

code_name	Measure method
units	WOD code
201	Titration (Knudsen 1902)
203	UNESCO (Cox et al. 1967)
204	Fofonoff et al. (1974)
205	Perkin and Walker (1972)
206	Bennett (1976)
207	Ribe and Howe (1975)
208	Federov (1971)
209	Other salinity methods
300	Winkler method (unknown)
301	Winkler automated oxygen titration; whole bottle method (Carpenter 1965)
302	Winkler method (Radiometer automated titrator)
303	Winkler automated oxygen titration: amperometric end-detection (Culberson 1991)
304	Winkler automated oxygen titration: photometric end-detection
305	Winkler manual oxygen titration: visual end-point (Strickland and Parsons 1972)
306	Winkler manual oxygen titration: visual end-point (Carpenter 1965; Anderson 1971)
307	Winkler automated oxygen titration; whole bottle method & photometric end-detection (Jones 1992; Levy et al. 1977)
308	Winkler manual oxygen titration: visual end-point
321	Beckman polarographic oxygen sensor (CTD)
322	Beckman polarographic oxygen sensor (Owens and Millard 1985)
323	SBE 43 Dissolved Oxygen Sensor; Clark polarographic membrane
340	Chromatography
360	Spectrophotometric (Shibala method)
4100	Winkler automated oxygen titration; (Williams and Jenkinson 1982; Friederich et al. 1991)
4101	Winkler automated oxygen titration; whole bottle method; end-detection
400	Spectrophotometric
401	Spectrophotometric single solution method (Strickland and Parsons 1972)
402	Spectrophotometric stannous chloride reduction
403	Spectrophotometric persulphate oxidation (Menzel and Corwin 1965)
404	Spectrophotometric perchloric acid digestion)
405	Spectrophotometric reduced beta silico-molybdate (Strickland and Parsons 1972)
406	Spectrophotometric reduced alpha silico-molybdate (Grasshof 1964)
407	Cadmium reduction (Morris and Riley 1963; Wood et al. 1967)
408	Strychnidine method (Rochford 1947)
409	Spectrophotometric phenolphthalein method (Solorzano 1969)
410	Spectrophotometric (Richards and Thompson 1952)

411	Spectrophotometric (SCOR/UNESCO 1966)
412	Spectrophotometric (Parsons and Strickland 1963)
413	Spectrophotometric (Jeffrey and Humphery 1975)
500	Autoanalyzer; model and brand unknown
501	Technicon Autoanalyzer model unknown (Murphy and Riley 1962)
502	Continuous flow autoanalyzer (CFA) colorimetric
503	Continuous Flow Analyzer (Bendschneider and Robinson 1952)
504	Continuous Flow Analyzer (CFA) Indophenol blue (Berthelot's reaction)
505	Nitrate+Nitrite - autoanalyzer
506	A Modification of colorimetric determination of silicic acid (Alimarin and Zverev 1937)
507	Continuous flow autoanalyzer (CFA) (Alpkem)
508	Continuous flow autoanalyzer (CFA) (Skalar instrument)
509	Silicic acid concentration in water (Dienert and Wandenbulcke 1923).
510	Ammonium samples were analyzed according to Lachat Instrument QuikChem method 31-107-06-1-B.
511	Phosphates are determined by Lachat Instrument QuikChem Method 31-115-01-1-H.
512	Silicates were measured using Lachat Instrument Method 31-114-27-1-C.
513	Nitrates and Nitrites were determined using Lachat Instrument Method 31-107-04-1-C.
600	Fluorescence
601	Fluorescence in situ Turner fluorometer (Strickland and Parsons 1972)
602	Fluorescence in vivo underway (Lorenzen 1966)
603	Fluorometer in-situ CTD
604	Fluorometer (Aiken 1981)
605	Fluorometric chl-a assay acetone extraction
606	Fluorometric chl-a assay methanol extraction
607	Fluorometric chl-a assay acetone extraction; Turner fluorometer (Yentsch and Menzel 1963; Holm-Hansen et al. 1965)
608	Chlorophyll and phaeopigments are measured fluorometrically using an acidification technique which may include chlorophyll-b interference (Holm-Hansen and Riemann 1978)
609	Chlorophyll-a values based on the Welschmeyer method which corrects for chlorophyll-b and phaeophytin interference (Welschmeyer N.A. 1994.)
700	HPLC (High Performance Liquid Chromatography)
701	HPLC (normal phase High Performance Liquid Chromatography)
702	HPLC (reverse phase High Performance Liquid Chromatography)
800	<sup>14</sup> C in-situ incubation
801	Carbon-14 ( <sup>14</sup> C) simulated in-situ or deck incubation
802	Carbon-14 ( <sup>14</sup> C) artificial light incubation
803	Sorokin's method
804	artificial light incubation (Hawaii method)

805	artificial light incubation (Australian method)
806	in situ light incubation (Hawaii method)
807	in situ light incubation (Australian method)
808	Carbon-14 ( <sup>14</sup> C) simulated in-situ or deck incubation (Steeman Nielsen 1952; Doty and Oguri 1958)
860	Van Dorn (Japanese)
900	Automated titration
901	Modified Gran titration (Brewer et al. 1986)
910	Ruppin's method (Zubov 1937)
920	Coulometric (Johnson et al. 1985)
921	Coulometric Single operator multi-param metabolic analyzer (SOMMA)
922	Coulometric; Single Operator Multi-Metabolic Analyzer (SOMMA) [Johnson et al. 1993; 1998]
923	Coulometric (Johnson et al. 1993b)
924	Potentiometric titration (Mintrop et al. 2000)
942	Spectroscopic pH (25 degrees Celcius) and coulometric TCO <sub>2</sub> using the carbonic acid dissociation constants of Mehrbach et al. (1973) as refit by Dickson and Millero (1987)
1000	C/N analyzer - GF/F filter
1001	BATS GF/F (0.7 um) CEC Elemental Analyzer
1002	BOFS 200pm pre-filter then GF/F Europa Roboprep Analyzera
1003	CEAREX: GF/F; Perkin Elmer Model 240B Elemental Analyzer
1004	KH754: Type C GF/F; Yanagimoto CHN Analyzer
1050	Spectrophotometric wet oxidation with dichromate (Strickland and Parsons 1972)
1100	High Temperature Catalytic Oxidation (HTCO) (Sugimura and Suzuki)
1101	Ultraviolet (UV) oxidation
1102	Wet oxidation (ie. persulphate)
1103	High Temperature Catalytic Oxidation (HTCO) ionics catalytic oxidation with IR CO <sub>2</sub> detection
1104	High Temperature Catalytic Oxidation (HTCO) Shimadzu catalytic oxidation with IR CO <sub>2</sub> detection
1200	Gas chromatography
1201	Gas chromatography (Weiss 1981)
1202	Gas chromatography xCO <sub>2</sub> at analysis temperature
1203	Gas chromatography (Bulsiewicz et al. 1998)
1205	Gas chromatography pCO <sub>2</sub> at analysis temperature
1231	Infrared spectrometry
1233	Infrared spectrometry pCO <sub>2</sub>
1261	Nondispersive Infrared spectrometry (NDIR)
1262	Nondispersive Infrared spectrometry (NDIR) xCO <sub>2</sub> at analysis temperature
1300	pH meter (potentiometric)
1340	Coulometric

1343	Coulometric (manual operation)
1344	Coulometric; automated operation; single-operator multiparameter metabolic analyzer (SOMMA)
1450	pH; spectrophotometry
1460	pH value determined manually using a pH color chart (Buch 1937)
1461	pH scale SWS25 ! do not use as method. Use scale header 3
1462	pH scale NBS25 ! do not use as method. Use scale header 3
1463	pH determined spectrophotometrically using the indicator m-cresol purple following Tupas et al. (1993) [Hawaii Time Series].
1464	Total (titration) alkalinity determined using the modified Gran titration method as described in Tupas et al. (1997) [Hawaii Time Series].
4001	Freon gas extraction (Bullister and Weiss 1988)
4054	Winkler automated oxygen titration: whole-bottle method; photometric end-detection (Culberson 1991)
4056	Winkler automated oxygen titration: amperometric end-detection (Knapp et al. 1989)
4057	Winkler automated oxygen titration: amperometric end-detection
4058	Winkler automated oxygen titration: potentiometric and photometric end-detection (Culberson 1991; Culberson et al. 1991; Dickson 1994)
4059	Winkler automated oxygen titration: whole-bottle method; photometric end-detection (Culberson 1992; Carpenter 1969; Friederich et al. 1991)
4061	Winkler automated oxygen titration: whole-bottle method; amperometric end-detection (Culberson and Huang 1987)
4062	Gran-linearized potentiometric Winkler titration (Anderson et al. 1992)
4063	Continuous Flow Analyzer (CFA) (Gordon et al. 1993)
4064	Modified gran approach (Dickson et al. 2003)
4065	Alkalinity method of Perez and Fraga (1987)
4102	Winkler automated oxygen titration (Rosenberg et al. 1995)
4103	Continuous Flow Analyzer (CFA); Technicon Autoanalyzer model unknown (Armstrong et al. 1967)
4104	Continuous Flow Analyzer (CFA); Technicon Autoanalyzer model (Bernhardt and Wilhelms 1967)
4105	Continuous Flow Analyzer (CFA); Technicon Autoanalyzer model unknown (Friedrich and Whitley 1972)
4106	Continuous Flow Analyzer (CFA); Murphy and Riley (1962)
4107	Continuous Flow Analyzer (CFA); Raimbault et al. (1990)
4108	Continuous Flow Analyzer (CFA); Fanning and Pilson (1973)
4109	Fluorescence in vivo underway (Kerouel and Aminot 1997)
4110	Dissolved inorganic nutrients (Armstrong 1967)
4111	Dissolved inorganic nutrients (Grasshoff 1965; 1984)
4112	Dissolved inorganic nutrients (Strickland and Parsons 1968)
4113	Winkler manual oxygen titration: visual end-point (Strickland and Parsons 1968)

4114	Winkler manual oxygen titration: visual end-point; whole bottle method (Carpenter 1965)
4115	Manual volumetric titration
4116	Spectrophometric following method of Robinson and Thompson (1948)
4117	Continuous Flow Analyzer (CFA); Kirkwood (1995)
4118	Salinity computed from Chlorinity data (Tcyrikova and Shylgina 1964)
4119	Dissolved inorganic nutrients (Whitledge et al. 1981)
4120	Salinity computed from Chlorinity data calculated from conductivity (Schiemer and Pritchard 1961)