FIAlyzer-1000 Methods List – April 2022

Alkalinity								
Method number	**Lower**	**Upper**	**MDL**	**Units**	**Sample / Hour**	**Matrix**	**Compliant With**	**Notes**
ALK-W-1-1	1 10	50 500	0.3 3	g CaCO3 / L	50	Waters	EPA 310.2	Methyl Orange method.
Ammonia								
Method number	**Lower**	**Upper**	**MDL**	**Units**	**Sample / Hour**	**Matrix**	**Compliant With**	**Notes**
NH3-S-1-1	0.02 0.075	0.5 50	0.006 0.025	mg N / L as NH3	120	Soil extracts	N/A	Salicylate method for soil extracts.
NH3-W-1-2	0.5	20	0.1	mg N / L as NH3	60	Waters	EPA 350.1	Salicylate method with gas diffusion, can also be used for TKN analysis.
NH3-W-1-4	0.5	20	0.1	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method with gas diffusion.
NH3-W-2-1	0.01	0.5	0.003	mg N / L as NH3	60	Waters	EPA 350.1	Salicylate or phenate method with gas diffusion, utilizing low-noise detector, can also be used for TKN analysis.
NH3-W-2-3	0.01	0.5	0.003	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method with gas diffusion, utilizing low-noise detector, can also be used for TKN analysis.
NH3-W-2-5	0.003	1	0.001	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method, utilizing low-noise detector.
NH3-W-2-6	0.003	1	0.001	mg N / L as NH3	60	Waters	EPA 350.1	Phenate method, no gas diffusion.
NH3-W-3-2	0.015	10	0.005	mg N / L as NH3	60	Waters	EPA FIAlab 100	OPA method with gas diffusion, utilizing fluorometric detector, can also be used for TKN analysis.
NH3-W-3-3	0.015	5	0.005	µmol NH3 / L	60	Waters	N/A	OPA method, utilizing fluorometric detector, no gas diffusion, for seawater matrices.

Chloramine

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
CLNH2-W-1-1	0.05	2	0.025	mg N / L	60	Waters	N/A	Salicylate method.

Chloride

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
CL-S-1-1	5	200	2	mg Cl / L	120	Soil extracts	N/A	Ferric chloride and mercuric (II) thiocyanate method, utilizing LED light source.
CL-W-1-1	0.5 20	20 800	0.2 8	mg Cl / L	120	Waters	SM 4500-Cl-	Ferric chloride and mercuric (II) thiocyanate method, utilizing LED light source.
CL-W-2-1	0.2	20	0.05	mg Cl / L	60	Waters	SM 4500-Cl-	Ferric chloride and mercuric (II) thiocyanate method.

Chloralkali Methods

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
CL-C-1-1	5	40	2	mg NaCl / L	60	Chloralkali samples	N/A	For samples from membrane cell process. Ferric chloride and mercuric (II) thiocyanate method, utilizing LED light source.
CL-C-1-2	100	250	N/A	mg NaCl / L	65	Chloralkali samples	N/A	For samples from diaphragm cell process. Ferric chloride and mercuric (II) thiocyanate method, utilizing LED light source.
CLO-C-1-1	1.6	75	N/A	mg NaOCl/L	40	Chloralkali samples	N/A	For samples from diaphragm cell process. Potassium iodide method, utilizing a dual LED light source.
CLO-C-1-2	1.25	10	0.2	mg NaOCl/L	25	Chloralkali samples	N/A	For samples from membrane cell process. Acidification - Methyl Orange method, utilizing gas diffusion.
CLO3-C-1-1	0.1	2	N/A	NaClO3/L	60	Chloralkali samples	N/A	For samples from diaphragm cell process. Fe(II) / ferrozine method.
CLO3-C-1-2	0.5	10	N/A	NaClO3/L	55	Chloralkali samples	N/A	For samples from membrane cell process. Fe(II) / ferrozine method.
NAOH-C-1-1	29	34	N/A	% NaOH	55	Chloralkali samples	N/A	For samples from membrane cell process. Cu(II) / ethylenediamine method.
NAOH-C-1-2	70	200	N/A	% NaOH	100	Chloralkali samples	N/A	For samples from membrane cell or diaphragm cell process. Cu(II) / ethylenediamine method.

Cyanide

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
CN-W-1-1	10	500	3	µg CN / L	60	Waters	EPA 335.4	Total CN method for post-distillation samples. Pyridine-barbiturate method.
CN-W-2-1	1 20	500 10,000	0.3 8	µg CN / L	60	Waters	EPA 335.4	Total CN method for post-distillation samples. Pyridine-barbiturate method, utilizing low-noise detector.
CN-W-2-2	1	100	0.3	µg CN / L	30	Waters	SM 4500-CN O.	Total CN method with in-line digestion and colorimetric detection.
CN-W-4-1	10	500	3	µg CN / L	50	Waters	EPA OIA-1677	Free / available / WAD CN method, utilizing gas diffusion and amperometric detection.
CN-W-4-2	10	500	3	µg CN / L	50	Waters	ASTM D7511-09	Total CN method with in-line digestion, utilizing gas diffusion and amperometric detection.

Fluoride

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
F-W-9-1	0.06	5	0.02	mg F / L	60	Waters	SM 4500-F F.	Ion-selective electrode (ISE) method.

Hardness

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
HRD-W-1-1	5	300	2	mg CaCO3 / L	60	Waters	EPA 130.1	Calmagite method.

Hexavalent Chromium

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
CR6-W-1-1	50	500	15	µg Cr6+ / L	60	Waters	SM 3500-Cr B.	Diphenylcarbazide method.
CR6-W-2-1	1	500	0.3	µg Cr6+ / L	60	Waters	SM 3500-Cr B.	Diphenylcarbazide method.

Iron

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
FE-W-2-1	50	500	2	µg Fe / L	60	Waters	N/A	TPTZ method.

Nitrate + Nitrite

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
NO3-S-1-1	0.003 0.008	1 25	0.001 0.003	mg N / L as NOx	120	Soil extracts	N/A	Griess method with cadmium reduction.
NO3-S-1-2	0.5	60	0.1	mg N / L as NOx	60	Soil extracts	N/A	Griess method with cadmium reduction and in-line dialysis.
NO3-S-2-1	0.1	60	0.02	mg N / L as NOx	120	Soil extracts	N/A	Griess method with cadmium reduction and in-line dialysis, utilizing low-noise detector
NO3-W-1-1	0.003 0.008	1 25	0.001 0.003	mg N / L as NOx	120	Waters	EPA 353.2	Griess method with cadmium reduction.
NO3-W-1-2	0.003 0.008	1 25	0.001 0.003	mg N / L as NOx	120	Waters	SM 4500-NO3 F.	Griess method with cadmium reduction.
NO3-W-2-1	0.001	25	0.0004	mg N / L as NOx	120	Waters	EPA 353.2	Griess method with cadmium reduction, utilizing low-noise detector.
NO3-W-2-2	0.001	25	0.0004	mg N / L as NOx	120	Waters	SM 4500-NO3 F.	Griess method with cadmium reduction, utilizing low-noise detector.
NO3-W-2-4	0.001	25	0.0004	mg N / L as NOx	60	Waters	EPA 353.2	Griess method with cadmium reduction, utilizing low-noise detector. For seawater matrices.

Nitrite

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
NO2-S-1-1	0.005 0.015	2.5 40	0.002 0.005	mg N / L as NOx	120	Soil Extracts	N/A	Griess method.
NO2-S-1-3	0.3	35	0.06	mg N / L as NOx	60	Soil Extracts	N/A	Griess method with in-line dialysis.
NO2-S-2-2	0.08	9	0.03	mg N / L as NOx	60	Soil Extracts	N/A	Griess method with in-line dialysis, utilizing low-noise detector.
NO2-W-1-2	0.005 0.015	2.5 40	0.002 0.005	mg N / L as NOx	120	Waters	EPA 353.2	Griess method.
NO2-W-2-1	0.0005	15	0.0002	mg N / L as NOx	120	Waters	EPA 353.2	Griess method utilizing low-noise detector.

Nitrogen – Kjeldahl (TKN)

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
NH3-W-1-1	0.5	20	0.1	mg N / L as NH3	120	Waters	N/A	For TKN digests. Salicylate method with gas diffusion, can also be used for
NH3-W-1-3	0.5	20	0.1	mg N / L as NH3	60	Waters	EPA 351.2	For TKN digests. Salicylate method with gas diffusion.
NH3-W-1-5	0.5	20	0.1	mg N / L as NH3	60	Waters	SM 4500-Norg D.	For TKN digests. Salicylate method with gas diffusion.
NH3-W-2-2	0.12	0.5	0.04	mg N / L as NH3	60	Waters	SM 4500-Norg D.	For TKN digests. Salicylate method with gas diffusion, utilizing low-noise detector.
NH3-W-2-4	0.12	0.5	0.04	mg N / L as NH3	60	Waters	EPA 351.2	For TKN digests. Salicylate method with gas diffusion, utilizing low-noise detector.
NH3-W-3-1	0.05	10	0.012	mg N / L as NH3	60	Waters	EPA FIALAB 100	For TKN digests. OPA method with gas diffusion, utilizing fluorometric detector.

Nitrogen – Total

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
NO3-W-1-3	1	40	0.3	mg N / L	40	Waters	N/A	Offline persulfate Digestion. Griess Method with Cadmium reduction. Can also be utilized for Total Phosphorus.
NO3-W-2-3	0.02	5	0.01	mg N / L	40	Waters	N/A	For Total N/P persulfate digests (Dennis Jones). Griess method with cadmium reduction, utilizing low-noise detector.

Phenol

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
PHNL-W-1-1	0.05	.5	0.02	g Phenol / L	60	Waters	EPA 420.1	For post-distillation samples. 4-aminoantipyrine method.
PHNL-W-1-2	0.05	0.5	0.02	g Phenol / L	60	Waters	EPA 420.4	For post-distillation samples. 4-aminoantipyrine method.
PHNL-W-2-1	0.005 0.013	0.2 0.5	0.001 0.003	g Phenol / L	60	Waters	EPA 420.1	For post-distillation samples. 4-aminoantipyrine method, utilizing low-noise detector.
PHNL-W-2-2	0.005 0.013	0.2 0.5	0.001 0.003	g Phenol / L	60	Waters	EPA 420.4	For post-distillation samples. 4-aminoantipyrine method, utilizing low-noise detector.

Phosphate - Ortho

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes

PO4-S-1-1	0.08 0.2	0.9 45	0.03 0.06	mg P / L	120	Soil extracts	N/A	Molybdenum blue method.
PO4-S-1-2	0.2	45	0.06	mg P / L	240	Soil extracts	N/A	Molybdenum blue method, with fast-phosphate manifold for high throughputs.
PO4-S-1-3	0.1	5	0.05	mg P / L	120	Soil extracts	N/A	For Olsen extracts. Molybdenum blue method.
PO4-S-1-4	0.1	5	0.05	mg P / L	120	Soil extracts	N/A	For Olsen extracts. Molybdenum blue method, utilizing LED light source.
PO4-W-1-1	0.08 0.2	0.9 45	0.03 0.06	mg P / L	60	Waters	EPA 365.1	Molybdenum blue method.
PO4-W-2-1	15	1000	5	µg P / L	60	Waters	EPA 365.1	Molybdenum blue method, utilizing low-noise detector.
PO4-W-2-3	15	1000	5	µg P / L	60	Waters	SM 4500-P F.	Molybdenum blue method.
PO4-W-2-4	1 20	1000 20,000	0.4 8	µg P / L	60	Waters	SM 4500-P G.	Molybdenum blue method.
PO4-W-2-6	0.03	30	0.01	µmol P / L	60	Waters	N/A	Molybdenum blue method, for seawater matrices.

Phosphorus – Total

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
PO4-W-1-2	0.08 0.2	0.9 45	0.03 0.06	mg P / L	60	Waters	EPA 365.1	For Total P persulfate digests. Molybdenum blue method.
PO4-W-2-2	12	1000	4	µg P / L	60	Waters	EPA 365.1	For Total P persulfate digests. Molybdenum blue method, utilizing low-noise detector.
PO4-W-2-5	12	1000	4	µg P / L	60	Waters	SM 4500-P H.	For Total P persulfate digests. Molybdenum blue method, utilizing low-noise detector.

Phosphate – Total Kjeldahl (TKP)

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
PO4-W-1-3	0.08 0.2	0.9 45	0.03 0.06	mg P / L	60	Waters	EPA 365.4	For TKP digests. Molybdenum blue method.
PO4-W-2-7	0.03	45	0.01	mg P / L	60	Waters	EPA 365.4	For TKP digests. Molybdenum blue method, utilizing low-noise detector.

Potassium

K-S-9-1	30	600	10	mg K / L	60	Soil extracts	N/A	Using flame photometer.

Silica

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
SIO2-W-1-1	0.24	2.7	0.09	mg SiO2 / L	60	Waters	SM 4500-SiO2 F.	Molybdenum blue method.
SIO2-W-2-1	0.003 0.04	1.5 20	0.0015 0.02	mg SiO2 / L	60	Waters	SM 4500-SiO2 F.	Molybdenum blue method, utilizing low-noise detector.
SIO2-W-2-2	0.24	2.7	0.09	mg SiO2 / L	60	Waters	SM 4500-SiO2 F.	Molybdenum blue method, for seawater matrices.

Sodium

NA-S-9-1	60	600	20	mg Na / L	60	Soil extracts	N/A	Using flame photometer.

Sulfate

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
SO4-S-1-1	2	20	0.4	mg S / L	120	Soil extracts	N/A	Barium chloride turbidity method, utilizing syringe pump for clean cycle.
SO4-W-1-1	1.5 50	25 300	0.5 6	mg SO4 / L	60	Waters	SM 4500-SO42- G	Barium chloride and methylthymol blue (MTB) method with IEX purification.
SO4-W-1-2	1.5 50	25 300	0.5 6	mg SO4 / L	60	Waters	EPA 375.2	Barium chloride and methylthymol blue (MTB) method with IEX purification.
SO4-W-1-3	1	3	50	mg SO4 / L	60	Waters	SM 4500-SO42- F	Barium chloride and methylthymol blue (MTB) method with IEX purification.

Urea

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
UREA-W-1-1	0.5	60	0.2	g urea / L	120	Waters	N/A	OPA-NED method.