



Specific Accreditation Criteria

ISO 17034 Application Document Reference Material Producers - Annex

Reference Gas Producers

Issued: xx July

Effective: xx July



© Copyright National Association of Testing Authorities, Australia 2014

This publication is protected by copyright under the Commonwealth of Australia Copyright Act 1968.

NATA's accredited facilities or facilities seeking accreditation may use or copy this publication or print or email this publication internally for accreditation purposes.

Individuals may store a copy of this publication for private non-commercial use or copy a reasonable portion of this publication in accordance with the fair dealing provisions in Part III Division 3 of the Copyright Act 1968.

You must include this copyright notice in its complete form if you make a copy of this publication.

Apart from these permitted uses, you must not modify, copy, reproduce, republish, frame, upload to a third party, store in a retrieval system, post, transmit or distribute this content in any way or any form or by any means without express written authority from NATA.




Table of Contents

Purpose	4
Reference Gas Producers	4
6.3 Provision of equipment, services and supplies.....	4
7.11 Assessment and monitoring of stability.....	5
7.14 RM documents and labels.....	5
References	6
Amendment Table	6

Purpose

In addition to the *ISO 17034 Standard Application Document (SAD)*, this document provides interpretative criteria and recommendations for both applicant and accredited Reference Gas Producers.

Facilities must comply with all relevant documents in the NATA Accreditation Criteria (NAC) package for Reference Materials Producers (refer to *NATA Procedures for Accreditation*).

The clause numbers in this document follow those of ISO 17034 however, as not all clauses require interpretation, the numbering may not be consecutive.

Reference Gas Producers

Certification of reference gas mixtures is based on three methods of characterisation:

- 1) Certified Reference Materials – produced according to ISO 6142-1 *Gas analysis - Preparation of calibration gas mixtures - Part 1: Gravimetric method for Class I mixtures*;

Note: 'Certified (Primary) Reference Material' is a primary type reference gas that can be produced using gravimetric techniques with analytical verification of the composition values in accordance with ISO 6142-1. Traceability for these types of gases is to the amount of substance contained within. A number of guidelines relating to the production, maintenance and distribution of reference gases are available in ISO 6142-1:2015 *Gas analysis - Preparation of calibration gas mixtures - Part 1: Gravimetric method for Class I mixtures*.

- 2) Certified Reference Materials – produced according to ISO 6142-2 *Gas analysis - Preparation of calibration gas mixtures – Part 2: Gravimetric method for Class II mixtures*.

Note: This standard describes a method for calculating the measurement uncertainty associated with the amount fraction of each component for Class II calibration gas mixtures using a static gravimetric method. It considers all of the uncertainty contributions mentioned in ISO 6142-1, plus the uncertainty resulting from the validation process for Class II mixtures that are not individually verified. Class II type mixtures will usually have amount-of-substance fractions with larger measurement uncertainties than Class I mixtures. Class II mixtures are limited to non-reactive components that are greater than or equal to an amount fraction of 100 µmol/mol.

- 3) Certified Reference Materials – certified by analytical methods.

Note: In general, gas standards (sold mostly as calibration gases to testing facilities) are produced by decanting a series of pure gases into a cylinder to make a mixture. This production process can be done using a combination of hydrostatic (pressure) and gravimetric techniques. The mixture in the decanted cylinder is homogenised and tested using gas chromatography and gas analyser instruments/techniques for determining the assigned value. Instruments need to be calibrated using a certified reference gas, prior to performing characterisation steps.

6.3 Provision of equipment, services and supplies

6.3.2 The constituents of gas mixtures must be reconfirmed if the mixtures have not been received from one of the following:

- a facility accredited to ISO 17034 by an accreditation body recognised by NATA under one of the regional mutual recognition arrangements (MRA) e.g. Asia Pacific Accreditation Cooperation (APAC) MRA;
- Australia's National Measurement Institute (NMI) or a national metrology institute that is a signatory to the Comité International des Poids et Mesures (CIPM, *English: International Committee for Weights and Measures*) MRA.

Note: Refer to NATA's *Metrological Traceability Policy*.

7.11 Assessment and monitoring of stability

7.11.2 A history of the assigned property values for different types of reference mixtures can be used to determine the stability of the gas mixture. The knowledge of previously determined measurements for specific gas mixtures and concentrations will assist in establishing long term and short-term stability periods.

7.14 RM documents and labels

7.14.2 For each reference mixture held by the facility, the following details, as a minimum, must be available:

- constituents of the mixture;
- date produced;
- confirmation procedures used;
- regulatory conditions applying to the gas mixture and its storage.

Note: ISO 6141 *Gas Analysis - Contents of Certificates for Calibration gas Mixtures* provides additional guidance on the contents of certificates.

References

This section lists publications referenced in this document. The year of publication is not included as it is expected that only current versions of the references shall be used.

Standards

ISO 17034 *General requirements for the competence of reference material producers*

ISO 6141 *Gas Analysis - Contents of Certificates for Calibration gas Mixtures*

ISO 6142 - 1 *Gas analysis - Preparation of calibration gas mixtures - Part 1: Gravimetric method for Class I mixtures*

ISO 6142-2 *Gas analysis - Preparation of calibration gas mixtures - Part 2: Gravimetric method for Class II mixtures*

Amendment Table

The table below provides a summary of changes made to the document with this issue.

Section or Clause	Amendment
Reference Gas Producers	Addition of ISO 6142-2 Gas analysis - Preparation of calibration gas mixtures - Part 2: Gravimetric method for Class II mixtures