Dare of Shipment: ***** xx, 20XX

National Institute of Advanced Industrial Science and Technology
National Metrology Institute of Japan

Reference Material Certificate
NMIJ CRM 3409-c01

Nitrogen in Argon (100 µmol/mol)

This certified reference material (CRM) was produced in accordance with the NMIJ’s management system and in compliance with ISO GUIDE 34:2009 and ISO/IEC 17025:2005. This CRM is intended for use in the calibration of instruments.

Certified Value
The certified value for nitrogen in this CRM is given in the table below. The uncertainty of the certified value is the half-width of the expanded uncertainty interval calculated using a coverage factor (k) of 2, which gives a level of confidence of approximately 95%.

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Certified value, Amount-of-substance fraction (µmol/mol)</th>
<th>Expanded uncertainty, Amount-of-substance fraction (µmol/mol)</th>
<th>Cylinder Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
<td>99.25</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Analysis
The certified value is the amount-of-substance fraction calculated in accordance with ISO 6142-1:2015 for the gravimetric method. The uncertainty was evaluated from the uncertainties in weighing, molar masses, source gas purities, and the verification method using a gas chromatograph-mass spectrometry.

Metrological Traceability
This CRM was prepared by the gravimetric method (ISO 6142-1:2015) at NMIJ using a mass comparator, mass pieces, and source gases that were traceable to the International System of Units (SI). Therefore, the certified value is also traceable to the SI.

Expiration of Certification
This certificate is valid for one year from the date of shipment, provided that the material is stored in accordance with the instructions given in this certificate.

Sample Form
This CRM is supplied in an aluminum alloy cylinder with an inner volume of approximately 9.5 L. The specification of the cylinder outlet is W22-14-threads right. The pressure of this CRM in the cylinder is above 6 MPa (35 °C).

Instructions for Storage
This CRM should be stored in compliance with high pressure gas regulations and other relevant laws. This CRM should not be exposed to sunlight. This CRM should be stored at a temperature below 40 °C and in a well-ventilated area. This CRM should be secured with chain to prevent it falling. Refer to the safety data sheet (SDS) on this CRM for storage.

Instructions for Use
This certificate is valid when residual pressure of this CRM is at 1.5 MPa or more gauge pressure. It is recommended that sufficient substitution of residual gas in a regulator, valves, piping, measuring instruments, and so on with this CRM before use. To avoid contamination, we recommend checking leakage from the joints of piping.
Precautions for Handling
This CRM should be handled in accordance with a law of high pressure gas regulations. This CRM is a simple asphyxiant that should only be handled in a well-ventilated area. This CRM should be returned to the Center for Quality Management of Metrology of AIST after use or after the expiry date. Refer to the SDS on this CRM before use.

Preparation
This CRM is prepared from commercially available high-purity nitrogen and argon by NMIJ using a gravimetric method in accordance with ISO 6142-1:2015.

NMIJ Analysts
The technical manager for this CRM is T. Shimosaka, the production manager is T. Shimosaka, and the analysts are T. Shimosaka and K. Takada.

Information
If substantive technical changes occur that affect the certification before the expiration of this certificate, NMIJ will notify the registered customer. Customer registration on the NMIJ Website (given below) will facilitate notification. Technical reports regarding this CRM can be obtained from the contact details given below.

Reproduction of Certificate
In reproducing this certificate, it should be clearly indicated that the document is a copy.

March 14, 2018

Ryoji Chubachi
President
National Institute of Advanced Industrial Science and Technology

If you have any questions about this CRM, please contact:
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National Metrology Institute of Japan,
Center for Quality Management of Metrology, Reference Materials Office,
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