	COOMET Recommendation	COOMET R/RM/22:2013
	Form and content of COOMET certificate for reference materials for composition and properties of substances and materials	
<p><i>Agreed at the 17th meeting of COOMET Technical Committee 1.12 "Reference Materials" (Braunschweig, Germany, October 2012)</i></p> <p><i>Approved at COOMET Committee Meeting (Nizhny Novgorod, Russia, June 5 – 6 2013).</i></p>		

This recommendation establishes the form and content of COOMET certificate for certified reference materials^{1,2} (CRMs) for composition and properties of substances and materials, produced by National Metrology Institutes (NMIs) of COOMET member-countries (herein after referred to as certificate for CRMs).

This recommendation may be also used by CRM producers from COOMET member-countries, which are not NMIs, during the preparation and issue of certificates for certified reference materials, developed and approved within COOMET as COOMET CRMs.

Note – This recommendation does not apply to the certificate of CRM type approval, specified [1].

The recommendation is based on the principles, laid down in the documents:

- ISO Guide 31:2000 “Reference materials – Contents of certificates and labels”;
- ISO Guide 34:2009 “General requirements for the competence of reference material producers”;
- ISO Guide 35:2006 “Reference materials – General and statistical principles for certification”;
- ISO/IEC 17025:2005 “General requirements for the competence of testing and calibration laboratories”

1 GENERAL

1.1 COOMET certificate for CRMs is a document, which accompanies a reference material and contains the information, necessary and sufficient for correct CRM use.

1.2 The form and content of certificate for CRMs is developed with due account of the provisions of ISO Guide 31:2000.

1.3 The use of the recommended form of certificate for CRMs harmonizes the documentation, which accompanies certified reference materials and facilitates the

¹ This document covers certified reference materials.

² In [1] the document, accompanying CRM is referred to as “паспорт СО”. This name of the document is allowed to use when preparing CRM accompanying document in Russian. works on external audit of NMI quality management system for conformity with the requirements of ISO Guide 34:2009.

2 FORM AND CONTENT OF CERTIFICATE FOR CRMs

2.1 The form of certificate for CRMs is given in Annex 1.

2.2 Certificate for CRMs contains the following sections:

- full name, abbreviation, logo of CRM producer, which issued certificate for CRMs, its contact details; COOMET logo; CIPM MRA logo; other logos (if necessary);
 - the title of the document;
 - name of the reference material, CRM registration number;
 - code of the reference material, the batch (specimen) number;
 - description;
 - intended use;
 - certified value¹ of a quantity together with uncertainty statement;
 - conditions of storage and transportation;
 - safety requirements;
 - information on homogeneity;
 - measurement method (-s);
 - metrological traceability;
 - quality management system;
 - additional information;
 - a set of supply;
 - date of certification¹;
 - instruction for use;
 - period of validity of the certificate;
 - signatures of certifying¹ officers.

Notes:

1. COOMET logo is inserted only for CRMs, issued by National Metrology Institutes (NMIs) of COOMET member-countries, Quality Management System of which is recognized by Quality Forum of Euro-Asian Cooperation of National Metrological Institutions (COOMET) and/or for CRMs, approved as COOMET CRMs. CIPM MRA logo is inserted only by NMIs, when CRM is included in Appendix C MRA.

2. COOMET CRM Register number [2], CRM national register number or another number, enabling the CRM search in various data bases, including the data base of the International Bureau of Weights and Measures (BIPM), may be indicated as Registration number

3. CRM index, etc, may be used as CRM code.

4. In the section “Measurement method (-s)” it is recommended to indicate measurement method (-s), used in the determination of CRM certified value.

5. The date of CRM certification corresponds to the date of CRM issue

6. The period of validity of COOMET Certificate for CRMs corresponds to the established lifetime of the CRM.

¹ Instead of the terms «аттестованное значение», «аттестация» the use of the terms «сертифицированное значение», «сертификация» respectively is allowed.

2.3 Certificate for CRMs is prepared by CRM producer (NMI, COOMET CRM producer).

2.4 When filling in the sections of certificate for CRMs it is necessary to follow the provisions of ISO Guide 31:2000 and the recommendations set out under the lines of the sections of certificate for CRMs, provided in Annex 1.

2.5 The example of issue of certificate for CRMs using the recommended form is given in Annex 2.

2.6 When preparing certificate for CRMs for composition of gas mixtures it is recommended to follow the provisions set out in [4].

References

[1] GOST 8.315-97 GSI. Reference materials for composition and properties of substances and materials. Basic principles

[2] R/RM/6:2010. Register of certified reference materials for composition and properties of substances and materials developed within COOMET. Basic principles

[3] R/RM/5:2010 Content and rules of drawing up documents for CRMs developed within COOMET

[4] ISO 61: 2000 Gas analysis - Requirements for certificates for calibration gases and gas mixtures.

**The form of certificate for CRMs
(recommended)**

 	<p style="text-align: right;">Logo of CRM producer</p> <hr/> <p style="text-align: center;"><i>Name, address, telephone, fax, e-mail of CRM producer</i></p> <p style="text-align: center;">CERTIFICATE</p> <hr/> <p style="text-align: center;">name of the certified reference material registration number</p> <p>Code of the certified reference material: _____, batch (specimen) number: _____</p> <p>Description: _____ <i>(details of material, aggregate state, design, dispersity, etc.)</i></p> <p>Intended use: _____</p> <p>Certified value of a quantity with uncertainty statement: _____ <i>(quantity, certified value, expanded uncertainty, coverage factor, confidence level)</i></p> <p><i>Certified value and expanded uncertainty of the certified value of certified reference material are established in conformity with the provisions of ISO Guide 35 "Reference materials – General and statistical principles for certification".</i></p> <p>Conditions of storage and transportation: _____</p> <p>Safety requirements: _____</p> <p>Information on homogeneity: _____ <i>(minimum representative sample, brief information of homogeneity study, etc.)</i></p> <p>Measurement method (-s): _____ <i>(measurement method (-s), used in the determination of the certified value)</i></p> <p>Metrological traceability: _____</p> <p>Quality management system: _____ <i>(information on the conformity of producer's quality management system with the requirements of ISO Guide 34, ISO/IEC 17025, on the organization, which conducted peer review of QMS)</i></p>
<p>Certificate for CRM batch (specimen) No. _____ page ___ of ___</p>	

Additional information **):

(information on uncertified quantity values, on commutability, etc.)

A set of supply:

(a number of specimens, supply unit, information on package and accompanying documents)

Date of certification:

(date, month, year)

Instruction for use:

Period of validity of the certificate:

(period of validity of the certificate, confirming the validity of CRM metrological characteristics)

Signatures of certifying officers:

Expert (-s):

Position of expert (-s)
of CRM producer

signature

Initials, surname

Head:

Position of the head
of CRM producer

signature


Initials, surname


Seal place

This Certificate may not be reproduced except in full. Any publication or reproduction of an extract of this Certificate requires permission in writing from CRM producer, which issued this Certificate.

Certificate for CRM
batch (specimen) No. ____
page __ of ____

Notes:

*) The logo  may be represented on the title page of Certificate for CRM, provided the certified reference material of NMI is included in Appendix C MRA.

The logo  may be represented on the title page of Certificate for CRM, provided the CRM is issued by the national metrological institute (NMI) from COOMET member-countries and/or approved as COOMET CRM.

**) In section "Additional information" the information according to p. 5.17 of ISO Guide 31:2000, p. 7.2 of COOMET R/RM/5:2010 may be provided [3].

***) Instead of the terms «аттестованное значение», «аттестация» the use of the terms «сертифицированное значение», «сертификация» respectively is allowed.

Example of certificate for CRMs

	FEDERAL STATE UNITARY ENTERPRISE THE URAL RESEARCH INSTITUTE FOR METROLOGY (FGUP "UNIIM")	
4, Krasnoarmeyskaya Str. Ekaterinburg, 620000, Russia, tel/fax +7 343 350-33-51, e-mail: uniim@uniim.ru		
<h2 style="margin: 0;">CERTIFICATE</h2> <h3 style="margin: 0;">CERTIFIED REFERENCE MATERIAL FOR COMPOSITION OF POTASSIUM DICHROMATE GSO 2215-81</h3>		
Code of the certified reference material: KD-1, batch number: 16		
Description: certified reference material is orange-red powder, packed in polyethylene bottles per 10 g.		
Intended use: certified reference material is intended for transfer of the unit of the base substance mass fraction to certified reference materials for composition of potassium dichromate, chemical reagents of potassium dichromate, reducing agents, such as sodium thiosulphate, double sulphate salt of ferrous oxide and ammonium, used as titrant in measurement procedures, based on titrimetric method; for metrological certification of measurement procedures and accuracy control of measurement results.		
Certified value of a quantity with uncertainty statement:		
Certified characteristic	Certified value	Expanded uncertainty, with $k=2$, $P=95\%$
Mass fraction of potassium dichromate, %	99,971	0,019
<i>Certified value and expanded uncertainty of the certified value of certified reference material are established in conformity with the requirements of ISO Guide 35:2006 "Reference materials – General and statistical principles for certification" and the principles of ISO/IEC Guide 98-3:2008 "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)".</i>		
Conditions of storage and transportation: certified reference material should be stored in its original container at the temperature of $(20\pm 5)^\circ\text{C}$ and relative air humidity not exceeding 80 % in the absence of contacts with aggressive media. The storage of open bottle with certified reference material is allowed at the temperature of $(20\pm 5)^\circ\text{C}$ and relative air humidity not exceeding 80 % in the absence of contacts with aggressive media, provided the instruction for use is observed.		
Transportation of certified reference material is allowed only in a container by any means of transport at the temperature from -10 to $+30^\circ\text{C}$.		
Certificate for CRM 2215-81 batch No. 16 page 1 of 3		

Safety requirements: during the works on the preparation of certified reference material for use, safety requirements according to GOST 12.1.005-88, GOST 12.1.007-76, GOST 4220-75 should be observed.

Information on homogeneity: homogeneity study of certified reference material is conducted in conformity with requirements, established in *ISO Guide 35:2006 "Reference materials – General and statistical principles for certification"*. Standard uncertainty due to inhomogeneity, equal to 0,003 %, is taken into account in the calculation of expanded uncertainty of the certified value of certified reference material.

Measurement method: metrological characteristics of certified reference material are determined by coulometric titration according to the instruction MA 03-223-2011 "GSO 2215-81. The programme and procedure of the determination of metrological characteristics", approved by UNIIM

Metrological traceability: metrological traceability of CRM certified value is ensured by the use of direct measurement method on State primary measurement standard of mass (molar) fraction and mass (molar) concentration of a component in liquid and solid substances and materials based on coulometric titration, GET 176-2010, calibration and measurement capabilities of which are recognized in the framework of international key comparisons and included in the data base of international key comparisons of International Bureau of Weights and Measures (http://kcdb.bipm.org/AppendixC/QM/RU/QM_RU_1.pdf).

Quality Management System: Quality Management System of UNIIM complies with the requirements of ISO Guide 34:2009 «General requirements for the competence of reference material producers» and ISO/IEC 17025 «General requirements for the competence of testing and calibration laboratories». Confirmation of Recognition of Quality Management System No. QSF-R23 is issued on 14 March 2012 by the Quality Forum of Euro-Asian Cooperation of Metrological Institutions (COOMET).

A set of supply: certified reference material is supplied to the user in a polyethylene bottle, placed in a carton box. The amount of CRM in the bottle is 10 g.
CRM is accompanied by Certificate for CRM.

Date of certification: 30 September 2012.

Instruction for use:

General guidelines

Before CRM use it is recommended to check by external examination the completeness, integrity of package and availability of marking and label. The package should be free of damage, resulting in the break of air tightness.

CRMs with expired lifetime are not allowed for use.

Preparation for use

Out of the bottle, containing CRM, pore out CRM material into a clean dry weighing beaker and close the bottle with a cover. To prevent possible contamination of the basic mass of the CRM, the test portions should be taken only out of the weighing beaker. The remainder of CRM should not be poured into the bottle. The collected test portion is dried during 2 hours at the temperature of $(100 \pm 2) ^\circ\text{C}$ and then cooled in a dessicator to an ambient temperature. The collected test portion is weighed on analytical balance with an error not exceeding $\pm 0,0002$ g.

Period of validity of the certificate: till 30 September 2017.

Signatures of certifying officers:

	<i>signature</i>	<i>Initials, surname</i>
Head: <i>Position of the head of CRM producer</i>	_____	_____
	<i>signature</i>	<i>Initials, surname</i>
Expert (-s): <i>Position of expert (-s) of CRM producer</i>	_____	_____
Seal place		

This Certificate may not be reproduced except in full. Any publication or reproduction of an extract of this Certificate requires permission in writing from UNIIM, which issued this Certificate.

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