International Accreditation Japan

Information on Accredited Reference Material Producer

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Accreditation Identification:	ASNITE 0001 RMP
Name of Reference Material Producer :	National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Technology
Location of Reference Material Producer :	1-1-1 Umezono, Tsukuba-shi, Ibaraki 305-8563, JAPAN
Name of Legal Entity:	National Institute of Advanced Industrial Science and Technology
Conformance Accreditation Standard:	ISO 17034:2016
Expiry Date of Accreditation :	2029-10-31

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	Reference Material		Range of property value	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method*[1]	Date of Accreditation
	Matrix	Analytical component				
High purity gases	CH_4	CH_4	0.99 mol/mol to 0.999999 mol/mol	1 mmol/mol to 0.0005 mmol/mol	・Purity analysis	2024-11-01
		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	0.4 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-PID ・GC-TCD	
		CO_2	0.4 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	0.7 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)	・ Chilled mirror dew pointhygrometer	
	C_3H_8	C_3H_8	0.99 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.03 mmol/mol	・Purity analysis	
		N_2	3 µmol/mol to 100 µmol/mol	80 % to 2 % (relative)	・GC-TCD	
		O_2	2 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-TCD	
		Ar	2 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-TCD	
		CO_2	1 µmol/mol to 100 µmol/mol	100 % to 6 % (relative)	・GC-TCD	
		C_2H_6	3.8 µmol/mol to 100 µmol/mol	100 % to 7 % (relative)	・GC-FID	
		propylene	17 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		butane	2 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-FID	
		isobutane	2 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-FID	
		H_2O	53 µmol/mol to 1000 µmol/mol	70 % to 53 % (relative)	・Capacitive hygrometer	
	CO_2	CO_2	0.99 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.006 mmol/mol	・Purity analysis	
		N_2	0.9 µmol/mol to 100 µmol/mol	100 % to 0.9 % (relative)	・GC-TCD	
		O_2	0.4 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 4 % (relative)	・GC-TCD	
		He	0.8 µmol/mol to 100 µmol/mol	100 % to 4 % (relative)	・GC-TCD	
		CH_4	0.01 µmol/mol to 1 µmol/mol	100 % to 1 % (relative)	・GC-FID	
		CO	0.05 µmol/mol to 100 µmol/mol	100 % to 0.7 % (relative)	・GC-FID	
		H_2O	0.9 µmol/mol to 130 µmol/mol	100 % to 30 % (relative)	・ Capacitive hygrometer	

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	Matrix	Analytical component				
High purity gases	CO	CO	0.99 mol/mol to 0.99993 mol/mol	1 mmol/mol to 0.02 mmol/mol	・Purity analysis	2024-11-01
		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)	・Capacitive hygrometer	
	O_2	O_2	0.99 mol/mol to 1 mol/mol	1 mmol/mol ～ 0.05 mmol/mol	・Purity analysis ・Magnetopneumatic oxygen analyzer	
		Ar	20 µmol/mol ～ 1000 µmol/mol	100 % ～ 4 % (relative)	・GC-TCD	
		N_2	2 µmol/mol ～ 100 µmol/mol	100 % ～ 4 % (relative)	・GC-TCD	
		CH_4	0.25 µmol/mol ～ 10 µmol/mol	100 % ～ 2.5 % (relative)	・ FT-IR	
		CO	0.25 µmol/mol ～ 10 µmol/mol	100 % ～ 2.5 % (relative)	・ FT-IR	
		CO_2	0.25 µmol/mol ～ 10 µmol/mol	100 % ～ 2.5 % (relative)	・ FT-IR	
		H_2O	5 µmol/mol ～ 130 µmol/mol	100 % ～ 30 % (relative)	・ Chilled mirror dew pointhygrometer ・ Capactive hygrometer	
	vinyl chloride	vinyl chloride	0.99 mol/mol to 0.99999 mol/mol	5 mmol/mol to 0.01 mmol/mol	・ Purity analysis	
		N_2	3.9 µmol/mol to 100 µmol/mol	30 % to 14 % (relative)	・GC-TCD	
		O_2	1.1 µmol/mol to 100 µmol/mol	100 % to 53 % (relative)	・GC-TCD	
		Ar	1 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-TCD	
		CO_2	2 µmol/mol to 100 µmol/mol	100 % to 3.7 % (relative)	・GC-TCD	
		methyl chloride	51.3 µmol/mol to 200 µmol/mol	30 % to 7 % (relative)	・GC-FID	
		ethyl chloride	5 µmol/mol to 100 µmol/mol	100 % to 5.8 % (relative)	・GC-FID	
		H_2O	187.1 µmol/mol to 1000 µmol/mol	70 % to 35 % (relative)	・ Capacitive hygrometer	

Subcategory	Reference Material		Range of property value	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method*[1]	Date of Accreditation
	Matrix	Analytical component				
High purity gases	1,3-butadiene	1,3-butadiene	0.98 mol/mol to 0.99996 mol/mol	20 mmol/mol to 1 mmol/mol	・Purity analysis	2024-11-01
		N_2	17 µmol/mol to 1000 µmol/mol	30 % to 7.4 % (relative)	・GC-TCD	
		O_2	5 µmol/mol to 1000 µmol/mol	80 % to 3.1 % (relative)	・GC-TCD	
		Ar	5 µmol/mol to 1000 µmol/mol	100 % to 3.1 % (relative)	・GC-TCD	
		CO_2	8 µmol/mol to 1000 µmol/mol	100 % to 3.1 % (relative)	・GC-TCD	
		butane	5 µmol/mol to 500 µmol/mol	20 % to 2 % (relative)	・GC-FID	
		isobutane	5 µmol/mol to 500 µmol/mol	100 % to 2 % (relative)	・GC-FID	
		1-butene	13 µmol/mol to 1000 µmol/mol	100 % 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_2O	93 µmol/mol to 1000 µmol/mol	70 % to 50 % (relative)	・Capacitive hygrometer	
	ethane	ethane	0.99 mol/mol to 0.99999 mol/mol	1 mmol/mol to 0.001 mmol/mol	・Purity analyss	
		N_2	1 µmol/mol to 100 µmol/mol	80 % to 2 % (relative)	・GC-TCD	
		O_2	0.5 µmol/mol to 100 µmol/mol	100 % to 2 % (relative)	・GC-TCD	
		CO_2	6 µmol/mol to 100 µmol/mol	100 % to 6 % (relative)	・GC-TCD	
		methane	0.5 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	0.13 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	0.79 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	67 µmol/mol to 1000 µmol/mol	70 % to 20 % (relative)	・Capacitive hygrometer	
	isobutane	isobutane	0.99 mol/mol to 0.99995 mol/mol	2 mmol/mol to 0.005 mmol/mol	・Purity analysis	
		N_2	1.4 µmol/mol to 100 µmol/mol	100 % to 8 % (relative)	・GC-TCD	
		O_2	5 µmol/mol to 100 µmol/mol	100 % to 10 % (relative)	・GC-TCD	
		CO_2	6 µmol/mol to 100 µmol/mol	100 % to 6 % (relative)	・GC-TCD	
		propane	7 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		butane	4 µmol/mol to 200 µmol/mol	50 % to 8 % (relative)	・GC-FID	
		pentane	3 µmol/mol to 100 µmol/mol	100 % to 34 % (relative)	・GC-FID	
		H_2O	510 µmol/mol to 3000 µmol/mol	70 % to 10 % (relative)	・Capacitive hygrometer	

Subcategory	Reference Material		Range of property value	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method*[1]	Date of Accreditation
	Matrix	Analytical component				
High purity gases	butane	butane	0.99 mol/mol to 0.99995 mol/mol	2 mmol/mol to 0.005 mmol/mol	・Purity analysis	2024-11-01 *2026-08-24
		N_2	1 µmol/mol to 100 µmol/mol	100 % to 8 % (relative)	・GC-TCD	
		O_2	1 µmol/mol to 100 µmol/mol	100 % to 10 % (relative)	・GC-TCD	
		CO_2	6 µmol/mol to 100 µmol/mol	100 % to 6 % (relative)	・GC-TCD	
		propane	4 µmol/mol to 100 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		isobutane	96 µmol/mol to 200 µmol/mol	30 % to 2 % (relative)	・GC-FID	
		H_2O	1110 µmol/mol to 3000 µmol/mol	30 % to 10 % (relative)	・Capacitive hygrometer	
	isopentane	isopentane	0.99 mol/mol to 1 mol/mol	10 mmol/mol to 3.4 mmol/mol	・Post-column reaction gas chromatography	
	pentane	pentane	0.99 mol/mol to 1 mol/mol	10 mmol/mol to 4.4 mmol/mol	・Post-column reaction gas chromatography	
	N_2	N_2	0.999 mol/mol to 0.999998 mol/mol	1 mmol/mol to 0.004 mmol/mol	・Purity analysis	
		O_2＋Ar	1 µmol/mol to 10 µmol/mol	100 % to 30 % (relative)	・GC-TCD	
		CO_2	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)	・Chilled mirror dew point hygrometer	
Mixtured gases	N_2	O_2	5 µmol/mol to 5 mmol/mol	1 % to 0.1 % (relative)	・GC-TCD	
	N_2 and air	N_2O	0.2 µmol/mol to 0.02 mol/mol	0.2 % to 0.1 % (relative)	・GC-TCD ・GC-ECD	
	CH_4	hexane	100 µmol/mol to 2500 µmol/mol	1.4 % (relative)	・GC-FID	
	Ar	N_2	1 µmol/mol to 200 µmol/mol	10 % to 0.5 % (relative)	・GC-MS	
	air	CO_2	150 µmol/mol to 800 µmol/mol	0.02 µmol/mol to 0.1 µmol/mol	・CRDS	
	N_2 and air*	CH_4	100 µmol/mol to 5000 µmol/mol	0.5 % (relative)	・FT-IR	
	air*	C_3H_8	1000 µmol/mol to 2000 µmol/mol	0.5 % (relative)	・FT-IR	
	N_2*	C_3H_8	10 µmol/mol to 100 µmol/mol	0.5 % (relative)	・FT-IR	
	N_2 and air*	CO_2	16 cmol/mol to 25 cmol/mol	0.5 % (relative)	・FT-IR	

Subcategory	Measurand (analyte or property)	Measurand 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	2024-11-01 *2026-08-24
	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	
	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	
	Pd*	0.8 g/kg to 1.2 g/kg	0.19 % (relative)	・Gravimetric preparation	
	Nd*	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 (analyte or property)	Measurand 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)	・Oxdation-reduction titration	2024-11-01
	bromate ion	1.6 g/kg to 2.4 g/kg	0.14 %(relative)	・Oxdation-reduction 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	
	^{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 (analyte or property)	Measurand 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	
	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	2024-11-01
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 (analyte or property)	Measurand 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 ・Mass balance approach	

Subcategory	Measurand (analyte or property)	Measurand 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 *2026-08-24
	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 ・Mass balance approach	
	acetoaldehyde	0.99 kg/kg to 1.00 kg/kg	0.01 kg/kg to 0.003 kg/kg	・Volumetric titration ・Mass balance approach	
	17β-estradiol	0.96 kg/kg to 1.00 kg/kg	0.005 kg/kg to 0.003 kg/kg	・qNMR ・Mass balance approach (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 ・Mass balance approach (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 ・Mass balance approach (HPLC-UV, HPLC-CAD, HS-GC-MS, Coulometric Karl-Fisher titration, TG)	
	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 ・Volumetric 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 ・Mass balance approach (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 ・Mass balance approach (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration, TG)	
	Potassium hydrogen phthalate*	0.999 kg/kg to 1 kg/kg	0.0003 kg/kg to 0.0001 kg/kg	・Coulometric titration ・Mass balance approach (HPLC-UV, qNMR, Coulometric Karl-Fischer titration, ICP-OES)	
	Phenylphosphonic acid*	0.998 kg/kg to 1 kg/kg	0.0015 kg/kg to 0.0005 kg/kg	・Volumetric Titration ・Mass balance approach (HPLC-UV, GC-FID, Coulometric Karl-Fischer titration, TG) ・qNMR	

Subcategory	Measurand (analyte or property)	Measurand 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	・Mass balance approach (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	・Mass balance approach (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	・Mass balance approach (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	・Mass balance approach (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	・Mass balance approach (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	・Mass balance approach (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	・Mass balance approach (HPLC-UV, GC-FID, Coulometric Karl-Fischer 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	・Mass balance approach (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	・Mass balance approach (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	

Subcategory	Measurand (analyte or property)	Measurand Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method *1	Date of Accreditation
Organic standard solution	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	
	3β,4α-dihydroxy-5α-androstan-17-one	100 µg/g to 170 µg/g	1.4 % (relative)	・qNMR ・qNMR/HPLC-UV ・Gravimetric preparation	
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	・Acid-base titration ・Mass balance approach (LC-MS, Karl Fischer titration, TG)	
	chloroalkanes	0.98 kg/kg to 1 kg/kg	0.005 kg/kg to 0.001 kg/kg	・Mass balance approach (GC-FID, HS-GC-MS, Karl Fischer titration, TG)	
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 Karl-Fischer titration ・Volumetric Karl-Fischer titration	
Food (pesticide in grain)	fenitrothion	0.1 mg/kg to 1 mg/kg	20 % to 7.5% (relative)	・ID-GC-MS ・ID-LC-MS	
	etofenprox	0.1 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS ・ID-LC-MS	
Food (pesticide in vegetable)	diazinon	0.001 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS	2024-11-01
	fenitrothion	0.001 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS	
	chlorpyrifos	0.001 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS	
	permethrin	0.001 mg/kg to 1 mg/kg	25 % to 7.5 % (relative)	・ID-GC-MS	
	cypermethrin	0.001 mg/kg to 1 mg/kg	25 % to 7.5 % (relative)	・ID-GC-MS	
	etofenprox	0.001 mg/kg to 1 mg/kg	10 % to 7.5 % (relative)	・ID-GC-MS	
Food (pesticide in fruits)	diazinon	0.001 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS	
	fenitrothion	0.001 mg/kg to 1 mg/kg	30 % to 7.5 % (relative)	・ID-GC-MS	
	permethrin	0.001 mg/kg to 1 mg/kg	25 % to 7.5 % (relative)	・ID-GC-MS	
	cypermethrin	0.001 mg/kg to 1 mg/kg	25 % to 7.5 % (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 (analyte or property)	Measurand 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 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 (analyte or property)	Measurand Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method *1	Date of Accreditation
Fuel (components in bioethanol fuel)	water	100 mg/kg to 5000 mg/kg	2 % to 0.2 % (relative)	・Coulometric Karl-Fischer titration ・Volumetric Karl-Fischer titration	2024-11-01
	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	
Fuel (components in biodiesel fuel)	water	300 mg/kg to 1000 mg/kg	10 % to 5 % (relative)	・Coulometric Karl-Fischer titration ・Volumetric Karl-Fischer 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	

Subcategory	Measurand (analyte or property)	Measurand Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method *1	Date of Accreditation
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	
	Rb	0.05 µg/kg to 100 µg/kg	5 % to 1 % (relative)	・ID-ICP-MS ・ICP-MS ・ICP-MS/MS	
	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	

Subcategory	Measurand (analyte or property)	Measurand Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method *1	Date of Accreditation
Environmental matrix (sea water)	Cr	1 µg/kg to 20000 µg/kg	10 % to 2 % (relative)	・ID-ICP-MS ・ICP-MS	2024-11-01
	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 1.8 % (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 (analyte or property)	Measurand 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 (analyte or property)	Measurand 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	2024-11-01
	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	
	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 (analyte or property)	Measurand 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	2024-11-01
	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	
	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 (analyte or property)	Measurand 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	・Mass balance approach	
	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 ・Mass balance approach	
	triglyceride	0.995 kg/kg to 1 kg/kg	0.001 kg/kg	・qNMR ・Mass balance approach	
	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 (analyte or property)	Measurand 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 *2026-08-24
	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	
	amyloidβ*	10 mg/L to 100 mg/L	5 % (relative)	・ID-LC-MS	
	total amyloidβ (mixture of amyloidβ , oxdated amyloidβ,deamidated amyloidβ, and isomerized amyloidβ)*	10 mg/L to 100 mg/L	5 % (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	20 pg/mL to 1000 pg/mL	5 % to 2 % (relative)	・ID-LC-MS	
	testosterone*	2 ng/mL to 10 ng/mL	5 % (relative)	・ID-LC-MS	

Subcategory	Measurand (analyte or property)	Measurand 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	2024-11-01
	poly (ethylene glycol) nonylphenyl ether (mass fraction and mole fraction of each degree of polymerization)	1×10^{-4} to 1	5 % (relative)	・SFC	
	monodisperse polystyrene (mass-average molar mass)	1×10^{5} to 1×10^{6}	5 % (relative)	・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)	・ DLS	
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} ～ 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	
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	
Image sharpness evaluation (Dot material: Tungsten)	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 (analyte or property)	Measurand Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)	Analytical Method*1	Date of Accreditation
Thermophysical properties reference materials	Thermal expansion	-0.5×10^{-6} K^{-1} to 20×10^{-6} K^{-1} (Temperature range： 15 K to 1100 K)	0.005×10^{-6} K^{-1}	・Laser interferometric thermal expansion measurement method	2024-11-01
	Thermal diffusivity	5×10^{-7} m^2 s^{-1} to 2×10^{-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 ・pulsed light heating thermoreflectance method) (specific heat capacity : ・Adiabatic calorimetry ・Differencial Scaning calorimetry) (density: dimensions and weight)	
	Thermal diffusivity	3×10^{-6} m^2 s^{-1} to 4×10^{-5} m^2 s^{-1} (Measurement environment temperature: 5 °C to 35 °C)	6 % (relative)	・Pulsed light 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)