Certificate of Accreditation

International Accreditation Japan (IAJapan) hereby accredits the following conformity assessment body as a Reference Material Producer of ASNITE accreditation program.

Accreditation Identification: ASNITE 0001 RMP

Name of Conformity Assessment Body: National Metrology Institute of Japan,
National Institute of Advanced Industrial Science and Technology

Name of Legal Entity: National Institute of Advanced Industrial Science and Technology

Location of Conformity Assessment Body: 1-1-1 Umezono, Tsukuba-shi, Ibaraki 305-8563, JAPAN

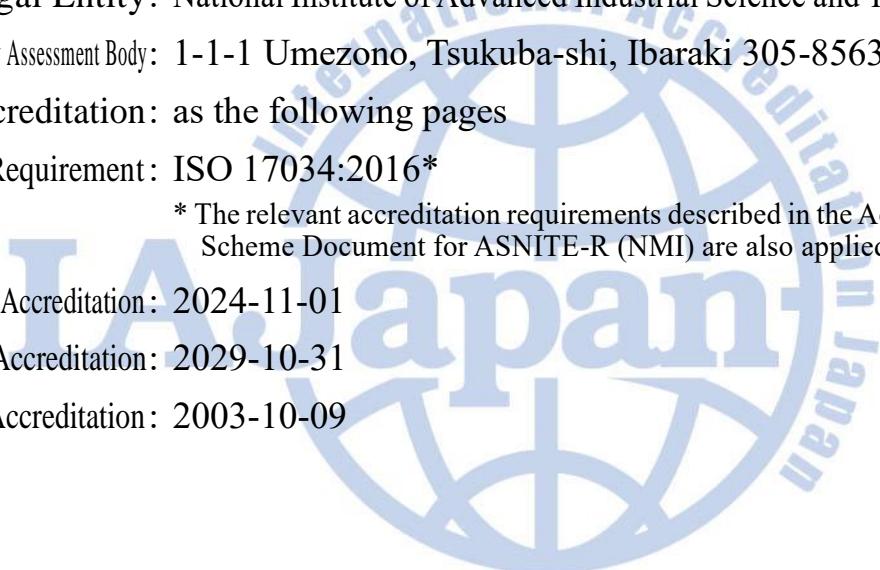**Scope of Accreditation:** as the following pages

Accreditation Requirement: ISO 17034:2016*

* The relevant accreditation requirements described in the Accreditation Scheme Document for ASNITE-R (NMI) are also applied.

Effective Date of Accreditation: 2024-11-01

Expiry Date of Accreditation: 2029-10-31

Date of Initial Accreditation: 2003-10-09

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- International Accreditation Japan (IAJapan) is an RMP accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
- MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and reassessment, and the policy on the traceability of measurement for MRA purpose.
- This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system in accordance with the recognized International Standard ISO 17034:2016.
- The latest accreditation information is publicly available on IAJapan Website as an accreditation certificate.

Category: Chemical Reference Material

RM/CRM: CRM

The Approach Used to Assign Property Values: Measurement by One or More Method(s) in a Single Laboratory (ISO 17034 7.12.3 NOTE 1 a), b))

Subcategory	Measurand		Measurement Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Standard gases	high purity nitrogen monoxide (NO)		0.99 mol/mol to 0.99993 mol/mol	1.0 % to 0.01 % (relative)	・Subtraction method	2024-11-01
	impurities in NO	NO_2	10 μmol/mol to 10000 μmol/mol	10 % to 2.5 % (relative)	・FT-IR	
		N_2	11 μmol/mol to 5000 μmol/mol	100 % to 2.5 % (relative)	・GC-TCD	
		O_2	11 μmol/mol to 5000 μmol/mol	100 % to 2.5 % (relative)	・GC-TCD	
		N_2O	7.5 μmol/mol to 11000 μmol/mol	10 % to 0.5 % (relative)	・FT-IR ・GC-TCD	
		CH_4	2 μmol/mol to 11000 μmol/mol	100 % to 2.5 % (relative)	・FT-IR ・GC-FID	
		C_3H_8	2 μmol/mol to 11000 μmol/mol	100 % to 2.5 % (relative)	・GC-FID	
		H_2O	21 μmol/mol to 100 μmol/mol	100 % to 0.5% (relative)	・FT-IR	
		CO_2	10 μmol/mol to 100 μmol/mol	100 % to 0.5% (relative)	・FT-IR	
	high purity sulfur dioxide (SO_2)		0.99 mol/mol to 0.99997 mol/mol	1.0 % to 0.01 % (relative)	・Subtraction method	
	impurities in SO_2	CO_2	1 μmol/mol to 15000 μmol/mol	100 % to 0.5 % (relative)	・GC-TCD ・FT-IR	
		N_2	1 μmol/mol to 15000 μmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		O_2	1 μmol/mol to 15000 μmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		CH_4	0.09 μmol/mol to 11000 μmol/mol	100 % to 0.5 % (relative)	・GC-FID	
		C_3H_8	0.04 μmol/mol to 11000 μmol/mol	100 % to 0.5 % (relative)	・GC-FID	
		H_2O	24 μmol/mol to 100 μmol/mol	100 % to 0.5 % (relative)	・FT-IR	
	high purity methane (CH_4)		0.99 mol/mol to 0.9999995 mol/mol	1 mmol/mol to 0.0005 mmol/mol	・Subtracting method	
	impurities in CH_4	N_2	0.1 μmol/mol to 100 μmol/mol	80 % to 2 % (relative)	・GC-PID ・GC-TCD	
		O_2	0.1 μmol/mol to 100 μmol/mol	60 % to 2 % (relative)	・GC-PID ・GC-TCD	
		Ar	0.1 μmol/mol to 100 μmol/mol	40 % to 2 % (relative)	・GC-PID ・GC-TCD	
		CO	0.04 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-PID ・GC-TCD	
		CO_2	0.04 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-PID ・GC-TCD	
		C_2H_6	0.02 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・ GC-FID	
		H_2	0.07 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-PID ・GC-TCD	
		hexane	0.02 μmol/mol to 20 μmol/mol	100 % to 0.6 % (relative)	・ GC-FID	
		H_2O	0.1 μmol/mol to 130 μmol/mol	70 % to 5 % (relative)	・ Dew point measuring method	

Subcategory	Measurand		Measurement Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Standard gases	high purity propane (C_3H_8)		0.99 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.001 mmol/mol	・Subtracting method	2024-11-01
	impurities in C_3H_8	N_2	3 µmol/mol to 100 µmol/mol	80 % to 2 % (relative)	・GC-TCD	
		O_2	0.1 µmol/mol to 100 µmol/mol	60 % to 2 % (relative)	・GC-TCD	
		Ar	0.1 µmol/mol to 100 µmol/mol	40 % to 2 % (relative)	・GC-TCD	
		CO_2	0.1 µmol/mol to 100 µmol/mol	50 % to 2 % (relative)	・GC-TCD	
		CH_4	0.1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		C_2H_6	0.1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		propylene	0.1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		butane	0.1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		isobutane	0.1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	10 µmol/mol to 1000 µmol/mol	70 % to 20 % (relative)	・Dew point measuring method	
	high purity carbon dioxide (CO_2)		0.99 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.002 mmol/mol	・Subtracting method	
	impurities in CO_2	N_2	0.1 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		O_2	0.1 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		H_2	0.8 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		He	0.8 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		CH_4	0.004 µmol/mol to 1 µmol/mol	100 % to 1 % (relative)	・GC-FID	
		C_3H_8	0.004 µmol/mol to 1 µmol/mol	100 % to 1 % (relative)	・GC-FID	
		CO	0.05 µmol/mol to 1 µmol/mol	100 % to 0.5 % (relative)	・GC-FID	
		H_2O	0.9 µmol/mol to 130 µmol/mol	100 % to 30 % (relative)	・Capacitance-type moisture analyzer	
	high purity carbon monoxide (CO)		0.99 mol/mol to 0.99993 mol/mol	1 mmol/mol to 0.02 mmol/mol	・Subtracting method	
	impurities in CO	N_2	1.5 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		O_2	2.1 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		H_2	0.9 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		He	0.4 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		CH_4	1.5 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		CO_2	0.3 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・GC-TCD	
		H_2O	0.36 µmol/mol to 100 µmol/mol	100 % to 0.5 % (relative)	・Quartz-crystal oscillator sample cell	

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Standard gases	high purity oxygen (O$_2$)		0.99 mol/mol to 1 mol/mol	1 mmol/mol to 0.0005 mmol/mol	・Subtracting method ・Magnetopneumatic oxygen analyzer	2024-11-01
	impurities in O$_2$	Ar	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		N$_2$	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		CH$_4$	0.05 μmol/mol to 1 μmol/mol	30 % to 5 % (relative)	・FT-IR	
		CO	0.06 μmol/mol to 1 μmol/mol	30 % to 5 % (relative)	・FT-IR	
		CO$_2$	0.05 μmol/mol to 1 μmol/mol	30 % to 5 % (relative)	・FT-IR	
		N$_2$O	0.05 μmol/mol to 1 μmol/mol	30 % to 5 % (relative)	・FT-IR	
		H$_2$O	0.5 μmol/mol to 130 μmol/mol	70 % to 30 % (relative)	・Dew point measuring method	
	high purity vinyl chloride		0.99 mol/mol to 0.99999 mol/mol	5 mmol/mol to 0.01 mmol/mol	・Subtracting method	
	impurities in vinyl chloride	N$_2$	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		O$_2$	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		Ar	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		CO$_2$	1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		methyl chloride	1 μmol/mol to 200 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		ethyl chloride	1 μmol/mol to 100 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		H$_2$O	10 μmol/mol to 1000 μmol/mol	70 % to 20 % (relative)	・Dew point measuring method	
	high purity 1,3-butadiene		0.98 mol/mol to 0.99996 mol/mol	20 mmol/mol to 1 mmol/mol	・Subtracting method	
	impurities in 1,3-butadiene	N$_2$	5 μmol/mol to 1000 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		O$_2$	5 μmol/mol to 1000 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		Ar	5 μmol/mol to 1000 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		CO$_2$	5 μmol/mol to 1000 μmol/mol	30 % to 2 % (relative)	・GC-TCD	
		butane	1 μmol/mol to 500 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		isobutane	1 μmol/mol to 500 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		1-butene	1 μmol/mol to 1000 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		trans-2-butene	1 μmol/mol to 7000 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		cis-2-butene	1 μmol/mol to 8000 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		isobutylene	1 μmol/mol to 1000 μmol/mol	20 % to 2 % (relative)	・GC-FID	
		4-vinyl-1-cyclohexene (1,3-butadiene dimer)	1 μmol/mol to 2150 μmol/mol	60 % to 30 % (relative)	・GC-FID	
		H$_2$O	10 μmol/mol to 1000 μmol/mol	70 % to 20 % (relative)	・Dew point measuring method	

Subcategory	Measurand		Measurement Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Standard gases	high purity ethane		0.99 mol/mol to 0.99999 mol/mol	1 mmol/mol to 0.001 mmol/mol	・Subtracting method	2024-11-01
	impurities in ethane	N_2	0.1 μmol/mol to 100 μmol/mol	80 % to 2 % (relative)	・GC-TCD	
		O_2	0.1 μmol/mol to 100 μmol/mol	60 % to 2 % (relative)	・GC-TCD	
		CO_2	0.1 μmol/mol to 100 μmol/mol	50 % to 2 % (relative)	・GC-TCD	
		methane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		ethylene	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		propane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		propylene	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		butane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	10 μmol/mol to 1000 μmol/mol	70 % to 20 % (relative)	・Dew point measuring method	
	high purity isobutane		0.99 mol/mol to 0.99995 mol/mol	2 mmol/mol to 0.005 mmol/mol	・Subtracting method	
	impurities in isobutane	N_2	1.76 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		O_2	5 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		CO_2	11 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		propane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		butane	0.1 μmol/mol to 200 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		isobutene	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		cis-2-butene	0.1 μmol/mol to 500 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		trans-2-butene	0.1 μmol/mol to 500 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		pentane	3 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	50 μmol/mol to 3000 μmol/mol	70 % to 10 % (relative)	・Dew point measuring method	
	high purity butane		0.99 mol/mol to 0.99995 mol/mol	2 mmol/mol to 0.005 mmol/mol	・Subtracting method	
	impurities in butane	N_2	1.76 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		O_2	1.7 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		CO_2	11 μmol/mol to 100 μmol/mol	100 % to 2 % (relative)	・GC-TCD	
		propane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		isobutane	1 μmol/mol to 200 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		isobutene	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		cis-2-butene	0.1 μmol/mol to 500 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		trans-2-butene	0.1 μmol/mol to 500 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		pentane	0.1 μmol/mol to 100 μmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	50 μmol/mol to 3000 μmol/mol	70 % to 10 % (relative)	・Dew point measuring method	

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Standard gases	high purity isopentane		0.99 mol/mol to 1 mol/mol	5 mmol/mol to 0.01 mmol/mol	・Post-column reaction gas chromatography	2024-11-01
	high purity pentane		0.99 mol/mol to 1 mol/mol	5 mmol/mol to 0.01 mmol/mol	・Post-column reaction gas chromatography	
	nitrogen		0.999 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.004 mmol/mol	・Subtracting method	
	impurities in nitrogen	$O_2 + Ar$	1 µmol/mol to 10 µmol/mol	100 % to 30 % (relative)	・GC-TCD	
		carbon dioxide	0.1 µmol/mol to 10 µmol/mol	100 % to 30 % (relative)	・GC-FID	
		total hydrocarbons	0.005 µmol/mol to 10 µmol/mol	100 % to 30 % (relative)	・Total hydrocarbon analyzer	
		H_2O	1.4 µmol/mol to 10 µmol/mol	100 % to 30 % (relative)	・Dew point measuring method	
	O_2/N_2		5 µmol/mol to 5 mmol/mol	1 % to 0.1 % (relative)	・GC-TCD	
	N_2O/N_2 or N_2O/air		0.2 µmol/mol to 0.02 mol/mol	0.2 % to 0.1 % (relative)	・GC-TCD ・GC-ECD	
	hexane/N_2		20 µmol/mol to 600 µmol/mol	2 % to 0.3 % (relative)	・GC-FID	
	hexane/CH_4		20 µmol/mol to 600 µmol/mol	2 % to 0.3 % (relative)	・GC-FID	
	$N_2+CO_2+C_3H_8/CH_4$		N_2: 0.005 mol/mol to 0.02 mol/mol CO_2: 0.005 mol/mol to 0.02 mol/mol C_3H_8: 0.02 mol/mol to 0.1 mol/mol	N_2: 0.2 mmol/mol CO_2: 0.1 mmol/mol C_3H_8: 0.3 mmol/mol	N_2: ・GC-TCD CO_2: ・GC-TCD C_3H_8: ・GC-TCD ・GC-FID	
	synthetic natural gas		N_2: 5 mmol/mol to 200 mmol/mol CO_2: 5 mmol/mol to 100 mmol/mol C_2H_6: 2 mmol/mol to 200 mmol/mol C_3H_8: 1 mmol/mol to 100 mmol/mol n-C_4H_{10}: 0.5 mmol/mol to 10 mmol/mol iso-C_4H_{10}: 0.5 mmol/mol to 10 mmol/mol CH_4: 600 mmol/mol to 980 mmol/mol	N_2: 0.5 % to 0.3 % (relative) CO_2: 0.6 % to 0.4 % (relative) C_2H_6: 0.5 % to 0.3 % (relative) C_3H_8: 0.5 % to 0.3 % (relative) n-C_4H_{10}: 0.5 % to 0.3 % (relative) iso-C_4H_{10}: 0.5 % to 0.3 % (relative) CH_4: 0.5 % to 0.3 % (relative)	N_2: ・GC-TCD CO_2: ・GC-TCD C_2H_6: ・GC-FID ・GC-TCD C_3H_8: ・GC-FID ・GC-TCD n-C_4H_{10}: ・GC-FID ・GC-TCD iso-C_4H_{10}: ・GC-FID ・GC-TCD CH_4: ・GC-TCD ・subtracting method	
	N_2/Ar		1 µmol/mol to 200 µmol/mol	10 % to 0.5 % (relative)	・GC-MS	
	CO_2/air		150 µmol/mol to 800 µmol/mol	0.02 µmol/mol to 0.1 µmol/mol	・CRDS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Inorganic standard solution	Mg	0.8 g/kg to 1.2 g/kg	0.16 % (relative)	・Chelatometric titration	
	Al	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Cu	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Zn	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Fe	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Ni	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Sr	0.8 g/kg to 1.2 g/kg	0.08 % (relative)	・Gravimetric preparation	
	V	0.8 g/kg to 1.2 g/kg	0.08 % (relative)	・Gravimetric preparation	
	Mn	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Mo	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Co	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Cd	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Ga	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	In	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Pb	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Bi	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Ba	0.8 g/kg to 1.2 g/kg	0.16 % (relative)	・Gravimetric preparation	
	Cr	0.8 g/kg to 1.2 g/kg	0.06 % (relative)	・Gravimetric preparation	
	Tl	0.8 g/kg to 1.2 g/kg	0.28 % (relative)	・Gravimetric preparation	
	Sn	0.8 g/kg to 1.2 g/kg	0.14 % (relative)	・Gravimetric preparation	
	Na	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	K	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Li	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Rb	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	2024-11-01
	Cs	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	As	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Sb	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Be	0.8 g/kg to 1.2 g/kg	0.18 % (relative)	・Gravimetric preparation	
	Zr	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Ag	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	Ca	0.8 g/kg to 1.2 g/kg	0.10 % (relative)	・Gravimetric preparation	
	Hg	0.8 g/kg to 1.2 g/kg	0.10 % (relative)	・Gravimetric preparation	
	Se	0.8 g/kg to 1.2 g/kg	0.12 % (relative)	・Gravimetric preparation	
	B	0.8 g/kg to 1.2 g/kg	0.12 % (relative)	・Gravimetric preparation	
	Te	0.8 g/kg to 1.2 g/kg	0.13 % (relative)	・Gravimetric preparation	
	Si	0.8 g/kg to 1.2 g/kg	0.28 % (relative)	・Gravimetric preparation	
	La	0.8 g/kg to 1.2 g/kg	0.13 % (relative)	・Chelatometric titration	
	Ti	0.8 g/kg to 1.2 g/kg	0.19 % (relative)	・Gravimetric preparation	
	Y	0.8 g/kg to 1.2 g/kg	0.13 % (relative)	・Chelatometric titration	
	chloride ion	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	nitrite ion	0.8 g/kg to 1.2 g/kg	0.18 % (relative)	・Gravimetric preparation	
	nitrate ion	0.8 g/kg to 1.2 g/kg	0.15 % (relative)	・Gravimetric preparation	
	phosphate ion	0.8 g/kg to 1.2 g/kg	0.18 % (relative)	・Gravimetric preparation	
	bromide ion	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	iodide ion	0.8 g/kg to 1.2 g/kg	0.04 % (relative)	・Gravimetric preparation	
	sulfate ion	0.8 g/kg to 1.2 g/kg	0.12 %(relative)	・IC	
	cyanide ion	0.8 g/kg to 1.2 g/kg	1.1 %(relative)	・Complexometric titration	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Inorganic standard solution	chlorate ion	0.8 g/kg to 1.2 g/kg	0.15 %(relative)	・Gravimetric titration	
	bromate ion	1.6 g/kg to 2.4 g/kg	0.14 %(relative)	・Gravimetric titration	
	ammonium ion	0.8 g/kg to 1.2 g/kg	0.13 % (relative)	・Gravimetric preparation	
	total organic carbon	0.8 g/kg to 1.2 g/kg	0.16 %(relative)	・Gravimetric preparation	
Inorganic standard solution (Isotopic standard)	$^{206}Pb/^{204}Pb$ (Isotopic ratio)	14 mol/mol to 22 mol/mol	0.025 % (relative)	・MC-ICP-MS	
	$^{207}Pb/^{204}Pb$ (Isotopic ratio)	13 mol/mol to 17 mol/mol	0.023 % (relative)	・MC-ICP-MS	
	$^{208}Pb/^{204}Pb$ (Isotopic ratio)	36 mol/mol to 40 mol/mol	0.023 % (relative)	・MC-ICP-MS	
	$^{208}Pb/^{206}Pb$ (Isotopic ratio)	1.8 mol/mol to 2.2 mol/mol	0.0062 % (relative)	・MC-ICP-MS	
	$^{207}Pb/^{206}Pb$ (Isotopic ratio)	0.8 mol/mol to 1.0 mol/mol	0.0042 % (relative)	・MC-ICP-MS	
	^{204}Pb (Isotopic abundance)	0.012 mol/mol to 0.015 mol/mol	0.029 % (relative)	・MC-ICP-MS	2024-11-01
	^{206}Pb (Isotopic abundance)	0.24 mol/mol to 0.28 mol/mol	0.0036 % (relative)	・MC-ICP-MS	
	^{207}Pb (Isotopic abundance)	0.20 mol/mol to 0.23 mol/mol	0.0047 % (relative)	・MC-ICP-MS	
	^{208}Pb (Isotopic abundance)	0.51 mol/mol to 0.53 mol/mol	0.0031 % (relative)	・MC-ICP-MS	
	Pb (Molar mass)	207.1 g/mol to 207.3 g/mol	0.000014 % (relative)	・MC-ICP-MS	
Inorganic standard solution (Isotopic standard)	$^{56}Fe/^{54}Fe$ (Isotopic ratio)	11 mol/mol to 20 mol/mol	0.041 % (relative)	・MC-ICP-MS	
	$^{57}Fe/^{54}Fe$ (Isotopic ratio)	0.25 mol/mol to 0.47 mol/mol	0.063 % (relative)	・MC-ICP-MS	
	$^{58}Fe/^{54}Fe$ (Isotopic ratio)	0.034 mol/mol to 0.063 mol/mol	0.11 % (relative)	・MC-ICP-MS	
	^{54}Fe (Isotopic abundance)	0.041 mol/mol to 0.076 mol/mol	0.038 % (relative)	・MC-ICP-MS	
	^{56}Fe (Isotopic abundance)	0.064 mol/mol to 1.2 mol/mol	0.0037 % (relative)	・MC-ICP-MS	
	^{57}Fe (Isotopic abundance)	0.015 mol/mol to 0.028 mol/mol	0.071 % (relative)	・MC-ICP-MS	
	^{58}Fe (Isotopic abundance)	0.0020 mol/mol to 0.0037 mol/mol	0.11 % (relative)	・MC-ICP-MS	
	Fe (Molar mass)	55.29 g/mol to 56.4 g/mol	0.000068 % (relative)	・MC-ICP-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
pH standard solution	pH	1.18 to 10.51	0.003	・Harned cell method	
Electrolytic conductivity standard solution	Electrolytic conductivity	0.05 S/m to 15 S/m	0.15 % to 0.48 % (relative)	・Impedance measurement	
		0.005 S/m to 0.05 S/m	0.61 % (relative)	・Impedance measurement	
High purity inorganic material (Potassium hydrogen phthalate)	acid	99.9 % to 100.1 % (mass fraction as potassium hydrogen phthalate)	0.012 % to 0.015 %	・Coulometric titration	
High purity inorganic material (Potassium dichromate)	oxidant	99.9 % to 100.1 % (mass fraction as potassium dichromate)	0.010 % to 0.012 %	・Coulometric titration	
High purity inorganic material (Arsenic(Ⅲ) trioxide)	reductant	99.9 % to 100.1 % (mass fraction as arsenic(Ⅲ) trioxide)	0.014 % to 0.020 %	・Coulometric titration	
High purity inorganic material (Sodium carbonate)	base	99.9 % to 100.1 % （mass fraction as sodium carbonate）	0.01 % to 0.02 %	・Coulometric titration ・Gravimetric titration	
High purity inorganic material (Potassium iodate)	oxidant	99.9 % to 100.1 % (mass fraction as potassium iodate)	0.014 % to 0.020 %	・Coulometric titration ・Gravimetric titration	
High purity inorganic material (Sodium oxalate)	reductant	99.9 % to 100.1 % (mass fraction as sodium oxalate)	0.023 % to 0.025 %	・Coulometric titration ・Gravimetric titration	
Heavy metals in polymer	Cd	5 mg/kg to 10000 mg/kg	0.5 % to 2.0 % (relative)	・ICP-OES ・ICP-MS ・ID-ICP-MS	2024-11-01
	Cr	10 mg/kg to 10000 mg/kg	0.5 % to 2.0 % (relative)	・ICP-OES ・ICP-MS ・ID-ICP-MS	
	Hg	10 mg/kg to 10000 mg/kg	0.5 % to 2.0 % (relative)	・ICP-OES ・ICP-MS ・ID-ICP-MS	
	Pb	10 mg/kg to 10000 mg/kg	0.5 % to 2.0 % (relative)	・ICP-OES ・ICP-MS ・ID-ICP-MS	
	Br	50 mg/kg to 10000 mg/kg	2.0 % to 5.0 % (relative)	・Instrumental Neutron Activation Analysis ・ID-ICP-MS	
Minor elements in metals and alloys (lead-free solder)	Pb	100 mg/kg to 2000 mg/kg	0.8 % to 1.6 % (relative)	・ID-ICP-MS	
	Ag	2.8 % to 3.2 % (mass fraction)	0.8 % to 1.6 % (relative)	・ID-ICP-MS	
	Cu	0.3 % to 0.7 % (mass fraction)	0.5 % to 1.0 % (relative)	・ID-ICP-MS	
High purity inorganic material (Sodium chloride)	Cl	99.9 % to 100.1 % (mass fraction as sodium chloride)	0.03 % to 0.05 %	・Coulometric titration	
High purity inorganic material (Ammonium chloride)	ammonium ion	99.9 % to 100.1 % (mass fraction as ammonium chloride)	0.034 % to 0.070 %	・Coulometric titration	
	Cl	99.9 % to 100.1 % (mass fraction as ammonium chloride)	0.054 % to 0.080 %	・Gravimetric titration	
High purity inorganic material (Amidosulfuric acid)	acid	99.9 % to 100.1 % (mass fraction as amidosulfuric acid)	0.008 % to 0.012 %	・Coulometric titration	
	N	99.9 % to 100.1 % (mass fraction as amidosulfuric acid)	0.025 % to 0.040 %	・Coulometric titration	
Hydrochloric acid	acid	0.05 mol/kg to 2 mol/kg	0.016 % to 0.027 % (relative)	・Coulometric titration	
High purity inorganic material (Tris(hydroxymethyl) aminomethane)	base	99.8 % to 100.2 % (mass fraction as tris(hydroxymethyl)aminomethane)	0.026 %	・Coulometric titration	
High purity inorganic material (Calcium carbonate)	Ca	99.5 % to 100.5 % (mass fraction as calcium carbonate)	0.030 %	・Chelatometric titration	
High purity inorganic material (Zinc)	Zn	99.5 % to 100.0 % (mass fraction as zinc)	0.008 %	・Subtracting method with impurity analysis	
	Zn (molar mass)	65.36 g/mol to 65.40 g/mol	0.0018 % (relative)	・ICP-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
High purity organic materials	ethanol	0.998 mol/mol to 1 mol/mol	0.002 mol/mol to 0.0004 mol/mol	· Freezing point depression method	2024-11-01
	toluene	0.998 mol/mol to 1 mol/mol	0.003 mol/mol to 0.00006 mol/mol	· Freezing point depression method	
	1,2-dichloroethane	0.998 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0001 mol/mol	· Freezing point depression method	
	benzene	0.998 mol/mol to 1 mol/mol	0.001 mol/mol to 0.00002 mol/mol	· Freezing point depression method	
	o-xylene	0.998 mol/mol to 1 mol/mol	0.001 mol/mol to 0.00002 mol/mol	· Freezing point depression method	
	ethylbenzene	0.998 mol/mol to 1 mol/mol	0.0002 mol/mol to 0.002 mol/mol	· Freezing point depression method	
	cholesterol	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	· Freezing point depression method	
	m-xylene	0.997 mol/mol to 1 mol/mol	0.001 mol/mol to 0.00015 mol/mol	· Freezing point depression method	
	diethyl phthalate	0.997 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	chloroform	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	p-xylene	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0001 mol/mol	· Freezing point depression method	
	bromoform	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	bromodichloromethane	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	bisphenol A	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0006 mol/mol	· Freezing point depression method	
	dibromochloromethane	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	$trans$-1,2-dichloroethylene	0.995 mol/mol to 1 mol/mol	0.001 mol/mol to 0.0002 mol/mol	· Freezing point depression method	
	trichloroethylene	0.995 mol/mol to 1 mol/mol	0.002 mol/mol	· Freezing point depression method	
	tetrachloroethylene	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0001 mol/mol	· Freezing point depression method	
	1,1,1-trichloroethane	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0004 mol/mol	· Freezing point depression method	
	cis-1,2-dichloroethylene	0.99 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0007 mol/mol	· Freezing point depression method	
	cis-1,3-dichloropropene	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.003 mol/mol	· Freezing point depression method	
	1,4-dichlorobenzene	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0003 mol/mol	· Freezing point depression method	
	styrene	0.99 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.0005 kg/kg	· Freezing point depression method · Subtracting method	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
High purity organic materials	dichloromethane	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0001 mol/mol	・Freezing point depression method	2024-11-01
	tetrachloromethane	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0001 mol/mol	・Freezing point depression method	
	1,1-dichloroethylene	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0001 mol/mol	・Freezing point depression method	
	1,1,2-trichloroethane	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.0001 mol/mol	・Freezing point depression method	
	trans-1,3-dichloropropene	0.97 mol/mol to 1 mol/mol	0.005 mol/mol to 0.003 mol/mol	・Freezing point depression method	
	1,2-dichloropropane	0.995 mol/mol to 1 mol/mol	0.005 mol/mol to 0.003 mol/mol	・Freezing point depression method	
	acrylonitrile	0.99 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.00005 kg/kg	・Freezing point depression method ・Subtracting method	
	acetoaldehyde	0.99 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.003 kg/kg	・Titration ・Subtracting method	
	17β-estradiol	0.96 kg/kg to 1.00 kg/kg	0.005 kg/kg to 0.003 kg/kg	・qNMR ・Subtracting method (HPLC-UV, HPLC-CAD, HS-GC-MS, Coulometric Karl-Fisher titration, TG)	
	progesterone	0.98 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.001 kg/kg	・qNMR ・Freezing point depression method ・Subtracting method (HPLC-UV, HPLC-CAD, HS-GC-MS, Coulometric Karl-Fisher titration, TG)	
	testosterone	0.98 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.001 kg/kg	・qNMR ・Subtracting method (HPLC-UV, HPLC-CAD, HS-GC-MS, Coulometric Karl-Fisher titration, TG)	
	sulfur in organic materials (as sulfur)	0.2 kg/kg to 0.4 kg/kg	0.00006 kg/kg to 0.0004 kg/kg	・Freezing point depression method ・Subtracting method (GC-FID, GC-SCD, Coulometric Karl-Fischer titration)	
	dibutyl sulfide	0.995 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0001 kg/kg	・Freezing point depression method ・Subtracting method (GC-FID, GC-SCD, Coulometric Karl-Fischer titration)	
	1,4-dioxane	0.998 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0001 kg/kg	・Freezing point depression method	
	tert-butylmethylether	0.998 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0003 kg/kg	・Freezing point depression method	
	trichloroacetic acid	0.995 kg/kg to 1 kg/kg	0.002 kg/kg	・Freezing point depression method ・Titration	
	3,5-bis(trifluoromethyl)benzoic acid	0.999 kg/kg to 1 kg/kg	0.0003 kg/kg to 0.0001 kg/kg	・Freezing point depression method ・Coulometric titration ・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration, TG)	
	1,4-bis(trimethylsilyl)-2,3,5,6-tetrafluorobenzene	0.999 kg/kg to 1 kg/kg	0.0003 kg/kg to 0.0001 kg/kg	・Freezing point depression method ・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration, TG)	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
High purity organic materials	di-*n*-butyl phthalate	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	2024-11-01
	di-2-ethylhexyl phthalate	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	di-*n*-propyl phthalate	0.98 kg/kg to 1 kg/kg	0.0006 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	di-*n*-pentyl phthalate	0.97 kg/kg to 1 kg/kg	0.006 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	di-*n*-hexyl phthalate	0.97 kg/kg to 1 kg/kg	0.006 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	dicyclohexyl phthalate	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	butyl benzyl phthalate	0.98 kg/kg to 1 kg/kg	0.0015 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	simazine	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, GC-MS, Coulometric Karl-Fisher titration)	
	thiuram	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・qNMR ・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fisher titration)	
	thiobencarb	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Freezing point depression method ・qNMR ・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fisher titration)	
	4-*n*-nonylphenol	0.99 mol/mol to 1 mol/mol	0.005 mol/mol to 0.001 mol/mol	・Freezing point depression method	
	4-*t*-octylphenol	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	4-*t*-butylphenol	0.98 kg/kg to 1 kg/kg	0.001 kg/kg to 0.0002 kg/kg	・Subtracting method (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration)	
	4-*n*-heptylphenol	0.99 mol/mol to 1 mol/mol	0.005 mol/mol to 0.001 mol/mol	・Freezing point depression method	
	2,4-dichlorophenol	0.99 mol/mol to 1 mol/mol	0.005 mol/mol to 0.001 mol/mol	・Freezing point depression method	
Environmental matrix (fish oil)	*p,p'*-DDE	1 mg/kg to 10 mg/kg	0.014 mg/kg	・ID-GC-MS	
	p,p'-DDT	0.05 mg/kg to 0.5 mg/kg	0.0031 mg/kg	・ID-GC-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Organic standard solution	p,p'-DDT/2,2,4-trimethylpentane	0.05 mg/kg to 20 mg/kg	7 % (relative)	・Freezing point depression method ・HPLC-UV ・Gravimetric preparation	
	p,p'-DDE/2,2,4-trimethylpentane	0.5 mg/kg to 20 mg/kg	2 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	γ-HCH/2,2,4-trimethylpentane	0.03 mg/kg to 20 mg/kg	1 % (relative)	・Subtracting method (GC-FID) ・Gravimetric preparation	
	p,p'-DDT + p,p'-DDE + p,p'-DDD + γ-HCH /2,2,4-trimethylpentane	p,p'-DDT : 0.05 mg/kg to 20 mg/kg p,p'-DDE : 0.5 mg/kg to 20 mg/kg p,p'-DDD : 0.5 mg/kg to 20 mg/kg γ-HCH : 0.03 mg/kg to 20 mg/kg	p,p'-DDT : 2 % to 1 % (relative) p,p'-DDE : 1 % to 0.5 % (relative) p,p'-DDD : 1% to 0.5 % (relative) γ-HCH : 2 % to 0.5 % (relative)	・Freezing point depression method ・HPLC-UV ・GC-FID ・Gravimetric preparation	
	PCB28/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	1.7 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	PCB70/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	1.8 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	PCB105/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	2.4 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	PCB153/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	1.7 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	2024-11-01
	PCB170/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	2.0 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	PCB194/2,2,4-trimethylpentane	2 mg/kg to 50 mg/kg	1.6 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	PCB28+PCB70+PCB105 +PCB153+PCB170+PCB194 /2,2,4 -trimethylpentane	PCB28 : 2 mg/kg to 50 mg/kg PCB70 : 2 mg/kg to 50 mg/kg PCB105 : 2 mg/kg to 50 mg/kg PCB153 : 2 mg/kg to 50 mg/kg PCB170 : 2 mg/kg to 50 mg/kg PCB194 : 2 mg/kg to 50 mg/kg	PCB28 : 1.7 % (relative) PCB70 : 1.8 % (relative) PCB105 : 2.4 % (relative) PCB153 : 1.7 % (relative) PCB170 : 2.0 % (relative) PCB194 : 1.6 % (relative)	・Freezing point depression method ・GC-FID ・Gravimetric preparation	
	4-hydroxy-clomifene	4-hydroxy-clomifene: 200 μg/g to 300 μg/g (E)-4-hydroxy-clomifene: 50 μg/g to 200 μg/g (Z)-4-hydroxy-clomifene: 50 μg/g to 200 μg/g	4-hydroxy-clomifene: 1.5 % (relative) (E)-4-hydroxy-clomifene: 1.6 % (relative) (Z)-4-hydroxy-clomifene: 1.6 % (relative)	・qNMR ・qNMR/HPLC-UV ・Gravimetric preparation	
	$3\beta,4\alpha$-dihydroxy-5α-androstan-17-one	100 μg/g to 170 μg/g	1.4 % (relative)	・qNMR ・qNMR/HPLC-UV ・Gravimetric preparation	
	sulfur in toluene (as sulfur)	0.5 mg/kg to 10000 mg/kg	0.02 mg/kg to 10 mg/kg	・Freezing point depression method ・Subtracting method (GC-FID, GC-FPD, Coulometric Karl-Fischer titration) ・Gravimetric preparation	
		10 μg/kg to 500 μg/kg	5 μg/kg to 20 μg/kg	・Combustion-ultraviolet fluorescence method	
CRMs for thermal properties	cyclohexane (thermal analysis with thermal analyzer such as DSC)	phase transition temperature 186 K to 280 K	0.04 K to 0.1 K	・Adiabatic calorimetry	
		phase transition enthalpy 30 J g^{-1} to 90 J g^{-1}	0.7 J g^{-1} to 3 J g^{-1}	・Adiabatic calorimetry	
High purity organic materials	perfluorooctanoic acid	0.95 kg/kg to 1 kg/kg	0.006 kg/kg to 0.002 kg/kg	・Titration ・Subtracting method (LC-MS, Karl Fischer titration, TG)	
	chloroalkanes	0.98 kg/kg to 1 kg/kg	0.005 kg/kg to 0.001 kg/kg	・Subtracting method (GC-FID, HS-GC-MS, Karl Fischer titration, TG)	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Organic standard solution	benzo[a]pyrene/ 2,2,4-trimethylpentane	10 mg/kg to 200 mg/kg	4 % to 1 % (relative)	・Freezing point depression method ・Gravimetric preparation	
	potassium perfluorooctandesulfonate /methanol	5 mg/kg to 100 mg/kg	4 % to 1 % (relative)	・Freezing point depression method ・Gravimetric preparation	
Standard solution (water in organic solvent)	water	0.01 g/kg to 10 g/kg	30 % to 0.1 % (relative)	・Coulometric titration ・Volumetric titration	
Food (pesticide in grain)	fenitrothion	0.1 mg/kg to 1 mg/kg	20 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
	etofenprox	0.1 mg/kg to 1 mg/kg	30 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
Food (pesticide in vegetable)	diazinon	0.1 mg/kg to 100 mg/kg	40 % to 5 % (relative)	・ID-GC-MS	
	fenitrothion	0.1 mg/kg to 100 mg/kg	20 % to 3 % (relative)	・ID-GC-MS	
	chlorpyrifos	1 mg/kg to 100 mg/kg	40 % to 5 % (relative)	・ID-GC-MS	
	permethrin	0.1 mg/kg to 100 mg/kg	30 % to 4 % (relative)	・ID-GC-MS	2024-11-01
	cypermethrin	0.1 mg/kg to 100 mg/kg	40 % to 5 % (relative)	・ID-GC-MS	
	etofenprox	1 mg/kg to 100 mg/kg	20 % to 3 % (relative)	・ID-GC-MS	
Food (pesticide in fruits)	diazinon	0.1 mg/kg to 10 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	fenitrothion	0.1 mg/kg to 10 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	permethrin	0.1 mg/kg to 10 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	cypermethrin	0.1 mg/kg to 10 mg/kg	30 % to 3 % (relative)	・ID-GC-MS	
Food (pesticide in beans)	diazinon	0.001 mg/kg to 0.1 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	fenitrothion	0.001 mg/kg to 0.2 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	chlorpyrifos	0.001 mg/kg to 0.3 mg/kg	30 % to 3 % (relative)	・ID-GC-MS	
	permethrin	0.002 mg/kg to 0.1 mg/kg	20 % to 2 % (relative)	・ID-GC-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Environmental matrix (trace elements in sediment)	Sb	0.1 mg/kg to 3 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	2024-11-01
	Cd	0.1 mg/kg to 3 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・GFAAS	
	Cu	5 mg/kg to 500 mg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Pb	2 mg/kg to 250 mg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Ni	5 mg/kg to 50 mg/kg	5 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Zn	20 mg/kg to 1000 mg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES	
	As	1 mg/kg to 50 mg/kg	20 % to 2 % (relative)	・ICP-MS ・ICP-OES ・GFAAS ・HR-ICP-MS	
	Co	1 mg/kg to 50 mg/kg	15 % to 2 % (relative)	・ICP-MS ・ICP-OES ・GFAAS	
	Se	0.1 mg/kg to 5 mg/kg	20 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Cr	10 mg/kg to 500 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Hg	0.02 mg/kg to 5 mg/kg	15 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・Heating evaporation-Gold amalgamation AAS	
	Ag	0.05 mg/kg to 2 mg/kg	4 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS	
	Mo	0.5 mg/kg to 20 mg/kg	7 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS	
	Sn	1 mg/kg to 50 mg/kg	5 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
Environmental (polychlorinated biphenyls in mineral oil)	PCB3	0.2 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB8	0.2 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB28	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB52	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB101	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB118	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB138	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB153	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB180	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB194	0.1 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	
	PCB206	0.09 µg/kg to 10 mg/kg	50 % to 3 % (relative)	・ID-GC-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Environmental matrix (fish tissue)	PCB28	1 μg/kg to 100 μg/kg	15 % to 2 % (relative)	・ID-GC-MS	
	PCB70	1 μg/kg to 10 μg/kg	15 % to 5 % (relative)	・ID-GC-MS	
	PCB105	1 μg/kg to 100 μg/kg	15 % to 2 % (relative)	・ID-GC-MS	
	PCB153	10 μg/kg to 200 μg/kg	10 % to 2 % (relative)	・ID-GC-MS	
	PCB170	0.1 μg/kg to 10 μg/kg	10 % to 4 % (relative)	・ID-GC-MS	
	p,p'-DDT	1 μg/kg to 10 μg/kg	10 % to 5 % (relative)	・ID-GC-MS	
	p,p'-DDE	10 μg/kg to 100 μg/kg	15 % to 5 % (relative)	・ID-GC-MS	
	p,p'-DDD	1 μg/kg to 10 μg/kg	10 % to 5 % (relative)	・ID-GC-MS	
	dieldrin	1 μg/kg to 10 μg/kg	10 % to 3 % (relative)	・ID-GC-MS	
	trans-nonachlor	1 μg/kg to 10 μg/kg	10 % to 4 % (relative)	・ID-GC-MS	
Environmental matrix (PAHs/dust)	fluorene	0.1 mg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS	
	anthracene	0.1 mg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS	
	fluoranthene	1 mg/kg to 1000 mg/kg	30 % to 10 % (relative)	・ID-GC-MS	
	pyrene	1 mg/kg to 1000 mg/kg	30 % to 10 % (relative)	・ID-GC-MS	
	benzo[a]anthracene	0.1 mg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS	
	benzo[b]fluoranthene	0.1 mg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS	
	benzo[k]fluoranthene	0.01 mg/kg to 10 mg/kg	20 % to 10 % (relative)	・ID-GC-MS	2024-11-01
	benzo[a]pyrene	0.1 mg/kg to 100 mg/kg	30 % to 10 % (relative)	・ID-GC-MS	
	perylene	0.01 mg/kg to 10 mg/kg	30 % to 10 % (relative)	・ID-GC-MS	
	indeno[1,2,3-cd]pyrene	0.1 mg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS	
	benzo[ghi]perylene	0.1 mg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS	
Environmental matrix (toxic elements in tunnel dust)	Cr	5 mg/kg to 5 % (mass fraction)	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Ni	5 mg/kg to 2 % (mass fraction)	5 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES	
	Pb	2 mg/kg to 1 % (mass fraction)	5 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES	
	Mn	2 mg/kg to 1 % (mass fraction)	5 % to 2 % (relative)	・ICP-MS ・ICP-OES ・GFAAS	
	Cd	0.1 mg/kg to 0.1 % (mass fraction)	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
Environmental matrix (polychlorinated biphenyls / pesticide in biological sample)	PCB118	5 ng/kg to 200 ng/kg	40 % to 10 % (relative)	・ID-GC-MS	
	PCB138	5 ng/kg to 200 ng/kg	40 % to 10 % (relative)	・ID-GC-MS	
	PCB153	5 ng/kg to 200 ng/kg	40 % to 10 % (relative)	・ID-GC-MS	
	PCB194	5 ng/kg to 200 ng/kg	40 % to 10 % (relative)	・ID-GC-MS	
	acetamiprid	0.1 μg/kg to 2 μg/kg	50 % to 10 % (relative)	・ID-LC-MS	
	clothianidin	0.1 μg/kg to 2 μg/kg	50 % to 10 % (relative)	・ID-LC-MS	
	thiacloprid	0.1 μg/kg to 2 μg/kg	50 % to 10 % (relative)	・ID-LC-MS	
	thiamethoxam	0.1 μg/kg to 2 μg/kg	50 % to 10 % (relative)	・ID-LC-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Environmental (polychlorinated biphenyls and organochlorine pesticides in sediment)	PCB3	0.1 μg/kg to 100 μg/kg	30 % to 5 % (relative)	・ID-GC-MS	
	PCB15	0.1 μg/kg to 100 μg/kg	20 % to 4 % (relative)	・ID-GC-MS	
	PCB28	1 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB31	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB70	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB101	1 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB105	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB138	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB153	1 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB170	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB180	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB194	0.1 μg/kg to 100 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB206	0.1 μg/kg to 100 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	PCB209	0.1 μg/kg to 100 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	p,p'-DDT	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	p,p'-DDE	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	p,p'-DDD	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
	γ-HCH	0.5 μg/kg to 1000 μg/kg	20 % to 2 % (relative)	・ID-GC-MS	
Environmental (polycyclic aromatic hydrocarbons in sediment)	fluorene	1 μg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS	2024-11-01
	phenanthrene	1 μg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	anthracene	1 μg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	fluoranthene	1 μg/kg to 100 mg/kg	20 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
	pyrene	1 μg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[c]phenanthrene	1 μg/kg to 100 mg/kg	10 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benz[a]anthracene	1 μg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	chrysene	1 μg/kg to 100 mg/kg	10 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[b]fluoranthene	1 μg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS	
	benzo[j]fluoranthene	1 μg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[k]fluoranthene	1 μg/kg to 100 mg/kg	30 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[a]fluoranthene	1 μg/kg to 100 mg/kg	50 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[e]pyrene	1 μg/kg to 100 mg/kg	30 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[a]pyrene	1 μg/kg to 100 mg/kg	20 % to 5 % (relative)	・ID-GC-MS ・ID-LC-MS	
	perylene	100 μg/kg to 100 mg/kg	30 % to 10 % (relative)	・ID-GC-MS	
	indeno[1,2,3-cd]pyrene	1 μg/kg to 100 mg/kg	40 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	benzo[ghi]perylene	1 μg/kg to 100 mg/kg	30 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
	dibenz[a,h]anthracene	1 μg/kg to 100 mg/kg	50 % to 10 % (relative)	・ID-GC-MS ・ID-LC-MS	
Fuel (components in bioethanol fuel)	water	100 mg/kg to 5000 mg/kg	2 % to 0.2 % (relative)	・Coulometric titration ・Volumetric titration	
	methanol	0.2 g/kg to 1 g/kg	10 % to 2 % (relative)	・ID-GC-MS ・GC-FID	
	S	1 mg/kg to 5 mg/kg	3 % (relative)	・Combustion-ultraviolet fluorescence method ・Combustion-IC	
	Cu	0.0001 mg/kg to 500 mg/kg	10 % to 1 % (relative)	・ICP-MS ・ID-ICP-MS ・GFAAS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Fuel (components in biodiesel fuel)	water	300 mg/kg to 1000 mg/kg	10 % to 5 % (relative)	・Coulometric titration ・Volumetric titration	
	Na	0.5 mg/kg to 20 mg/kg	20 % to 5 % (relative)	・ICP-MS/MS ・HR-ICP-MS ・FAAS	
	Mg	0.5 mg/kg to 20 mg/kg	20 % to 5 % (relative)	・ID-ICP-MS/MS ・ICP-MS/MS	
	K	0.5 mg/kg to 20 mg/kg	20 % to 5 % (relative)	・ID-ICP-MS/MS ・ICP-MS/MS	
	Ca	0.5 mg/kg to 20 mg/kg	20 % to 5 % (relative)	・ID-ICP-MS/MS ・ICP-MS/MS	
	P	0.5 mg/kg to 20 mg/kg	20 % to 5 % (relative)	・ICP-MS/MS ・FI-ICP-MS ・ICP-OES	
	S	2 mg/kg to 50 mg/kg	10 % to 5 % (relative)	・ID-ICP-MS/MS ・ICP-MS/MS ・Combustion-IC	
Environmental matrix (river water and drinking water)	Al	1 µg/kg to 100 µg/kg	8 % to 1 % (relative)	・ICP-MS ・ICP-MS/MS ・GFAAS	2024-11-01
	Sb	0.001 µg/kg to 10 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS ・ICP-MS/MS	
	As	0.05 µg/kg to 50 µg/kg	15 % to 1 % (relative)	・ICP-MS ・ICP-MS/MS ・GFAAS	
	Ba	0.5 µg/kg to 50 µg/kg	2 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	B	1 µg/kg to 100 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Cd	0.001 µg/kg to 10 µg/kg	15 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Cr	0.05 µg/kg to 50 µg/kg	8 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Cu	0.05 µg/kg to 50 µg/kg	15 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Fe	0.1 µg/kg to 100 µg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Pb	0.001 µg/kg to 10 µg/kg	15 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Mn	0.01 µg/kg to 50 µg/kg	15 % to 1 % (relative)	・ICP-MS ・ICP-MS/MS ・GFAAS	
	Mo	0.05 µg/kg to 10 µg/kg	2 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS ・ICP-MS/MS	
	Ni	0.01 µg/kg to 50 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Se	0.1 µg/kg to 50 µg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Zn	0.05 µg/kg to 50 µg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	Na	1 mg/kg to 50 mg/kg	5 % to 1 % (relative)	・ICP-MS ・ICP-OES ・MP-AES	
	K	0.2 mg/kg to 50 mg/kg	5 % to 1 % (relative)	・ICP-MS ・ICP-OES ・MP-AES	
	Mg	0.2 mg/kg to 50 mg/kg	5 % to 1 % (relative)	・ICP-MS ・ICP-OES ・MP-AES	
	Ca	1 mg/kg to 50 mg/kg	5 % to 1 % (relative)	・ICP-MS ・ICP-OES ・MP-AES	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Environmental matrix (river water and drinking water)	Rb	0.05 µg/kg to 100 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	2024-11-01
	Sr	0.05 µg/kg to 200 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	P	1 µg/kg to 100 µg/kg	5 % to 1 % (relative)	・ICP-MS	
Environmental matrix (sea water)	Cr	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Mn	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ICP-MS ・GFAAS	
	Fe	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Ni	1 µg/kg to 20000 µg/kg	15 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Cu	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Zn	1 µg/kg to 20000 µg/kg	20 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	As	1 µg/kg to 20000 µg/kg	15 % to 2 % (relative)	・ICP-MS ・GFAAS	
	Se	1 µg/kg to 20000 µg/kg	15 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Cd	0.3 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Pb	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	dissolved silica	0.03 mg/kg to 5 mg/kg	12 % to 1 % (relative)	・Colorimetry ・IC ・IC-ID-ICP-MS	
	nitrate ion	0.8 mg/kg to 3 mg/kg	3 % to 1 % (relative)	・Colorimetry ・IC	
	nitrite ion	0.01 mg/kg to 0.3 mg/kg	20 % to 5 % (relative)	・Colorimetry ・IC	
	phosphate ion	0.1 mg/kg to 0.3 mg/kg	5 % to 1 % (relative)	・Colorimetry	
Standard solution for chemical speciation	arsenobetaine	1 mg/kg to 1000 mg/kg	5 % to 1 % (relative)	・HPLC-ICP-MS　・ICP-MS ・ICP-OES　・GFAAS	
	arsenate (As(V))	1 mg/kg to 1000 mg/kg	5 % to 1 % (relative)	・HPLC-ICP-MS　・ICP-MS ・ICP-OES　・GFAAS	
	dimethylarsenic acid	1 mg/kg to 1000 mg/kg	5 % to 1 % (relative)	・HPLC-ICP-MS　・ICP-MS ・ICP-OES　・GFAAS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method[*1]	Date of Accreditation
Food (trace elements and arsenic compounds in grains and beans)	Cr	0.01 mg/kg to 10 mg/kg	15 % to 2 % (relative)	・ID-HR-ICP-MS ・ICP-MS	2024-11-01
	Mn	0.1 mg/kg to 50 mg/kg	10 % to 1.5 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・GFAAS ・MP-AES	
	Fe	0.1 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Ni	0.01 mg/kg to 10 mg/kg	15 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Cu	0.1 mg/kg to 50 mg/kg	10 % to 1.5 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Zn	0.1 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	As	0.005 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・GFAAS	
	Rb	0.1 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Sr	0.02 mg/kg to 10 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Cd	0.005 mg/kg to 5 mg/kg	7 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Mo	0.02 mg/kg to 10 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Ba	0.02 mg/kg to 10 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	
	Pb	0.001 mg/kg to 10 mg/kg	15 % to 2 % (relative)	・ID-HR-ICP-MS ・ICP-MS	
	Na	0.1 mg/kg to 50 mg/kg	15 % to 2 % (relative)	・ICP-OES ・FAAS ・Flame photometry	
	Mg	10 mg/kg to 5000 mg/kg	5 % to 1.2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・FAAS ・MP-AES	
	K	100 mg/kg to 50000 mg/kg	5 % to 2 % (relative)	・ICP-OES ・FAAS ・Flame photometry	
	Ca	5 mg/kg to 5000 mg/kg	5 % to 1.5 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・FAAS ・Flame photometry ・MP-AES	
	P	100 mg/kg to 9000 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES	
	arsenite (As(III))	0.005 mg/kg to 50 mg/kg (as As)	8 % to 2 % (relative)	・HPLC-ICP-MS	
	arsenate (As(V))	0.005 mg/kg to 50 mg/kg (as As)	8 % to 2 % (relative)	・HPLC-ICP-MS	
	dimethylarsenic acid	0.005 mg/kg to 50 mg/kg (as As)	8 % to 2 % (relative)	・HPLC-ICP-MS	
Food (trace elements, arsenobetaine and methylmercury in fish, shellfish, and cephalopoda tissues)	Cr	0.2 mg/kg to 5 mg/kg	15 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS ・GFAAS	
	Mn	0.1 mg/kg to 5 mg/kg	10 % to 1.5 % (relative)	・ICP-MS ・HR-ICP-MS ・GFAAS	
	Fe	1 mg/kg to 100 mg/kg	10 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Ni	0.2 mg/kg to 20 mg/kg	15 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS ・GFAAS	
	Cu	0.2 mg/kg to 100 mg/kg	10 % to 1.5 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Zn	1 mg/kg to 100 mg/kg	10 % to 1.5 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES	
	As	1 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・GFAAS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Food (trace elements, arsenobetaine and methylmercury in fish, shellfish, and cephalopoda tissues)	Se	0.1 mg/kg to 10 mg/kg	15 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・GFAAS	
	Hg	0.1 mg/kg to 10 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・Heating evaporation Gold amalgamation AAS	
	Na	1 mg/kg to 100 g/kg	10 % to 2 % (relative)	・ICP-OES ・FAAS ・Flame photometry	
	Mg	0.5 mg/kg to 100 g/kg	5 % to 1 % (relative)	・ICP-MS ・ICP-OES ・FAAS	
	K	1 mg/kg to 100 g/kg	10 % to 2 % (relative)	・ICP-OES ・FAAS ・Flame photometry	
	Ca	0.1 mg/kg to 100 g/kg	15 % to 3 % (relative)	・ICP-MS ・ICP-OES ・FAAS ・Flame photometry	
	arsenobetaine	1 mg/kg to 100 mg/kg (as As)	10 % to 2 % (relative)	・HPLC-ICP-MS ・ID-LC-MS	
	methylmercury	0.1 mg/kg to 10 mg/kg (as Hg)	5 % to 1 % (relative)	・ID-GC-ICP-MS	
	Sr	0.02 mg/kg to 10 mg/kg	10 % to 1.2 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	Cd	0.01 mg/kg to 5 mg/kg	10 % to 1.5 % (relative)	・ID-ICP-MS ・ID-HR-ICP-MS ・ICP-MS ・ICP-OES ・GFAAS	
	P	1 g/kg to 100 g/kg	5 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES	
Food (trace elements and arsenic compounds in algae)	Na	0.5 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-OES ・FAAS ・Flame photometry	2024-11-01
	K	1 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-OES ・FAAS ・Flame photometry	
	Mg	0.1 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-MS ・ICP-OES ・FAAS	
	Ca	0.5 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-MS ・ICP-OES ・FAAS ・Flame photometry	
	Sr	0.1 g/kg to 50 g/kg	10 % to 1 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES ・GFAAS	
	P	0.01 g/kg to 50 g/kg	10 % to 1 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES	
	Al	10 mg/kg to 1000 mg/kg	10 % to 3 % (relative)	・ICP-MS ・ICP-OES ・GFAAS	
	As	0.5 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・GFAAS	
	Ba	0.5 mg/kg to 100 mg/kg	10 % to 1 % (relative)	・ICP-MS ・ID-ICP-MS	
	Cd	0.01 mg/kg to10 mg/kg	10 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES ・GFAAS	
	Co	0.1 mg/kg to10 mg/kg	10 % to 3 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・GFAAS	
	Cr	0.1 mg/kg to 50 mg/kg	15 % to 2 % (relative)	・ID-ICP-MS ・HR-ICP-MS ・ICP-OES	
	Cu	0.1 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES ・GFAAS	
	Fe	10 mg/kg to 1000 mg/kg	10 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES ・GFAAS	
	Mn	0.1 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・GFAAS	
	Ni	0.1 mg/kg to 10 mg/kg	15 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES	
	Pb	0.01 mg/kg to 10 mg/kg	15 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES	
	Zn	0.1 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ICP-MS ・ID-ICP-MS ・ICP-OES ・GFAAS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Food (trace elements and arsenic compounds in algae)	arsenate (As(V))	0.5 mg/kg to 100 mg/kg (as As)	10 % to 2 % (relative)	・HPLC-ICP-MS	
	arsenosugar-408 (arsenosugar-SO$_4$)	0.1 mg/kg to 10 mg/kg (as As)	10 % to 2 % (relative)	・HPLC-ICP-MS	
	arsenosugar-328 (arsenosugar-OH)	0.1 mg/kg to 10 mg/kg (as As)	10 % to 2 % (relative)	・HPLC-ICP-MS	
	Hg	0.01 mg/kg to 0.1 mg/kg	10 % to 2 % (relative)	・ID-HR-ICP-MS	
Environmental matrix (trace elements in plant leaves)	Al	5 mg/kg to 5000 mg/kg	5 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・GFAAS	2024-11-01
	B	1 mg/kg to 500 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Ba	1 mg/kg to 500 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・ICP-OES	
	Ca	200 mg/kg to 20000 mg/kg	5 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS	
	Cd	0.005 mg/kg to 50 mg/kg	10 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Co	0.01 mg/kg to 5 mg/kg	10 % to 2 % (relative)	・ICP-MS ・HR-ICP-MS	
	Cu	0.5 mg/kg to 500 mg/kg	5 % to 1 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・ICP-OES ・GFAAS	
	Fe	0.5 mg/kg to 2000 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	K	100 mg/kg to 30000 mg/kg	5 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS	
	Li	0.02 mg/kg to 10 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Mg	20 mg/kg to 5000 mg/kg	5 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS	
	Mn	5 mg/kg to 10000 mg/kg	5 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・GFAAS	
	Na	0.5 mg/kg to 100 mg/kg	20 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS	
	Ni	0.3 mg/kg to 100 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・ICP-OES	
	P	150 mg/kg to 10000 mg/kg	10 % to 1 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES	
	Pb	0.01 mg/kg to 100 mg/kg	20 % to 3 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Rb	0.5 mg/kg to 200 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	
	Sr	0.5 mg/kg to 200 mg/kg	5 % to 1 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・ICP-OES	
	Zn	1 mg/kg to 500 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・HR-ICP-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method *1	Date of Accreditation
Food (trace elements in milk and dairy products)	Ca	0.5 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS　・FAES	
	Fe	0.01 g/kg to 10 g/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・ICP-OES	
	K	0.1 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-MS ・HR-ICP-MS ・ICP-OES ・FAAS　・FAES	
	Mg	0.1 g/kg to 100 g/kg	10 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS	
	Na	0.01 g/kg to 50 g/kg	10 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES　・FAAS　・FAES	
	P	0.1 g/kg to 50 g/kg	10 % to 1 % (relative)	・ICP-MS　・HR-ICP-MS ・ICP-OES	
	Ba	0.05 mg/kg to 10 mg/kg	10 % to 1 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS	
	Cu	0.5 mg/kg to 100 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・GFAAS	
	Mn	0.1 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ICP-MS　・HR-ICP-MS ・GFAAS	
	Mo	0.02 mg/kg to 10 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS	
	Rb	0.1 mg/kg to 500 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS	
	Sr	0.1 mg/kg to 50 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS	
	Zn	0.1 mg/kg to 1000 mg/kg	10 % to 2 % (relative)	・ID-ICP-MS　・ICP-MS ・HR-ICP-MS　・ICP-OES	
High purity organic materials	creatinine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	2024-11-01
	urea	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	hydrocortisone	0.990 kg/kg to 1 kg/kg	0.001 kg/kg	・Subtracting method	
	isoleucine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	phenylalanine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	valine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	proline	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	alanine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	leucine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	lysine monohydrochloride	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	arginine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	uric acid	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	triolein	0.990 kg/kg to 1 kg/kg	0.001 kg/kg	・qNMR　・Subtraction method	
	triglyceride	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・qNMR　・Subtraction method	
	glycine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	glutamic acid	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	aspartic acid	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	tyrosine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	histidine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	serine	0.990 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	threonine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	methionine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	
	cystine	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・Neutralization titration ・Nitrogen determination	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Organic standard solution	C-reactive protein	10 μmol/kg to 50 μmol/kg	2 % (relative)	·ID-LC-MS	2024-11-01
	total deoxyribonucleic acid (DNA) less than 650 bp	0.5 ng/μL to 200 ng/μL	5 % (relative)	·ID-LC-MS · ICP-MS	
	C-peptide	0.08 g/L to 1 g/L	3 % (relative)	·ID-LC-MS	
	total C-peptide (mixture of C-peptide, deamidated C-peptide, and pyroglutamylated C-peptide)	0.08 g/L to 1 g/L	3 % (relative)	·ID-LC-MS	
	total ribonucleic acid (RNA) less than 1100 bases	10 ng/μL to 200 ng/μL	4 % (relative)	·ID-LC-MS · ICP-MS	
	albumin	1 g/L to 100 g/L	1.6 % (relative)	·ID-LC-MS	
	okadaic acid	0.5 μg/mL to 10 μg/mL	4 % (relative)	· qNMR · Gravimetric preparation	
	dinophysistoxin-1	0.5 μg/mL to 10 μg/mL	1.6 % (relative)	· qNMR · Gravimetric preparation	
	monoclonal antibody	0.5 g/L to 100 g/L	2.6 % (relative)	·ID-LC-MS	
Environmental matrix (food)	okadaic acid	0.01 mg/kg to 10 mg/kg	10 % (relative)	·LC-MS	
	dinophysistoxin-1	0.01 mg/kg to 10 mg/kg	10 % (relative)	·LC-MS	
Steroids in serum	cortisol (hydrocortisone)	15 μg/L to 250 μg/L	3 % to 2 % (relative)	·ID-LC-MS	
	aldosterone	100 pg/mL to 1000 pg/mL	5 % (relative)	·ID-LC-MS	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Molecular weight of polymer	poly (ethylene glycol) nonylphenyl ether (mass-average molecular mass, number-average molecular mass)	600 to 700	3 % (relative)	・SFC	
	poly (ethylene glycol) nonylphenyl ether (mass fraction and mole fraction of each degree of polymerization)	1×10^{-4} to 1	5 % (relative)	・SFC	
	polystyrene (mass-average molecular mass, number-average molecular mass, peak-average molecular mass)	400 to 2600	0.5 % (relative)	・SFC	
	polystyrene (polydispersity)	1.05 to 1.20	1.5 % (relative)	・SFC	
	polystyrene (mass fraction and mole fraction of each degree of polymerization)	2×10^{-5} to 1	2 % (relative)	・SFC	
	poly (ethylene glycol) (mass-average molecular mass, number-average molecular mass)	350 to 1700	1 % (relative)	・SFC	
	poly (ethylene glycol) (mass fraction and mole fraction of each degree of polymerization)	3×10^{-5} to 1	1 % (relative)	・SFC	
	monodisperse polystyrene (mass-average molar mass)	1×10^{5} to 1×10^{6}	5 % (relative)	・Static light scattering (SLS)	
	poly (ethylene glycol) 23mer (mass fraction)	0.99 to 1	0.1 % (relative)	・SFC	
Particle reference material	polystyrene latex nanoparticle (light scattering intensity averaged diameter)	100 nm to 300nm	1 % (relative)	・Dynamic light scattering (DLS)	2024-11-01
Polymer reference material (polymer: organic compounds)	polybrominated diphenyl ether in plastics (polystyrene, polyvinyl chloride)	50 mg/kg to 1500 mg/kg	5 % to 2 % (relative)	・ID-GC-MS ・HPLC	
	plasticizers (dimethyl phthalate, diethyl phthalate, di-*n*-propyl phthalate, di-*i*-butyl phthalate, di-*n*-butyl phthalate, di-*n*-pentyl phthalate, di-*n*-hexyl phthalate, dicyclohexyl phthalate, di-*n*-heptyl phthalate, butyl benzyl phthalate, bis(2-ethylhexyl) phthalate, bis(*n*-octyl) phthalate) in plastics (polystylen, polypropylene, polyvinyl chloride)	50 mg/kg to 1500 mg/kg	3 % to 1.5 % (relative)	・ID-GC-MS ・HPLC	
Polymer reference material (Raman shift)	Raman shift	$300\ cm^{-1} \sim 3500\ cm^{-1}$	$0.28\ cm^{-1}$	・Raman spectroscopy	
Polymer (perfluoroalkyl substances in polymer)	perfluorooctanesulfonic acid and its salts	10 mg/kg to 100 mg/kg	20 % to 10 % (relative)	・ID-LC-MS/MS	
Positron lifetime	positron lifetime in solids	0.1 ns to 20 ns	2 % (relative)	・Positron annihilation lifetime spectroscopy	
Steel	chromium	mass fraction 20 % to 40 %	0.1 % (relative)	・Titration ・EPMA	
	nickel	mass fraction 15 % to 70 %	0.1 % (relative)	・Titration ・EPMA	
	iron	mass fraction 5 % to 70 %	0.1 % (relative)	・Titration ・EPMA	
	carbon	mass fraction 0.05 % to 1.0 %	10.0 % to 1.0 % (relative)	・Gravimetric analysis ・EPMA	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Thin film	film thickness	each layer 1 nm to 200 nm (total film thickness 3 nm to 200 nm or less)	0.27 % to 0.06 % (relative)	· X-ray reflectivity	2024-11-01
	arsenic	0.01 g/kg to 1.6 g/kg	2.4 % (relative)	· Instrumental Neutron Activation Analysis · ICP-MS	
Image sharpness evaluation	dot pitch	70 nm to 6000 nm	1.2 % (relative)	· SEM	
Thick film	film thickness	70 nm to 6000 nm	1.2 % (relative)	·SEM	

Subcategory	Measurand	Measurand Level or Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method [*1]	Date of Accreditation
Thermophysical properties reference materials	Thermal expansion	$-0.5\times10^{-6}\,K^{-1}$ to $20\times10^{-6}\,K^{-1}$ (Temperature range : 15 K to 1100 K)	$0.005\times10^{-6}\,K^{-1}$	・Laser interferometric thermal expansion measurement method	2024-11-01
	Thermal diffusivity	$5\times10^{-7}\,m^2\,s^{-1}$ to $2\times10^{-4}\,m^2\,s^{-1}$ (Temperature range: 300 K to 1500 K)	3 % (relative)	・Laser flash method	
	Specific heat capacity	$0.07\,J\,K^{-1}\,g^{-1}$ to $1.8\,J\,K^{-1}\,g^{-1}$ (Temperature range: 50 K to 900 K)	1 % (relative)	・Adiabatic calorimetry ・Differencial Scaning calorimetry	
	Thermal conductivity	$1\,W\,m^{-1}\,K^{-1}$ to $200\,W\,m^{-1}\,K^{-1}$ (Temperature range: 300 K to 900 K)	5 % (relative)	The product of thermal diffusivity, specific heat capacity and density （thermal diffusivity: ・laser flash method ・pulse heating thermoreflectance method specific heat capacity : ・Adiabatic calorimetry ・Differencial Scaning calorimetry density: dimensions and weight）	
	Thermal diffusivity	$3\times10^{-6}\,m^2\,s^{-1}$ to $4\times10^{-5}\,m^2\,s^{-1}$ (Measurement environment temperature: 5 °C to 35 °C)	6 % (relative)	・Pulse heating thermoreflectance method	

*1

CRDS :	Cavity ring down spectroscopy
EPMA :	Electron probe microanalysis
DLS :	Dynamic light scattering
FAAS :	Flame atomic absorption spectrometry
FAES :	Flame atomic emission spectrometry
FI-ICP-MS :	Flow injection-inductively coupled plasma mass spectrometry
FT-IR :	Fourier transform infrared spectrometry
GC :	Gas chromatography
GC-ECD :	Gas chromatography/Electron capture detector
GC-FID :	Gas chromatography/Flame Ionization detector
GC-FPD :	Gas chromatography/Flame photometric detector
GC-MS :	Gas chromatography/Mass spectrometry
GC-PID :	Gas chromatography/Photo ionization detector
GC-SCD :	Gas chromatography/Sulfur chemiluminescence detector
GC-TCD :	Gas chromatography/Thermal conductivity detector
GFAAS :	Graphite furnace atomic absorption spectrometry
HPLC :	High performance liquid chromatography
HPLC-CAD	High performance liquid chromatography/Charged aerosol detector
HPLC-ICP-MS :	High performance liquid chromatography/inductively coupled plasma mass spectrometry
HPLC-UV	High performance liquid chromatography/Ultraviolet-visible absorption detector
HS- :	Head space-
HR-ICP-MS :	High-resolution inductively coupled plasma mass spectrometry
IC :	Ion chromatography
ICP-MS :	Inductively coupled plasma mass spectrometry
ICP-MS/MS :	Inductively coupled plasma tandem mass spectrometry
ICP-OES :	Inductively coupled plasma optical emission spectrometry
ID-GC-MS :	Isotope dilution-gas chromatography/mass spectrometry
ID-GC-ICP-MS :	Isotope dilution-gas chromatography/Inductively coupled plasma mass spectrometry
ID-HR-ICP-MS :	Isotope dilution-high-resolution inductively coupled plasma mass spectrometry
ID-HPLC-ICP-MS :	Isotope dilution-liquid chromatography/Inductively coupled plasma mass spectrometry
ID-ICP-MS :	Isotope dilution-inductively coupled plasma mass spectrometry
ID-ICP-MS/MS :	Isotope dilution-inductively coupled plasma tandem mass spectrometry
ID-LC-MS :	Isotope dilution-liquid chromatography/mass spectrometry
ID-LC-MS/MS :	Isotope dilution-liquid chromatography/tandem mass spectrometry
LC-MS :	Liquid chromatography/mass spectrometry
MC-ICP-MS :	Multicollector inductively coupled plasma mass spectrometry
MP-AES :	Microwave plasma atomic emission spectrometry
qNMR :	Quantitative nuclear magnetic resonance spectroscopy
SEM :	Scanning electron microscopy
SFC :	Supercritical fluid chromatography
SLS :	Static light scattering
TG :	Thermogravimetry

(End of Attachment)