



DR4900

Methods Guide

NOTE: Click on the name of each Method to view and download the Method Document.



DR4900 Laboratory Spectrophotometer

Parameter	Method	Method Number	Range
Alkalinity	10239 TNTplus	10239	25 - 400 mg/L as CaCO ₃
Aluminum	10215 TNTplus	10215	0.02 - 0.50 mg/L Al
	8012 Spectrophotometer, Powder Pillows	8012	0.008 - 0.800 mg/L Al
	8326 Eriochrome Cyanine R	8326	0.006 - 0.250 mg/L Al
Ammonia	10023 Test 'N Tube LR Salicylate	10023	0.02 - 2.50 mg/L NH ₃ -N
	10031 Test 'N Tube HR Salicylate	10031	0.4 - 50.0 mg/L NH ₃ -N
	10205 HR TNTplus 832	10205	2 - 47 mg/L NH ₃ -N
	10205 LR TNTplus 831	10205	1 - 12 mg/L NH ₃ -N
	10205 UHR TNTplus 833	10277	47 - 130 mg/L NH ₃ -N
	10205 ULR TNTplus 830	10205	0.015 - 2.00 mg/L NH ₃ -N
	8038 Nessler	8038	0.02 - 2.50 mg/L NH ₃ -N
	8155 Powder Pillows Salicylate	8155	0.01 - 0.50 mg/L NH ₃ -N
Ammonia, Free	10200 Spectrophotometer Powder Pillows	10200	0.01 - 0.50 mg/L NH ₃ -N
	10201 Spectrophotometer Powder Pillows Indophenol Method	10201	0.01 - 0.50 mg/L NH ₃ -N
Anammox Activity	10304 TNTplus 882	10304	0 - 1000 mAbs (milli absorptions)
	10304 TNTplus 882	10304	0 - 33.4 µmol/L (Cytochrome C from horse heart)
Arsenic	8013	8013	0 - 0.200 mg/L As
Barium	10251 Spectrophotometer Powder Pillows	10251	2 - 10,000 mg/L Ba
	8014 Turbidimetric	8014	2 - 100 mg/L Ba
Benzotriazole/ Tolytriazole	8079 Powder Pillows UV Photolysis	8079	1.0 - 16.0 mg/L Benzotriazole
	8079 Powder Pillows UV Photolysis	8079	1.0 - 20.0 mg/L Tolytriazole
Boron	10252 Carmine Method Powder Pillows	10252	2 - 50 mg/L B
	10274 TNTplus 877	10274	0.05 - 2.5 mg/L B
	8015 Carmine	8015	0.2 - 14.0 mg/L B
Bromine	8016 DPD Method, PP or AccuVac®	8016	0.05 - 4.50 mg/L Br ₂
Cadmium	10217 TNTplus	10217	0.02 - 0.30 mg/L Cd
	8017 Dithizone	8017	0.7 - 80 µg/L Cd
Cationic Surfactants	10305 TNTplus 885	10305	0.2 - 2.0 mg/L Cetyltrimethylammonium bromide
Chloride	10291 Chloride TNTplus	10291	1.0 - 70 mg/L Cl ⁻
	10291 Chloride TNTplus	10291	70 - 1000 mg/L Cl ⁻
	8113	8113	0.1 - 25.0 mg/L Cl ⁻
Chlorine Dioxide	10126 DPD	10126	0.05 - 5.00 mg/L ClO ₂
	10126 DPD Powder Pillows or AccuVac®	10126	0.04 - 5.00 mg/L ClO ₂
	8065 LR Chlorophenol Red	8065	0.01 - 1.00 mg/L ClO ₂
	8138 Spectrophotometer HR Direct Reading	8138	5 - 1000 mg/L
	8345 MR Direct Reading Method Direct Reading	8345	1 - 50.0 mg/L ClO ₂

Parameter	Method	Method Number	Range
Chlorine, Free	10059 DPDRapid Liquid Method, Pour-Thru™ Cell DPD Rapid Liquid Method for Free Chlorine	10059	0.02 - 2.00 mg/L Cl ₂
	10069 DPD, HR Powder Pillows	10069	0.1 - 10.0 mg/L Cl ₂
	10102 DPD Test 'N Tube	10102	0.09 - 5.00 mg/L Cl ₂
	10231 Spectrophotometer, TNTplus DPD	10231 & 10232	0.05 - 2.00 mg/L Cl ₂
	10241 Powder Pillows Indophenol	10241	0.04 - 4.50 mg/L Cl ₂
	10245 DPD, MR Powder Pillows	10245	0.05 - 4.00 mg/L Cl ₂
	8021 DPD Powder Pillows or AccuVac®	8021	0.02 - 2.00 mg/L Cl ₂
	10102 DPD 16-mm Vials	10102	0.09 to 5.00 mg/L Cl ₂
Chlorine, Total	10014 DPD	10014	2 - 500 µg/L ULR as Cl ₂
	10060 DPD Rapid Liquid, Pour-Thru™ Cell	10060	0.02 - 2.00 mg/L Cl ₂
	10070 DPD Powder Pillows	10070	0.1 - 10.0 mg/L as Cl ₂
	10101 DPD Test 'N Tube	10101	0.09 - 5.00 mg/L Cl ₂
	10232 Spectrophotometer DPD TNTplus DPD	10231 & 10232	0.05 - 2.00 mg/L Cl ₂
	10250 DPD Powder Pillows	10250	0.05 - 4.00 mg/L Cl ₂
	8167 DPD Powder Pillows or AccuVac®	8167	0.02 - 2.00 mg/L Cl ₂
	8370 DPD	8370	2 - 500 µg/L - as Cl ₂
	10101 DPD 16-mm Vials	10101	0.09 to 5.00 mg/L Cl ₂
Chromium, Hexavalent	8023 Powder Pillows or AccuVac®	8023	0.010 - 0.700 mg/L Cr ⁶⁺
Chromium, Hexavalent, and Total	10218 Hexavalent, TNTplus	10218 & 10219	0.03 - 1.00 mg/L Cr
	10219 Total, TNTplus	10218 & 10219	0.03 - 1.00 mg/L Cr
Chromium, Total	8024 Spectrophotometer Powder Pillows	8024	0.01 - 0.70 mg/L Cr
Cobalt	8078 Spectrophotometer Powder Pillows	8078	0.01 - 2.00 mg/L Co
COD (Chemical Oxygen Demand)	10067 (Manganese III without chloride removal) Spectrophotometer Manganese III Reactor Digestion Method	10067	30 - 1,000 mg/L
	10211 TNTplus ULR	10211	1.0 - 60.0 mg/L
	10212 TNTplus (UHR)	10212	5 - 60 g/L COD (UHR)
	10212 TNTplus UHR	10212	250 - 15,000 mg/L
	10236 TNTplus HR Mercury-Free Reactor Digestion	10236	25 - 1,000 mg/L
	10299 TNTplus 815	10299	7 - 70 mg/L COD (LR)
	10299 TNTplus 816	10299	70 - 700 mg/L COD (HR)
	8000 Reactor Digestion	8000	0.7 - 40.0 mg/L
	8000 Reactor Digestion	8000	20 - 1500 mg/L
	8000 Reactor Digestion	8000	200 - 15,000 mg/L
	8000 Reactor Digestion	8000	3 - 150 mg/L
	8000 TNTplus LR, HR	8000	20 - 1,500 mg/L HR
	8000 TNTplus LR, HR	8000	3 - 150 mg/L LR
Color	10048 ADMI Weighted Ordinate ADMI Weighted Ordinate	10048	5 - 1000 Pt-Co units
	8025 True and Apparent, HR Platinum-Cobalt	8025	15 - 500 Units
	8025 True and Apparent, Spectrophotometer LR Color, True and Apparent, Low Range	8025	3 - 200 Units
Copper	10238	10238	0.1 - 8.0 mg/L Cu
	8026 CuVer 2 AccuVac® Bicinchoninate	8506 & 8026	0.04 - 5.00 mg/L Cu
	8143 Powder Pillows	8143	1 - 210 µg/L Cu
	8506 CuVer 1 Powder Pillows Bicinchoninate	8506 & 8026	0.04 - 5.00 mg/L Cu

Parameter	Method	Method Number	Range
Cyanide	10265 Pyridine Barbituric Acid	10265	0.01 - 0.60 mg/L CN ⁻
	8027 Powder Pillows Pyridine-Pyrazalone	8027	0.002 - 0.240 mg/L CN ⁻
Cyanuric Acid	8139 Spectrophotometer Powder Pillows Turbidimetric	8139	5 - 50 mg/L
Detergents/ Surfactants	8028 Spectrophotometer, Crystal Violet	8028	0.002 - 0.275 mg/L as LAS
Dissolved Oxygen	8166 AccuVac® HR HRDO	8166	0.3 - 15.0 mg/L O ₂
	8316 Spectrophotometer AccuVac® Indigo Carmine	8316	6 - 800 µg/L O ₂
	8333 Ultra High Range, AccuVac®	8333	1.0 - 40.0 mg/L O ₂
Fluoride	10225 SPADNS 2, Reagent Solution or AccuVac®	10225	0.02 - 2.00 mg/L F
	10225 SPADNS 2, TNTplus 878	10225	0.1 - 2.5 mg/L F
	8029 Reagent Solution or AccuVac®	8029	0.02 - 2.00 mg/L F
Formaldehyde	10295 Formaldehyde TNTplus	10295	0.5 - 10.0 mg/L H ₂ CO
	8110 MBTH	8110	3 - 500 µg/L CH ₂ O
Hardness	10293 Hardness, Calcium/Magnesium	10293	20 - 350 mg/L CaCO ₃
	10293 Hardness, Calcium/Magnesium	10293	Hardness, Ca/Mg 10293 3-50 mg/L Mg
	10293 Hardness, Calcium/Magnesium	10293	Hardness, Ca/Mg 10293 5-100 mg/L Ca
	8030 Ca & Mg Calmagite Colorimetric Calmagite Colorimetric	8030	0.05 - 4.00 mg/L Ca and Mg as CaCO ₃
	8374 Chlorophosonazo Rapid liquid, Pour-Thru Cell Chlorophosonazo Colorimetric	8374	4 - 1,000 µg/L CaCO ₃
	8374 Chlorophosonazo Colorimetric, Solution Pillow	8374	8 - 1,000 µg/L CaCO ₃
Hydrazine	8141 Spectrophotometer, Reagent Solution or AccuVac® p-Dimethylaminobenzaldehyde	8141	4 - 600 µg/L N ₂ H ₄
Hydrogen Peroxide	10290 Powder Pillows	10290	0.1 - 10.0 mg/L PAA / H ₂ O ₂
Iodine	8031 Spectrophotometer, Powder Pillows or AccuVac® DPD	8031	0.07 - 7.00 mg/L I ₂
Iron	10229 TNTplus	10229	0.2 - 6.0 mg/L Fe
	10249 FerroVer® Powder Pillows	10249	0.1 - 300.0 mg/L Fe
	10306 HPT251 (Metal Prep Set TNT890)	10306	0.01 - 1.00 mg/L Fe
	10306 HPT251 (Metal Prep Set TNT890)	10306	0.012 - 1.200 mg/L Fe
	8008 FerroVer® Powder Pillows or AccuVac®	8008	0.02 - 3.00 mg/L Fe
	8112 Spectrophotometer Powder Pillows or AccuVac®	8112	0.012 - 1.800 mg/L Fe
	8146 Powder Pillows or AccuVac® 1,10 Phenanthroline	8146	0.02 - 3.00 mg/L Fe ²⁺
	8147 FerroZine® Solution Pillows	8147	0.009 - 1.400 mg/L Fe
	8147 Spectrophotometer FerroZine® Rapid Liquid, Pour Thru Cell FerroZine	8147	0.009 - 1.400 mg/L Fe
	8365 FerroMo® Powder Pillows FerroMo®	8365	0.01 - 1.80 mg/L Fe
	FerroZine®	10287	1.00 - 100 µg/L
Lead	10216 Spectrophotometer TNTplus	10216	0.1 - 2.0 mg/L Pb
	8033 Spectrophotometer Powder Pillows Dithizone	8033	3 - 300 µg/L Pb
	8317 Spectrophotometer LeadTrak™ Column Extraction LeadTrak Fast Column Extraction	8317	5 - 150 µg/L Pb

Parameter	Method	Method Number	Range
Magnesium, Total	10292 TNTplus	10292	0.5 - 10 mg/L Mg
	10292 TNTplus	10292	10 - 50 mg/L
Manganese	8034 Powder Pillows Periodate Oxidation	8034	0.1 - 20.0 mg/L Mn
	8149 Powder Pillows PAN Method	8149	0.006 - 0.700 mg/L Mn
Mercury	10065 Cold Vapor Mercury Concentration	10065	0.1 - 2.5 µg/L Hg
Molybdenum	8036 Powder Pillows or AccuVac® Mercaptoacetic Acid	8036	0.2 - 40.0 mg/L Mo
	8169 Powder Pillows Ternary Complex	8169	0.02 - 3.00 mg/L Mo
Monochloramine	10171 Indophenol LR, Powder Pillows	10172	0.04 - 4.50 mg/L Cl ₂
	10172 Indophenol Method Test 'N Tube	10171	0.1 - 10.0 mg/L Cl ₂
	10200 Monochloramine/Free Ammonia Powder Pillows	10200	0.01 - 0.50 mg/L NH ₃ -N
	10200 Monochloramine/Free Ammonia Powder Pillows	10200	0.04 - 4.50 mg/L Cl ₂
Nickel	10220 Spectrophotometer, TNTplus	10220	0.1 - 6.0 mg/L Ni
	8037 Spectrophotometer Powder Pillows Heptoxime	8037	0.02 - 1.80 mg/L Ni
	8150 Powder Pillows PAN	8150	0.006 - 1.000 mg/L Ni
Nitrate	10020 Spectrophotometer, Chromotropic Acid Method	10020	0.2 - 30.0 mg/L NO ₃ -N
	10206 Spectrophotometer, HR, TNTplus 836	10206	22 - 155 mg/L NO ₃
	10206 Spectrophotometer, HR, TNTplus 836	10206	5 - 35 mg/L NO ₃ -N
	10206 Spectrophotometer, LR, TNTplus 835	10206	.23 - 13.50 mg/L NO ₃ -N
	10206 Spectrophotometer, LR, TNTplus 835	10206	0.3 - 30.0 mg/L NO ₃ -N
	8039 Powder Pillows or AccuVac® Cadmium Reduction	8039	0.3 - 30.0 mg/L NO ₃ -N
	8171 Spectrophotometer Powder Pillows or AccuVac®	8171	0.1 - 10.0 mg/L NO ₃ -N
	8192 Powder Pillows LR Cadmium Reduction	8192	0.01 - 0.50 mg/L NO ₃ -N
Nitrite	10019 Test 'N Tube N ₂ Vials Diazotization	10019	0.003 - 0.500 mg/L NO ₂ -N
	10207 Spectrophotometer, TNTplus 839	10207	0.015 - 0.600 mg/L NO ₂ -N
	10237 Spectrophotometer, TNTplus 840	10237	0.6 - 6.0 mg/L NO ₂ -N (2.0-20.0 mg/L NO ₂ -)
	10296 Diazotization Method, TNTplus 841	10296	2 - 90 mg/L NO ₂ -N
	10296 Diazotization Method, TNTplus 841	10296	7 - 295 mg/L NO ₂ -(UHR)
	8153 Spectrophotometer HR, Powder Pillows	8153	2 - 250 mg/L NO ₂ -
	8507 Spectrophotometer Powder Pillows or AccuVac®	8507	0.002 - 0.300 mg/L NO ₂ -N
Nitrogen, Ammonia	10301 Salicylate TNTplus (UHR)	10301	100 - 1800 mg/L NH ₃ -N
	10301 Salicylate TNTplus (UHR)	10301	120 - 2190 mg/L NH ₃
Nitrogen, Total	10071 Test 'N Tube LR Persulfate Digestion	10071	0.5 - 25.0 mg/L N
	10072 Test 'N Tube HR Persulfate Digestion	10072	2 - 150 mg/L N
	10208 Spectrophotometer HR TNTplus	10208	5 - 40 mg/L N
	10208 Spectrophotometer LR TNTplus	10208	1 - 16 mg/L N
	10208 Spectrophotometer UHR TNTplus	10208	20 - 100 mg/L N
Nitrogen, Total Inorganic (TIN)	10021 Test 'N Tube Titanium Trichloride Reduction	10021	0.2 - 25.0 mg/L N

Parameter	Method	Method Number	Range
Nonionic Surfactants	10275 Nonionic surfactants TNT875	10275	0.2 - 6.0 mg/L TRITON X-100
	10275 Nonionic surfactants TNT876	10275	6.0 - 200 mg/L TRITON x 100
Oxygen Scavengers	8140 Powder Pillows Iron Reduction	8140	13 - 1500 µg/L Iso-ascorbic Acid (ISA)
	8140 Powder Pillows Iron Reduction	8140	15 - 1,000 µg/L Methylene Ketoxime (MEKO)
	8140 Powder Pillows Iron Reduction	8140	3 - 450 µg/L DEHA
	8140 Powder Pillows Iron Reduction	8140	5 - 600 µg/L Carbohydrazide
	8140 Powder Pillows Iron Reduction	8140	9 - 1,000 µg/L Hydroquinone-PP
Ozone	8311 AccuVac® Indigo	8311	0.01 - 0.25 mg/L O ₃ LR
	8311 AccuVac® Indigo	8311	0.01 - 0.75 mg/L O ₃
	8311 AccuVac® Indigo	8311	0.01 - 1.50 mg/L O ₃ HR
Peracetic Acid (PAA)	DPD 10290	10290	0.10 - 10.0 mg/L as PPA
Phenols	10266 4-Aminoantipyrine, TNTplus 868	10266	20 - 150 mg/L Phenol
	10266 4-Aminoantipyrine, TNTplus 868	10266	5 - 40 mg/L Phenols
	8047 4-Aminoantipyrine	8047	0.002 - 0.200 mg/L Phenol
Phosphonates	8007 Powder Pillows Persulfate UV Oxidation	8007	0.02 - 2.50 mg/L PO ₄ ³⁻
	8007 Powder Pillows Persulfate UV Oxidation	8007	0.1 - 2.5 mg/L
	8007 Powder Pillows Persulfate UV Oxidation	8007	1.0 - 125 mg/L PO ₄ ³⁻
Phosphorus	10055 Spectrophotometer Pour-Thru Cell	10055	19 - 3,000 µg/L PO ₄
	10127 Test 'N Tube Molybdovanadate with Acid Persulfate Digestion	10127	1.0 - 100.0 mg/L PO ₄ ³⁻
	10209 SpectrophotometerHR, TNTplus 844	10209 & 10210	0.5 - 5 mg/L P (1.5-15.0 mg/L PO ₄)
	10209 Spectrophotometer LR, TNTplus 843	10209 & 10210	0.05 - 1.5 mg/L P (0.15-4.5 mg/L PO ₄)
	10209 Spectrophotometer UHR, TNTplus 845	10209 & 10210	2 - 20 mg/L P (6-60 mg/L PO ₄)
	10209 Spectrophotometer ULR, TNTplus 843	10209 & 10210	10 - 500 µg/L P (30-1500µg/L PO ₄)
	10210 Spectrophotometer LR, TNTplus 843	10209 & 10210	0.15 - 4.50 mg/L PO ₄ ³⁻
	10210 Spectrophotometer UHR, TNTplus 845 Ascorbic Acid Method TNTplus 843	10209 & 10210	6 - 60 mg/L PO ₄ ³⁻
	10214 Spectrophotometer TNTplus 846	10214	1.6 - 30 mg/L P (5.0 - 90 mg/L PO ₄)
	10307 Orthophosphate Ascorbic Acid	10307	0.01 - 0.50 mg/L PO ₄ -P
	8048 Powder Pillows or AccuVac® PhosVer3, Ascorbic Acid	8048	0.02 - 2.50 mg/L PO ₄
	8048 TNT PhosVer3	8048	0.06 - 5.00 mg/L PO ₄ ³⁻
	8114 Reagent or AccuVac® Molybdovanadate	8114	0.3 - 45.0 mg/L PO ₄
	8114 Spectrophotometer Pour-Thru	8114	0.3 - 45.0 mg/L PO ₄
	8114 Test 'N Tube HR Molybdovanadate	8114	1.0 - 100.0 mg/L PO ₄
	8178 Amino Acid Reagent Amino Acid Method	8178	0.23 - 30.00 mg/L PO ₄
	8180 Test 'N Tube PhosVer® 3 with Acid Hydrolysis	8180	0.06 - 3.50 mg/L PO ₄ ³⁻
	8190 Digestion Test 'N Tube	8190	0.06 - 3.50 mg/L PO ₄ ³⁻
Potassium	8049 Colorimetric Powder Pillow-LR-MR-HR For oil and gas field waters	8049	0.1 - 700 mg/L K
	8049 Spectrophotometer Powder Pillows	8049	0.1 - 7.0 mg/L K
Quaternary Ammonium Compounds	8337 Spectrophotometer Powder Pillows Direct Binary Complex	8337	0.2 - 5.0 mg/L CTAB
Selenium	8194 Spectrophotometer Diaminobenzidine	8194	0.01 - 1.00 mg/L Se

Parameter	Method	Method Number	Range
Silica	8185 Spectrophotometer Powder Pillows HR Silicomolybdate	8185	1 - 100 mg/L SiO ₂
	8186 Spectrophotometer Powder Pillows Heteropoly Blue	8186	0.010 - 1.600 mg/L SiO ₂
	8282 Spectrophotometer Pour-Thru Cell Heteropoly Blue	8282	3 - 1,000 µg/L SiO ₂
	8282 Spectrophotometer Pour-Thru Cell-Rapid Liquid Heteropoly Blue Rapid Liquid	8282	3 - 1000 µg/L as SiO ₂
Silver	8120 Spectrophotometer Powder Pillows Colorimetric	8120	0.02 - 0.70 mg/L
Sulfate	10227 Spectrophotometer HR TNTplus 865	10227	150 - 900 mg/L SO ₄
	10227 Spectrophotometer LR TNTplus 864 Turbidimetric	10227	150 - 900 mg/L SO ₄
	10248 Powder Pillows LR-MR-HR SulfaVer 4	10248	2 - 7000 mg/L SO ₄ ²⁻
	8051 Powder Pillows or AccuVac® SulfaVer 4	8051	2 - 70 mg/L SO ₄ ²⁻
Sulfite/Hydrogen Sulfide	10254 Methylene Blue	10254	0.01 - 70 mg/L S ²⁻
	10294 Methylene Blue	10294	0.1 - 2.0 mg/L S ²⁻
	8131 Spectrophotometer Methylene Blue	8131	5 - 800 µg/L S ²⁻
Sulfite	10308 DTNB	10308	0.10 - 5.00 mg/L SO ₃ ²⁻
Suspended Solids	8006 Photometric	8006	5 - 750 mg/L TSS
Tannin and Lignin	8193 Tyrosine	8193	0.1 - 9.0 mg/L as Tannic Acid
TKN	10242 Spectrophotometer, s-TKN, TNTplus 880	10242	0 - 16 mg/L N
	8075 TKN, Nessler	8075	1 - 150 mg/L TKN
Total Organic Carbon (TOC)	10128 HR, Spectrophotometer Test 'N Tube Direct	10128	100 - 700 mg/L C
	10129 LR, Test 'N Tube Direct	10129	0.3 - 20.0 mg/L C
	10173 MR, Test 'N Tube Direct	10173	15 - 150 mg/L C
	10267 HR Spectrophotometer TNTplus 811	10267	30 - 300 mg/L C
	10267 LR Spectrophotometer TNTplus 810	10267	1.5 - 30.0 mg/L C
Toxicity	10017 ToxTrak	10017	0 - 100 % Inhibition
TPH in Soil	10050	10050	TPH in Soil 10050 Threshold
Trihalomethanes, Total (THM)	10132 THM Plus	10132	10 - 600 µg/L CHCl ₃
Volatile Acids	10240 TNTplus	10240	50 - 2,500 mg/L Acetic
	8196 Reagent Solution Esterification	8196	27 - 2800 mg/L as Acetic Acid
Zinc	8009 Powder Pillows Zincon	8009	0.01 - 2.00 mg/L Zn
	8009 Powder Pillows Zincon	8009	0.01 - 3.00 mg/L Zn



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