

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|-----------------------|------------------------------|---|----|----------|---|----|------|---|--|----|------|---|----|------|---|---|--------------------------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-01 | High purity | hydrogen | carbon monoxide | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| | | | carbon dioxide | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | nitrogen | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | oxygen | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | total hydrocarbons | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | water | Amount-of-substance fraction | 1 | 10 | µmol/mol | 30 | 8 | % | Yes | | | | | | | | | |
| 4.1-02 | High Purity | nitrogen | carbon monoxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| | | | carbon dioxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | argon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | oxygen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | neon | Amount-of-substance fraction | 0.2 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | hydrogen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | total nitrogen oxides | Amount-of-substance fraction | 0 | 1 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | total hydrocarbons | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |

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|------------------------|------------------------------|--------|----------------------|------------------------------|---|----|----------|---|----|------|---|--|----|------|---|----|------|---|---|--------------------------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | water | Amount-of-substance fraction | 0.5 | 10 | µmol/mol | 30 | 8 | % | Yes | | | | | | | | | |
| 4.1-03 | High Purity | helium | carbon monoxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| | | | carbon dioxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | nitrogen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | oxygen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | total hydrocarbons | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | neon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | argon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | water | Amount-of-substance fraction | 0.5 | 10 | µmol/mol | 30 | 8 | % | Yes | | | | | | | | | |
| 4.1-04 | High Purity | oxygen | neon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| | | | argon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | hydrogen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | nitrogen | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | carbon monoxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|----------|---|----|------|---|--|----|------|---|----|------|---|---|--------------------------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | carbon dioxide | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | methane | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | krypton | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | xenon | Amount-of-substance fraction | 0.1 | 10 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | water | Amount-of-substance fraction | 0.5 | 10 | µmol/mol | 30 | 8 | % | Yes | | | | | | | | | |
| 4.1-05 | High Purity | methane | carbon dioxide | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| | | | carbon monoxide | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | hydrogen | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | nitrogen | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | oxygen | Amount-of-substance fraction | 2 | 10 | µmol/mol | 6 | 4 | % | Yes | | | | | | | | | |
| | | | water | Amount-of-substance fraction | 2 | 10 | µmol/mol | 15 | 8 | % | Yes | | | | | | | | | |
| | | | ethane | Amount-of-substance fraction | 0.1 | 100 | µmol/mol | 20 | 3 | % | Yes | | | | | | | | | |
| | | | higher hydrocarbons | Amount-of-substance fraction | 10 | 1000 | µmol/mol | 20 | 3 | % | Yes | | | | | | | | | |
| 4.1-06 | High Purity | synthetic air | carbon monoxide | Amount-of-substance fraction | 0.1 | 1 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |

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|------------------------|------------------------------|---------------|-----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | carbon dioxide | Amount-of-substance fraction | 0.1 | 1 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | total nitrogen oxides | Amount-of-substance fraction | 0.01 | 1 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | total hydrocarbons | Amount-of-substance fraction | 0.15 | 1 | µmol/mol | 30 | 6 | % | Yes | | | | | | | | | |
| | | | water | Amount-of-substance fraction | 0.5 | 10 | µmol/mol | 30 | 8 | % | Yes | | | | | | | | | |
| 4.2-01a | Environmental | nitrogen | carbon monoxide | Amount of substance fraction | 1 | 10 | micromol/mol | 2 | 0.5 | % | Yes | 1 | 10 | micromol/mol | 2 | 0.5 | % | Yes | SM 06.02.34 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.2-01b | Environmental | synthetic air | carbon monoxide | Amount of substance fraction | 1 | 10 | micromol/mol | 2 | 0.5 | % | Yes | 1 | 10 | micromol/mol | 2 | 0.5 | % | Yes | SM 06.02.34 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.2-02a | Environmental | nitrogen | carbon monoxide | Amount of substance fraction | 10 | 1000 | µmol/mol | 0.5 | 0.5 | % | Yes | 10 | 1000 | µmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.004 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Approved on 19 July 2010 |
| 4.2-02b | Environmental | synthetic air | carbon monoxide | Amount of substance fraction | 10 | 1000 | µmol/mol | 0.5 | 0.5 | % | Yes | 10 | 1000 | µmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.004 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Approved on 19 July 2010 |
| 4.2-03a | Environmental | nitrogen | carbon monoxide | Amount-of-substance fraction | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | PRM SM 06.02.005 | | |
| 4.2-03b | Environmental | air | carbon monoxide | Amount-of-substance fraction | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | PRM SM 06.02.005 | | |

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|------------------------|------------------------------|----------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-04a | Environmental | nitrogen | carbon monoxide | Amount-of-substance fraction | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.006 | |
| 4.2-04b | Environmental | air | carbon monoxide | Amount-of-substance fraction | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.006 | |
| 4.2-11a | Environmental | nitrogen | nitrogen dioxide | Amount-of-substance fraction | 0.1 | 50 | µmol/mol | 5 | 1.5 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| 4.2-11b | Environmental | air | nitrogen dioxide | Amount-of-substance fraction | 0.1 | 50 | µmol/mol | 5 | 1.5 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |
| 4.2-12a | Environmental | nitrogen | nitrogen dioxide | Amount-of-substance fraction | 50 | 5000 | µmol/mol | 1.5 | 1.5 | % | Yes | 50 | 5000 | µmol/mol | 1.5 | 1.5 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.015 | |
| 4.2-12b | Environmental | air | nitrogen dioxide | Amount-of-substance fraction | 50 | 5000 | µmol/mol | 1.5 | 1.5 | % | Yes | 50 | 5000 | µmol/mol | 1.5 | 1.5 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.015 | |
| 4.2-13a | Environmental | nitrogen | nitrogen dioxide | Amount-of-substance fraction | 5 | 25 | mmol/mol | 1 | 0.3 | % | Yes | 5 | 25 | mmol/mol | 1 | 0.3 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.020 | |
| 4.2-13b | Environmental | air | nitrogen dioxide | Amount-of-substance fraction | 5 | 25 | mmol/mol | 1 | 0.3 | % | Yes | 5 | 25 | mmol/mol | 1 | 0.3 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.020 | |
| 4.2-14a | Environmental | nitrogen | sulfur dioxide | Amount-of-substance fraction | 0.1 | 100 | micromol/mol | 5 | 0.7 | % | Yes | 0.1 | 100 | micromol/mol | 5 | 0.7 | % | Yes | SM 06.02.013 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-14b | Environmental | synthetic air | sulfur dioxide | Amount-of-substance fraction | 0.1 | 100 | micromol/mol | 5 | 0.7 | % | Yes | 0.1 | 100 | micromol/mol | 5 | 0.7 | % | Yes | SM 06.02.013 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-15a | Environmental | nitrogen | sulfur dioxide | Amount-of-substance fraction | 100 | 1000 | micromol/mol | 0.7 | 0.5 | % | Yes | 100 | 1000 | micromol/mol | 0.7 | 0.5 | % | Yes | SM 06.02.013 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-15b | Environmental | synthetic air | sulfur dioxide | Amount-of-substance fraction | 100 | 1000 | micromol/mol | 0.7 | 0.5 | % | Yes | 100 | 1000 | micromol/mol | 0.7 | 0.5 | % | Yes | SM 06.02.013 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 September 2012 |
| 4.2-16a | Environmental | nitrogen | propane | Amount-of-substance fraction | 5 | 20 | micromol/mol | 2 | 1 | % | Yes | 5 | 20 | micromol/mol | 2 | 1 | % | Yes | SM 06.02.010 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-16b | Environmental | synthetic air | propane | Amount-of-substance fraction | 5 | 20 | micromol/mol | 2 | 1 | % | Yes | 5 | 20 | micromol/mol | 2 | 1 | % | Yes | SM 06.02.010 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-19 | Environmental | nitrogen | carbon monoxide | Amount-of-substance fraction | 5 | 50 | mmol/mol | 0.3 | 0.2 | % | Yes | 5 | 50 | mmol/mol | 0.3 | 0.2 | % | Yes | SM 06.02.029 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 21 December 2007 |
| | | | carbon dioxide | Amount-of-substance fraction | 40 | 160 | mmol/mol | 0.3 | 0.2 | % | Yes | 40 | 160 | mmol/mol | 0.3 | 0.2 | % | Yes | | |
| | | | propane | Amount-of-substance fraction | 0.1 | 3 | mmol/mol | 0.5 | 0.2 | % | Yes | 0.1 | 3 | mmol/mol | 0.5 | 0.2 | % | Yes | | |
| 4.2-21 | Environmental | nitrogen | oxygen | Amount-of-substance fraction | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 5 | mmol/mol | 0.5 | 0.5 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | PRM SM 06.02.001 | | |

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-22 | Environmental | nitrogen | oxygen | Amount-of-substance fraction | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | 5 | 100 | mmol/mol | 0.5 | 0.2 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.002 | |
| 4.2-23 | Environmental | nitrogen | oxygen | Amount-of-substance fraction | 100 | 250 | mmol/mol | 0.2 | 0.2 | % | Yes | 100 | 250 | mmol/mol | 0.2 | 0.2 | % | Yes | Calibration | |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.003 | |
| 4.2-25a | Environmental | nitrogen | propane | Amount-of-substance fraction | 5 | 50 | mmol/mol | 0.5 | 0.5 | % | Yes | 5 | 50 | mmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.011 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-25b | Environmental | synthetic air | propane | Amount-of-substance fraction | 5 | 50 | mmol/mol | 0.5 | 0.5 | % | Yes | 5 | 50 | mmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.011 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-26 | Environmental | nitrogen | hydrogen sulfide | Amount-of-substance fraction | 20 | 1000 | μmol/mol | 2 | 1.5 | % | Yes | 20 | 1000 | μmol/mol | 2 | 1.5 | % | Yes | Calibration | Uncertainty convention 2 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.02.016 | |
| 4.2-27a | Environmental | nitrogen | ammonia | Amount of substance fraction | 100 | 1000 | micromol/mol | 2 | 2 | % | Yes | 100 | 1000 | micromol/mol | 2 | 2 | % | Yes | SM 06.02.017 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.2-27b | Environmental | synthetic air | ammonia | Amount of substance fraction | 100 | 1000 | micromol/mol | 2 | 2 | % | Yes | 100 | 1000 | micromol/mol | 2 | 2 | % | Yes | SM 06.02.017 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.2-28 | Environmental | nitrogen | hydrogen chloride | Amount-of-substance fraction | 20 | 1000 | μmol/mol | 5 | 3 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2 |

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|------------------------|------------------------------|----------|----------------------|------------------------------|---|------|----------|---|----|------|---|--|----|----------|---|----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-29a | Environmental | nitrogen | benzene | Amount-of-substance fraction | 5 | 1000 | nmol/mol | 5 | 5 | % | Yes | | | | | | | | Calibration | |
| 4.2-29b | Environmental | air | benzene | Amount-of-substance fraction | 5 | 1000 | nmol/mol | 5 | 5 | % | Yes | | | | | | | | Calibration | |
| 4.2-30a | Environmental | nitrogen | toluene | Amount-of-substance fraction | 5 | 1000 | nmol/mol | 5 | 5 | % | Yes | | | | | | | | Calibration | |
| 4.2-30b | Environmental | air | toluene | Amount-of-substance fraction | 5 | 1000 | nmol/mol | 5 | 5 | % | Yes | | | | | | | | Calibration | |
| 4.2-34a | Environmental | nitrogen | 1-butanol | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.005 | |
| 4.2-34b | Environmental | air | 1-butanol | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.005 | |
| 4.2-35a | Environmental | nitrogen | methanol | Amount-of-substance fraction | 0.5 | 50 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 50 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.006 | |
| 4.2-35b | Environmental | air | methanol | Amount-of-substance fraction | 0.5 | 50 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 50 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.006 | |
| 4.2-36a | Environmental | nitrogen | ethylacetate | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.007 | |
| 4.2-36b | Environmental | air | ethylacetate | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.007 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|----|--------------|---|-----|------|---|--|----|--------------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-37a | Environmental | nitrogen | n-hexane | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.008 | |
| 4.2-37b | Environmental | air | n-hexane | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.008 | |
| 4.2-42a | Environmental | nitrogen | ethylbenzene | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.029 | |
| 4.2-42b | Environmental | air | ethylbenzene | Amount-of-substance fraction | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | 0.5 | 20 | µmol/mol | 5 | 2 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.029 | |
| 4.2-45a | Environmental | nitrogen | sulfur dioxide | Amount-of-substance fraction | 0.1 | 20 | micromol/mol | 5 | 1 | % | Yes | 0.1 | 20 | micromol/mol | 5 | 1 | % | Yes | SM 06.05.014, SM 06.05.015, plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.6-45b | Environmental | synthetic air | sulfur dioxide | Amount-of-substance fraction | 0.1 | 20 | micromol/mol | 5 | 1 | % | Yes | 0.1 | 20 | micromol/mol | 5 | 1 | % | Yes | SM 06.05.014, SM 06.05.015, plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.2-46a | Environmental | nitrogen | hydrogen sulfide | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.016 | |
| 4.2-46b | Environmental | air | hydrogen sulfide | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.016 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleyev Institute for Metrology, Rosstandart)

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| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-47a | Environmental | nitrogen | nitrogen dioxide | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.017 | |
| 4.2-47b | Environmental | air | nitrogen dioxide | Amount-of-substance fraction | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | 0.1 | 20 | µmol/mol | 5 | 1.5 | % | Yes | Calibration | Uncertainty convention 2. Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.017 | |
| 4.2-48a | Environmental | nitrogen | ammonia | Amount-of-substance fraction | 1 | 100 | µmol/mol | 5 | 2 | % | Yes | 1 | 100 | µmol/mol | 5 | 2 | % | Yes | Calibration | Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.018 | |
| 4.2-48b | Environmental | air | ammonia | Amount-of-substance fraction | 1 | 100 | µmol/mol | 5 | 2 | % | Yes | 1 | 100 | µmol/mol | 5 | 2 | % | Yes | Calibration | Approved on 09 December 2004 |
| | | | | | | | | | | | | | | | | | | | PRM SM 06.05.018 | |
| 4.2-53 | Environmental | nitrogen | carbon dioxide | Amount of substance fraction | 100 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | 50 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | SM 06.02.34 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-03a | Other | nitrogen | n-hexane | Amount of substance fraction | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-03b | Other | synthetic air | n-hexane | Amount of substance fraction | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-17 | Other | nitrogen | n-hexane | Amount of substance fraction | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|-----|----------|---|-----|------|---|--|----|----------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-18 | Other | synthetic air | n-hexane | Amount of substance fraction | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-04a | Other, transformer gas | helium | hydrogen | Molar fraction | 0.1 | 1.0 | mmol/mol | 5 | 2.5 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2. Approved on 07 February 2005 |
| | | | oxygen | Molar fraction | 0.1 | 1.0 | mmol/mol | 5 | 2.0 | % | Yes | | | | | | | | | |
| | | | nitrogen | Molar fraction | 0.1 | 1.0 | mmol/mol | 5 | 2.0 | % | Yes | | | | | | | | | |
| | | | carbon dioxide | Molar fraction | 0.2 | 1.0 | mmol/mol | 2 | 1.0 | % | Yes | | | | | | | | | |
| | | | carbon monoxide | Molar fraction | 0.2 | 1.0 | mmol/mol | 2 | 1.5 | % | Yes | | | | | | | | | |
| | | | methane | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.0 | % | Yes | | | | | | | | | |
| | | | ethane | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.5 | % | Yes | | | | | | | | | |
| | | | ethylene | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.5 | % | Yes | | | | | | | | | |
| | | | acetylene | Molar fraction | 0.1 | 1.0 | mmol/mol | 3 | 2.0 | % | Yes | | | | | | | | | |
| 4.6-04b | Other, transformer gas | argon | hydrogen | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.0 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2. Approved on 07 February 2005 |
| | | | oxygen | Molar fraction | 0.1 | 1.0 | mmol/mol | 5 | 2.0 | % | Yes | | | | | | | | | |
| | | | nitrogen | Molar fraction | 0.1 | 1.0 | mmol/mol | 3 | 2.0 | % | Yes | | | | | | | | | |
| | | | carbon dioxide | Molar fraction | 0.2 | 1.0 | mmol/mol | 2 | 2 | % | Yes | | | | | | | | | |
| | | | carbon monoxide | Molar fraction | 0.2 | 1.0 | mmol/mol | 2 | 2 | % | Yes | | | | | | | | | |
| | | | methane | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.0 | % | Yes | | | | | | | | | |
| | | | ethane | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.5 | % | Yes | | | | | | | | | |
| | | | ethylene | Molar fraction | 0.1 | 1.0 | mmol/mol | 2 | 1.0 | % | Yes | | | | | | | | | |
| | | | acetylene | Molar fraction | 0.1 | 1.0 | mmol/mol | 3 | 1.5 | % | Yes | | | | | | | | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------------|----------------------|------------------------------|---|-----|----------|---|----|------|---|--|-----|----------|---|----|------|---|--|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-07 | High purity | carbon dioxide | hydrogen | Molar fraction | 2 | 20 | μmol/mol | 10 | 4 | % | Yes | | | | | | | | Calibration | Uncertainty convention 2. Approved on 07 February 2005 |
| | | | nitrogen | Molar fraction | 2 | 100 | μmol/mol | 10 | 3 | % | Yes | | | | | | | | | |
| | | | methane | Molar fraction | 2 | 20 | μmol/mol | 10 | 5 | % | Yes | | | | | | | | | |
| | | | carbon monoxide | Molar fraction | 2 | 20 | μmol/mol | 10 | 5 | % | Yes | | | | | | | | | |
| | | | water | Molar fraction | 0.5 | 100 | μmol/mol | 30 | 5 | % | Yes | | | | | | | | | |
| 4.2-67a | Environmental | nitrogen | carbon tetrafluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/1 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-67b | Environmental | synthetic air | carbon tetrafluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/2 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-68a | Environmental | nitrogen | hexafluoroethane | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/3 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-68b | Environmental | synthetic air | hexafluoroethane | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/4 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-69a | Environmental | nitrogen | trifluoromethane | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | PRM SM 06.02.031/5 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-69b | Environmental | synthetic air | trifluoromethane | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | PRM SM 06.02.031/6 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-70a | Environmental | nitrogen | sulfur hexafluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/7 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-70b | Environmental | synthetic air | sulfur hexafluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031/8 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|-----|----------|---|----|------|---|--|-----|----------|---|----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-71a | Environmental | nitrogen | nitrogen trifluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | PRM SM 06.02.031/9 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-71b | Environmental | synthetic air | nitrogen trifluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | PRM SM 06.02.031/10 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| 4.2-72 | Environmental | nitrogen | carbon tetrafluoride | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | PRM SM 06.02.031 plus instrument calibration | Uncertainty convention 2. Approved on 29 April 2005 |
| | | | sulfur hexafluoride | | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | | |
| | | | hexafluoroethane | | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 2 | 1 | % | Yes | | |
| | | | trifluoromethane | | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 3 | 1 | % | Yes | | |
| | | | nitrogen trifluoride | | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | 0.01 | 100 | mmol/mol | 5 | 1 | % | Yes | | |
| 4.2-43a | Environmental | nitrogen | chloroform | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/1 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-43b | Environmental | synthetic air | chloroform | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/2 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-44a | Environmental | nitrogen | dichloromethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/3 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-44b | Environmental | synthetic air | dichloromethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/4 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-50a | Environmental | nitrogen | trichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/5 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-50b | Environmental | synthetic air | trichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/6 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|---------------|-----------------------|------------------------------|---|-----|----------|---|----|------|---|--|-----|----------|---|----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-51a | Environmental | nitrogen | tetrachloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/7 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-51b | Environmental | synthetic air | tetrachloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/8 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-52a | Environmental | nitrogen | 1,2-dichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 4 | 3 | % | Yes | 0.05 | 100 | µmol/mol | 6 | 4 | % | Yes | PRM SM 06.02.030/9 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-52b | Environmental | synthetic air | 1,2-dichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 4 | 3 | % | Yes | 0.05 | 100 | µmol/mol | 6 | 4 | % | Yes | PRM SM 06.02.030/10 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-54a | Environmental | nitrogen | vinyl chloride | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/13 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-54b | Environmental | synthetic air | vinyl chloride | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/14 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-55a | Environmental | nitrogen | carbon tetrachloride | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/15 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-55b | Environmental | synthetic air | carbon tetrachloride | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/16 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-56a | Environmental | nitrogen | 1,1,1-trichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/17 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-56b | Environmental | synthetic air | 1,1,1-trichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/18 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-57a | Environmental | nitrogen | o-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/19 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleyev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|---------------|--------------------------|------------------------------|---|-----|----------|---|----|------|---|--|-----|----------|---|----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-57b | Environmental | synthetic air | o-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/20 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-58a | Environmental | nitrogen | m-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/21 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-58b | Environmental | synthetic air | m-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/22 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-59a | Environmental | nitrogen | p-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/23 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-59b | Environmental | synthetic air | p-xylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/24 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-60a | Environmental | nitrogen | 1,1-dichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/25 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-60b | Environmental | synthetic air | 1,1-dichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/26 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-61a | Environmental | nitrogen | cis-1,2-dichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/27 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-61b | Environmental | synthetic air | cis-1,2-dichloroethylene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/28 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-62a | Environmental | nitrogen | 1,1,2-trichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/29 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-62b | Environmental | synthetic air | 1,1,2-trichloroethane | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/30 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|---------------------------|------------------------------|---|-----|----------|---|------|------|---|--|-----|----------|---|------|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-63a | Environmental | nitrogen | trans-1,3-dichloropropene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/31 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-63b | Environmental | synthetic air | trans-1,3-dichloropropene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/32 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-64a | Environmental | nitrogen | cis-1,3-dichloropropene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/33 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-64b | Environmental | synthetic air | cis-1,3-dichloropropene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/34 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-65a | Environmental | nitrogen | ethyl benzene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/35 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-65b | Environmental | synthetic air | ethyl benzene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030/36 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| 4.2-66 | Environmental | nitrogen | benzene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | PRM SM 06.02.030 plus instrument calibration | Uncertainty convention 2. Approved on 24 January 2006 |
| | | | chloroform | | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | | |
| | | | dichloromethane | | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | | |
| | | | trichloroethylene | | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | | |
| | | | tetrachloroethylene | | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | | |
| | | | 1,2-dichloroethane | | 0.05 | 100 | µmol/mol | 4 | 3 | % | Yes | 0.05 | 100 | µmol/mol | 6 | 4 | % | Yes | | |
| | | | vinyl chloride | | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | | |
| 4.2-73 | Environmental | nitrogen | carbon monoxide | Amount-of-substance fraction | 100 | 700 | mmol/mol | 1.5 | 0.15 | % | Yes | 100 | 700 | mmol/mol | 1.5 | 0.15 | % | Yes | SM 06.01.125, 06.01.126, 06.01.129 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-----|----------|---|-----|------|---|--|-----|----------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-05 | Other | nitrogen | methane | Amount-of-substance fraction | 20 | 300 | mmol/mol | 0.8 | 0.7 | % | Yes | 20 | 300 | mmol/mol | 0.8 | 0.7 | % | Yes | SM 06.01.168, 06.01.169, 06.01.174, 06.01.176, 06.01.179, 06.01.180, 06.01.181 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-06 | Other | nitrogen | hydrogen | Amount-of-substance fraction | 12 | 50 | mmol/mol | 2.5 | 0.8 | % | Yes | 12 | 50 | mmol/mol | 2.5 | 0.8 | % | Yes | SM 06.01.203, 06.01.204, 06.01.205, 06.01.206, 06.01.208 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-07 | Other | air | hydrogen | Amount-of-substance fraction | 2 | 20 | mmol/mol | 5 | 1.5 | % | Yes | 2 | 20 | mmol/mol | 5 | 1.5 | % | Yes | SM 06.01.386, 06.01.387, 06.01.388, 06.01.241 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-08 | Other | argon | hydrogen | Amount-of-substance fraction | 15 | 50 | mmol/mol | 2 | 1.5 | % | Yes | 15 | 50 | mmol/mol | 2 | 1.5 | % | Yes | SM 06.01.246, 06.01.249, 06.01.250 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-09 | Other | helium | hydrogen | Amount-of-substance fraction | 5 | 500 | mmol/mol | 2 | 2 | % | Yes | 5 | 500 | mmol/mol | 2 | 2 | % | Yes | SM 06.01.450, 06.01.451, 06.01.796, 06.01.797 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-10 | Other | argon | propane | Amount-of-substance fraction | 15 | 110 | mmol/mol | 2.5 | 2 | % | Yes | 15 | 110 | mmol/mol | 2.5 | 2 | % | Yes | SM 06.01.448, SM 06.01.449, plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.6-11 | Other | nitrogen | helium | Amount-of-substance fraction | 15 | 950 | mmol/mol | 2.5 | 0.2 | % | Yes | 15 | 950 | mmol/mol | 2.5 | 0.2 | % | Yes | SM 06.01.270, 06.01.272, 06.01.274, 06.01.276, 06.01.277 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-12 | Other | nitrogen | argon | Amount-of-substance fraction | 80 | 975 | mmol/mol | 2.5 | 0.2 | % | Yes | 80 | 975 | mmol/mol | 2.5 | 0.2 | % | Yes | SM 06.01.296, 06.01.301 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-----|----------|---|-----|------|---|--|-----|----------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-13 | Other | nitrogen | oxygen | Amount-of-substance fraction | 5 | 900 | mmol/mol | 4 | 0.2 | % | Yes | 5 | 900 | mmol/mol | 4 | 0.2 | % | Yes | SM 06.01.343, 06.01.344, 06.01.345, 06.01.346, 06.01.347, 06.01.348, 06.01.349, 06.01.350, 06.01.391 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | carbon dioxide | | 50 | 150 | mmol/mol | 2 | 1.3 | % | Yes | 50 | 150 | mmol/mol | 2 | 1.3 | % | Yes | | |
| 4.6-14 | Other | nitrogen | oxygen | Amount-of-substance fraction | 5 | 800 | mmol/mol | 4 | 0.5 | % | Yes | 5 | 800 | mmol/mol | 4 | 0.5 | % | Yes | SM 06.01.352, 06.01.353, 06.01.354, 06.01.355, 06.01.356, 06.01.357, 06.01.358, 06.01.359 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | hydrogen | | 6 | 12 | mmol/mol | 5 | 2.5 | % | Yes | 6 | 12 | mmol/mol | 5 | 2.5 | % | Yes | | |
| 4.6-15 | Other | nitrogen | oxygen | Amount-of-substance fraction | 2.5 | 500 | mmol/mol | 4 | 1.5 | % | Yes | 2.5 | 500 | mmol/mol | 4 | 1.5 | % | Yes | SM 06.01.361, 06.01.362, 06.01.363, 06.01.364, 06.01.365, 06.01.366, 06.01.367 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | methane | | 6 | 12 | mmol/mol | 5 | 2.5 | % | Yes | 6 | 12 | mmol/mol | 5 | 2.5 | % | Yes | | |
| 4.6-16 | Other | nitrogen | hydrogen | Amount-of-substance fraction | 35 | 200 | mmol/mol | 1.5 | 1 | % | Yes | 35 | 200 | mmol/mol | 1.5 | 1 | % | Yes | SM 06.01.373, 06.01.374, 06.01.375, 06.01.376 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | carbon dioxide | | 60 | 300 | mmol/mol | 3 | 1 | % | Yes | 60 | 300 | mmol/mol | 3 | 1 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-----|----------|---|-----|------|---|--|-----|----------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-17 | Other | nitrogen | hexane | Amount-of-substance fraction | 0.5 | 5 | mmol/mol | 4 | 2 | % | Yes | 0.5 | 5 | mmol/mol | 4 | 2 | % | Yes | SM 06.01.419, 06.01.461, 06.01.462, 06.01.463, 06.01.464, 06.01.548, 06.01.549 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-18 | Other | air | hexane | Amount-of-substance fraction | 0.65 | 5 | mmol/mol | 4.5 | 2 | % | Yes | 0.65 | 5 | mmol/mol | 4.5 | 2 | % | Yes | SM 06.01.465, 06.01.551, 06.01.552 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-19 | Other | nitrogen | krypton | Amount-of-substance fraction | 100 | 200 | mmol/mol | 2 | 2 | % | Yes | 100 | 200 | mmol/mol | 2 | 2 | % | Yes | SM 06.01.584, 06.01.585, 06.01.586 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-20 | Other | xenon | krypton | Amount-of-substance fraction | 50 | 150 | mmol/mol | 2 | 2 | % | Yes | 50 | 150 | mmol/mol | 2 | 2 | % | Yes | SM 06.01.587, 06.01.588, 06.01.589 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-21 | Other | helium | argon | Amount-of-substance fraction | 100 | 300 | mmol/mol | 2 | 2 | % | Yes | 100 | 300 | mmol/mol | 2 | 2 | % | Yes | SM 06.01.590, 06.01.591, 06.01.592 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-22 | Other | helium | krypton | Amount-of-substance fraction | 100 | 300 | mmol/mol | 2 | 2 | % | Yes | 100 | 300 | mmol/mol | 2 | 2 | % | Yes | SM 06.01.593, 06.01.594, 06.01.595 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-23 | Other | nitrogen | hydrogen | Amount-of-substance fraction | 2.5 | 10 | mmol/mol | 4 | 1 | % | Yes | 2.5 | 10 | mmol/mol | 4 | 1 | % | Yes | GSO 7606-99, 7607-99 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | carbon dioxide | | 100 | 100 | mmol/mol | 1.5 | 1.5 | % | Yes | 100 | 100 | mmol/mol | 1.5 | 1.5 | % | Yes | | |
| | | | oxygen | | 20 | 20 | mmol/mol | 1.5 | 1.5 | % | Yes | 20 | 20 | mmol/mol | 1.5 | 1.5 | % | Yes | | |
| 4.2-75 | Environmental | argon | carbon monoxide | Amount-of-substance fraction | 5 | 50 | μmol/mol | 4 | 1 | % | Yes | 5 | 50 | μmol/mol | 4 | 1 | % | Yes | SM 06.01.638, 06.01.639 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-24 | Other | argon | iso-pentane | Amount-of-substance fraction | 5 | 10 | mmol/mol | 3 | 1.5 | % | Yes | 5 | 10 | mmol/mol | 3 | 1.5 | % | Yes | SM 06.01.642 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | n-pentane | | 50 | 60 | mmol/mol | 3 | 2.5 | % | Yes | 50 | 60 | mmol/mol | 3 | 2.5 | % | Yes | | |
| | | | n-hexane | | 5 | 10 | mmol/mol | 3 | 1.5 | % | Yes | 5 | 10 | mmol/mol | 3 | 1.5 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|------|----------|---|-----|------|---|--|------|----------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-26 | Other | helium | methane | Amount-of-substance fraction | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | SM 06.01.651 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | ethane | | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | | |
| | | | propane | | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | | |
| | | | n-butane | | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | 10 | 10 | mmol/mol | 5 | 5 | % | Yes | | |
| 4.6-27 | Other | helium | hydrogen | Amount-of-substance fraction | 50 | 50 | mmol/mol | 5 | 5 | % | Yes | 50 | 50 | mmol/mol | 5 | 5 | % | Yes | SM 06.01.654 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | oxygen | | 15 | 15 | mmol/mol | 0.5 | 0.5 | % | Yes | 15 | 15 | mmol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | nitrogen | | 50 | 50 | mmol/mol | 5 | 5 | % | Yes | 50 | 50 | mmol/mol | 5 | 5 | % | Yes | | |
| | | | carbon dioxide | | 5 | 5 | mmol/mol | 5 | 5 | % | Yes | 5 | 5 | mmol/mol | 5 | 5 | % | Yes | | |
| 4.2-76 | Environmental | helium | carbon monoxide | Amount-of-substance fraction | 10 | 5000 | µmol/mol | 4 | 4 | % | Yes | 10 | 5000 | µmol/mol | 4 | 4 | % | Yes | SM 06.01.792 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-28 | Other | helium | propane | Amount-of-substance fraction | 1 | 5 | mmol/mol | 4 | 4 | % | Yes | 1 | 5 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.793 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | hexane | | 0.2 | 5 | mmol/mol | 4 | 4 | % | Yes | 0.2 | 5 | mmol/mol | 4 | 4 | % | Yes | | |
| 4.2-77 | Environmental | helium | nitrogen | Amount-of-substance fraction | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | SM 06.01.798 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| | | | oxygen | | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | | |
| | | | carbon dioxide | | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | | |
| | | | carbon monoxide | | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | 40 | 400 | µmol/mol | 5 | 5 | % | Yes | | |
| 4.6-29 | Other | helium | propane | Amount-of-substance fraction | 0.01 | 100 | mmol/mol | 4 | 3 | % | Yes | 0.01 | 100 | mmol/mol | 4 | 3 | % | Yes | SM 06.01.799, SM 06.01.800, plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 |
| 4.6-30 | Other | oxygen | nitrogen | Amount-of-substance fraction | 100 | 950 | mmol/mol | 1 | 1 | % | Yes | 100 | 950 | mmol/mol | 1 | 1 | % | Yes | SM 06.01.802 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-31 | Other | argon | nitrogen | Amount-of-substance fraction | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.803 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-32 | Environmental | hydrogen | helium | Amount-of-substance fraction | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.806 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|----------|----------------------|------------------------------|---|------|----------|---|-----|------|---|--|------|----------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-78 | Other | hydrogen | carbon monoxide | Amount-of-substance fraction | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.807 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-33 | Other | hydrogen | methane | Amount-of-substance fraction | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.808 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-34 | Other | helium | methane | Amount-of-substance fraction | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | 5 | 100 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.810 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.6-35 | Other | helium | methane | Amount-of-substance fraction | 100 | 950 | mmol/mol | 1 | 1 | % | Yes | 100 | 950 | mmol/mol | 1 | 1 | % | Yes | SM 06.01.811 plus calibration | Uncertainty convention 2 Approved on 12 December 2006 |
| 4.2-79 | Environmental | air | hydrogen sulfide | Amount-of-substance fraction | 20 | 500 | µmol/mol | 1.5 | 1.5 | % | Yes | 20 | 500 | µmol/mol | 2 | 2 | % | Yes | | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 |
| 4.6-36 | Other | nitrogen | hydrogen sulfide | Amount-of-substance fraction | 1 | 5 | mmol/mol | 1.5 | 1.5 | % | Yes | 1 | 5 | mmol/mol | 1.5 | 1.5 | % | Yes | SM 06.02.016 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 |
| 4.6-37 | Other | hydrogen | nitrogen | Amount-of-substance fraction | 20 | 40 | mmol/mol | 2 | 1 | % | Yes | 20 | 40 | mmol/mol | 2 | 1 | % | Yes | SM 06.01.034 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 |
| 4.2-81 | Environmental | helium | carbon dioxide | Amount-of-substance fraction | 500 | 1000 | µmol/mol | 3 | 1.5 | % | Yes | 500 | 1000 | µmol/mol | 3 | 1.5 | % | Yes | SM 06.01.088 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 |
| 4.6-38 | Other | air | helium | Amount-of-substance fraction | 25 | 100 | mmol/mol | 2.5 | 0.8 | % | Yes | 25 | 100 | mmol/mol | 2.5 | 0.8 | % | Yes | SM 06.01.278, 06.01.279 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-----|----------|---|-----|------|---|--|-----|----------|---|-----|------|---|--|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-39 | Other | oxygen | hydrogen | Amount-of-substance fraction | 10 | 19 | mmol/mol | 2.6 | 1.3 | % | Yes | 10 | 19 | mmol/mol | 2.6 | 1.3 | % | Yes | SM 06.01.393 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.6-40 | Other | nitrogen | ammonia | Amount-of-substance fraction | 1 | 5 | mmol/mol | 4 | 4 | % | Yes | 1 | 5 | mmol/mol | 4 | 4 | % | Yes | SM 06.02.017 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.6-41 | Other | air | ammonia | Amount-of-substance fraction | 10 | 15 | mmol/mol | 4 | 4 | % | Yes | 10 | 15 | mmol/mol | 4 | 4 | % | Yes | SM 06.01.622, 06.01.623, plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.6-42 | Other | nitrogen | ethylene | Amount-of-substance fraction | 25 | 100 | mmol/mol | 0.6 | 0.6 | % | Yes | 25 | 100 | mmol/mol | 0.6 | 0.6 | % | Yes | SM 06.01.634, 06.01.635, 06.01.690, 06.01.691 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.6-43 | Other | nitrogen | acetylene | Amount-of-substance fraction | 75 | 140 | mmol/mol | 3 | 3 | % | Yes | 75 | 140 | mmol/mol | 3 | 3 | % | Yes | SM 06.01.636, 06.01.637 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.6-48 | Other | nitrogen | sulfur hexafluoride | Amount-of-substance fraction | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | SM 06.01.812 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| | | | carbon tetrafluoride | Amount-of-substance fraction | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | | |
| | | | carbon monoxide | Amount-of-substance fraction | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | 10 | 100 | μmol/mol | 5 | 5 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-----|--------------|---|------|------|---|--|-----|--------------|---|------|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-31a | Environmental | nitrogen | benzene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | SM 06.02.23 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.2-31b | Environmental | air | benzene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | SM 06.02.23 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.2-32a | Environmental | nitrogen | toluene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | SM 06.02.24 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.2-32b | Environmental | air | toluene | Amount-of-substance fraction | 0.05 | 100 | µmol/mol | 3 | 2 | % | Yes | 0.05 | 100 | µmol/mol | 5 | 3 | % | Yes | SM 06.02.24 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 18 June 2007 | |
| 4.2-80 | Environmental | helium | carbon dioxide | Amount-of-substance fraction | 100 | 500 | µmol/mol | 4 | 3 | % | Yes | 100 | 500 | µmol/mol | 4 | 3 | % | Yes | SM 06.01.791 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 21 December 2007 | |
| 4.6-49 | Other | helium | carbon dioxide | Amount-of-substance fraction | 1 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | 1 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | SM 06.02.018 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 24 June 2008 | |
| 4.2-08 | Environmental | nitrogen | nitrogen monoxide | Amount-of-substance fraction | 0.1 | 10 | micromol/mol | 5 | 1 | % | Yes | 0.1 | 10 | micromol/mol | 5 | 1 | % | Yes | SM 06.02.014 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 27 March 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|--|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-09 | Environmental | nitrogen | nitrogen monoxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 1 | 0.7 | % | Yes | 10 | 100 | micromol/mol | 1 | 0.7 | % | Yes | SM 06.02.014 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 | |
| 4.6-47 | Other | nitrogen | nitrogen monoxide | Amount-of-substance fraction | 0.1 | 5 | mmol/mol | 0.7 | 0.5 | % | Yes | 0.1 | 5 | mmol/mol | 0.7 | 0.5 | % | Yes | SM 06.02.014 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 | |
| 4.2-10 | Environmental | nitrogen | nitrogen monoxide | Amount-of-substance fraction | 5 | 25 | mmol/mol | 0.5 | 0.3 | % | Yes | 5 | 25 | mmol/mol | 0.5 | 0.3 | % | Yes | SM 06.02.014 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 | |
| 4.6-44 | Other | nitrogen | hydrogen sulphide | Amount of substance fraction | 1 | 10 | µmol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | µmol/mol | 3 | 2 | % | Yes | SM 06.02.152 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 19 July 2010 | |
| | | | methanethiol | | 1 | 10 | µmol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | µmol/mol | 3 | 2 | % | Yes | | |
| | | | ethanethiol | | 1 | 10 | µmol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | µmol/mol | 3 | 2 | % | Yes | | |
| 4.3-08 | Fuel | methane | hydrogen sulphide | Amount of substance fraction | 10 | 500 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 500 | µmol/mol | 2 | 1.5 | % | Yes | SM 06.02.102 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 19 July 2010 | |
| | | | methanethiol | | 10 | 1000 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | µmol/mol | 2 | 1.5 | % | Yes | | |
| | | | ethanethiol | | 10 | 1000 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | µmol/mol | 2 | 1.5 | % | Yes | | |
| 4.6-45 | Other | nitrogen | hydrogen sulphide | Amount of substance fraction | 10 | 500 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 500 | µmol/mol | 2 | 1.5 | % | Yes | SM 06.02.153 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 19 July 2010 | |
| | | | methanethiol | | 10 | 1000 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | µmol/mol | 2 | 1.5 | % | Yes | | |
| | | | ethanethiol | | 10 | 1000 | µmol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | µmol/mol | 2 | 1.5 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|-------------------------|------------------------------|---------|-----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.3-07 | Fuel | methane | hydrogen sulphide | Amount of substance fraction | 1 | 10 | micromol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | micromol/mol | 3 | 2 | % | Yes | SM 06.02.101 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 | |
| | | | methanethiol | | 1 | 10 | micromol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | micromol/mol | 3 | 2 | % | Yes | | |
| | | | ethanethiol | | 1 | 10 | micromol/mol | 2.5 | 1.5 | % | Yes | 1 | 10 | micromol/mol | 3 | 2 | % | Yes | | |
| 4.3-09 | Fuel | methane | hydrogen sulphide | Amount of substance fraction | 10 | 500 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 500 | micromol/mol | 2 | 1.5 | % | Yes | SM 06.02.103 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 | |
| | | | methanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | ethanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | carbonyl sulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | carbon disulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | dimethyl sulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | diethyl sulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | ethyl methyl sulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | dimethyl disulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | diethyl disulphide | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| | | | 1-propanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| 2-propanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | | | | |
| 1-butanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | | | | |
| 2-butanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | | | | |
| 2-methyl-2-propanethiol | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | | | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|----------|----------------------|------------------------------|---|-------|--------------|---|-----|------|---|--|-------|--------------|---|-----|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | tetrahydrothiophene | | 10 | 1000 | micromol/mol | 1.5 | 1 | % | Yes | 10 | 1000 | micromol/mol | 2 | 1.5 | % | Yes | | |
| 4.6-50 | Other | nitrogen | oxygen | Amount-of-substance fraction | 10 | 1000 | micromol/mol | 3 | 0.5 | % | Yes | 10 | 1000 | micromol/mol | 3 | 0.5 | % | Yes | SM 06.02.154 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-51 | Other | nitrogen | argon | Amount-of-substance fraction | 10 | 10000 | micromol/mol | 3 | 0.5 | % | Yes | 10 | 10000 | micromol/mol | 3 | 0.5 | % | Yes | SM 06.02.155 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-52 | Other | nitrogen | neon | Amount-of-substance fraction | 10 | 10000 | micromol/mol | 3 | 0.5 | % | Yes | 10 | 10000 | micromol/mol | 3 | 0.5 | % | Yes | SM 06.02.156 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-53 | Other | nitrogen | helium | Amount-of-substance fraction | 10 | 10000 | micromol/mol | 5 | 0.5 | % | Yes | 10 | 10000 | micromol/mol | 5 | 0.5 | % | Yes | SM 06.02.157 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-54 | Other | nitrogen | hydrogen | Amount-of-substance fraction | 10 | 10000 | micromol/mol | 5 | 0.5 | % | Yes | 10 | 10000 | micromol/mol | 5 | 0.5 | % | Yes | SM 06.02.158 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-55 | Other | methane | n-hexane | Amount of substance fraction | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |
| 4.6-56 | Other | helium | n-hexane | Amount of substance fraction | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | 40 | 400 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.012 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|--|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-57 | Other | methane | n-hexane | Amount of substance fraction | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | SM 06.02.012 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 | |
| 4.6-58 | Other | helium | n-hexane | Amount of substance fraction | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | 0.4 | 4 | mmol/mol | 0.5 | 0.3 | % | Yes | SM 06.02.012 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 | |
| 4.2-84 | Environmental | nitrogen | carbon dioxide | Amount-of-substance fraction | 50 | 200 | mmol/mol | 0.5 | 0.5 | % | Yes | 50 | 200 | mmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.093 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 December 2011 | |
| | | | propane | | 1 | 100 | micromol/mol | 2 | 1 | % | Yes | 1 | 100 | micromol/mol | 2 | 1 | % | Yes | | |
| | | | nitrogen monoxide | | 10 | 1000 | micromol/mol | 2 | 0.5 | % | Yes | 10 | 1000 | micromol/mol | 2 | 0.5 | % | Yes | | |
| | | | sulfur dioxide | | 10 | 1000 | micromol/mol | 2 | 0.5 | % | Yes | 10 | 1000 | micromol/mol | 2 | 0.5 | % | Yes | | |
| 4.2-20a | Environmental | nitrogen | sulfur dioxide | Amount-of-substance fraction | 1 | 25 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 25 | mmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.013 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 | |
| 4.2-20b | Environmental | synthetic air | sulfur dioxide | Amount-of-substance fraction | 1 | 25 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 25 | mmol/mol | 0.5 | 0.5 | % | Yes | SM 06.02.013 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 September 2012 | |
| 4.2-24a | Environmental | nitrogen | propane | Amount-of-substance fraction | 20 | 5000 | micromol/mol | 1 | 0.5 | % | Yes | 20 | 5000 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.010 plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 27 March 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

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|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|------|---|--|------|--------------|---|-----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-24b | Environmental | synthetic air | propane | Amount-of-substance fraction | 20 | 5000 | micromol/mol | 1 | 0.5 | % | Yes | 20 | 5000 | micromol/mol | 1 | 0.5 | % | Yes | SM 06.02.010 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Uncertainty convention 2 Approved on 06 September 2012 |
| 4.3-10 | Fuel | helium | methane | Amount-of-substance fraction | 0.05 | 0.2 | mol/mol | 0.3 | 0.3 | % | Yes | 0.05 | 0.2 | mol/mol | 0.3 | 0.3 | % | Yes | SM2.706.136-454 | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis Approved on 06 September 2012 |
| | | | ethene | | 0.05 | 0.2 | mol/mol | 0.3 | 0.3 | % | Yes | 0.05 | 0.2 | mol/mol | 0.3 | 0.3 | % | Yes | | |
| | | | ethane | | 0.01 | 0.1 | mol/mol | 0.3 | 0.3 | % | Yes | 0.01 | 0.1 | mol/mol | 0.3 | 0.3 | % | Yes | | |
| | | | propene | | 0.005 | 0.1 | mol/mol | 0.4 | 0.4 | % | Yes | 0.005 | 0.1 | mol/mol | 0.4 | 0.4 | % | Yes | | |
| | | | propane | | 0.001 | 0.05 | mol/mol | 0.5 | 0.5 | % | Yes | 0.001 | 0.05 | mol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | 1,3-butadiene | | 0.005 | 0.03 | mol/mol | 0.5 | 0.5 | % | Yes | 0.005 | 0.03 | mol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | 1-butene | | 0.001 | 0.01 | mol/mol | 0.5 | 0.5 | % | Yes | 0.001 | 0.01 | mol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | iso-butene | | 0.001 | 0.01 | mol/mol | 0.6 | 0.6 | % | Yes | 0.001 | 0.01 | mol/mol | 0.6 | 0.6 | % | Yes | | |
| | | | hydrogen | | 0.05 | 0.2 | mol/mol | 0.6 | 0.6 | % | Yes | 0.05 | 0.2 | mol/mol | 0.6 | 0.6 | % | Yes | | |
| | | | nitrogen | | 0.01 | 0.7 | mol/mol | 0.5 | 0.5 | % | Yes | 0.01 | 0.7 | mol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | helium | | 0.01 | 0.7 | mol/mol | 0.3 | 0.3 | % | Yes | 0.01 | 0.7 | mol/mol | 0.3 | 0.3 | % | Yes | | |
| 4.1-08 | High purity | methane | carbon monoxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-09 | High purity | methane | carbon monoxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-10 | High purity | methane | carbon dioxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-11 | High purity | methane | carbon dioxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-12 | High purity | methane | nitrogen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-13 | High purity | methane | nitrogen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-14 | High purity | methane | oxygen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-15 | High purity | methane | oxygen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |
| 4.1-16 | High purity | methane | argon | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

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|------------------------|------------------------------|---------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-17 | High purity | methane | argon | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-18 | High purity | methane | ethane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-19 | High purity | methane | ethane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-20 | High purity | methane | propane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-21 | High purity | methane | propane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-22 | High purity | ethane | carbon monoxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

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|------------------------|------------------------------|--------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-23 | High purity | ethane | carbon monoxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-24 | High purity | ethane | carbon dioxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-25 | High purity | ethane | carbon dioxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-26 | High purity | ethane | nitrogen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-27 | High purity | ethane | nitrogen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-28 | High purity | ethane | oxygen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



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|------------------------|------------------------------|--------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-29 | High purity | ethane | oxygen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-30 | High purity | ethane | argon | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-31 | High purity | ethane | argon | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-32 | High purity | ethane | methane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-33 | High purity | ethane | methane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-34 | High purity | ethane | propane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

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|------------------------|------------------------------|---------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-35 | High purity | ethane | propane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-36 | High purity | propane | carbon monoxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-37 | High purity | propane | carbon monoxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-38 | High purity | propane | carbon dioxide | Amount-of-substance fraction | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | 1 | 10 | micromol/mol | 15 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-39 | High purity | propane | carbon dioxide | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | 10 | 100 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-40 | High purity | propane | nitrogen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



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|------------------------|------------------------------|---------|----------------------|------------------------------|---|-----|--------------|---|----|------|---|--|-----|--------------|---|----|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-41 | High purity | propane | nitrogen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-42 | High purity | propane | oxygen | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-43 | High purity | propane | oxygen | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-44 | High purity | propane | argon | Amount-of-substance fraction | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | 1 | 10 | micromol/mol | 10 | 5 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-45 | High purity | propane | argon | Amount-of-substance fraction | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | 10 | 100 | micromol/mol | 5 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-46 | High purity | propane | methane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



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|------------------------|------------------------------|-----------------------|----------------------|------------------------------|---|-----|--------------|---|------|------|---|--|-----|--------------|---|------|------|---|---|----------|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.1-47 | High purity | propane | methane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-48 | High purity | propane | ethane | Amount-of-substance fraction | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | 1 | 10 | micromol/mol | 5 | 3 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.1-49 | High purity | propane | ethane | Amount-of-substance fraction | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | 10 | 100 | micromol/mol | 3 | 2 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 12 June 2013 | |
| 4.3-01 | Gases Fuel | synthetic natural gas | methane | Amount-of-substance fraction | 764 | 908 | mmol/mol | 0.05 | 0.05 | % | Yes | 764 | 908 | mmol/mol | 0.05 | 0.05 | % | Yes | PRM plus calibration Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 19 June 2014 | |
| | | | ethane | Amount-of-substance fraction | 30 | 93 | mmol/mol | 0.8 | 0.8 | % | Yes | 30 | 93 | mmol/mol | 0.8 | 0.8 | % | Yes | | |
| | | | propane | Amount-of-substance fraction | 5 | 33 | mmol/mol | 1.3 | 1.3 | % | Yes | 5 | 33 | mmol/mol | 1.3 | 1.3 | % | Yes | | |
| | | | n-butane | Amount-of-substance fraction | 1 | 10 | mmol/mol | 0.5 | 0.5 | % | Yes | 1 | 10 | mmol/mol | 0.5 | 0.5 | % | Yes | | |
| | | | carbon dioxide | Amount-of-substance fraction | 5 | 30 | mmol/mol | 1 | 1 | % | Yes | 5 | 30 | mmol/mol | 1 | 1 | % | Yes | | |
| | | | nitrogen | Amount-of-substance fraction | 40 | 135 | mmol/mol | 0.8 | 0.8 | % | Yes | 40 | 135 | mmol/mol | 0.8 | 0.8 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

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|------------------------|------------------------------|-----------------------|----------------------|------------------------------|---|-----|----------|---|------|------|---|--|-----|----------|---|------|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.3-03 | Gases Fuel | synthetic natural gas | methane | Amount-of-substance fraction | 600 | 980 | mmol/mol | 0.25 | 0.03 | % | Yes | 600 | 980 | mmol/mol | 0.25 | 0.03 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 19 June 2014 |
| | | | helium | Amount-of-substance fraction | 1 | 20 | mmol/mol | 5 | 0.5 | % | Yes | 1 | 20 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | nitrogen | Amount-of-substance fraction | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | carbon dioxide | Amount-of-substance fraction | 5 | 100 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 100 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | ethane | Amount-of-substance fraction | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | propane | Amount-of-substance fraction | 1 | 100 | mmol/mol | 5 | 0.5 | % | Yes | 1 | 100 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | iso-butane | Amount-of-substance fraction | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | n-butane | Amount-of-substance fraction | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | i-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | n-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | neo-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.5 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.5 | % | Yes | | |
| | | | n-hexane | Amount-of-substance fraction | 0.1 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.1 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

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|------------------------|------------------------------|-----------------------|----------------------|------------------------------|---|-----|----------|---|------|------|---|--|-----|----------|---|------|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.3-04 | Gases Fuel | synthetic natural gas | methane | Amount-of-substance fraction | 600 | 980 | mmol/mol | 0.25 | 0.03 | % | Yes | 600 | 980 | mmol/mol | 0.25 | 0.03 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 19 June 2014 |
| | | | helium | Amount-of-substance fraction | 1 | 20 | mmol/mol | 5 | 0.5 | % | Yes | 1 | 20 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | hydrogen | Amount-of-substance fraction | 0.1 | 5 | mmol/mol | 5 | 1.0 | % | Yes | 0.01 | 5 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | oxygen | Amount-of-substance fraction | 0.5 | 20 | mmol/mol | 10 | 1.0 | % | Yes | 0.05 | 20 | mmol/mol | 10 | 1.0 | % | Yes | | |
| | | | nitrogen | Amount-of-substance fraction | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | carbon dioxide | Amount-of-substance fraction | 5 | 100 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 100 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | ethane | Amount-of-substance fraction | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | 5 | 200 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | propane | Amount-of-substance fraction | 1 | 100 | mmol/mol | 5 | 0.5 | % | Yes | 1 | 100 | mmol/mol | 5 | 0.5 | % | Yes | | |
| | | | iso-butane | Amount-of-substance fraction | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | n-butane | Amount-of-substance fraction | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | 0.5 | 10 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | i-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | n-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |
| | | | neo-pentane | Amount-of-substance fraction | 0.2 | 2 | mmol/mol | 5 | 1.5 | % | Yes | 0.2 | 2 | mmol/mol | 5 | 1.5 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|-----------------------|----------------------|------------------------------|---|------|----------|---|------|------|---|--|------|----------|---|------|------|---|---|---|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | n-hexane | Amount-of-substance fraction | 0.1 | 2 | mmol/mol | 5 | 1.0 | % | Yes | 0.1 | 2 | mmol/mol | 5 | 1.0 | % | Yes | | |
| 4.3-05 | Gases Fuel | synthetic natural gas | n-heptane | Amount of substance fraction | 0.05 | 2.5 | mmol/mol | 8 | 2 | % | Yes | 0.05 | 2.5 | mmol/mol | 8 | 2 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2 Approved on 19 June 2014 |
| | | | n-octane | Amount of substance fraction | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | | |
| | | | n-nonane | Amount of substance fraction | 0.02 | 0.25 | mmol/mol | 8 | 5 | % | Yes | 0.02 | 0.25 | mmol/mol | 8 | 5 | % | Yes | | |
| | | | n-decane | Amount of substance fraction | 0.02 | 0.1 | mmol/mol | 8 | 5 | % | Yes | 0.02 | 0.1 | mmol/mol | 8 | 5 | % | Yes | | |
| | | | benzene | Amount of substance fraction | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | | |
| | | | toluene | Amount of substance fraction | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | 0.05 | 0.5 | mmol/mol | 8 | 5 | % | Yes | | |
| 4.3-06 | Gases Fuel | synthetic natural gas | methane | Amount-of-substance fraction | 700 | 980 | mmol/mol | 0.1 | 0.05 | % | Yes | 700 | 980 | mmol/mol | 0.1 | 0.05 | % | Yes | PRM plus calibration | |
| | | | nitrogen | Amount-of-substance fraction | 10 | 200 | mmol/mol | 0.4 | 0.4 | % | Yes | 10 | 200 | mmol/mol | 0.4 | 0.4 | % | Yes | | |
| | | | carbon dioxide | Amount-of-substance fraction | 1 | 50 | mmol/mol | 0.6 | 0.6 | % | Yes | 1 | 50 | mmol/mol | 0.6 | 0.6 | % | Yes | | |
| | | | ethane | Amount-of-substance fraction | 10 | 200 | mmol/mol | 0.4 | 0.4 | % | Yes | 10 | 200 | mmol/mol | 0.4 | 0.4 | % | Yes | | |
| | | | propane | Amount-of-substance fraction | 1 | 50 | mmol/mol | 0.6 | 0.6 | % | Yes | 1 | 50 | mmol/mol | 0.6 | 0.6 | % | Yes | | |
| | | | i-butane | Amount-of-substance fraction | 0.5 | 15 | mmol/mol | 1.5 | 1 | % | Yes | 0.5 | 15 | mmol/mol | 1.5 | 1 | % | Yes | | |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|------|--------------|---|-----|----------|---|--|------|--------------|---|-----|------|---|--|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| | | | n-butane | Amount-of-substance fraction | 0.5 | 15 | mmol/mol | 1.5 | 1 | % | Yes | 0.5 | 15 | mmol/mol | 1.5 | 1 | % | Yes | | |
| 4.4-02 | Gases Forensic | nitrogen | ethanol | Amount-of-substance fraction | 50 | 500 | micromol/mol | 0.5 | 0.3 | % | Yes | 50 | 500 | micromol/mol | 0.5 | 0.3 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-85 | Environmental | purified air | ozone | Amount-of-substance fraction | 0 | 1000 | nmol/mol | Q[1.1, 0.022 x(O ₃)] | | nmol/mol | No | | | | | | | | Instrumental comparison against primary UV photometer | Uncertainty convention 2. Approved on 19 June 2015 |
| 4.4-03 | Gases Forensic | synthetic air | ethanol | Amount-of-substance fraction | 50 | 500 | micromol/mol | 0.5 | 0.3 | % | Yes | 50 | 500 | micromol/mol | 0.5 | 0.3 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-83a | Environmental | nitrogen | nitrous oxide | Amount-of-substance fraction | 0.2 | 20 | micromol/mol | 1 | 0.8 | % | Yes | 0.2 | 20 | micromol/mol | 1 | 0.8 | % | Yes | SM 06.02.091 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-83b | Environmental | synthetic air | nitrous oxide | Amount-of-substance fraction | 0.2 | 20 | micromol/mol | 1 | 0.8 | % | Yes | 0.2 | 20 | micromol/mol | 1 | 0.8 | % | Yes | SM 06.02.092 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-49 | Environmental | nitrogen | carbon dioxide | Amount-of-substance fraction | 50 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | 50 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | hd.2.706.141-ET54 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-82 | Environmental | synthetic air | carbon dioxide | Amount-of-substance fraction | 100 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | 100 | 1000 | micromol/mol | 1 | 0.2 | % | Yes | hd.2.706.136-ET275 hd.2.706.141-ET47 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-06a | Environmental | nitrogen | carbon dioxide | Amount-of-substance fraction | 1 | 25 | mmol/mol | 0.2 | 0.2 | % | Yes | 1 | 25 | mmol/mol | 0.2 | 0.2 | % | Yes | SM 06.02.018 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|-----|--------------|---|------|------|---|--|-----|--------------|---|------|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.2-06b | Environmental | synthetic air | carbon dioxide | Amount-of-substance fraction | 1 | 25 | mmol/mol | 0.2 | 0.2 | % | Yes | 1 | 25 | mmol/mol | 0.2 | 0.2 | % | Yes | SM 06.02.018 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-07a | Environmental | nitrogen | carbon dioxide | Amount-of-substance fraction | 25 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | 25 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | SM 06.02.018 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-07b | Environmental | synthetic air | carbon dioxide | Amount-of-substance fraction | 25 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | 25 | 300 | mmol/mol | 0.2 | 0.15 | % | Yes | SM 06.02.018 plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-17a | Gases, Environmental | nitrogen | methane | Amount-of-substance fraction | 1.7 | 10 | micromol/mol | 0.25 | 0.25 | % | Yes | 1.7 | 10 | micromol/mol | 0.25 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-17b | Gases, Environmental | synthetic air | methane | Amount-of-substance fraction | 1.7 | 10 | micromol/mol | 0.25 | 0.25 | % | Yes | 1.7 | 10 | micromol/mol | 0.25 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-17c | Gases, Environmental | scrubbed air | methane | Amount-of-substance fraction | 1.7 | 2.5 | micromol/mol | 0.25 | 0.25 | % | Yes | 1.7 | 2.5 | micromol/mol | 0.25 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-18a | Gases, Environmental | nitrogen | methane | Amount-of-substance fraction | 10 | 500 | micromol/mol | 0.25 | 0.2 | % | Yes | 10 | 500 | micromol/mol | 0.25 | 0.2 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.2-18b | Gases, Environmental | synthetic air | methane | Amount-of-substance fraction | 10 | 500 | micromol/mol | 0.25 | 0.2 | % | Yes | 10 | 500 | micromol/mol | 0.25 | 0.2 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |

Amount of substance, Gases, Russian Federation, VNIIM (D.I. Mendeleev Institute for Metrology, Rosstandart)

In the case where an uncertainty range is given, the expanded uncertainty range is expressed as the uncertainty of the smallest value of the quantity to the uncertainty of the largest value of the quantity.



Note: The expanded uncertainties correspond to $k = 2$ (level of confidence 95%)

| NMI Service Identifier | Measurement Service Category | Matrix | Mesurand | | Dissemination Range of Measurement Capability | | | Range of Expanded Uncertainties as Disseminated | | | | Range of Certified Values in Reference Materials | | | Range of Expanded Uncertainties for Certified Value | | | | Mechanism(s) for Measurement Service Delivery | Comments |
|------------------------|------------------------------|---------------|----------------------|------------------------------|---|----|--------------|---|-------------|------|---|--|----|--------------|---|-------------|------|---|---|--|
| | | | Analyte or Component | Quantity | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | From | To | Unit | From | To | Unit | Is the expanded uncertainty a relative one? | | |
| 4.6-01a | Gases, Other | nitrogen | methane | Amount-of-substance fraction | 0.5 | 25 | mmol/mol | 0.2 | 0.11 | % | Yes | 0.5 | 25 | mmol/mol | 0.2 | 0.11 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.6-01b | Gases, Other | synthetic air | methane | Amount-of-substance fraction | 0.5 | 25 | mmol/mol | 0.2 | 0.11 | % | Yes | 0.5 | 25 | mmol/mol | 0.2 | 0.11 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.1-50a | Gases, High purity | nitrogen | methane | Amount-of-substance fraction | 0.01 | 10 | micromol/mol | 10 | 0.25 | % | Yes | 0.01 | 10 | micromol/mol | 10 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.1-50b | Gases, High purity | oxygen | methane | Amount-of-substance fraction | 0.005 | 10 | micromol/mol | 15 | 0.25 | % | Yes | 0.005 | 10 | micromol/mol | 15 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |
| 4.1-050c | Gases, High purity | argon | methane | Amount-of-substance fraction | 0.05 | 10 | micromol/mol | 10 | 0.25 | % | Yes | 0.05 | 10 | micromol/mol | 10 | 0.25 | % | Yes | PRM plus calibration | Calibration service involves calibration of gas mixtures of known composition against primary standards on regular basis. Uncertainty convention 2. Approved on 19 June 2015 |