Thermo Scientific Orion Products
Drinking Water & Wastewater Compliance

EPA methods

The easy way

Thermo SCIENTIFIC

EPA Compliance Testing Made Easy

Drinking Water: Under the EPA Safe Drinking Water Act and National Primary Drinking Water Regulations, the Thermo Scientific AquaSensors AquaPro monitor with AquaChlor process sensor can measure free chlorine residual as approved in EPA Method 334.0. The AquaSensors® AquaPro monitor with Orion 2001SC electrode measures pH as approved in EPA Method 150.2.

Wastewater: The latest EPA Methods Update Rule (MUR) included the approval of new and revised methods for wastewater testing under the Clean Water Act, including dissolved oxygen, turbidity, and ammonia methods. All Thermo Scientific Orion VERSA STAR and Star A meters can use luminescence-based optical dissolved oxygen sensors as approved in ASTM Method D888-09(C). The Thermo Scientific Orion AQ4500 turbidimeter measures turbidity by nephelometry, using the approved Orion Method AQ4500. The Thermo Scientific Orion AQ3700 colorimeter measures ammonia as approved in Standard Methods 4500-NH_3 F.

We offer a variety of Orion® products to meet your testing needs for drinking and wastewater regulatory compliance. This brochure makes it easy to find the proper Orion product for EPA compliance testing and incorporates the latest EPA updates.

Drinking water

Analyte	Analytical Method	Format	Thermo Scientific Orion Electrode or Reagent	Complete measurement system for identified analysis*	Range-submitted method	EPA approved reference method**
Alkalinity	Electrometric Titration	Electrode	8172BNWP	STARA2115	per method	SM 2320B; ASTM D1067-92,-02,-06 (B)
Chloride	Potentiometric Titration	Electrode	9616BNWP	2115000 + 9616BNWP	≥ 0.5 mg/L	SM 4500-Cl^- D
Chlorine Dioxide	DPD, Colorimetry	Ampoule	AC4099	AQ4000 + AC4099	0.80 - 12 mg/L	SM 4500 ClO_2 D
Chlorine Dioxide	DPD, Colorimetry	Tablet	AC2099	AQ3700 + AC2099	0.05 - 11 mg/L	SM 4500 ClO_2 D
Chlorine Dioxide	DPD, Colorimetry	Tablet	AC2099	AQ3070 + AC2099	0.05 - 9 mg/L	SM 4500 ClO_2 D
Chlorine - F & T	DPD, Colorimetry	Ampoule	AC4070	AQ4000 + AC4070	0.05 - 5.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4070
Chlorine - F & T	DPD, Colorimetry	Liquid	AC2070LQ	AQ3700 + AC2070LQ	0.20 - 4.0 mg/L	SM 4500-Cl G
Chlorine - F & T	DPD, Colorimetry	Tablet	AC2070	AQ4000 + AC2070	0.03 - 4.0 mg/L	SM 4500-Cl G
Chlorine - F & T	DPD, Colorimetry	Tablet	AC2070	AQ3700 + AC2070	0.03 - 4.0 mg/L	SM 4500-Cl G
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ3070	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P71
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ3700 + AC4P71	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P71
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ4000 + AC4P71	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P71
Chlorine - Free	DPD, Colorimetry	Tablet	AC2071	AQ4000 + AC2071	0.03 - 2.0 mg/L	SM 4500-Cl G
Chlorine - Free	DPD, Colorimetry	Tablet	AC2071	AQ3700 + AC2071	0.03 - 2.0 mg/L	SM 4500-Cl G
Chlorine - Free	On-line Analyzer	Electrode	AquaSensors AquaChlor	AquaPro + AquaChlor	0.01 - 5.0 mg/L	EPA 334.0
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ3070	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ3700 + AC4P72	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ4000 + AC4P72	0.03 - 2.0 mg/L	SM 4500-Cl G; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Tablet	AC2072	AQ4000 + AC2072	0.03 - 4.0 mg/L	SM 4500-Cl G; ATP Orion Method AC2072
Chlorine - Total	DPD, Colorimetry	Tablet	AC2072	AQ3700 + AC2072	0.03 - 4.0 mg/L	SM 4500-Cl G; ATP Orion Method AC2072
Chlorine - Total	Iodometric Electrode	Electrode	9770BNWP	STARA2140 + 9770BNWP	0.01 - 20 mg/L	SM 4500-Cl I
Conductivity	Conductance	Electrode	013016MD	STARA2126	0.055 - 300 uS	SM 2510B; D1125-95, -99 (A)
Conductivity	Conductance	Electrode	013005MD	STARA2125	1 uS - 200 mS	SM 2510B; D1125-95, -99 (A)
Cyanide	Isonicotinic-Barbituric Acid, Colorimetry[1]	Ampoule	AC4006	AQ4000 + AC4006	0.02 - 0.50 mg/L	ETV Verified; SM 4500-CN^- E, ASTM D2036-06 (A)
Cyanide	Pyridine-Barbituric Acid Colorimetry	Powder & Liquid	AC4P06	AQ3700 + AC4P06	0.01 - 0.5 mg/L	SM 4500-CN^- E, ASTM D2036-06 (A)
Cyanide	Selective Electrode	Electrode	9606BNWP	STARA2140 + 9606BNWP	0.05 - 10 mg/L	SM 4500-CN^- F
Fluoride	Selective Electrode	Electrode	9609BNWP	STARA2147	0.1 - 10 mg/L	SM 4500-F^- C, ASTM D1179-04, -10 (B)
Fluoride	SPADNS, Colorimetry	Ampoule	AC4009	AQ4000 + AC4009	0.20 - 2.0 mg/L	SM 4500-F^- D
Fluoride	SPADNS, Colorimetry	Liquid	AC2009	AQ4000 + AC2009	0.08 - 1.4 mg/L	SM 4500-F^- D; ATP Orion Method AC2009
Fluoride	SPADNS, Colorimetry	Liquid	AC2009	AQ3700 + AC2009	0.08 - 2.0 mg/L	SM 4500-F^- D; ATP Orion Method AC2009

Analyte	Analytical Method	Format	Thermo Scientific Orion Electrode or Reagent	Complete measurement system for identified analysis*	Range-submitted method	EPA approved reference method**
Hydrogen Ion (pH)	Electrometric	Electrode	8172BNWP	STARA2115	0 - 14 pH	EPA 150.1; SM 4500-H^+ B; ASTM D1293-99
Hydrogen Ion (pH)	Electrometric	Electrode, automated	2001SC	AquaPro + 2001SC	0 - 14 pH	EPA 150.2; ASTM D1293-99 (B)
Nitrate	Cadmium Reduction[2]	Ampoule	AC4004	AQ4000 + AC4004	0.20 - 1.5 mg/L NO_3-N	SM 4500-NO_3^- E; ASTM D3867-90 (B)
Nitrate	Cadmium Reduction[2]	Ampoule	AC4005	AQ4000 + AC4005	0.40 - 3.0 mg/L NO_3-N	SM 4500-NO_3^- E; ASTM D3867-90 (B)
Nitrate	Cadmium Reduction[2]	Ampoule	AC4007	AQ4000 + AC4007	5.0 - 50 mg/L NO_3-N	SM 4500-NO_3^- E; ASTM D3867-90 (B)
Nitrate	Ion Selective Electrode	Electrode	9707BNWP	STARA2140 + 9707BNWP	0.10 - 1400 mg/L	SM 4500-NO_3^- D; Orion Method 601
Nitrate	Zinc Reduction[3]	Tablet	AC2007	AQ4000 + AC2007	1 - 40 mg/L NO_3-N	SM 4500-NO_3^- E; ASTM D3867-90 (B)
Nitrate	Zinc Reduction[3,4]	Tablet	AC2007	AQ3700 + AC2007	1 - 40 mg/L NO_3-N	SM 4500-NO_3^- E; ASTM D3867-90 (B)
Nitrite	Diazotization, Colorimetry	Ampoule	AC4046	AQ4000 + AC4046	0.015-0.80 mg/L NO_2-N	SM 4500-NO_2^- B; ASTM D3867-90 (B)
Nitrite	Diazotization, Colorimetry	Powder	AC4P46	AQ4000 + AC4P46	0.01-0.35 mg/L NO_2-N	SM 4500-NO_2^- B; ASTM D3867-90 (B)
Nitrite	Diazotization, Colorimetry	Powder	AC4P46	AQ3700 + AC4P46	0.01-0.3 mg/L NO_2-N	SM 4500-NO_2^- B; ASTM D3867-90 (B)
Nitrite	Diazotization, Colorimetry	Tablet	AC2046	AQ4000 + AC2046	0.01-0.50 mg/L NO_2-N	SM 4500-NO_2^- B; ATP Orion Method AC2046
Nitrite	Diazotization, Colorimetry	Tablet	AC2046	AQ3700 + AC2046	0.01-0.50 mg/L NO_2-N	SM 4500-NO_2^- B; ATP Orion Method AC2046
Orthophosphate	Ascorbic Acid, Colorimetry	Powder	AC4P95	AQ4000 + AC4P95	0.1-2.5 mg/L as PO_4	SM 4500-P E; ASTM D515-88 (A)
Orthophosphate	Ascorbic Acid, Colorimetry	Powder	AC4P95	AQ3700 + AC4P95	0.06-2.5 mg/L as PO_4	SM 4500-P E; ASTM D515-88 (A)
Orthophosphate	Ascorbic Acid, Colorimetry	Tablet	AC2095	AQ4000 + AC2095	0.05-4.0 mg/L as PO_4	SM 4500-P E; ATP Orion Method AC2095
Orthophosphate	Ascorbic Acid, Colorimetry	Tablet	AC2095	AQ3700 + AC2095	0.05-4.0 mg/L as PO_4	SM 4500-P E; ATP Orion Method AC2095
Orthophosphate	Ascorbic Acid, Colorimetry	Tube	ACR095	AQ3700 + ACR095	0.06 - 5.0 mg/L as PO_4	SM 4500-P E; ASTM D515-88 (A)
pH	Electrometric	Electrode	8172BNWP	STARA2115	0 - 14 pH	EPA 150.1; SM 4500-H^+ B; ASTM D1293-99
pH	Electrometric	Electrode, Automated	2001SC	AquaPro + 2001SC	0 - 14 pH	EPA 150.2; ASTM D1293-99 (B)
Silica	Heteropoly Blue, Colorimetry	Ampoule	AC4060	AQ4000 + AC4060	1.0 - 14 mg/L	SM 4500-SiO_2 D; ASTM D859-05,-10
Silica	Heteropoly Blue, Colorimetry	Powder & Liquid	AC4P60LR	AQ3700 + AC4P60LR	0.10 - 1.6 mg/L	SM 4500-SiO_2 D; ASTM D859-05,-10
Silica	Heteropoly Blue, Colorimetry	Tablet	AC2060 + AC2061	AQ4000 + AC2060 + AC2061	0.05 - 4.0 mg/L	SM 4500-SiO_2 D; ASTM D859-05,-10
Silica	Heteropoly Blue, Colorimetry	Tablet	AC2060 + AC2061	AQ3700 + AC2060 + AC2061	0.05 - 4.0 mg/L	SM 4500-SiO_2 D; ASTM D859-05,-10
Silica	Molybdosilicate, Colorimetry	Powder	AC4P60	AQ4000 + AC4P60	1 - 75 mg/L	SM 4500-SiO_2 C
Silica	Molybdosilicate, Colorimetry	Powder	AC4P60	AQ3700 + AC4P60	1 - 90 mg/L	SM 4500-SiO_2 C
Specific Conductance	Conductance	Electrode	013016MD	STARA2126	0.055 - 300 uS	SM 2510B; D1125-95, -99 (A)
Specific Conductance	Conductance	Electrode	013005MD	STARA2125	1 uS - 200 mS	SM 2510B; D1125-95, -99 (A)
Sulfate	Turbidimetric, Colorimetry	Ampoule	AC4082	AQ4000 + AC4082	2 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Powder	AC4P82	AQ4000 + AC4P82	1.0 - 70 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Powder	AC4P82	AQ3700 + AC4P82	1.0 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Tablet	AC2082	AQ4000 + AC2082	5 - 200 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Tablet	AC2082	AQ3700 + AC2082	5 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Turbidity	Nephelometric, LED	Turbidimeter	AQ4500	AQ4500	0.02 - 1000 NTU	ATP Method Orion AQ4500 (LED Nephelometry)

Wastewater

Analyte	Analytical Method	Format	Thermo Scientific Orion Electrode or Reagent	Complete measurement system for identified analysis*	Range-submitted method	EPA approved reference method**
Acidity	Electrometric endpoint	Electrode	8172BNWP	STARA2115	per method	SM 2310 B-1997; ASTM D1067-06
Alkalinity	Electrometric titration	Electrode	8172BNWP	STARA2115	per method	SM 2320 B-1997; ASTM D1067-06
Aluminum	Eriochrome cyanine R	Ampoule	AC4027	AQ4000 + AC4027	0.04 - 0.25 mg/L	SM 3500-Al B-2001
Aluminum	Eriochrome cyanine R	Powder	AC4P27	AQ3700 + AC4P27	0.01 - 0.25 mg/L	SM 3500-Al B-2001
Aluminum	Eriochrome cyanine R	Tablet	AC2027	AQ4000 + AC2027	0.05 - 0.30 mg/L	SM 3500-Al B-2001
Ammonia	Electrode	Electrode	9512HPBNWP or 9512BNWP	STARA2146	0.03 - 1400 mg/L	SM 4500-NH_3 D-1997 or E-1997; ASTM D1426-08 (B)
Ammonia	Indophenol Phenate, Colorimetry	Tablet	AC2012	AQ4000 + AC2012	0.05 - 1.0 mg/L; 0.5 - 10.0 mg/L	SM 4500-NH_3 F-1997
Ammonia	Indophenol Phenate, Colorimetry	Tablet	AC2012	AQ3700 + AC2012	0.05 - 1.0 mg/L; 0.5 - 10.0 mg/L	SM 4500-NH_3 F-1997
Ammonia	Nesslerization, Colorimetry	Ampoule	AC4012	AQ4000 + AC4012	0.045 - 7.0 mg/L	ASTM D1426-08 (A)
Ammonia	Nesslerization, Colorimetry	Ampoule	AC4011	AQ4000 + AC4011	1.0 - 14 mg/L	ASTM D1426-08 (A)
Ammonia	Salicylate, Colorimetry	Powder	AC4P12	AQ4000 + AC4P12	0.1 - 0.5 mg/L	SM 4500-NH_3 F-1997
Ammonia	Salicylate, Colorimetry	Powder	AC4P12	AQ3700 + AC4P12	0.01 - 0.80 mg/L	SM 4500-NH_3 F-1997
Ammonia	Salicylate, Colorimetry	Tube test	ACD012	AQ3700 + ACD012	0.02 - 2.5 mg/L	SM 4500-NH_3 F-1997
Ammonia	Salicylate, Colorimetry	Tube test	ACD011	AQ3700 + ACD011	1 - 50 mg/L	SM 4500-NH_3 F-1997
Biochemical Oxygen Demand (BOD_5)	Dissolved oxygen depletion	Electrode	086030MD	STARA2136	per method	SM 5210 B-2001
Biochemical Oxygen Demand (BOD_5)	Dissolved oxygen depletion	Electrode	10060003	10060020 - BOD AutoEZ®	per method	SM 5210 B-2001
Biochemical Oxygen Demand (BOD_5)	Dissolved oxygen depletion	Electrode	087010MD - RDO (luminescence/optical)	STARA2130+087010MD	per method	ATP Method 1003-8-2009
Bromide	Electrode	Electrode	9635BNWP	STARA2140+9635BNWP	0.4-79,000 mg/L	ASTM D1246-05
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Dissolved oxygen depletion w/ nitrification inhibitor	Electrode	086030MD	STARA2136	per method	SM 5210 B-2001
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Dissolved oxygen depletion w/ nitrification inhibitor	Electrode	10060003	10060020 - BOD AutoEZ	per method	SM 5210 B-2001
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Dissolved oxygen depletion w/ nitrification inhibitor	Electrode	087010MD - RDO (luminescence/optical)	STARA2130+087010MD	per method	ATP Method 1004-8-2009
Chemical Oxygen Demand (COD) 0-150 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODL00	AQ3700 + CODL00 + COD165	5 -150 mg/L	SM 5220 D-1997; ASTM D1252-06 (B); ATP Orion Method CODL00
Chemical Oxygen Demand (COD) 0-150 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODL00	AQ4000 + CODL00 + COD165	5 -150 mg/L	SM 5220 D-1997; ASTM D1252-06 (B); ATP Orion Method CODL00
Chemical Oxygen Demand (COD) 0-150 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODL00	AQ2040 + CODL00 + COD165	5 -150 mg/L	SM 5220 D-1997; ASTM D1252-06(B); ATP Orion Method CODL00
Chemical Oxygen Demand (COD) 0-1500 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODH00	AQ2040 + CODH00 + COD165	20 - 1500 mg/L	SM 5220 D-1997; ASTM D1252-06 (B); ATP Orion Method CODH00
Chemical Oxygen Demand (COD) 0-1500 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODH00	AQ4000 + CODH00 + COD165	20 - 1500 mg/L	SM 5220 D-1997; ASTM D1252-06 (B); ATP Orion Method CODH00
Chemical Oxygen Demand (COD) 0-1500 ppm	Closed reflux, Colorimetry (Spectrophotometric)	Vials	CODH00	AQ3700 + CODH00 + COD165	20 - 1500 mg/L	SM 5220 D-1997; ASTM D1252-06 (B); ATP Orion Method CODH00
Chloride	Ferricyanide, Colorimetry	Ampoule	AC4017	AQ4000 + AC4017	3.0 - 40 mg/L	SM 4500-Cl^- E-1997
Chloride	Ion Selective Electrode	Electrode	9617BNWP	STARA2140+9617BNWP	2-1000 mg/L	ASTM D512-04 (C)
Chloride	Potentiometric Titration	Electrode	9616BNWP	2115000 + 9616BNWP	≥ 0.5 mg/L	SM 4500-Cl^- D-1997

Analyte	Analytical Method	Format	Thermo Scientific Orion Electrode or Reagent	Complete measurement system for identified analysis*	Range- submitted method	EPA approved reference method**
Chlorine - F & T	DPD, Colorimetry	Ampoule	AC4070	AQ4000 + AC4070	0.05 - 5.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC4070 (total)
Chlorine - F & T	DPD, Colorimetry	Liquid	AC2070LQ	AQ3700 + AC2070LQ	0.20 - 4.0 mg/L	SM 4500-Cl G-2000
Chlorine - F & T	DPD, Colorimetry	Tablet	AC2070	AQ4000 + AC2070	0.03 - 4.0 mg/L	SM 4500-Cl G-2000
Chlorine - F & T	DPD, Colorimetry	Tablet	AC2070	AQ3700 + AC2070	0.03 - 4.0 mg/L	SM 4500-Cl G-2000
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ3070	0.03 - 2.0 mg/L	SM 4500-Cl G-2000
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ3700 + AC4P71	0.03 - 2.0 mg/L	SM 4500-Cl G-2000
Chlorine - Free	DPD, Colorimetry	Powder	AC4P71	AQ4000 + AC4P71	0.03 - 2.0 mg/L	SM 4500-Cl G-2000
Chlorine - Free	DPD, Colorimetry	Tablet	AC2071	AQ4000 + AC2071	0.03 - 2.0 mg/L	SM 4500-Cl G-2000
Chlorine - Free	DPD, Colorimetry	Tablet	AC2071	AQ3700 + AC2071	0.03 - 2.0 mg/L	SM 4500-Cl G-2000
Chlorine - Total	DPD, Colorimetry	Ampoule	AC4070	AQ4000 + AC4070	0.05 - 5.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC4070
Chlorine - Total	DPD, Colorimetry	Liquid	AC2070LQ	AQ3700 + AC2070LQ	0.20 - 4.0 mg/L	SM 4500-Cl G-2000
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ3070	0.03 - 2.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ3700 + AC4P72	0.03 - 2.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Powder	AC4P72	AQ4000 + AC4P72	0.03 - 2.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC4P72
Chlorine - Total	DPD, Colorimetry	Tablet	AC2072	AQ4000 + AC2072	0.03 - 4.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC2072
Chlorine - Total	DPD, Colorimetry	Tablet	AC2072	AQ3700 + AC2072	0.03 - 4.0 mg/L	SM 4500-Cl G-2000; ATP Orion Method AC2072
Chlorine - Total	Electrode	Electrode	9770BNWP	STARA2140+9770BNWP	0.01 - 20 mg/L	Orion Instruction Manual Model 9770
Conductivity	Wheatstone bridge	Electrode	013005MD	STARA2125	1 uS - 200 mS	EPA 120.1 (rev 1982), SM 2510 B, ASTM D1125-95 (99) (A)
Copper	Bicinchoninate, Colorimetry	Powder	AC4P29	AQ4000 + AC4P29	0.02 - 5.0 mg/L	Method 8506
Copper	Bicinchoninate, Colorimetry	Powder	AC4P29	AQ3700 + AC4P29	0.02 - 5.0 mg/L	Method 8506
Copper (soluble)	Bathocuproine, Colorimetry	Ampoule	AC4029	AQ4000 + AC4029	0.03 - 12 mg/L	SM 3500-Cu C-1999
Cyanide	Ion Selective Electrode	Electrode	9606BNWP	STARA2140+9606BNWP	0.05 - 10 mg/L	SM 4500-CN^- F-1999, ASTM D2036-09 (A)
Cyanide	Pyridine-barbituric acid, Colorimetry	Powder & liquid	AC4P06	AQ3700 + AC4P06	0.01 - 0.5 mg/L	SM 4500-CN^- E-1999, ASTM D2036-09 (A)
Fluoride	Electrode	Electrode	9609BNWP	STARA2147	0.1 - 10 mg/L	SM 4500-F^- C-1997, ASTM D1179-04 (B)
Fluoride	SPADNS, Colorimetry	Ampoule	AC4009	AQ4000 + AC4009	0.20 - 2.0 mg/L	SM 4500-F^- D-1997
Fluoride	SPADNS, Colorimetry	Liquid	AC2009	AQ4000 + AC2009	0.08 - 1.4 mg/L	SM 4500-F^- D-1997; ATP Orion Method AC2009
Fluoride	SPADNS, Colorimetry	Liquid	AC2009	AQ3700 + AC2009	0.08 - 2.0 mg/L	SM 4500-F^- D-1997; ATP Orion Method AC2009
Hydrogen Ion (pH)	Electrometric measurement	Electrode	8172BNWP	STARA2115	0 - 14 pH	SM 4500-H^+ B, ASTM D1293-99 (A or B)
Hydrogen Ion (pH)	Electrometric measurement	Automated electrode	Industrial ROSS® pH	AquaPro + Industrial ROSS pH	0 - 14 pH	EPA 150.2 (Dec 1982); ASTM D1293-99 (B)
Iron 1 - T & S	Phenanthroline, Colorimetry	Ampoule	AC4078	AQ4000 + AC4078	0.03 - 7.0 mg/L	SM 3500-Fe-1997
Iron 1 - T & S	Phenanthroline, Colorimetry	Powder	AC4P78	AQ4000 + AC4P78	0.02 - 3.0 mg/L	SM 3500-Fe-1997
Iron 1 - T & S	Phenanthroline, Colorimetry	Powder	AC4P78	AQ3700 + AC4P78	0.02 - 3.0 mg/L	SM 3500-Fe-1997
Kjeldahl Nitrogen	Electrode	Electrode	9512HPBNWP or 9512BNWP	STARA2146	see ammonia ISE	SM 4500-NH_3 D-1997 or E-1997; ASTM D1426-08 (B)
Kjeldahl Nitrogen	Salicylate, Colorimetry	Powder	AC4P12	AQ4000 + AC4P12	See ammonia salicylate colorimetry	SM 4500-NH_3 F-1997
Kjeldahl Nitrogen	Salicylate, Colorimetry	Powder	AC4P12	AQ3700 + AC4P12	See ammonia salicylate colorimetry	SM 4500-NH_3 F-1997
Kjeldahl Nitrogen	Salicylate, Colorimetry	Tube test	ACD012	AQ3700 + ACD012	See ammonia salicylate colorimetry	SM 4500-NH_3 F-1997
Kjeldahl Nitrogen	Salicylate, Colorimetry	Tube test	ACD011	AQ3700 + ACD011	See ammonia salicylate colorimetry	SM 4500-NH_3 F-1997
Manganese	Periodate, Colorimetry	Ampoule	AC4055	AQ4000 + AC4055	1.0 - 30 mg/L	Method 8034
Manganese	Periodate, Colorimetry	Powder	AC4P55	AQ4000 + AC4P55	0.2 - 20 mg/L	Method 8034
Manganese	Periodate, Colorimetry	Powder	AC4P55	AQ3700 + AC4P55	0.2 - 18 mg/L	Method 8034
Nitrate	Cadmium Reduction[2]	Ampoule	AC4004	AQ4000 + AC4004	0.20-1.5 mg/L NO_3-N	SM 4500-NO_3^- E, ASTM D3867-04 (B)
Nitrate	Cadmium Reduction[2]	Ampoule	AC4005	AQ4000 + AC4005	0.40-3.0 mg/L NO_3-N	SM 4500-NO_3^- E, ASTM D3867-04 (B)
Nitrate	Cadmium Reduction[2]	Ampoule	AC4007	AQ4000 + AC4007	5.0 - 50 mg/L NO_3-N	SM 4500-NO_3^- E, ASTM D3867-04 (B)

Analyte	Analytical Method	Format	Thermo Scientific Orion Electrode or Reagent	Complete measurement system for identified analysis*	Range- submitted method	EPA approved reference method**
Nitrate	Ion Selective Electrode	Electrode	9707BNWP	STARA2140 + 9707BNWP	0.10 - 1400 mg/L	SM 4500-NO_3^- D
Nitrate	Zinc Reduction[3]	Tablet	AC2007	AQ4000 + AC2007	1 - 40 mg/L NO_3-N	SM 4500-NO_3^- E, ASTM D3867-04 (B)
Nitrate	Zinc Reduction[3,4]	Tablet	AC2007	AQ3700 + AC2007	1 - 40 mg/L NO_3-N	SM 4500-NO_3^- E, ASTM D3867-04 (B)
Nitrite	Diazotization, Colorimetry	Ampoule	AC4046	AQ4000 + AC4046	0.015-0.80 mg/L NO_2-N	SM 4500-NO_2^- B
Nitrite	Diazotization, Colorimetry	Powder	AC4P46	AQ4000 + AC4P46	0.01-0.35 mg/L NO_2-N	SM 4500-NO_2^- B
Nitrite	Diazotization, Colorimetry	Powder	AC4P46	AQ3700 + AC4P46	0.01-0.3 mg/L NO_2-N	SM 4500-NO_2^- B
Nitrite	Diazotization, Colorimetry	Tablet	AC2046	AQ4000 + AC2046	0.01-0.50 mg/L NO_2-N	SM 4500-NO_2^- B; ATP Orion Method AC2046
Nitrite	Diazotization, Colorimetry	Tablet	AC2046	AQ3700 + AC2046	0.01-0.50 mg/L NO_2-N	SM 4500-NO_2^- B; ATP Orion Method AC2046
Nitrogen (organic)	Total Kjeldahl Nitrogen minus ammonia nitrogen	Electrode	9512HPBNWP	STARA2146	see ammonia ISE	Total Kjeldahl Nitrogen minus ammonia nitrogen
Nitrogen (total)	Thermal Digestion w/ persulfate, Colorimetry	Tube	ACD004	AQ3700 + ACD004	0.5 - 25 mg/L	An approved total nitrogen method is not promulgated for wastewater monitoring
Nitrogen (total)	Thermal Digestion w/ persulfate, Colorimetry	Tube	ACD007	AQ3700 + ACD004	5.0 - 150 mg/L	An approved total nitrogen method is not promulgated for wastewater monitoring
Orthophosphate	Ascorbic Acid, Colorimetry	Powder	AC4P95	AQ4000 + AC4P95	0.1 - 2.5 mg/L as PO_4	SM 4500-P E
Orthophosphate	Ascorbic Acid, Colorimetry	Powder	AC4P95	AQ3700 + AC4P95	0.06 - 2.5 mg/L as PO_4	SM 4500-P E
Orthophosphate	Ascorbic Acid, Colorimetry	Tablet	AC2095	AQ4000 + AC2095	0.05 - 4.0 mg/L as PO_4	EPA 365.3; ATP Orion Method AC2095
Orthophosphate	Ascorbic Acid, Colorimetry	Tablet	AC2095	AQ3700 + AC2095	0.05 - 4.0 mg/L as PO_4	EPA 365.3; ATP Orion Method AC2095
Orthophosphate	Ascorbic Acid, Colorimetry	Tube	ACR095	AQ3700 + ACR095	0.06 - 5.0 mg/L as PO_4	SM 4500-P E
Oxygen, Dissolved (DO)	Electrode (Polarographic)	Electrode	083010MD	STARA2230 + 083010MD	0 - >100%	SM 4500-O G, ASTM D888-09 (B)
Oxygen, Dissolved (DO)	Luminescence based sensor (Optical)	Electrode	087010MD	STARA2235	0 - >100%	ASTM D888-09(C); ATP Method 1002-8-2009 In-Situ
pH	Electrometric measurement	Electrode	8172BNWP	STARA2115	0 - 14 pH	SM 4500-H^+ B, ASTM D1293-99 (A or B)
pH	Electrometric measurement	Automated electrode	Industrial ROSS pH	AquaPro + Industrial ROSS pH	0 - 14 pH	EPA 150.2 (Dec 1982); ASTM D1293-99 (B)
Phosphorous - Total	Persulfate/thermal digestion; ascorbic acid, Colorimetry	Tube	ACD095	AQ3700 + ACD095	0.02 - 1.1 mg/L as P	SM4500-P E-1999
Silica	Molybdate Reactive, Colorimetry	Tablet	AC2060 + AC2061	AQ4000 + AC2060 + AC2061	0.05 - 4.0 mg/L	ASTM D859-05
Silica	Molybdate Reactive, Colorimetry	Tablet	AC2060 + AC2061	AQ3700 + AC2060 + AC2061	0.05 - 4.0 mg/L	ASTM D859-05
Silica	Molybdate Reactive, Colorimetry	Ampoule	AC4060	AQ4000 + AC4060	1.0 - 14 mg/L	ASTM D859-05
Silica	Molybdosilicate, Colorimetry	Powder	AC4P60	AQ4000 + AC4P60	1 - 75 mg/L	SM 4500-SiO_2 C
Silica	Molybdosilicate, Colorimetry	Powder	AC4P60	AQ3700 + AC4P60	1 - 90 mg/L	SM 4500-SiO_2 C
Specific conductance	Wheatstone bridge	Electrode	013005MD	STARA2125	1 uS - 200 mS	EPA 120.1 (rev 1982), SM 2510B, ASTM D1125-95 (99) (A)
Sulfate	Turbidimetric, Colorimetry	Ampoule	AC4082	AQ4000 + AC4082	2 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Powder	AC4P82	AC4000 + AC4P82	1.0 - 70 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Powder	AC4P82	AC3700 + AC4P82	1.0 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Tablet	AC2082	AQ4000 + AC2082	5 - 200 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfate	Turbidimetric, Colorimetry	Tablet	AC2082	AQ3700 + AC2082	5 - 100 mg/L	ASTM D516-07; SM 4500-SO_4^{2-} E
Sulfide	Ion Selective Electrode	Electrode	9616BNWP	STARA2140 + 9616BNWP	0.03 - 100 mg/L	SM 4500-S^{2-} G, ASTM D4658-08
Sulfide	Methylene Blue, Colorimetry	Ampoule	AC4016	AQ4000 + AC4016	0.04 - 3.0 mg/L	SM 4500-S^{2-} D
Turbidity	Nephelometric	Turbidimeter	AQ4500	AQ4500	0.02 - 1000 NTU	ATP Method Orion AQ4500
Zinc	Zincon, Colorimetry	Ampoule	AC4065	AQ4000 + AC4065	0.02 - 3.0 mg/L	SM 3500-Zn B
Zinc	Zincon, Colorimetry	Tablet	AC2065	AQ4000 + AC2065	0.02 - 1.0 mg/L	SM 3500-Zn B
Zinc	Zincon, Colorimetry	Tablet	AC2065	AQ3700 + AC2065	0.02 - 1.0 mg/L	SM 3500-Zn B

* ▶ Items in this column include reagents or electrode and meter required for identified analysis. COD, Total Nitrogen, and Total Phosphorous also require reactor

** ▶ Per 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; etc., Federal Register, May 18, 2012, EPA, Final Rule (wastewater) or per 40 CFR Part 141 - National Primary Drinking Water Regulations, June 28, 2012 (drinking water)

SM ▶ Standard Methods for the Examination of Water and Wastewater, published by American Public Health Association, Washington, D.C., 20005. USA. www.standardmethods.org

ASTM ▶ Annual Book of Standards, Volumes 11.01 and 11.02, D19 Water, ASTM International, West Conshohocken, PA, 19428. USA. www.astm.org

MDL/LL ▶ Method Detection Limit per EPA (40 CFR Part 136, Appendix B) or lower limit

ATP ▶ Alternative Test Procedure, EPA approved method

[1] ▶ Isonicotinic acid is a non-hazardous alternative to the pyridine reagent. Consult the Method Modifications guidelines in 40 CFR Part 136.6(b)(2)(i) for monitoring use requirements

[2] ▶ Cadmium reduction followed by diazotization. Alternative color reagents are used. Consult the Method Modifications guidelines in 40 CFR Part 136.6(b)(2)(i) for monitoring use requirements

[3] ▶ Zinc reduction followed by diazotization. Alternative color reagents are used. Consult the Method Modifications guidelines in 40 CFR Part 136.6(b)(2)(i) for monitoring use requirements

[4] ▶ User generated curve

Benchtop meter kits

STARA2115 ▶ Orion Star™ A211 pH benchtop meter kit

STARA2125 ▶ Orion Star A212 conductivity benchtop meter kit

STARA2126 ▶ Orion Star A212 conductivity benchtop meter kit for ultrapure water

STARA2136 ▶ Orion Star A213 dissolved oxygen benchtop meter kit with self-stirring probe

STARA2145 ▶ Orion Star A214 pH/ISE benchtop meter kit

STARA2146 ▶ Orion Star A214 pH/ISE benchtop meter kit for Ammonia

STARA2147 ▶ Orion Star A214 pH/ISE benchtop meter kit for Fluoride

2115001 ▶ Orion Dual Star™ dual channel pH/ISE benchtop meter kit

Portable meter kits

STARA2215 ▶ Orion Star A221 pH portable meter

STARA2235 ▶ Orion Star A223 RDO/dissolved oxygen portable meter kit

STARA3295 ▶ Orion Star A329 pH/ISE/ Conductivity/RDO/DO Multiparameter portable meter kit

Ion selective electrodes

9606BNWP ▶ Cyanide ionplus® design

9609BNWP ▶ Combination fluoride ISE with Sure-Flow® reference

9616BNWP ▶ Silver/sulfide ionplus design

9617BNWP ▶ Combination chloride ISE with sure-flow reference

9707BNWP ▶ Combination nitrate ISE with sure-flow reference

9770BNWP ▶ Chlorine, solid state combination

pH, conductivity & DO probes

8172BNWP ▶ ROSS Sure-Flow combination pH electrode with glass body

013016MD ▶ 2-electrode conductivity cell for ultra-pure water

013005MD ▶ Rugged DuraProbe™ 4-electrode conductivity cell

083010MD ▶ Durable and accurate DO probes for the lab or field

Colorimeters

AQ3070 ▶ Orion III chlorine meter kit

AQ2040 ▶ Orion II dedicated COD meter

Multiparameter colorimeters

AQ3700 ▶ Orion colorimeter witth COD, total nitrogen and total phosphate

AQ4000 ▶ Orion advanced colorimeter witth COD

Powder & tablet reagents

AC2007 ▶ AQUAfast® II nitrate

AC2012 ▶ AQUAfast II Ammonia, as nitrogen

AC2027 ▶ AQUAfast II aluminium

AC2046 ▶ AQUAfast II nitrate, EPA-approved method

AC2060 ▶ AQUAfast II silica

AC2065 ▶ AQUAfast II zinc/copper

AC2070 ▶ AQUAfast II chlorine, free and total

AC2071 ▶ AQUAfast II chlorine, DPD, free only

AC2072 ▶ AQUAfast II chlorine, total, EPA-approved method

AC2082 ▶ AQUAfast II sulfate

AC2095 ▶ AQUAfast II phosphorous LR, EPA-approved method

AC2099 ▶ AQUAfast II chlorine dioxide

AC4P12 ▶ AQUAfast ammonia-nitrogen, powder

AC4P27 ▶ AQUAfast aluminium LR

AC4P29 ▶ AQUAfast copper, bicinchoninate, powder

AC4P46 ▶ AQUAfast nitrate LR, powder

AC4P55 ▶ AQUAfast manganese HR, powder

AC4P60 ▶ AQUAfast silica HR, powder packets

AC4P71 ▶ AQUAfast chlorine, free, DPD powder, packets, EPA-approved method

AC4P72 ▶ AQUAfast chlorine, total, DPD powder, packets, EPA-approved method

AC4P78 ▶ AQUAfast iron, total ferro, powder

AC4P82 ▶ AQUAfast sulfate 4, powder packets

AC4P95 ▶ AQUAfast phosphorus 3, powder

Visit our Online Library at **www.thermoscientific.com/waterlibrary** for more application information or contact our Technical Service group at 1-800-225-1480 for assistance

Liquid reagents

CODH00 ▶ 0-1500 rpm, EPA-approved
CODL00 ▶ 0-150 rpm, EPA-approved
AC2009 ▶ AQUAfast II fluoride SPADNS kit, EPA-approved method
AC4004 ▶ AQUAfast IV nitrate (as N) LR
AC4005 ▶ AQUAfast IV nitrate 2 (as N)
AC4006 ▶ AQUAfast IV cyanide (free)
AC4007 ▶ AQUAfast IV nitrate 3, (as NO_3)
AC4009 ▶ AQUAfast IV fluoride SPADNS
AC4011 ▶ AQUAfast IV ammonia (high range)
AC4012 ▶ AQUAfast II ammonia, as nitrogen
AC4016 ▶ AQUAfast IV sulfide (soluble)
AC4017 ▶ AQUAfast IV chloride
AC4027 ▶ AQUAfast IV aluminium
AC4029 ▶ AQUAfast IV copper (soluble)
AC4046 ▶ AQUAfast IV nitrite
AC4055 ▶ AQUAfast IV manganese
AC4060 ▶ AQUAfast IV silica
AC4065 ▶ AQUAfast IV zinc
AC4070 ▶ AQUAfast IV chlorine, free and total, EPA-approved method
AC4078 ▶ AQUAfast IV iron 1 (free and total)
AC4082 ▶ AQUAfast IV sulfate
AC4099 ▶ AQUAfast IV chlorine dioxide
ACD004 ▶ Nitrogen, total, LR
ACD007 ▶ Nitrogen, total, HR
ACD095 ▶ Phosphate, total

Turbidimeters

AQ4500 ▶ Orion trubidimeter and calibration kit

Thermoreactor

COD165 ▶ Sample preparation in determining COD, total phosphorus, total nitrogen, total chromium and other parameters in water and sludge analysis

BOD AutoEZ

10060020 ▶ Free chlorine sensor and monitoring system

Process sensors

pHR Industrial ROSS ▶ General purpose ROSS pH electrode

Analyzers

AquaChlor ▶ Free chlorine sensor and monitoring system

On-line analyzers

AquaPro ▶ In-line monitoring for process applications, up to four inputs or parameters

Thermo Fisher Scientific
Water Analysis Instruments
Chelmsford, MA USA
Quality Management System
Registered to ISO 9001

thermoscientific.com/water

Water Analysis Instruments

North America
Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
info.water@thermo.com

Netherlands
Tel: (31) 033-2463887
info.water.uk@thermo.com

China
Tel: (86) 21-68654588
wai.asia@thermofisher.com

India
Tel: (91) 22-4157-8800
wai.asia@thermofisher.com

Singapore
Tel: (65) 6778-6876
wai.asia@thermofisher.com

Japan
Tel: (81) 045-453-9175
wai.asia@thermofisher.com

Australia
Tel: (613) 9757-4300
in Australia (1300) 735-295
InfoWaterAU@thermofisher.com

Thermo SCIENTIFIC
Part of Thermo Fisher Scientific

CH-EPA RevB 0812