



Form 4: New Work Item Proposal

Circulation date: 2018-03-14 Closing date for voting: 2018-06-06	Reference number: Click here to enter text. (to be given by Central Secretariat)
Proposer (e.g. ISO member body or A liaison organization) AFNOR	ISO/TC Click here to enter text. /SC Click here to enter text. <input checked="" type="checkbox"/> Proposal for a new PC
Secretariat AFNOR	N Click here to enter text.

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.

Guidelines for proposing and justifying a new work item are contained [in Annex C of the ISO/IEC Directives, Part 1](#).

The proposer has considered the guidance given in the Annex C during the preparation of the NWIP.

Proposal (to be completed by the proposer)

Title of the proposed deliverable. English title: Tableware, giftware, jewellery, luminaries — Glass clarity — Classification and test method French title (if available): Verrerie, objets de décoration, bijouterie, luminaire — Clarté du verre — Classification et méthode d'essai <i>(In the case of an amendment, revision or a new part of an existing document, show the reference number and current title)</i>

Scope of the proposed deliverable.

The proposed International Standard will establish requirements for the use of the designations “clear glass” and “ultra-clear glass” for non-coloured glass according to their clarity and iron content. The standard will specify a procedure for measuring the clarity of glass items by means of a spectrophotometer.

The standard will cover mineral glass, and

glass in items where the glass component is not covered by coating or decoration, and is therefore accessible for sampling.

The scope of this International Standard includes glass used as tableware, giftware, jewellery and luminaries. It excludes glass used in construction work, containers, medicine and laboratories, or in other types of technical applications.

Purpose and justification of the proposal*

Clear and ultra-clear glass products for tableware, giftware, jewellery, luminaries, *etc.* is a growing market worldwide.

An International Standard providing a generic definition and a classification of glass clarity will enable precise product characterization and facilitate commercial exchanges through transparency of information.

It is proposed that IWA 8:2009 will serve as a first version for this document as it has proved its usefulness by being referenced in commercial documents. The proposed International Standard will not only reuse but also improve and build upon the content of IWA 8:2009.

Since clear and ultra-clear glass are used as a material for components of a wide range of goods, this subject cannot be assigned to the existing ISO technical committees since they all relate to a specific use case of all the materials involved in their respective specialty.

In particular the proposed work will target different stakeholders than the one involved in ISO/TC 166 *Ceramic ware, glassware and glass ceramic ware in contact with food*, which deals solely with ceramic ware, glassware and glass ceramic ware in contact with food, while the proposed work also covers giftware, jewellery and luminaries. The dynamics related to standardization for the contact with food are driven by regulation and focused on the determination of the migration of chemicals elements, which are completely distinct from the issues at stake in this proposal.

For similar reasons, ISO/TC 274 *Light and lighting* and ISO/TC 174 *Jewellery and precious metals*, focused on the specific use of materials and in particular of precious metals, would not be relevant to address the needs expressed by the stakeholders.

Therefore, expanding the scope of either existing TCs would not be appropriate. It is thus proposed to establish a new ISO Project Committee, for which AFNOR is willing and ready to undertake the secretariat.

Consider the following: Is there a verified market need for the proposal? What problem does this standard solve? What value will the document bring to end-users? See Annex C of the ISO/IEC Directives part 1 for more information.

See the following guidance on justification statements on ISO Connect:
<https://connect.iso.org/pages/viewpage.action?pageId=27590861>

<p>Preparatory work (at a minimum an outline should be included with the proposal)</p> <p><input checked="" type="checkbox"/> A draft is attached <input type="checkbox"/> An outline is attached <input type="checkbox"/> An existing document to serve as initial basis</p> <p>The proposer or the proposer's organization is prepared to undertake the preparatory work required:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>If a draft is attached to this proposal,:</p> <p>Please select from one of the following options (note that if no option is selected, the default will be the first option):</p> <p><input type="checkbox"/> Draft document will be registered as new project in the committee's work programme (stage 20.00)</p> <p><input checked="" type="checkbox"/> Draft document can be registered as a Working Draft (WD – stage 20.20)</p> <p><input type="checkbox"/> Draft document can be registered as a Committee Draft (CD – stage 30.00)</p> <p><input type="checkbox"/> Draft document can be registered as a Draft International Standard (DIS – stage 40.00)</p> <p><input type="checkbox"/> If the attached document is copyrighted or includes copyrighted content, the proposer confirms that copyright permission has been granted for ISO to use this content in compliance with clause 2.13 of the ISO/IEC Directives, Part 1 (see also the Declaration on copyright).</p>
<p>Is this a Management Systems Standard (MSS)?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>NOTE: if Yes, the NWIP along with the <u>Justification study</u> (see Annex SL of the Consolidated ISO Supplement) must be sent to the MSS Task Force secretariat (tmb@iso.org) for approval before the NWIP ballot can be launched.</p>
<p>Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal.</p> <p><input checked="" type="checkbox"/> International Standard <input type="checkbox"/> Technical Specification</p> <p><input type="checkbox"/> Publicly Available Specification <input type="checkbox"/> Technical Report</p>
<p>Proposed development track</p> <p><input type="checkbox"/> 18 months* <input type="checkbox"/> 24 months <input checked="" type="checkbox"/> 36 months <input type="checkbox"/> 48 months</p> <p>Note: Good project management is essential to meeting deadlines. A committee may be granted only one extension of up to 9 months for the total project duration (to be approved by the ISO/TMB).</p> <p>*DIS ballot must be successfully completed within 13 months of the project's registration in order to be eligible for the direct publication process</p>
<p>Draft project plan (as discussed with committee leadership)</p> <p>Proposed date for first meeting: October 2018</p> <p>Dates for key milestones: DIS submission February 2020 Publication June 2021</p>

<p>Known patented items (see ISO/IEC Directives, Part 1 for important guidance)</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes", provide full information as annex</p>
<p>Co-ordination of work: To the best of your knowledge, has this or a similar proposal been submitted to another standards development organization?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes", please specify which one(s):</p> <p>Click here to enter text.</p>
<p>A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized.</p> <p>No other known similar work, except the IWA 8:2009.</p>
<p>A listing of relevant existing documents at the international, regional and national levels.</p> <p>IWA 8:2009 Tableware, giftware, jewellery, luminaries – Glass clarity – Classification and test method</p>

Please fill out the relevant parts of the table below to identify relevant affected stakeholder categories and how they will each benefit from or be impacted by the proposed deliverable(s).

	Benefits/impacts	Examples of organizations/companies to be contacted
Industry and commerce – large industry	The IS will facilitate commercial exchanges by setting common quality requirement and allowing greater transparency of information	Manufacturers and retailers
Industry and commerce – SMEs	The IS will facilitate commercial exchanges by setting common quality requirement and allowing greater transparency of information	Manufacturers and retailers
Government	The IS will foster fair trade and fair competition through transparency of information	Competent authorities (governmental inspection services)
Consumers	The IS will provide consumers with a higher level of information about product characteristics and quality	Click here to enter text.
Labour	//	Click here to enter text.
Academic and research bodies	The IS will provide common testing procedures	Testing laboratories
Standards application businesses	A certification mark could be developed	Certification bodies
Non-governmental organizations	Click here to enter text.	Click here to enter text.
Other (please specify)	Click here to enter text.	Click here to enter text.

Liaisons:

A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s).

ISO/TC 136 *Furniture*

ISO/TC 166 *Ceramic ware, glassware and glass ceramic ware in contact with food*

ISO/TC 174 *Jewellery and precious metals*

ISO/TC 274 *Light and lighting*

Joint/parallel work:

Possible joint/parallel work with:

IEC (please specify committee ID)

[Click here to enter text.](#)

CEN (please specify committee ID)

[Click here to enter text.](#)

Other (please specify)

[Click here to enter text.](#)

<p>A listing of relevant countries which are not already P-members of the committee.</p> <p>Austria, Belgium, China, Czech Republic, France, Germany, Indonesia, Italy, Netherland, Portugal, Spain, Turkey, United Kingdom, USA</p> <p>Note: The committee secretary shall distribute this NWIP to the countries listed above to see if they wish to participate in this work</p>	
<p>Proposed Project Leader (name and e-mail address)</p> <p>Ivan Litvinenko</p>	<p>Name of the Proposer (include contact information)</p> <p>Ms PIAT RAGOT gwenaelle.piatragot@afnor.org</p>
<p>This proposal will be developed by:</p> <p><input type="checkbox"/> An existing Working Group (please specify which one: Click here to enter text.)</p> <p><input type="checkbox"/> A new Working Group (title: Click here to enter text.)</p> <p>(Note: establishment of a new WG must be approved by committee resolution)</p> <p><input type="checkbox"/> The TC/SC directly</p> <p><input checked="" type="checkbox"/> To be determined</p>	
<p>Supplementary information relating to the proposal</p> <p><input type="checkbox"/> This proposal relates to a new ISO document;</p> <p><input type="checkbox"/> This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;</p> <p><input type="checkbox"/> This proposal relates to the re-establishment of a cancelled project as an active project.</p> <p>Other:</p> <p>Replacement of IWA 8:2009</p>	
<p>Maintenance agencies and registration authorities</p> <p><input type="checkbox"/> This proposal requires the service of a maintenance agency. If yes, please identify the potential candidate: Click here to enter text.</p> <p><input type="checkbox"/> This proposal requires the service of a registration authority. If yes, please identify the potential candidate: Click here to enter text.</p> <p>NOTE: Selection and appointment of the MA or RA is subject to the procedure outlined in the ISO/IEC Directives, Annex G and Annex H, and the RA policy in the ISO Supplement, Annex SN.</p>	
<p><input checked="" type="checkbox"/> Annex(es) are included with this proposal (give details)</p> <p>See working draft attached</p>	

Additional information/questions

For more information or question, please contact Ms PIAT RAGOT at
gwenaelle.piatragot@afnor.org

Tableware, giftware, jewellery, luminaries — Glass clarity — Classification and test method

*Verrerie, objets de décoration, bijouterie, luminaire — Clarté du verre — Classification et
méthode d'essai*

WD stage

Warning

This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	4
Introduction	5
1 Scope	6
2 Specifications	6
2.1 General.....	6
2.2 Specifications for ultra-clear glass	7
2.3 Specifications for clear glass.....	7
3 Test methods	7
3.1 General.....	7
3.2 Apparatus	7
3.3 Sampling	8
3.4 Sample preparation.....	8
Annex A (normative) Determination of the lightness L^* and chroma C^*	10
A.1 Applicability	10
A.2 Principle	10
A.3 Measurement of lightness L^* and chroma C^*	10
A.4 Estimation of the experimental reproducibility	12
Annex B (normative) Determination of the iron oxide content	13
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee *[or Project Committee]* ISO/TC *[or ISO/PC]* ###, *[name of committee]*.

Introduction

This International Standard is intended to provide a generic definition and classification of glass clarity to permit a global understanding of consumer quality requirements, with a corresponding method to measure glass clarity.

For glass clarity, spectrophotometric measurement is performed in accordance with CIE 15:2004 with a predefined choice of illuminate and observer. Measurement on the sample at two different thicknesses permits calculation of internal transmission for a defined intermediate thickness and indicates glass clarity irrespective of the refractive index value. The same methodology applies for all mineral glasses.

This method has been verified in accordance with visual inspection with a light cabinet. In addition, preliminary collaborative studies have confirmed the results of these measurements as being coherent with both consumer perception and quality recognition.

As it is well known that iron is by far the main contaminant of glass raw materials affecting the transparency and colorimetric purity of the glass, the iron content has been considered as an additional criterion.

This International Standard does not concern lead crystal as defined in EU Council Directive 69/493/EEC, which has its own characteristics with respect to density and refraction index.

Tableware, giftware, jewellery, luminaries — Glass clarity — Classification and test method

1 Scope

This International Standard establishes requirements for the use of the glass designations “clear glass” and “ultra-clear glass” for non-coloured glass items according to their clarity and iron content. This International Standard specifies a procedure for measuring the clarity of glass items by means of a spectrophotometer.

This International Standard is applicable to

- mineral glasses, and
- glass items where a part is not covered by coating or decoration, and is therefore available for sampling.

This International Standard is applicable to the use of glass as tableware, giftware, jewellery and luminaries.

This International Standard is not applicable to the use of glass in the context of building, containers, medicine and laboratories, and to other technical uses of glass

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Specifications

4.1 General

The classification of the samples of glass in terms of clarity is based on three criteria:

- lightness, L^* ;
- chroma, C^* ;
- iron content of the material.

The iron content is a main contaminant influencing the transparency and colour of the glass; the value is expressed in iron oxide (Fe_2O_3) in mg/kg.

NOTE The best classification of clarity is obtained for the maximum value of lightness L^* at 100 and the minimum value of chroma C^* at zero.

4.2 Specifications for ultra-clear glass

Ultra-clear glass shall have:

- lightness $L^* \geq 98,8$;
- chroma $C^* \leq 0,5$;
- iron oxide content ≤ 140 mg/kg.

If one or more of these criteria are not reached, the glass cannot be classified as ultra-clear glass.

4.3 Specifications for clear glass

Clear glass shall have:

- lightness $L^* \geq 98,0$;
- chroma $C^* \leq 0,5$;
- iron oxide content ≤ 200 mg/kg.

If one or more of these criteria are not reached, the glass cannot be classified as clear glass.

5 Test methods

5.1 General

The sample shall be prepared in accordance with 3.3 and 3.4. The same sample shall be used to characterize the three criteria, in accordance with the following two determination methods:

- Annex A shall apply for the determination of lightness L^* and chroma C^* ;
- Annex B shall apply for the determination of the iron oxide content.

5.2 Apparatus

3.2.1 Double-beam spectrophotometer, preferably with integrating sphere.

3.2.2 X-ray fluorescence spectrometer, with wavelength dispersion.

3.2.3 Non-metallic hammer.

3.2.4 Non-metallic plate.

3.2.5 Platinum crucible, compatible with the final dimensions of the sample(s).

3.2.6 Electric oven, capable of maintaining a temperature of 1 300 °C for a duration of 16 h.

3.2.7 Polishing device.

3.2.8 Manual grinding device, with silicon carbide (SiC) abrasive.

3.2.9 Automatic grinding machine.

3.2.10 Automatic polishing device.

5.3 Sampling

5.3.1 General

The sampling is carried out to prepare two pieces of glass:

- the first with a minimum dimension of 30 mm for one face;
- the second with a minimum dimension of 10 mm for one face.

The two other dimensions shall be greater than the slide dimensions of the **spectrophotometer** (3.2.1) for the two pieces.

5.3.2 Cutting

Cut a glass block from the glass item (e.g. tumblers with a thick bottom).

For glass items covered with coating or decoration, or for glass items of which the minimum dimensions of the sample cannot be reached,

- melt a sufficient quantity of glass not covered with coating or decoration, approximately 200 g;
- crush with a **non-metallic hammer** (3.2.3) on a **non-metallic plate** (3.2.4);
- melt in a **platinum crucible** (3.2.5) in an **electric oven** (3.2.6) for a duration of at least 8 h at 1 300 °C, in order to obtain a good quality of glass;
- check for the absence of seeds or bubbles;
- after solidification of the glass, put the crucible outside the furnace in a cold water stream to separate the glass from the crucible.

The resulting sample is annealed to avoid residual stresses.

5.4 Sample preparation

5.4.1 General

For the internal transmission measurements, prepare one sample with at least one face providing 10 mm thickness for measurement and the other sample with at least one face providing 30 mm thickness for measurement (see 3.3.1). The sample thicknesses where the light travels are $(10 \pm 0,05)$ mm and $(30 \pm 0,05)$ mm respectively.

The dimensions of the samples (cubes) should fit the sample holder of the spectrophotometer that is used.

The preparation of the cubes of glass samples are carried out in accordance with the usual procedures of the laboratories, applying a **polishing device** (3.2.7) on the two faces in the optical way of transmission (light path).

5.4.2 Cutting

Each sample is cut from the part of a glass block that is homogenous and free of bubbles, cords and any other defects, by means of a diamond saw, to dimensions that are

- approximately 0,5 mm greater than the required final dimensions before manual grinding with silicon carbide abrasive (see 3.2.8), or
- approximately 5 mm greater than the required final dimensions before grinding with an automatic machine as used in the glass industry (see 3.2.9).

5.4.3 Grinding

In the manual grinding procedure, a sample cube is ground under flowing water to obtain parallel surfaces at each measured face by means of turning grinding disks (see 3.2.8), using coarse grain size of silicon carbide granules. The final step of grinding is carried out on a flat glass surface, using fine grain size of silicon carbide (less than 25 μm) polishing slurry to obtain the exact final dimensions of the samples and the right surface appearance. With a grinding machine (see 3.2.9), the cube is grinded automatically by 1,5 mm steps (or less). The cube is machined on one side and then on the other side to obtain parallel sides. The thickness is then reduced to 10 mm or 30 mm.

In both procedures (manual and automatic), the parallelism of the surfaces and the dimensions are continuously checked between the grinding steps.

5.4.4 Polishing

Only the two surfaces of the glass sample cube from where the light travels in the spectrophotometer need to be polished.

In the manual procedure, the sample cubes are polished on a turning polishing wheel (see 3.2.7) using cerium oxide powder solution, obtained by diluting approximately 100 g of powder with 500 ml of water.

Polishing can also be achieved automatically by a polishing machine using cerium oxide (as used in the glass industry) (see 3.2.10).

Lastly, a verification is made that the thickness is within the tolerance of $\pm 0,05$ mm, as is the parallelism of the ground and polished sample deviation range of the required dimensions. The polished sample is cleaned using alcohol before the measurement.

Only glass samples without optical distortion and surface defects shall be used on the polished surfaces.

NOTE Optical distortion is checked by viewing a grid through the glass sample. If there are bubbles or any other defects, deviation and distortion of the observed image occur.

Annex A (normative)

Determination of the lightness L^* and chroma C^*

A.1 Applicability

The procedure in this annex describes a method for determining lightness L^* and chroma C^* , in order to classify glass items in accordance with the specifications for ultra-clear glass (see 2.2) and for clear glass (see 2.3).

This procedure applies to samples prepared in accordance with 3.3 and 3.4.

A.2 Principle

Spectrophotometric measurement is performed in accordance with CIE 15:2004 with a predefined choice of illuminate and observer.

The total transmission of the samples is measured in order to calculate the internal transmission. The colorimetric values are then calculated from internal transmission data.

A.3 Measurement of lightness L^* and chroma C^*

A.3.1 General

The spectral curves of total transmittance (internal and surface) are measured every 5 nm on the spectral range from 380 nm to 780 nm on the sample, with the two thicknesses of 10 mm and 30 mm, using a double-beam ultraviolet-visible (UV-Vis) spectrophotometer (see 3.2.1).

Geometry (transmittance/reflectance) $0^\circ / 8^\circ$, reference: air. Temperature of the room: $(22 \pm 2)^\circ\text{C}$.

The laboratory shall take the necessary actions to maintain an adequate level of calibration of the equipment.

A.3.2 Calculation of the internal transmission

A.3.2.1 Principle

Measurement on the sample at two different thicknesses permits calculation of internal transmission for a defined intermediate thickness and indicates glass clarity irrespective of the refractive index value.

A.3.2.2 Total transmittance measurement T_λ

Measure the total transmittances $T_{\lambda,d1}$ and $T_{\lambda,d2}$ of the sample at two different thicknesses, d_1 and d_2 , in order to determine the transmittance of a thickness x , as $d_1 < x < d_2$ (see A.3.1).

For the purposes of this International Standard, use $d_1 = 10$ mm and $d_2 = 30$ mm, with $x = 20$ mm (see A.3.1).

A.3.2.3 Calculation of the extinction coefficient K_λ

The extinction coefficient, K_λ , is calculated as shown in Equation (A.1):

$$K_\lambda = -\frac{\ln\left(\frac{T_{\lambda,d1}}{T_{\lambda,d2}}\right)}{d_1 - d_2} \quad (\text{A.1})$$

where

K_λ is the extinction coefficient at the wavelength λ ;

$T_{\lambda,d1}$ is the transmittance value of the glass item sample of thickness $d1$ (10 mm) at wavelength λ ;

$T_{\lambda,d2}$ is the transmittance value of the glass item sample of thickness $d2$ (30 mm) at wavelength λ .

A.3.2.4 Calculation of the internal transmission, $T_{i\lambda}$, for a chosen thickness (20 mm)

From the extinction coefficient (see A.3.2.3), the internal transmission, $T_{i\lambda}$, is calculated as shown in Equation (A.2):

$$T_{i\lambda} = \frac{\Phi_{i\lambda}}{\Phi_{e\lambda}} = e^{-K_\lambda \cdot \chi} \quad (\text{A.2})$$

where

χ is the chosen thickness (20 mm);

$T_{i\lambda}$ is the internal transmission;

$\Phi_{i\lambda}$ is the light flow with the wavelength λ entering in an isotropic element, non-luminescent, non-phototropic and optically clear;

$\Phi_{e\lambda}$ is the outgoing light flow.

A.3.3 Calculation of lightness L^* and chroma C^*

From the obtained spectral curve of internal transmittance, the colorimetric values are calculated in colour space developed by the International Commission on Illumination (CIE) in CIE 1976 (CIELAB) (see ISO 11664-4), in Cartesian coordinates $L^*a^*b^*$ and in cylindrical coordinates L^*C^*h , for

- the main reference illuminate D65 (see ISO 11664-2), and
- the observer 10° (see ISO 11664-1).

All colorimetric calculations are carried out in accordance with the recommendations of CIE 15:2004.

NOTE 1 These colour measurements can be validated and correlated with visual observations under light cabinet, with an illuminate D65 and under an illumination of 1 000 lux, and on a grey and uniform back of lightness $L^* = 50$.

NOTE 2 D65 is the reference illuminate. It is advisable that the user of this International Standard take into consideration the possible effects of a measurement under another illuminate.

A.4 Estimation of the experimental reproducibility

One laboratory performed ten measurements of the same sample on ten different days with the same instrument and operator. The obtained standard deviations of the measurements are as follows:

- standard deviation on lightness $L^* = 0,028$;
- standard deviation on chroma $C^* = 0,026$.

A round robin test was performed by seven laboratories. The average values of lightness L^* and chroma C^* were determined on 17 different samples covering a large range of glasses on the market. The standard deviations for these values were obtained. The main results are given in Table A.1.

Table A.1 — Reproducibility study for determination method in this annex

Parameters	Range of measurement	Standard deviation
Lightness L^*	From 97,1 to 99,7	From 0,06 to 0,15
Chroma C^*	From 0,07 to 0,53	From 0,01 to 0,08

NOTE Table A.1 gives an estimation of the reproducibility. It is advisable that a further collaborative study be carried out in order to obtain reproducibility and repeatability values in accordance with ISO 5725-1.

Annex B

(normative)

Determination of the iron oxide content

The iron content of the material is also taken into consideration, according to the value of the iron oxide content as measured by X-ray fluorescence in the same glass samples.

For the X-ray fluorescence calibration and measures, refer to the publications listed in the Bibliography and use certified standard material.

Standard materials are currently available from the German Federal Institute for Material Research and Testing¹⁾. Other certified standard materials are also available.

If appropriate certified standard materials are not available in the laboratory, chemical methods shall be employed.

1) Bundesanstalt für Materialforschung und -prüfung (BAM).

Bibliography

- [1] ISO 5725-1, Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions
- [2] ISO 11664-1²⁾, Colorimetry — Part 1: CIE standard colorimetric observers
- [3] ISO 11664-2³⁾, Colorimetry — Part 2: CIE standard illuminants
- [4] ISO 11664-4⁴⁾, Colorimetry — Part 4: CIE 1976 L*a*b* Colour space
- [5] CIE 15:2004, Colorimetry, 3rd edition
- [6] ASTM E1172-87 (2003), Standard Practice for Describing and Specifying a Wavelength-Dispersive X-Ray Spectrometer
- [7] ASTM E1361-02 (2007), Standard Guide for Correction of Interelement Effects in X-Ray Spectrometric Analysis
- [8] ASTM E1621-05, Standard Guide for X-Ray Emission Spectrometric Analysis
- [9] ASTM E1622-94 (1999)e1⁵⁾, Standard Practice for Correction of Spectral Line Overlap in Wavelength- Dispersive X-Ray Spectrometry
- [10] KIPPHARDT, H. and MATSCHAT, R., "Traceability and uncertainty of chemical measurement results exemplified in the frame of the certification and the use of the glass CRM BAM-S005", in: *Rivista della Stazione Sperimentale del Vetro*, 2007, vol. 37, No. 6, pp.19-23

2) ISO 11664-1 is identical to CIE S 014-1.
3) ISO 11664-2 is identical to CIE S 014-2.
4) ISO 11664-4 is identical to CIE S 014-4.
5) Withdrawn 2006.



NORMALISATION

AFNOR STANDARDIZATION

International Direct line : +33 1 41 62 82 36
alain.costes@afnor.org

Our Ref : dasa/dai

Subject :

Date : February, 02, 2018

Ms Sophie CLIVIO
Secretary of the TMB
International organization for
Standardization
Chemin de Blandonnet 8 – CP 401
1214 Vernier, Genève

Dear Ms Clivio,

Clear and ultra-clear glass products for tableware, giftware, jewellery, luminaries, etc. is a growing market at a global level. However, there is no international standard establishing requirements for the use of the designations "clear glass" and "ultra-clear glass" for non-coloured glass items according to their clarity and iron content.

This is why our stakeholders consider that an International Standard providing a generic definition and a classification for glass clarity is needed to enable precise product characterization and facilitate commercial exchanges through transparency of information.

Since clear and ultra-clear glass are used as components of a wide range of goods, this subject cannot be assigned to the existing ISO technical committees, which deal with specific use-cases for glass-made products, for instance ISO/TC 174 Jewellery or ISO/TC 274 Light and lighting.

It is thus proposed to establish a new Project Committee to deal with this new topic for which AFNOR is ready to undertake the secretariat of this new Project Committee. It is considered to use IWA 8:2009 as a first version for this document as it has proved its usefulness by being frequently referenced in commercial documents.

Yours sincerely,

The Director



Alain COSTES