection of corn and cane sugar products</b>								Colombia

COMMENT	MEMBER / OBSERVER
Este parámetro se centra en la detección de azúcares provenientes específicamente de jarabes de caña y maíz mediante análisis isotópico y puede considerarse un complemento específico del control de adulteración con azúcares C4. Es conveniente monitorear este parámetro, pues resultados positivos o fuera de los rangos esperados podrían asociarse a la incorporación de estos jarabes en la miel, afectando la originalidad del producto, su aceptación en mercados regulados y el cumplimiento de los requisitos de autenticidad establecidos para la miel. Método, sometido a consulta.	
<del>AOAC 978.17</del> AOAC 998.12	Australia
<del>AOAC 978.17</del> EA-IRMS	Australia
CCS Los métodos para autenticidad siguen siendo muy costosos y demandan tiempo de implementación considerándose un bloqueo técnico, existe un enfoque como opción alternativa, que en varios países se viene implementando en relación a la trazabilidad en la composición característica de elementos según sea la región donde se produzca y para Colombia se podría considerar su implementación. En ese sentido el enfoque mencionado utiliza la tecnología ICP OES, esta herramienta permite definir una huella mineral típica de las mieles auténticas de cada región y, con modelos estadísticos, detectar muestras mucho más escasas en minerales.	Colombia
COMMENT : AOAC 978.17 has been replaced by AOAC 998.12. Update method to AOAC 998.12 and retype Type I typing. Change principle to “Stable isotope mass spectrometry” to be consistent with the listings for fruit juices and nectars.  Agree with reviewer comments. However, suggest principle 'Sugars added to honey (authenticity)' as it appears in CXS 12-1981. Also suggest the principle be 'EA-IRMS'.	Australia
COMMENT: It is updated with AOAC 998.12.  Philippines support the use of AOAC 998.12 as suitable for detecting syrup of C4-plants but accessing the necessary equipment is a challenge due to limited availability.	Philippines
COMMENT 3: Outdated and replaced by AOAC 998.12. Suitable for detecting syrup of C4-plants (corn, cane) in honey.  Isotopic dilution methods are primary methods and therefore should be categorized as type I	Chile

COMMENT							MEMBER / OBSERVER
<u>Honey</u>	<u>Sugars added: detection of corn and cane sugar products</u>	<u>AOAC 998.12</u>	<u>Stable isotope mass spectrometry</u>	<u>II</u>	CXS 12-1981	CCS	COMMENT: It is updated with AOAC 998.12. COMMENT 3: Outdated and replaced by AOAC 998.12. Suitable for detecting syrup of C4-plants (corn, cane) in honey.
<u>II</u> I							Chile
Sugars (dextrose anhydrous and dextrose monohydrate)	D-Glucose	ISO 5377	Titrimetry	I	CXS 212-1999	CCS	
<b>Sugars (dextrose anhydrous and dextrose monohydrate)</b> Add new line:  Commodity:Honey Provisions:Electrical Conductivity Method: IHC2 Principle:Conductimetry Type: II Codex Standard:CXS 212- CCS 1981 Committee:CCS Participant comments: Chile: Clarify: new method Proposed  Clarify the principle of the method (Lane & Eynon)							Chile
<b>Titrimetry</b> (Lane & Eynon)							Chile
<b>Support</b>							Philippines

COMMENT						MEMBER / OBSERVER
Sugars (dextrose anhydrous and dextrose monohydrate)	Solids, total	ISO 1741	Gravimetry (vacuum oven)	I	CXS 212- 1999 CCS	
<b>Gravimetry (vacuum oven)</b> at 100 ± 1 °C						Chile
<b>Support</b>						Philippines
Clarify the principle of the method (temperature)						Chile
Sugars (glucose syrup and dried glucose syrup)	Solids, total	ISO 1742	Gravimetry (vacuum oven)	I	CXS 212- 1999 CCS	
<b>Gravimetry (vacuum oven)</b> ...at 70°C)						Chile
<b>Support</b>						Philippines
Clarify the principle of the method (temperature)						Chile
Sugars (dextrose anhydrous and dextrose monohydrate, dried glucose syrup, glucose syrup, powdered dextrose, lactose)	Sulphated ash	ISO 5809	Single sulphonation	I	CXS 212- 1999 CCS	
<b>Single sulphonation</b> identified as gravimetry and incineration at 525°C, rather than single sulphonation.						Canada
<b>Single sulphonation</b> add:Gravimetry & Ashing (at 525 ± 25 °C) delete: Single sulphonation						Chile



COMMENT						MEMBER / OBSERVER
<b>CCS</b> Clarify the principle of the method						Chile
Sugars (soft brown sugar)	Sulphated ash	ICUMSA GS <u>1/3/4/7/8-11</u> <u>3-11</u>	Gravimetry & <u>Ashing at 650 °C</u>	I	CXS 212- 1999 CCS	
<b>Gravimetry &amp; Ashing at 650 °C</b> ICUMSA Method GS3-11 (2000) is suitable for determination of sulphated ash in brown sugar, molasses and sugar, but it is a gravimetric method. I don't understand why the statement of ashing has been added to the description here Gravimetry testing may include ashing or simple drying, the main method is difference weighing (gravimetry), not the processes performed to obtain the difference.						ICUMSA
Ok						Chile
Sugars (fructose, <u>lactose</u> )	pH	ICUMSA GS <u>1/2/3/4/7/8-23</u> <u>1-23</u>	Potentiometry	I	CXS 212- 1999 CCS	
Ok						Chile
Sugars (fructose, <u>powdered sugar</u> , <u>white sugar</u> )	Conductivity ash	ICUMSA GS <u>2/3-17</u> <u>17-2-17</u>	Conductimetry	I	CXS 212- 1999 CCS	Sugars (plantation or mill white sugar) COMMENT: ICUMSA Official Method Includes validation studies
<b>Sugars (fructose, <u>powdered sugar</u>, <u>white sugar</u>)</b> ICUMSA Method GS2-17 (2011) doesn't include testing of pure fructose. It clearly states the products it is validated for as white sugar, speciality sugars (which generally are sucrose but may be inverted sucrose syrups) and plantation white sugar. Therefore, it is inappropriate to state it is valid for fructose because that isn't within the scope nor within the validation data.						ICUMSA
<b>Sugars (plantation or mill white sugar)</b> Ok						Chile



COMMENT							MEMBER / OBSERVER
Sugars (fructose)	D-Glucose	ISO 10504	Liquid chromatography (refractive index detection) LC-RI	II	CXS 212- 1999	CCS	
<b>LC-RI</b> Principle is HPLC-RI Philippines support the changes for editorial consistency							Chile Philippines
Sugars (fructose)	Loss on drying	ISO 1742	Gravimetry	I	CXS 212- 1999	CCS	COMMENT: The method is suitable for the specified matrix.
Gravimetry The principle is Gravimetry (Vacuum Drying at 70 °C)							Chile
Sugars (lactose)	Loss on drying	USP General Chapter 731	Gravimetry (drying at 120 °C for 16 h)	I	CXS 212- 1999	CCS	COMMENT: The method is suitable for the specified matrix COMMENT: The test conditions are not specified (time-temperature).
<b>Gravimetry (drying at 120 °C for 16 h)</b> delete: for 16 h)							Chile
<b>COMMENT: The method is suitable for the specified matrix</b> Ok							Chile

COMMENT							MEMBER / OBSERVER
Sugars (plantation or mill white sugar, <b>powdered sugar, soft white sugar and soft brown sugar, white sugar</b> )	Loss on drying	ICUMSA GS <b>2/4/3-15</b> <b>2-15</b>	Gravimetry	I	CXS 212-1999	CCS	<p>COMMENT: The method is suitable for the specified matrix</p> <p>plantation or mill white sugar, powdered sugar, soft white sugar and soft brown sugar</p> <p>COMMENT: ICUMSA Official Method Includes validation studies</p>
<p><b>Sugars (plantation or mill white sugar, <b>powdered sugar, soft white sugar and soft brown sugar, white sugar</b>)</b></p> <p>The scope of ICUMSA Method GS2-15 (2007) is raw sugar, white sugar, speciality sugar (this includes powdered sugar, soft white sugar and soft brown sugar), and plantation white sugar. The commodity listed should therefore include all these within the description. It is invalid to state that the current ICUMSA Method includes validation studies, as there are no quoted precision data, but the upcoming revised Method will include proficiency testing scheme data for both white and raw sugar samples. The current ICUMSA Method does state the acceptable tolerance for duplicate results, which is based on collaborative testing.</p>							<b>ICUMSA</b>
<p><b>Gravimetry</b></p> <p>The principle is Gravimetry (Drying at 105 °C)</p>							<b>Chile</b>
Sugars (glucose syrup and dried glucose syrup)	Reducing sugar	ISO 5377	Titrimetry	I	CXS 212-1999	CCS	
<p><b>Titrimetry</b></p> <p>The principle I Titrimetry (Lane &amp; Eyon)</p>							<b>Chile</b>
Support							<b>Philippines</b>

COMMENT							MEMBER / OBSERVER
Sugars (plantation or mill white sugar)	Invert sugar (as reducing sugars)	ICUMSA GS 1/3/7-3 1-3	Titrimetry (Lane & Eynon)	I IV	CXS 212- 1999	CCS	COMMENT: Either retain as Type IV (if still in wide use which was case in 2005) with ICUMSA 'Official' method GS1-5 (2009), principle 'Titrimetry - Luff & Schoorl' (would need to be included in list of 'principles') as Type I. But our preference is to delete the GS1-3 'accepted' method and replace with the GS1-5 'official' method. Another option is a Type II method by FCC 14th Ed. for Sucrose - invert sugar NMT 0.1% by HPLC-PAD with lactose internal standard ).
<p><b>ICUMSA GS 1/3/7-3</b></p> <p>ICUMSA Method GS1-3 (2005) does not include plantation white sugar within its scope. The scope of ICUMSA Method GS1-3 (2005) covers raw sugar, speciality sugars with low invert sugar content and cane processing products only. Therefore, this commodity listing should be removed as it isn't valid for plantation white sugar. Labs may independently choose to use it after modifying it locally, but it isn't true to the ICUMSA Method as validated.</p> <p>ICUMSA Method GS1-4 (1998) has Official status and is a method for the determination of glucose and fructose in raw and white sugars, in the range of (0.005 to 0.15)%. Plantation white sugar isn't specifically mentioned in the scope, but the method should be suitable for it as long as the expected glucose and fructose content is within the range described. Precision data for the method is stated for both raw and white sugar. Use of an ICUMSA Method for sugar products should be better than use of a method from FCC, especially as ICUMSA provided guidance to FCC on methods of sugar analysis using HPLC-PAD and HPAEC that FCC have since published.</p>							ICUMSA
<p><b>IV</b></p> <p>Delete: IV Add III</p>							Chile
<b>Sugars</b> (plantation or mill white sugar)	<b>Invert sugar</b> (as reducing sugars)	<b>ICUMSA GS 1-5</b>	<b>Titrimetry – Luff Schoorl</b>	<b>I</b>	CXS 212- 1999	CCS	COMMENT: Type I as replacement or in addition to ICUMSA GS1-3 as Type IV, (but only if the latter is still in wide use, which ICUMSA reported as the case in 2005 but hopefully no longer the case in 2025). Another option is a Type II method by FCC 14th Ed. for Sucrose - invert sugar NMT 0.1% by HPLC-PAD) NEW METHOD PROPOSED

COMMENT										MEMBER / OBSERVER	
<b>Sugars (plantation or mill white sugar)</b> ICUMSA Method GS1-5 (2009) does not include plantation white sugar within its scope. The scope of ICUMSA Method GS1-3 (2005) covers only raw sugar. Therefore, this commodity listing should be removed as it isn't valid for plantation white sugar. Labs may independently choose to use it after modifying it locally, but it isn't true to the ICUMSA Method as validated.										ICUMSA	
<b>NEW METHOD PROPOSED</b> Ok										Chile	
<b>Sugars (plantation or mill white sugar)</b>		<b>Invert sugar</b>	<b>Food Chemical Codex 14th Ed.,(2024), Sucrose monograph, for Organic Impurities - Invert Sugar</b>	<b>HPLC - PAD</b>	<b>II</b>	CXS 212- 1999	CCS	COMMENT: As a rational method alternative to the previous 'empirical Type I' method NEW METHOD PROPOSED			
<b>Food Chemical Codex 14th Ed.,(2024), Sucrose monograph, for Organic Impurities - Invert Sugar</b> Delete:Food Chemical Codex 14th Ed.,(2024) Add FCC FCC is the acronym for Food Chemical Codex. It is not necessary to mention the year.										Chile	
Sugars <b>(white sugar, powdered sugar)</b>		<b>Invert sugar (as reducing sugars)</b>	ICUMSA GS 2-5 after filtration if necessary to remove any anticaking agents	Titrimetry <b>- Knight &amp; Allen</b>	<b>I</b>	CXS 212- 1999	CCS	COMMENT: Type I, method assumes reducing sugars present are all glucose and fructose. Suggest the inclusion of GS 2-4 as an alternative Type IV.			
<b>Sugars (white sugar, powdered sugar)</b> The scope of ICUMSA Method GS2-5 (2011) is: "the determination of low reducing sugars contents, e.g. white sugars including speciality white sugars and plantation white sugars up to 0.05%." The method is designated as the ICUMSA Official (Reference) Method for these products, so should be used in preference to any other ICUMSA Method for this determination for these products.										ICUMSA	

COMMENT	MEMBER / OBSERVER								
<p><b>Type I, method assumes reducing sugars present are all glucose and fructose. Suggest the inclusion of GS 2-4 as an alternative Type IV.</b></p> <p>The assumption is made based on extensive analysis (over many decades) of the beet and cane sugar extraction and refining processes. It is valid, as there is no evidence of significant presence of other invert sugars in processing of either beet or cane to produce crystalline sugar. With respect to powdered sugar, use of the appropriate method requires knowledge of the product. That is, if the produce is simply powdered sucrose, this method is appropriate. If the powdered sugar is a blend of different sugars, especially if it includes glucose or fructose, this method isn't appropriate. Additional information about powdered sugar is in comment #12.</p> <p>This is an invalid statement because the scope of ICUMSA Method GS2-4 (2007) is white sugar only.</p>	ICUMSA								
<table><tr><td><b>Sugars (powdered sugar)</b></td><td><b>Invert sugar</b></td><td><b>ICUMSA GS 2-4 after filtration if necessary to remove any anticaking agents</b></td><td><b>Enzymatic</b></td><td><b>IV</b></td><td>CXS 212- 1999</td><td>CCS</td><td>COMMENT: Type IV as an 'Invert sugar' method being newly introduced. NEW METHOD PROPOSED</td></tr></table>	<b>Sugars (powdered sugar)</b>	<b>Invert sugar</b>	<b>ICUMSA GS 2-4 after filtration if necessary to remove any anticaking agents</b>	<b>Enzymatic</b>	<b>IV</b>	CXS 212- 1999	CCS	COMMENT: Type IV as an 'Invert sugar' method being newly introduced. NEW METHOD PROPOSED	
<b>Sugars (powdered sugar)</b>	<b>Invert sugar</b>	<b>ICUMSA GS 2-4 after filtration if necessary to remove any anticaking agents</b>	<b>Enzymatic</b>	<b>IV</b>	CXS 212- 1999	CCS	COMMENT: Type IV as an 'Invert sugar' method being newly introduced. NEW METHOD PROPOSED		
<p><b>Sugars (powdered sugar)</b></p> <p>Unfortunately, the description of the commodity as "powdered sugar" is open to interpretation. This is a product specification that can mean simply powdered (through grinding/milling) sucrose or could be interpreted as a product that contains more than sucrose (e.g. additives to reduce clumping, like calcium phosphate or cornflour, as is used in icing sugar, or more speciality products for commercial baking like spray-dried glucose applied to milled sucrose). Thus, some knowledge of the product is required for the testing laboratory to apply the correct method.</p>	ICUMSA								
<p><b>ICUMSA GS 2-4 after filtration if necessary to remove any anticaking agents</b></p> <p>This would require a change to the ICUMSA Method GS2-4 (2007) scope. This has not been raised with ICUMSA by any ICUMSA member, so it is invalid to suggest it here unless there is data available to prove the validity of the change.</p>	ICUMSA								
<p><b>Enzymatic</b></p> <p>Spectrophotometry UV</p>	Chile								
<p><b>NEW METHOD PROPOSED</b></p> <p>OK but Principle is Enzimatic-Spectrophotometry UV</p>	Chile								

COMMENT							MEMBER / OBSERVER
Sugars (soft white sugar and soft brown sugar)	Invert sugar <b>(as reducing sugars)</b>	ICUMSA GS <b>4/3-3 4-3</b> (applicable at levels >10% m/m)	Titrimetry (Lane & Eynon)	I	CXS 212- 1999	CCS	COMMENT: Method not validated for Soft brown or soft white sugars; assumes reducing sugars present are all glucose and fructose, also has a correction for Sucrose present in final titration.
<b>Sugars (soft white sugar and soft brown sugar)</b> The scope of ICUMSA Method GS4-3 (2007) is clearly stated as being applicable to molasses containing reducing sugars in the range of (10 to 25)% and that it may also be applied to refined syrups containing the same range of reducing sugar content. There is no statement about the method being suitable for determination of invert sugar in soft white and soft brown sugars, but it is likely that individual labs have adapted the method to use in that way. However, use for anything other than the products stated in the scope would require validation, and there is nothing in ICUMSA Method GS4-3 (2007) that supports the use of this method for the commodity stated.							ICUMSA
<b>Method not validated for Soft brown or soft white sugars; assumes reducing sugars present are all glucose and fructose, also has a correction for Sucrose present in final titration.</b>  Ok							Chile
<b>Method not validated for Soft brown or soft white sugars; assumes reducing sugars present are all glucose and fructose, also has a correction for Sucrose present in final titration.</b>  The assumption is made based on extensive analysis (over many decades) of the beet and cane sugar extraction and refining processes. It is valid, as there is no evidence of significant presence of other invert sugars in processing of either beet or cane to produce crystalline sugar. With respect to powdered sugar, use of the appropriate method requires knowledge of the product. That is, if the produce is simply powdered sucrose, this method is appropriate. If the powdered sugar is a blend of different sugars, especially if it includes glucose or fructose, this method isn't appropriate. Additional information about powdered sugar is presented below.							ICUMSA



COMMENT							MEMBER / OBSERVER
<b>Sugars (plantation or mill white sugars)</b>	<b>Sulphur dioxide</b>	<b>AOAC 962.16</b>	<b>Titrimetry Modified Monier – Williams</b>	<b>III</b>	CXS 212- 1999 CCS	COMMENT: Note, AOAC 962.16 refers to the Modified Monier Williams Method. While the AOAC Official Method 990.28, Sulfites in Foods, Optimized Monier-Williams Method is already endorsed in CXS 234(2025) for Hominy, fruit juice, seafood and Dried or dehydrated ginger. The AOAC 962.16 is a predecessor of AOAC 990.28 not optimized for enforcement at the 10 mg/kg sulfite level. Thus, we suggest the AOAC 962.16 could only be used for the Sugar commodities with a >50 mg/kg maximum limit i.e. 11.1.5 Plantation or mill white sugar 11.3 Sugar solutions and syrups, also (partially) inverted, including treacle and molasses, excluding products of food category 11.1.3. While the LC-MSMS sulfite method should be separately listed NEW METHOD PROPOSED	
<b>Sugars (raw cane sugar)</b> This commodity used to be included within the scope of ICUMSA Method GS2-33 (2022), but there was insufficient validation data to support its inclusion, so it was removed from the scope in 2022.							ICUMSA

COMMENT	MEMBER / OBSERVER
<b>Sugars (soft white sugar and soft brown sugar)</b> There are two ICUMSA Methods for determination of sulphite as sulphur dioxide in brown and speciality sugars, GS3-51 (2019) and GS3-52 (2019). Both use an optimised Monier-Williams procedure, but determination is either by titration (GS3-51) or HPIC (GS3-52). Validation data is listed in both methods.	ICUMSA
<b>The AOAC 962.16 is a predecessor of AOAC 990.28 not optimized for enforcement at the 10 mg/kg sulfite level. Thus, we suggest the AOAC 962.16 could only be used for the Sugar commodities with a &gt;50 mg/kg maximum limit</b>  I agree with this statement, as lower levels of sulphite aren't covered by general food methods.	ICUMSA
<b>11.1.5 Plantation or mill white sugar</b>  The limit for plantation white sugar is likely to be lowered significantly, based on studies undertaken in India, which support that the level of sulphite present is consistently <30 mg/kg. Evidence for this was presented at the 34th Session of ICUMSA in 2025.	ICUMSA
<div> <div>Sugars (plantation or mill white sugar)</div> <div>Sulphur dioxide</div> <div>ICUMSA GS 2-33</div> <div>Colorimetry</div> <div>IV</div> <div>CXS 212- 1999</div> <div>CCS</div> <div>COMMENT: NEW METHOD PROPOSED</div> </div>	
<b>Sugars (plantation or mill white sugar)</b>  ICUMSA Method GS2-33 (2022) used to include more materials within the scope, but there was insufficient data to support maintaining their inclusion. Plantation white sugar will be added to the scope in the revision planned for ICUMSA Method GS2-33 (2022), as validation data has been produced for it in 2024-25 (this update is part of Recommendation 1 for General Subject 9, Plantation White Sugar, which is available on the ICUMSA website.	ICUMSA
<b>NEW METHOD PROPOSED</b>  Ok	Chile
<div> <div>Sugars (all)</div> <div>Sulphur dioxide</div> <div>US FDA Method C-004.04</div> <div>LC-MS/MS</div> <div>IV</div> <div>CXS 212- 1999</div> <div>CCS</div> <div>As a 'recently introduced' method NEW METHOD PROPOSED</div> </div>	
<b>As a 'recently introduced' method</b>  Philippines support US FDA Method C-004.04, a 'recently introduced' method as New Proposed Method	Philippines
<b>NEW METHOD PROPOSED</b>  Ok	Chile

COMMENT	MEMBER / OBSERVER
<p><u>Sugars</u> <u>(plantation or</u> <u>mill white sugar</u> <u>powdered sugar</u> <u>and powdered</u> <u>dextrose, raw</u> <u>cane sugar, soft</u> <u>white sugar and</u> <u>soft brown</u> <u>sugar, white</u> <u>sugar)</u></p> <p><u>Sulphur dioxide</u></p> <p><u>ICUMSA GS 2-35</u> <u>Enzymatic</u></p> <p><u>II</u> CXS 212- CCS 1999</p> <p>COMMENT: If the analyst has very limited experience with enzymatic methods, a high coefficient of variation can be expected. Therefore, it is a challenging analysis that requires experience.</p> <p>The AOAC Official Method 2006, No. 962.16 has been used by us since 2003 (and has been accredited since 2005), and it consistently passes proficiency tests for non-alcoholic beverages, meat, jam, biscuits, wine, and both dried and fresh fruits. Therefore, the primary method should be AOAC Official Method 2006, No. 962.16 (Monier-Williams).</p> <p>COMMENT:</p> <p>II (but only in the absence of a method with appropriate sensitivity <math>LOQ \leq 4</math> mg/kg and precision conforming to the codex criteria <math>RSDR\% = 20.4\%</math>).</p> <p>white sugar</p> <p>COMMENT : "AOAC, No: 962.16" method is employed and validated in our laboratory.</p> <p>COMMENT :</p> <p>Type II (but only in the absence of method with appropriate sensitivity <math>LOQ \leq 3</math> mg/kg and precision conforming to codex criteria <math>RSDR\% = 21.3\%</math>)</p>	
<p><u>ICUMSA GS 2-35</u></p> <p>ISO 5809, for the provision sulphated ash, we wonder whether the principle should be Three methods for the determination of sulphur dioxide have been identified in different sugars (GS 2-35, NMKL 135 and EN 1988-2), frequently all appearing as Type II. Are all of the methods identical, if not, suggest one should be selected as Type II (reference method) among the others identified as Type III.</p>	Canada
<p><u>ICUMSA GS 2-35</u></p>	ICUMSA

COMMENT							MEMBER / OBSERVER
See details in comment #20. Additionally, ICUMSA Method GS2-35 (2024) doesn't include plantation white sugar, raw sugar or brown sugars within its scope.							
<b>Enzymatic</b> Spectrophotometry UV							Chile
<b>The AOAC Official Method 2006, No. 962.16 has been used by us since 2003 (and has been accredited since 2005), and it consistently passes proficiency tests for non-alcoholic beverages, meat, jam, biscuits, wine, and both dried and fresh fruits. Therefore, the primary method should be AOAC Official Method 2006, No. 962.16 (Monier-Williams).</b>  See previous comments about ICUMSA Methods, especially noting that generic food methods aren't necessarily suitable for all matrices. ICUMSA GS2-35 (2024) is undergoing additional testing because of changes in test kits availability, but it is clear that the test kits aren't suitable for determination of sulphur dioxide <10 mg/kg, which is expected for white sugar (based on customer specifications). Monier-Williams is not great for use at such low levels for a variety of reasons.							ICUMSA
<b>Type II (but only in the absence of method with appropriate sensitivity LOQ≤3 mg/kg and precision conforming to codex criteria RSDR%=21.3%)</b>  Within the procedure for ICUMSA Method GS2-35 (2024), it clearly states a modification for determination of sulphur dioxide at <3 mg/kg. The method is under review, see comment # 20.							ICUMSA
<b>Sugars (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar and soft brown sugar, white sugar)</b>	<b>Sulphur dioxide</b>	<b>NMKL 135</b>	<b>Enzymatic</b>	<b>II or III</b>	CXS 212- 1999    CCS	COMMENT: If the analyst has very limited experience with enzymatic methods, a high coefficient of variation can be expected. Therefore, it is a challenging analysis that requires experience.  The AOAC Official Method 2006, No. 962.16 has been used by us since 2003 (and has been accredited since 2005), and it consistently passes proficiency tests for non-alcoholic beverages, meat, jam, biscuits, wine, and both dried and fresh fruits. Therefore, the primary method should be AOAC Official Method 2006, No. 962.16 (Monier-Williams).  COMMENT: The method was collaboratively tested for the following foods: potato flakes, wine, juice, and dried apples.	
<b>Sugars (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar and soft brown sugar, white sugar)</b>							Chile

COMMENT	MEMBER / OBSERVER
Delete Sugars (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar and soft brown sugar, white sugar)	
<b><u>Sulphur dioxide</u></b> Delete Sulphur dioxide	Chile
<b><u>NMKL 135</u></b> Delete NMKL 135	Chile
<b><u>Enzymatic</u></b> Delete Enzymatic	Chile
<b><u>II or III</u></b> Delete II or III	Chile
<b>COMMENT: The method was collaboratively tested for the following foods: potato flakes, wine, juice, and dried apples.</b> Not Ok because not is validated in sugars	Chile
<div> <div>Sugars (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar and soft brown sugar, white sugar)</div> <div>Sulphur dioxide</div> <div>EN 1988-2</div> <div>Enzymatic</div> <div>II</div> <div>CXS 212- 1999</div> <div>CCS</div> <div>To retain in CXS 234-1999 until more information is available on this method</div> </div>	
<b><u>Enzymatic</u></b> Principle is Enzymatic- Spectrometry-UV	Chile
AOAC 962.16 & US FDA Method C-004.04 Ok	Chile

COMMENT							MEMBER / OBSERVER
Sugars (soft white sugar and soft brown sugar)	Sucrose plus invert sugar <b>(as reducing sugars)</b>	ICUMSA GS <b>4/3-7-4-7</b>	Titrimetry	<b>I</b> <b>IV</b>	CXS 212- 1999	CCS	COMMENT Preferably a Type IV as an existing Type I methods without a full set of validation data. Ideally an alternative collaborative studied candidate-method can be identified.
<p>ICUMSA GS <b>4/3-7-4-7</b></p> <p>The scope of ICUMSA Method GS4-7 (2011) doesn't include the commodities listed (soft white and soft brown sugars). The scope states applicability is only to molasses and some sugar syrups.</p> <p><b>Preferably a Type IV as an existing Type I methods without a full set of validation data. Ideally an alternative collaborative studied candidate-method can be identified.</b></p> <p>The validation data quoted in ICUMSA Method GS4-7 (2011) is only valid for molasses or syrups, not sugars. As with other ICUMSA Methods, individual labs may choose to modify a method for in-house use on different materials to those stated in the scope, but without validation for those different materials, the use of the method is questionable, especially when methods are available for the stated commodities.</p>							ICUMSA
Sugars (plantation and mill white sugar)	Colour	ICUMSA GS <b>9/1/2/3-8</b>	Photometry	I	CXS 212- 1999	CCS	COMMENT: ICUMSA Reference Method COMMENT: ICUMSA Accepted Method Includes validation studies
<p><b>Colour</b></p> <p>The term that should be used is ICUMSA® Colour (CIU), as measured by colour in solution. The definition is listed on the ICUMSA website. This is to ensure that the measurement is not confused with visual colour or reflectance grade colour.</p>							ICUMSA
<p>ICUMSA GS <b>9/1/2/3-8</b></p> <p>- Suggest that for plantation or mill white sugar the method for colour be simplified to ICUMSA GS 9-8.</p>							Canada
<p>ICUMSA GS <b>9/1/2/3-8</b></p> <p>ICUMSA Method GS9-8 (2011) has been revised and now has full validation data for the range of application. The scope of the method states that it is suitable for plantation white sugar, white sugar, raw sugar and speciality sugars (within the stated range of colour in solution, in IU). There are other ICUMSA Methods for determination of colour in solution, but ICUMSA recommends that the Official (Reference)</p>							ICUMSA



COMMENT							MEMBER / OBSERVER
<b>Sugars (powdered sugar)</b>	<b>Polarization</b>	<b>ICUMSA GS 3-1</b>	<b>Polarimetry</b>	<b>III</b>	CXS 212-1999	CCS	<p>COMMENT: As an alternative to the reference Type II method GS1-1. Also details of the filtration removal of anticaking agents are not included, suggest a procedure reference is provided in CXS 234</p> <p>NEW METHOD PROPOSED</p>
<p><b>Sugars (powdered sugar)</b></p> <p>ICUMSA Method GS3-1 (2002) clearly states that it is a method for the determination of the polarisation of the sugar component of powdered sugars containing anti-caking agents, referencing the need to first quantify the content of anti-caking agent, recognising that procedure has been imported from ICUMSA Method GS3-21 (2002) and determination of loss on drying from ICUMSA Method GS2-15 (2007).</p>							ICUMSA
<p><b>COMMENT: As an alternative to the reference Type II method GS1-1. Also details of the filtration removal of anticaking agents is not included, suggest a procedure reference is provided in CXS 234</b></p> <p>The comment about "details of the filtration removal of anticaking agents" is invalid. ICUMSA Method GS3-1 (2002) clearly states that it is a method for the determination of the polarisation of the sugar component of powdered sugars containing anti-caking agents, referencing the need to first quantify the content of anti-caking agent, recognising that procedure has been imported from ICUMSA Method GS3-21 (2002) and determination of loss on drying from ICUMSA Method GS2-15 (2007).</p>							ICUMSA



COMMENT						MEMBER / OBSERVER
<b>Sugars (white sugar, powdered sugar)</b>	<b>Polarization</b>	<b>ICUMSA GS 1-1</b>	<b>Polarimetry</b>	<b>II</b>	CXS 212- 1999 CCS	COMMENT: Recommended reference method Updated method GS1-1 (2022) to include the use of Carrez reagents or other clarification agent alternatives to basic lead acetate, however not fully accepted or implemented at this time NEW METHOD PROPOSED
<b>Sugars (white sugar, powdered sugar)</b> ICUMSA Method GS1-1 (2022) clearly states in the scope that it is suitable for all raw sugars, white sugars, speciality sugars and plantation white sugars that require clarification prior to polarimetric measurement. Thus, this method is not suitable for white or speciality sugars that don't require clarification and ICUMSA Method GS2-1 (2022) should be used instead. It is important to note that application of ICUMSA Methods to different sugar products often depends on the sugar products meeting other quality parameters. This is why there is more than one method listed for a generic product, as there are (currently) no specific definitions available for all speciality products (see comment #12). It is important to note that ICUMSA Method GS1-1 (2022) retains the Official (Reference) status for the materials stated in the scope, so this method should be used in preference to any others for those sample types.						<b>ICUMSA</b>
<b>Updated method GS1-1 (2022) to include the use of Carrez reagents or other clarification agent alternatives to basic lead acetate, however not fully accepted or implemented at this time</b> The update described is in progress, but without validation data for use of Carrez reagents or other clarification agents, it is not viable to propose a new procedure. A decision was made subsequent to the 34th Session of ICUMSA in 2025 that a new method for alternative clarification agents to lead acetate would be written, leaving ICUMSA Method GS1-1 (2022) as a procedure using lead acetate as the clarification agent. This is the same approach as has been taken for other ICUMSA Methods that use lead acetate.						<b>ICUMSA</b>
<b>Sugars (white sugar, powdered sugar, plantation or mill white sugar)</b>	<b>Polarization</b>	<b>ICUMSA GS 1-2</b>	<b>Polarimetry</b>	<b>III</b>	CXS 212- 1999 CCS	COMMENT: III (as a new alternative to the recommended reference GS1-1 Type II method) NEW METHOD PROPOSED
<b>Sugars (white sugar, powdered sugar, plantation or mill white sugar)</b> The scope of ICUMSA Method GS1-2 (2022) is identical to that stated for GS1-1 (2022). The only differences is that ICUMSA Method GS2-1 (2022) doesn't require the use of a clarification aid but instead uses a filtration aid and the measurement uses NIR polarimetry (not VIS polarimetry). This is considered a secondary method to ICUMSA Method GS1-1 (2022), see comment #33, but may be utilised by labs unable to use lead acetate, as long as they have NIR polarimetry available to them.						<b>ICUMSA</b>

