



LATIS SCIENTIFIC

LABORATORY TESTING
AND ANALYSIS

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v. 1.0 issued May 2019

Although every effort is made to ensure the accuracy of published information in this document, the information may inadvertently contain inaccuracies or typographical errors. Every effort has been made to present you with the most accurate information of the testing we provide, but because the nature of scientific and business research is constantly evolving, we cannot be held responsible for the accuracy of our content. Latis Scientific will not be held liable and shall not accept any liability for the content or interpretation of this document and reserve the right to change the document with no prior notice.

Latis Scientific are part of a global network of laboratories operating within the SUEZ group that provide a range of analytical testing and technical solutions to our customers.

We offer a broad range of accredited (ISO/IEC 17025:17) microbiological and chemical testing and this catalogue provides a detailed overview of Latis Scientific's services.

We are a market leader within our chosen markets providing a unique combination of technical expertise and personal customer care. Latis Scientific is experienced with meeting the demands of many industries and are proud to serve a client base that include, among others: water treatment and water hygiene consultants, healthcare providers, medical device manufacturers, local authorities, and industrial water consultants.

Latis Scientific's services are used to provide assurance of compliance to numerous regulatory standards including: HTM 01-04, HTM 01-06, HTM 01-01, BSRIA BG29, BSRIA BG50 and Discharge Consents. With a state-of-the-art laboratory based in London, expertly trained staff and a national refrigerated logistics network, our services extend across the UK and, through our network of laboratories in the UK and globally we are able to support a wide range of technical and analytical testing requirements.

We are well placed to be a trusted partner for all clients with challenging demands and rigorous expectations and we look forward to hearing from you.



Quality and Certifications

Latis Scientific's processes and culture are underpinned by a dedication to improving the quality of service it offers. Latis Scientific is accredited by the United Kingdom Accreditation Service (UKAS) to the norm ISO/IEC 17025:2005, the British, European and International Standard for quality assurance in analytical laboratories.

- ISO9001 SGS Certified – Quality Management System
- ISO14001 SGS Certified – Environmental Management System
- OHSAS 18001 SGS Certified – Occupational Health and Safety
- City and Guilds Accredited training academy
- LCA accredited (legionella control association)
- Legionella Analysis to ISO 11731 standard as per HSG274 Part 1



Waters from heating, cooling and other closed pipework systems are known to be a difficult matrix to analyse, especially due to the unique composition of individual systems and unknown interfering chemicals. Latis Scientific has many years' experience analysing closed water systems and have developed specifically optimised methods to overcome these challenges. Our experienced team can also provide interpretive advice based on analytical results.

Commissioning

Latis can offer a number of suites of tests that support you delivering compliance to BSRIA guidelines. Some of these suites are listed below.



Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 8 suggested range
Chloride01	Chloride	5	mg/l	Yes	<250mg/l
pH05	pH	2 - 13	pH Unit	Yes	6.0 - 8.5
Sulphate01	Sulphate	5	mg/l	Yes	<250mg/l
Hard16	Hardness, Total as CaCO3	10	mg/l	Yes	As recommended by water treatment specialist

If you would like to order this suite, when you contact us please quote code: BG29C4

Latis Determinant Code:	Determinant	LOD (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 8 suggested range
P_SPEC4	Pseudomonads @ 30°C	100 - 100,000	CFU/100ml	Yes	<1000 cfu/100ml
TVC_01	Total viable count @ 22°C/72hrs	0 - 300,000	CFU/ml	Yes	<10,000 cfu/ml

If you would like to order this suite, when you contact us please quote code: BG29B3

Closed Water Systems

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 4 Guideline
Al36	Aluminium, Total	0.03	mg/l	Yes	For information only
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes	Range as recommended by the cleaning specialist in their method statement
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes	N/A
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes	N/A
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes	N/A
Chloride01	Chloride	5	mg/l	Yes	Maximum as recommended by the cleaning specialist in their method statement
Cu35	Copper, Dissolved	0.07	mg/l	Yes	For information only
Cu36	Copper, Total	0.07	mg/l	Yes	Less than 1mg/l or as recommended by the cleaning specialist in their method statement
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes	Range as recommended by the cleaning specialist in their method statement (depends on water treatment regime)
Fe35	Iron, Dissolved	0.03	mg/l	Yes	Less than 3mg/l
Fe36	Iron, Total	0.03	mg/l	Yes	Less than 6mg/l
Molybdat13	Molybdate as MoO ₄	5	mg/l	Yes	Range as recommended by the cleaning specialist in their method statement
Nitrite03	Nitrite as NaNO ₂	9.9	mg/l	Yes	
pH05	pH	2 - 13	pH Unit	Yes	Range as recommended by the cleaning specialist in their method statement (depends on water treatment regime)
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No	Range as recommended by the cleaning specialist in their method statement (depends on water treatment regime)
Solids06	Suspended Solids @ 105°C	5	mg/l	No	Less than 30mg/l in circulating water at pumps, Less than 45mg/l in pipework at extremes of system or at terminal units
Sulphate01	Sulphate	5	mg/l	Yes	Range as recommended by the cleaning specialist in their method statement
Zn36	Zinc, Total	0.08	mg/l	Yes	For information only

If you would like to order this suite, when you contact us please quote code: BG29C

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 4 - Guideline Levels
P_SPEC4	Pseudomonads @ 30°C	100 -100,000	CFU/100ml	Yes	<1000 cfu/100ml
SRB_2	Sulphate reducing bacteria @ 21 Days	Detected or Not Detected		No	Absent

If you would like to order this suite, when you contact us please quote code: BG29B

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 5 Guideline for practical completion
Al36	Aluminium, Total	0.03	mg/l	Yes	For information only
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes	Range as recommended by the specialist
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes	N/A
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes	N/A
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes	N/A
Chloride01	Chloride	5	mg/l	Yes	Maximum as recommended by the specialist
Cu35	Copper, Dissolved	0.07	mg/l	Yes	For information only
Cu36	Copper, Total	0.07	mg/l	Yes	Less than 1mg/l or as recommended by the specialist
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes	Range as recommended by the specialist
Fe35	Iron, Dissolved	0.03	mg/l	Yes	Less than 3mg/l subject to advice from water treatment chemical supplier
Fe36	Iron, Total	0.03	mg/l	Yes	Less than 15mg/l subject to advice from water treatment chemical supplier
Molybdat13	Molybdate as MoO ₄	5	mg/l	Yes	Range as recommended by the water treatment specialist
Nitrite03	Nitrite as NaNO ₂	9.9	mg/l	Yes	Range as recommended by the water treatment specialist
pH05	pH	2 - 13	pH Unit	Yes	Range as recommended by the cleaning specialist in their method statement (depends on water treatment regime)
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No	Range as recommended by the specialist

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Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 5 Guideline for practical completion
Solids06	Suspended Solids @ 105°C	5	mg/l	No	Less than 30mg/l at system pump during circulation, less than 60mg/l in pipework at extremes of system; less than 45mg/l in pipework at extremes of system if previously sampled within 3 weeks; less than 90mg/l at terminal units not previously sampled; less than 45mg/l at terminal units if previously sampled or flushed within 3 weeks
Sulphate01	Sulphate	5	mg/l	Yes	Range as recommended by the specialist
Zn36	Zinc, Total	0.08	mg/l	Yes	For information only
D004	Dissolved Oxygen	0.1	mg/l	No	For information only, range as recommended by the specialist
EGlycol02	Ethylene Glycol	0.4	% v/v	No	If present - range as specified

If you would like to order this suite, when you contact us please quote code: BG29C2

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters	BG29/2012 Table 6 Guideline for practical completion (for overall taste of system applied to geometric means of result sets)
P_SPEC4	Pseudomonads @ 30 °C	100 - 100,000	CFU/ 100ml	Yes	10,000 cfu/100ml and no increasing trend
SRB_2	Sulphate reducing bacteria @ 21 Days	Detected or Not Detected		No	absent
TVC_01	Total viable count @ 22°C/72hrs	0 - 300,000	CFU/ml	Yes	<100,000 cfu/ml and no increasing trend
NRB_2	Nitrate / Nitrite Reducing Bacteria	Detected or Not Detected		No	for information only

If you would like to order this suite, when you contact us please quote code: BG29B2



Routine Monitoring

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
Solids06	Suspended Solids @ 105°C	5	mg/l	No
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
pH05	pH	2 - 13	pH Unit	Yes
Appear02, Appear04, Appear08	Visual appearance	N/A		No
Appear05	Odour	N/A		No
D004	Dissolved Oxygen	0.1	mg/l	No
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes
Hard20	Hardness, Total as CaCO ₃	1	mg/l	Yes
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Nitrate01	Nitrate as N	0.5	mg/l	Yes
Sulphate01	Sulphate	5	mg/l	Yes
Chloride01	Chloride	5	mg/l	Yes
Fe36	Iron, Total	0.03	mg/l	Yes
Fe35	Iron, Dissolved	0.03	mg/l	Yes
Cu35	Copper, Total	0.07	mg/l	Yes
Cu36	Copper, Dissolved	0.07	mg/l	Yes
Al36	Aluminium, Total	0.03	mg/l	Yes
Zn36	Zinc, Total	0.08	mg/l	Yes
Molybdat13	Molybdate as MoO ₄	5	mg/l	Yes
Nitrite03	Nitrite as NaNO ₂	9.9	mg/l	Yes
EGlycol02	Ethylene Glycol (antifreeze)	0	% v/v	No
---	Biocides			
TVC_01	Total viable count @ 22°C/72hrs	0 - 300000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 30,000	CFU/ml	Yes
P_SPEC4	Pseudomonads @ 30°C	100 - 100,000	CFU/100ml	Yes
SRB_2	Sulphate reducing bacteria @ 21 Days	Detected or Not Detected		No
NRB_2	Nitrate / Nitrite Reducing Bacteria	Detected or Not Detected		No
NOB_1	Nitrite Oxidising Bacteria	Detected or Not Detected		No

Please contact us to arrange a bespoke test suite tailored to your system.

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Appear02	Colour	N/A		No
Appear04	Clarity	N/A		No
Appear05	Odour	N/A		No
Appear08	Solids - Visual	N/A		No
Chloride01	Chloride	5	mg/l	Yes
Cu35	Copper, Dissolved	0.07	mg/l	Yes
Cu36	Copper, Total	0.07	mg/l	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Fe35	Iron, Dissolved	0.03	mg/l	Yes
Fe36	Iron, Total	0.03	mg/l	Yes
Hard20	Hardness, Total as CaCO ₃	1	mg/l	Yes
Molybdat13	Molybdate as MoO ₄	5	mg/l	Yes
Nitrite03	Nitrite as NaNO ₂	9.9	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No
Solids06	Suspended Solids @ 105°C	5	mg/l	No
Sulphate01	Sulphate	5	mg/l	Yes
Zn35	Zinc, Dissolved	0.08	mg/l	Yes
Zn36	Zinc, Total	0.08	mg/l	Yes
Nitrate01	Nitrate as N	0.5	mg/l	Yes
Al36	Aluminium, Total	0.03	mg/l	Yes

If you would like to order this suite, when you contact us please quote code: HCFC

Closed Water Systems

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
NRB_2	Nitrate / Nitrite Reducing Bacteria	Detected or Not Detected		No
P_SPEC4	Pseudomonads @ 30°C	100 - 100,000	CFU/100ml	Yes
SRB_2	Sulphate reducing bacteria @ 21 Days	Detected or Not Detected		No
TVC_01	Total viable count @ 22°C/72hrs	0 - 300000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 30,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: TPSN-21DAY

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
BACILLUS1	Bacillus	0 - 300	CFU/ml	No
FLAVBAC1	Flavobacterium	0 - 300	CFU/ml	No
MicroFungi	Microfungi	0 - 100	CFU/100ml	No
NOB_1	Nitrite Oxidising Bacteria	Detected or Not Detected		No
NRB_2	Nitrate / Nitrite Reducing Bacteria	Detected or Not Detected		No
P_SPEC4	Pseudomonads @ 30°C	100 - 100,000	CFU/100ml	Yes
SRB_2	Sulphate reducing bacteria @ 21 Days	Detected or Not Detected		No
TVC_01	Total viable count @ 22°C/72hrs	0 - 300000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 30,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: RDF-21DAY



Closed System Volume Estimate

Latis Scientific can provide you with general purpose reagent grade Lithium chloride powder which, together with system samples taken before and after dosing, will provide you with an estimated system volume based on the change

of lithium concentration. This information is essential when using corrosion inhibitors and biocides in a large system with unknown volume.

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
Li04	Lithium, Total	0.2	mg/l	No

Closed System Water Discharge

Requirements for discharge consent will vary between sewage undertakers. However, here

are some of the common parameters which may be required.

Please contact us to arrange a bespoke test suite tailored to the discharge requirements

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /reporting range (Microbiology)	Units	UKAS accreditation for Process waters
As04	Arsenic, Total	0.01	mg/l	Yes
B04	Boron, Total	0.01	mg/l	No
Zn36	Zinc, Total	0.01	mg/l	Yes
Cu35	Copper, Dissolved	0.07	mg/l	Yes
Cu36	Copper, Total	0.07	mg/l	Yes
Al36	Aluminium, Total	0.03	mg/l	Yes
Cd04	Cadmium, Total	0.005	mg/l	Yes
Cr04	Chromium, Total	0.01	mg/l	Yes
Pb04	Lead, Total	0.01	mg/l	Yes
Ni04	Nickel, Total	0.01	mg/l	Yes
P02	Phosphorus, Total	0.02	mg/l	Yes
COD03	Chemical Oxygen Demand	10	mg/l	Yes
Solids05	Total Solids @ 105°C	5	mg/l	No
Solids08	Settleable Solids	5	mg/l	No
Solids07	Settleable Solids, Rapid	5	mg/l	No
pH05	pH	2 - 13	pH Unit	Yes
Mo04	Molybdenum, Total	0.05	mg/l	No
Nitrite03	Nitrite as NaNO ₂	9.9	mg/l	Yes
EGlycol02	Ethylene Glycol	0.04	% v/v	No
TOC-man3LL	Total Organic Carbon	0.1	mg/l	No
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Chloride01	Chloride	5	mg/l	Yes
Sulphate01	Sulphate	5	mg/l	Yes

Potable Water Supply

Latis Scientific has many solutions on offer for the testing of potable water supplies, whether you are investigating an aesthetic complaint, testing water outlets from homes, offices or healthcare premises; assessing water from new domestic pipework systems or testing private water supplies.



New Domestic Water Supply Installation

BS 8558:2011 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages – Complementary guidance to BS EN 806.

Where routine flushing was not possible between the completion of new domestic pipework system disinfection and start of occupancy, the system should be sampled to check that water quality has not deteriorated.

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Potable waters	BS 8558:2011 5.2.3.3 Guidelines
TVC_01	Total viable count @ 37°C/48hrs	0 - 15,000	CFU/ml	Yes	Corrective action required if deterioration is evident
TVC_02	Total viable count @ 22°C/72hrs	0 - 15,000	CFU/ml	Yes	
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes	Flush and re-test if present. Investigate and consider repeat disinfection if positive results persist
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes	
P_AERU1	Pseudomonas aeruginosa	0 - 100	CFU/100ml	Yes	
LEGIOND1	Other Legionella Species	50 - 15,000	CFU/Vol	Yes	Repeat disinfection if detected
LEGIOND2	Legionella pneumophila SG 1	50-15,000	CFU/Vol	Yes	Repeat disinfection if detected
LEGIOND3	Legionella pneumophila SG 2-14	50-15,000	CFU/Vol	Yes	Repeat disinfection if detected



New Connection to Mains

Before a new connection can be made to mains water, the pipework must be disinfected and a sample taken for analysis to be tested in

an UKAS accredited laboratory such as Latis Scientific. The required set of test depends on the water supply company.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for Potable waters
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes
TVC_01	Total viable count @ 22°C/72hrs	0 - 15,000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 15,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: TWB

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Potable waters
Chlorine03	Chlorine, Free	0.02	mg/l	No
Chlorine04	Chlorine, Total	0.02	mg/l	No
Turb01	Turbidity	0.4	NTU	No

If you would like to order this suite, when you contact us please quote code: TWCH

Routine Microbiological Assessment

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for Potable waters
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes
TVC_01	Total viable count @ 22°C/72hrs	0 - 15,000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 15,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: POT or DWB

Drinking Water Complaints

The following microbiological and chemical test suites can be used to investigate common drinking water complaints such as discoloured

water, unpleasant smell and presence of deposits. A written result interpretation of the test results is included with the DWC suite.

Other microbiological test suites are available depending on the particular site concerns.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for Potable waters
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes
P_AERU1	Pseudomonas aeruginosa	0 - 100	CFU/100ml	Yes
P_SPEC1	Pseudomonas species @ 30°C	0 - 100	CFU/100ml	Yes
TVC_01	Total viable count @ 22°C/72hrs	0 - 15,000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 15,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: DVM

Latis Determinant Code:	Determinant	Reporting Limits	Units	UKAS accreditation for Potable waters
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Amm07	Albuminoid Nitrogen as N	0.04	mg/l	Yes
Appear02	Colour	n/a	n/a	No
Appear04	Clarity	n/a	n/a	No
Appear05	Odour	n/a	n/a	No
Appear06	Taste, Qualitative	n/a	n/a	No
Appear08	Solids - Visual	n/a	n/a	No
Cd21	Cadmium, Total	0.001	mg/l	Yes
Chloride01	Chloride	5	mg/l	Yes
Cr21	Chromium, Total	0.002	mg/l	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Fe21	Iron, Total	0.003	mg/l	Yes
Hard08	Hardness, Total as CaCO ₃	1	mg/l	No
K04	Potassium, Total	0.5	mg/l	Yes
Mn21	Manganese, Total	0.002	mg/l	Yes
Na04	Sodium, Total	0.1	mg/l	Yes
Ni21	Nickel, Total	0.002	mg/l	Yes
Nitrate01	Nitrate as N	0.5	mg/l	Yes
Nitrite04	Nitrite as N	0.01	mg/l	Yes
Pb21	Lead, Total	0.001	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
PV01	Permanganate Value - 4hrs @ 27°C	0.5	mg/l	Yes
Solids18	Total Dissolved Solids - Meter	100	mg/l	No
Sulphate01	Sulphate	5	mg/l	Yes
Zn21	Zinc, Total	0.002	mg/l	Yes
Cu21	Copper, Total	0.002	mg/l	Yes

If you would like to order this suite, when you contact us please quote code: DWC



Healthcare Premises

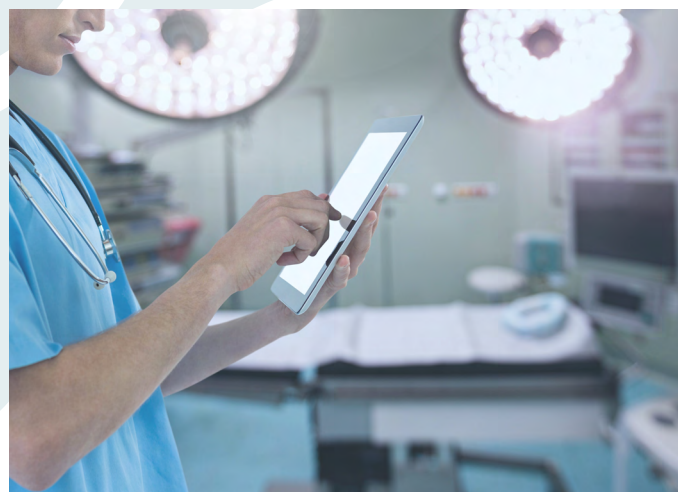
Pipework supplying potable water within healthcare premises are often large and complex, and comprehensive management of the system is necessary to control waterborne pathogens. As well as compliance to the HSE's Approved Code of Practice and guidance on regulations 'Legionnaires' disease: The control of legionella bacteria in water systems (L8)', particular significance is placed within HTM 04-01 on the control of *Pseudomonas aeruginosa* within augmented care units.

Pseudomonas aeruginosa is an opportunistic pathogen capable of infecting vulnerable patients, which have been shown to readily colonise systems and outlets without proper management and surveillance.

Latis Scientific has two UKAS accredited methods available for the detection of *Pseudomonas aeruginosa*. One is the culture method as specified in HTM 04-01 Part B Appendix F and based on 'Microbiology of drinking water – Part 8: the isolation and enumeration of *Aeromonas* and *Pseudomonas aeruginosa*'. This is a standard test for *Pseudomonas aeruginosa* and provides a result within 2 days (+ 1 day where confirmation of presumptive positive required).

In the second method, results are available after 24 hours as a confirmed positive and the method has been validated using BS EN ISO 17994 and shown to have comparable sensitivity and specificity as the culture test, this test is based on 'Microbiology of drinking water – Part 8: the isolation and enumeration of *Aeromonas* and *Pseudomonas aeruginosa*' Method C.

Retention of positive isolates can be arranged upon request and ranges can be adjusted as required with suitable dilution tests.



Other microbiological test suites are available depending on the particular site concerns.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for Potable waters	Satisfactory results HTM 04-01
P_AERU1	<i>Pseudomonas aeruginosa</i> (culture)	0 - 100	CFU/100ml	Yes	Not Detected
P_AERU6	<i>Pseudomonas aeruginosa</i> (IDEXX)	0 - 201	MPN/100ml	Yes	Not Detected

If you would like to order this suite, when you contact us please quote code: DVM

Indicator Organisms

Indicator organisms are used to indicate possible presence of pathogenic microorganisms and to show the efficacy of any treatment processes. Most commonly used is

Escherichia coli which is used as a faecal indicator organism. Other organisms can be used together to give a wider picture depending on the circumstances of water testing.

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Potable waters
ECOLI1	Escherichia coli (E.coli)	0 - 201	MPN/100ml	Yes
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
F_ENT1	Enterococci	0 - 100	CFU/100ml	Yes
CL_PERF6	Clostridium perfringens	0 - 100	CFU/100ml	Yes



WELL Building Standard

Launched in 2014 by the International Well Building Institute, the WELL Building standard is being increasingly taken up by new building projects in the U.K. Latis Scientific can offer the complete range of water testing to meet the standard including micro and chemistry determinants.

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Potable waters	WELL Building Limits	WELL Building WATER Section No.
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes	Note Detected	30
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes	Note Detected	30

If you would like to order this suite, when you contact us please quote code: WELLMICRO

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Potable waters	WELL Building Limits	WELL Building WATER Section No.
Turb01	Turbidity	0.4	NTU	No	1.0 NTU	30
Pb20	Lead, Dissolved	0.001	mg/l	Yes	0.01 mg/l	31
As20	Arsenic, Dissolved	0.003	mg/l	Yes	0.01 mg/l	31
Sb20	Antimony, Dissolved	0.001	mg/l	No	0.006 mg/l	31
Hg60	Mercury, Dissolved	0.00003	mg/l	No	0.002 mg/l	31
Ni20	Nickel, Dissolved	0.0025	mg/l	Yes	0.012 mg/l	31
Cu20	Copper, Dissolved	0.004	mg/l	Yes	1.0 mg/l	31
Styrene01	Styrene	0.2	æg/l	Yes	0.0005 mg/l	32
VOC150	Benzene	0.2	æg/l	Yes	0.001 mg/l	32
VOC151	Ethyl Benzene	0.2	æg/l	Yes	0.3 mg/l	32
PCB15	PCBs Total	0.1	æg/l	Yes	0.0005 mg/l	32
VOC152	Vinyl Chloride	0.1	æg/l	Yes	0.002 mg/l	32
VOC153	Toluene	0.5	æg/l	Yes	0.15 mg/l	32
VOC154	Total Xylene	1	æg/l	Yes	0.5 mg/l	32
VOC155	Tetrachloroethene	0.5	æg/l	Yes	0.005 mg/l	32
TRIAZINE18	Atrazine	0.05	æg/l	Yes	0.001 mg/l	33
TRIAZINE19	Simazine	0.05	æg/l	Yes	0.002 mg/l	33
Herb01	Glyphosate	0.05	æg/l	Yes	0.70 mg/l	33
AcidHerb32	2,4-D (2,4-dichlorophenoxyacetic acid)	2	æg/l	No	0.07 mg/l	33
Nitrate01	Nitrate as N	0.5	mg/l	Yes	10 mg/l	33

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Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Potable waters	WELL Building Limits	WELL Building WATER Section No.
Chlorine02	Chlorine, Combined*	0.02	mg/l	No	4 mg/l	34
Chlorine03	Chlorine, Free	0.02	mg/l	No	0.6 mg/l	34
Chlorine04	Chlorine, Total	0.02	mg/l	No	N/A	N/A
THM16	Total Trihalomethanes	0.8	æg/l	Yes	0.08 mg/l	34
AcidHerb33	Total Haloacetic Acids	4	æg/l	No	0.06 mg/l	34
Fluoride01	Fluoride	0.1	mg/l	Yes	4.0 mg/l	34
Al21	Aluminium, Total	0.003	mg/l	Yes	0.2 mg/l	37
Mn21	Manganese, Total	0.002	mg/l	Yes	0.05 mg/l	37
Na21	Sodium, Total	0.1	mg/l	No	270 mg/l	37
Fe21	Iron, Total	0.003	mg/l	Yes	0.3 mg/l	37
Zn21	Zinc, Total	0.002	mg/l	Yes	5 mg/l	37
Solids03	Total Dissolved Solids @ 105øC	30	mg/l	No	500 mg/l	37
Chloride01	Chloride	5	mg/l	Yes	250 mg/l	37
Sulphate01	Sulphate	5	mg/l	Yes	250 mg/l	37

* listed as 'Residual Chloramine' in WELL Building standard, and clarified in their Performance Verification Guidebook
 If you would like to order this suite, when you contact us please quote code: WELLCHEM1

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Potable waters	WELL Building Limits	
Pb20	Lead, Dissolved	0.001	mg/l	Yes	0.01 mg/l	31
As20	Arsenic, Dissolved	0.003	mg/l	Yes	0.01 mg/l	31
Hg60	Mercury, Dissolved	0.00003	mg/l	No	0.002 mg/l	31
Cu20	Copper, Dissolved	0.004	mg/l	Yes	1.0 mg/l	31

If you would like to order this suite, when you contact us please quote code: WELLCHEM2

Latis Scientific has a long history of helping our customers look after recreational waters. We provide a range of services related to swimming, spa, and hydrotherapy pools in addition to interactive water features.



Routine Microbiological suite for Pools, Spas and Hydrotherapy pools

Our microbiological suite is designed to meet the requirements specified in the Pool Water Treatment Advisory Group (PWTAG), in addition to those set out in the HSE guidance document HSG282 "Control of *legionella* and other infectious agents in spa-pool systems".



Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Recreational waters
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes
P_AERU6	Pseudomonas aeruginosa	0 - 201	MPN/100ml	Yes
TVC_04	Total viable count @ 37°C/24hrs	0 - 15,000	CFU/ml	Yes

If you would like to order this suite, when you contact us please quote code: SPB1

Other Microbiological Analysis

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Recreational waters
ALGAE	Algae	50000	Cells/L	No
P_SPEC1	Pseudomonas species @ 30°C	0 - 100	CFU/100ml	Yes

Chemical Analysis

We offer a wide-range of chemical testing whether you are designing a new pool, installing a treatment plant or carrying out routine monitoring.

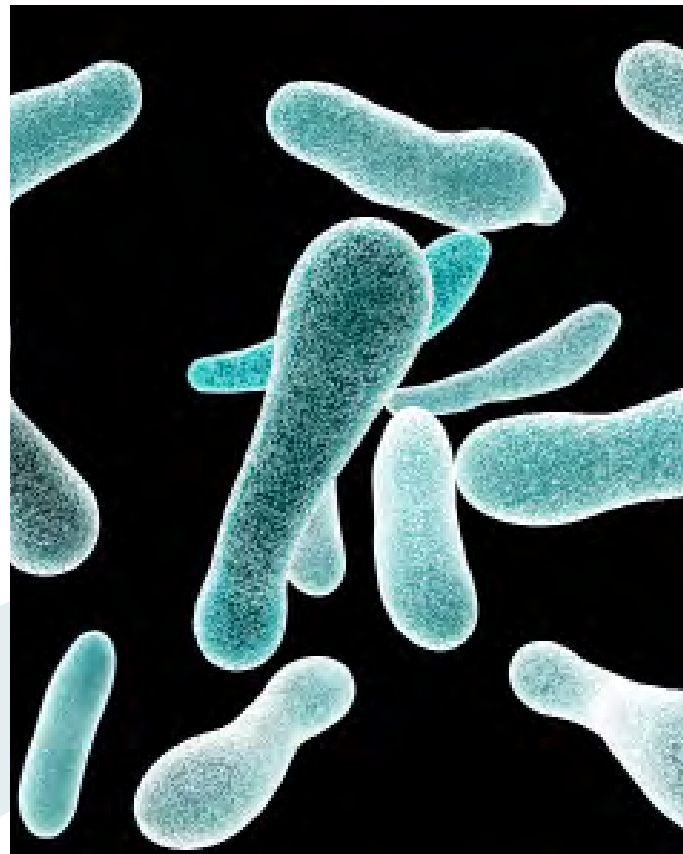
Below are some of the tests which we can provide. Please contact us to discuss your requirements.

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Recreational waters
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes
Appear02	Colour	N/A		No
Appear05	Odour	N/A		No
Chlorate01	Chlorate	0.5	mg/l	No
Chloride01	Chloride	5	mg/l	Yes
Cu04	Copper, Total	0.02	mg/l	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Fe04	Iron, Total	0.05	mg/l	Yes
Hard08	Hardness, Total as CaCO ₃	1	mg/l	No
Hard11	Hardness, Calcium as CaCO ₃	1	mg/l	No
Lang01	Langelier Index	-100		No
Nitrate01	Nitrate as N	0.5	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
PV01	Permanganate Value - 4hrs @ 27°C	0.5	mg/l	Yes
Solids18	Total Dissolved Solids - Meter	100	mg/l	No
Sulphate01	Sulphate	5	mg/l	Yes
Turb01	Turbidity	0.4	NTU	No
Zn04	Zinc, Total	0.01	mg/l	Yes
TOC04	Total Organic Carbon	0.1	mg/l	No
VOC84	Trichloromethane	1	µg/l	No
VOC94	Bromodichloromethane	1	µg/l	No
VOC100	Dibromochloromethane	1	µg/l	No
VOC108	Tribromomethane	1	µg/l	No
Chlorine02	Chlorine, Combined	0.02	mg/l	No
Chlorine03	Chlorine, Free	0.02	mg/l	No
Chlorine04	Chlorine, Total	0.02	mg/l	No
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Amm07	Albuminoid Nitrogen as N	0.04	mg/l	Yes

Legionellosis is a collective term for diseases caused by *Legionella* bacteria including the most serious and potentially fatal, Legionnaires' disease. *Legionella* are common in natural water sources such as rivers, lakes, reservoir and soils, but usually in low numbers. They may also be found in purpose-built water systems such as cooling towers, evaporative condensers, domestic hot and cold water systems and spa pools.

If conditions are favourable, the bacteria will multiply thereby increasing the risks of Legionnaires' disease. It is important to control the risks by introducing the appropriate measures as outlined in associated guidance and legislation.

Our legionella methods follows the most recent ISO standard; 11731:2017 Water quality – Enumeration of Legionella. Filtration is utilised as standard (method MIC003d) but we also have a centrifugation method available for processing 'dirty' samples.



Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation
LEGIOND1	Other Legionella Species	50 - 15000	CFU/Vol	Yes
LEGIOND2	Legionella pneumophila SG 1	50 - 15000	CFU/Vol	Yes
LEGIOND3	Legionella pneumophila SG 2-14	50 - 15000	CFU/Vol	Yes

If you would like to order this suite, when you contact us please quote code: LEGP

Rapid Legionella Analysis

For culture methods, finding bacteria relies on the principle of viable culturable bacterial cells growing to form colonies on agar. Results are expressed as Colony Forming Units per unit volume e.g. cfu/L.

qPCR, which is a molecular method, works on the principle of extracting DNA from cells in the sample and then amplifying until it becomes detectable. The number of DNA copies in the initial sample (1 per cell) can then be calculated from the calibration curve of the instrument depending on the time it takes to detect the DNA. Results are expressed as Genomic Units (GU) per unit volume e.g. GU/L.

Currently, the culture method is the 'gold standard' in Legionella detection and identification. However, new technologies such as qPCR offer considerable advantage over the culture method in the rapid turn-around time of results (as fast as 48hrs). This has been recognised by the HSE (Health and Safety Executive) especially as a negative screening tool and as a complimentary test to routine monitoring.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation
LEGPCR01	Legionella Species PCR Result	608-1184000	GU/L	No
LEGPCR02	Legionella Pneumophila PCR Result	608-1184000	GU/L	No

Comparison of Legionella culture and rapid qPCR method

Specification	Culture	qPCR
Result Turn-around time	10-12 days	Rapid 6 - 48hrs
Interferences with nontarget microorganisms	High	Very low
Viable But Non-Culturable (VBNC)	Not detected	Detected
Culturable cells	Detected	Detected
Dead cells	Not detected	Detected
Regulatory Compliance	Yes	Not currently, but likely in future versions of Regs
Cost	Low	Moderate
Expression of Results	Colony Forming Units (CFU)	Genomic units (GU)



Surface and Air Tests

A range of microbiological and chemical tests are available for surface and air samples which are suitable for many applications.

Consumables such as swabs and plates are provided by Latis Scientific, and we also have the option to loan portable air samplers for contact plates.

Surface Samples

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
TVC_11	Total viable count @ 25°C (plate)	0 - 100	CFU/plate	No
YEAST4	Yeasts (plate count)	0 - 100	CFU/plate	No
Mould01	Penicillium Species*	0 - 100	CFU/plate	No
Asper01	Aspergillus Species*	0 - 100	CFU/plate	No
Penic01	Moulds	0 - 100	CFU/plate	No

* *morphological identification*

If you would like to order this suite, when you contact us please quote code: AIRC

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
Asper03	Aspergillus Species	0 - 100	CFU/swab	No
TVC_18	Total viable count @ 25°C (swab)	0 - 100	CFU/swab	No
YEAST1	Yeast (Swab)	0 - 100	CFU/Swab	No
Penic03	Penicillium Species	0 - 100	CFU/swab	No
Mould03	Moulds	0 - 100	CFU/swab	No

If you would like to order this suite, when you contact us please quote code: AIRW

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
LEGIONQ06	Other Legionella Species	50 - 15000	CFU/swab	No
LEGIONQ07	Legionella pneumophila SG 1	50 - 15000	CFU/swab	No
LEGIONQ08	Legionella pneumophila SG 2-14	50 - 15000	CFU/swab	No

If you would like to order this suite, when you contact us please quote code: LEGPS

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
ECOLI2	Escherichia coli	10 - 24000	MPN/swab	No
CL_PERF2	Clostridium perfringens swab	10 - 1000	CFU/swab	No
F_ENT2	Enterococci	10 - 1000	CFU/swab	No

If you would like to order this suite, when you contact us please quote code: FAECALSWAB

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
P_AERU2	Pseudomonas aeruginosa	10 - 1000	CFU/swab	No
P_SPEC3	Pseudomonas species @ 30°C	10 - 1000	CFU/swab	No

If you would like to order this suite, when you contact us please quote code: PSEUDSWAB

Air Samples

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
TVC_11	Total viable count @ 25°C (plate)	0 - 100	CFU/plate	No
YEAST4	Yeasts (plate count)	0 - 100	CFU/plate	No
Penic01	Penicillium Species	0 - 100	CFU/plate	No
Asper01	Aspergillus Species	0 - 100	CFU/plate	No
Mould01	Moulds	0 - 100	CFU/plate	No

If you would like to order this suite, when you contact us please quote code: AIRP



Lakes and other surface waters can be polluted by contaminants from agricultural, domestic and industrial run-offs. These pollutants change the water environment affecting the fish and vegetation. Latis Scientific can offer advise and carry out testing to determine such contamination assist in the determination of such contamination.

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Surface waters
Amm02	Ammoniacal Nitrogen as NH ₄	0.04	mg/l	Yes
Appear08	Solids - Visual	n/a	n/a	No
As04	Arsenic, Total	0.01	mg/l	Yes
BOD01	Biochemical Oxygen Demand	5.6	mg/l	No
Cd04	Cadmium, Total	0.005	mg/l	Yes
Chloride01	Chloride	5	mg/l	Yes
CN03	Cyanide, Total	0.03	mg/l	No
COD03	Chemical Oxygen Demand	10	mg/l	Yes
Cr04	Chromium, Total	0.01	mg/l	Yes
Cu04	Copper, Total	0.02	mg/l	Yes
Deter10	Anionic Surfactants	0.05	mg/l	No
D001	Dissolved Oxygen	0.5	mg/l	Yes
D002	Oxygen Saturation	0.5	%	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Hg04	Mercury, Total	0.005	mg/l	No
Mn04	Manganese, Total	0.01	mg/l	Yes
Ni04	Nickel, Total	0.01	mg/l	Yes
Nitrate02	Nitrate as NO ₃	2.2	mg/l	Yes
Nitrite05	Nitrite as NO ₂	0.03	mg/l	No
P02	Phosphorus, Total	0.02	mg/l	No
Pb04	Lead, Total	0.01	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
Phenols01	Phenols, Total	0.01	mg/l	No
Solids18	Total Dissolved Solids - Meter	100	mg/l	No
Solids06	Suspended Solids @ 105°C	5	mg/l	No
TKN01	Total Kjeldahl Nitrogen as N	0.04	mg/l	No
Zn04	Zinc, Total	0.01	mg/l	Yes

If you would like to order this suite, when you contact us please quote code: LWCH

det	Determinant	Reporting range	Units	UKAS accreditation for Surface waters
COLI1	Total Coliforms	0 - 240000	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 240000	MPN/100ml	Yes
I_ENT1	Intestinal enterococci	0 - 10000	CFU/100ml	Yes

If you would like to order this suite, when you contact us please quote code: LWB2

Other Microbiological Tests

det	Determinant	Reporting range	units	UKAS accreditation for Surface waters
SALMON1	Salmonella spp	Detected / Not Detected	per 1L	No
ALGAE	Algae	50000	Cells/L	No



Latis Scientific offer effluent discharge testing for many industries. Please contact us to discuss your specific requirements and to arrange a bespoke testing suite. Examples of possible tests undertaken by Latis for effluent include:

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Effluent waters
Chlorine03	Chlorine, Free	0.02	mg/l	No
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No
Solids07	Settleable Solids, Rapid	5	mg/l	No
Solids08	Settleable Solids	5	mg/l	No
Solids06	Suspended Solids @ 105°C	5	mg/l	No
BOD01	Biochemical Oxygen Demand	5.6	mg/l	No
BOD02	Biochemical Oxygen Demand - Settled	5.6	mg/l	No
D001	Dissolved Oxygen	0.5	mg/l	Yes
COD01	Chemical Oxygen Demand	10	mg/l	Yes
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	No
Amm02	Ammoniacal Nitrogen as NH ₄	0.04	mg/l	No
Na04	Sodium, Total	0.1	mg/l	No
K04	Potassium, Total	0.5	mg/l	No
Sulphite01	Sulphite as Na ₂ SO ₃	0.1	mg/l	No
Ag03	Silver, Dissolved	0.005	mg/l	No
Cd04	Cadmium, Total	0.005	mg/l	No
Cr04	Chromium, Total	0.01	mg/l	No
Cu04	Copper, Total	0.02	mg/l	No
Ni04	Nickel, Total	0.01	mg/l	No
Pb04	Lead, Total	0.01	mg/l	No
Zn04	Zinc, Total	0.01	mg/l	No
Sb04	Antimony, Total	0.02	mg/l	No
Be04	Beryllium, Total	0.01	mg/l	No
Se04	Selenium, Total	0.05	mg/l	No
Ag04	Silver, Total	0.005	mg/l	No
Sn04	Tin, Total	0.01	mg/l	No
V04	Vanadium, Total	0.02	mg/l	No
B03	Boron, Dissolved	0.01	mg/l	No
P02	Phosphorus, Total	0.02	mg/l	No
Fe03	Iron, Dissolved	0.05	mg/l	No
As04	Arsenic, Total	0.01	mg/l	No
Al04	Aluminium, Total	0.01	mg/l	No
Mo04	Molybdenum, Total	0.05	mg/l	No
P06	Phosphorus, Total as PO ₄	0.061	mg/l	No
Na04	Sodium, Total	0.1	mg/l	No
K04	Potassium, Total	0.5	mg/l	No
Ca05	Calcium, Total	0.05	mg/l	No

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Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Effluent waters
Mg05	Magnesium, Total	0.1	mg/l	No
Co04	Cobalt, Total	0.01	mg/l	No
Fe04	Iron, Total	0.05	mg/l	No
Mn04	Manganese, Total	0.01	mg/l	No
Hg04	Mercury, Total	0.005	mg/l	No
Ti04	Titanium, Total	0.01	mg/l	No
Ba04	Barium, Total	0.01	mg/l	No
B04	Boron, Total	0.01	mg/l	No
Sr04	Strontium, Total	0.01	mg/l	No
Tl02	Thallium, Total	0.01	mg/l	No
Phosphat03	Phosphate, Total Inorganic as P	0.01	mg/l	No
Phosphat04	Phosphate, Total Inorganic as PO4	0.031	mg/l	No
Phosphat06	Phosphate, Ortho as PO4	0.031	mg/l	No
Phosphat05	Phosphate, Ortho as P	0.01	mg/l	No
CN03	Cyanide, Total	0.03	mg/l	No
Sulphide01	Sulphide as H2S	0.01	mg/l	No
Sulphide07	Sulphide as S2-	0.01	mg/l	No
OIL01	Oil & Grease, Total	5	mg/l	No
OIL02	Oil & Grease, Saponifiable	5	mg/l	No
OIL03	Oil & Grease, Unsaponifiable	5	mg/l	No
Chloride01	Chloride	5	mg/l	Yes
Fluoride01	Fluoride	0.1	mg/l	Yes
Sulphate01	Sulphate	5	mg/l	Yes
Sulphate02	Available Sulphur Dioxide as SO2	5	mg/l	No
Bromide01	Bromide	0.5	mg/l	Yes
Nitrate01	Nitrate as N	0.5	mg/l	Yes
Phosphat05	Phosphate, Ortho as P	0.01	mg/l	No
Nitrite01	Nitrite as N	2	mg/l	Yes
Nitrite02	Nitrite as NO2	6.6	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Alk11	Alkalinity, Total as CaCO3	10	mg/l	Yes
Alk12	Alkalinity, Total as HCO3	10	mg/l	Yes
EC06	Electrical Conductivity @ 25°C	100	µS/cm	Yes
COD03	Chemical Oxygen Demand	10	mg/l	Yes
COD05	Chemical Oxygen Demand - Settled	10	mg/l	Yes
Chloride02	Chloride	10	mg/l	No
Phenols01	Phenols, Total	0.01	mg/l	No
Hard08	Hardness, Total as CaCO3	1	mg/l	No
Hard09	Hardness, Total as Ca	10	mg/l	No
Appear03	Colour	0	HU	No

Whether you wish to test raw borehole water prior to treatment as a private water supply, or if land contamination is a concern, Latis Scientific provide ground water testing to meet your needs. Please contact us to discuss your requirements.

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /Reporting range (Microbiology)	Units	UKAS accreditation for Ground waters
Appear02	Colour	n/a	n/a	No
Appear04	Clarity	n/a	n/a	No
Appear05	Odour	n/a	n/a	No
Appear08	Solids - Visual	n/a	n/a	No
Appear01	Appearance	n/a	n/a	No
Appear09	Odour, Quantitative	0	Dilution No	No
Chlorine03	Chlorine, Free	0.02	mg/l	No
Solids03	Total Dissolved Solids @ 105°C	30	mg/l	No
Solids04	Total Dissolved Solids @ 180°C	30	mg/l	No
Solids06	Suspended Solids @ 105°C	5	mg/l	No
BOD01	Biochemical Oxygen Demand	5.6	mg/l	No
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Amm02	Ammoniacal Nitrogen as NH ₄	0.04	mg/l	Yes
Hard01	Hardness, Total as CaCO ₃	10	mg/l	No
Hard15	Hardness, Permanent as CaCO ₃	10	mg/l	No
Hard19	Hardness, Temporary as CaCO ₃	10	mg/l	No
K04	Potassium, Total	0.5	mg/l	Yes
Al04	Aluminium, Total	0.01	mg/l	No
B04	Boron, Total	0.01	mg/l	No
Cr04	Chromium, Total	0.01	mg/l	Yes
Cu04	Copper, Total	0.02	mg/l	Yes
Fe04	Iron, Total	0.05	mg/l	Yes
Mn04	Manganese, Total	0.01	mg/l	Yes
Na04	Sodium, Total	0.1	mg/l	Yes
Ni04	Nickel, Total	0.01	mg/l	Yes
Ba04	Barium, Total	0.01	mg/l	No
Co04	Cobalt, Total	0.01	mg/l	No
Mo04	Molybdenum, Total	0.05	mg/l	No
Zn04	Zinc, Total	0.01	mg/l	Yes
Ca05	Calcium, Total	0.05	mg/l	Yes
Mg05	Magnesium, Total	0.1	mg/l	Yes
P02	Phosphorus, Total	0.02	mg/l	No
Si05	Silica, Total	0.01	mg/l	No
Pb04	Lead, Total	0.01	mg/l	Yes

Continued on next page...

Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) /Reporting range (Microbiology)	Units	UKAS accreditation for Ground waters
Pb04	Lead, Total	0.01	mg/l	Yes
Fe03	Iron, Dissolved	0.05	mg/l	Yes
Cd04	Cadmium, Total	0.005	mg/l	Yes
CN03	Cyanide, Total	0.03	mg/l	No
Sulphide01	Sulphide as H ₂ S	0.01	mg/l	No
Nitrite05	Nitrite as NO ₂	0.03	mg/l	No
Nitrite04	Nitrite as N	0.01	mg/l	No
Chloride01	Chloride	5	mg/l	No
Bromate01	Bromate	0.25	mg/l	No
Fluoride01	Fluoride	0.1	mg/l	No
Nitrate02	Nitrate as NO ₃	2.2	mg/l	No
Sulphate01	Sulphate	5	mg/l	No
Nitrate01	Nitrate as N	0.5	mg/l	No
Alk11	Alkalinity, Total as CaCO ₃	10	mg/l	Yes
Alk13	Alkalinity, Bicarbonate as CaCO ₃	10	mg/l	Yes
Alk15	Alkalinity, Carbonate as CaCO ₃	10	mg/l	Yes
Alk17	Alkalinity, Hydroxide as CaCO ₃	10	mg/l	Yes
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
pH05	pH	2 - 13	pH Unit	Yes
COD03	Chemical Oxygen Demand	10	mg/l	Yes
Turb01	Turbidity	0.4	NTU	No
Appear03	Colour	0	HU	No
TVC_01	Total viable count @ 22°C/72hrs	0 - 15,000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 15,000	CFU/ml	Yes
LEGI0ND1	Other Legionella Species	50 - 15000	CFU/Vol	No
LEGI0ND2	Legionella pneumophila SG 1	50 - 15000	CFU/Vol	No
LEGI0ND3	Legionella pneumophila SG 2-14	50 - 15000	CFU/Vol	No
CL_PERF1	Clostridium perfringens	0 - 100	CFU/100ml	Yes
F_ENT1	Enterococci	0 - 100	CFU/100ml	Yes
COLI1	Total Coliforms	0 - 201	MPN/100ml	Yes
ECOLI1	Escherichia coli	0 - 201	MPN/100ml	Yes
FaecalCol1	Faecal Coliforms	0 - 100	MPN/100ml	No

Deposits

Deposits can appear in a water system due to various causes such as precipitation of metals, treatment chemicals, hardness scale and sloughed biofilm, to name but a few. These deposits can represent a health risk where bacteria can thrive, in addition to lowering the life expectancy of expensive equipment and fittings.

Latis Scientific can help you determine the type and cause of deposit present.

Chemical Deposit Suite

(exact reporting parameter will differ from the generic suite below, depending on the outcome of certain analysis)

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation
Ca09	Calcium, as CaCO ₃	0.1	% w/w	No
Cu07	Copper, as CuCO ₃ , Cu(OH) ₂	0.1	% w/w	No
Deposit02	Acid Insoluble Material	0.1	% w/w	No
Deposit03	Loss on Ignition @ 525°C	0.1	% w/w	No
Deposit05	Appearance			No
Deposit07	Dried / Crushed Appearance			No
Deposit08	Odour on acidification			No
Fe07	Iron, as Fe ₂ O ₃ / Fe ₃ O ₄	0.1	% w/w	No
Zn09	Zinc, as ZnCO ₃	0.1	% w/w	No
Deposit02	Acid Insoluble Material	0.1	% w/w	No

If you would like to order this suite, when you contact us please quote code: DEP

Where the major component of the deposit is not determined in the above test suite, we can proceed to further analyse the sample based on the system information available.

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation
Al07	Aluminium as Al ₂ O ₃	0.1	% w/w	No
Mg08	Magnesium, as MgCO ₃	0.1	% w/w	No

Microbiological Analysis

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
TVC_S1	Total viable count @ 22°C/72hrs	10 - 3000	CFU/g	No
TVC_S2	Total viable count @ 37°C/48hrs	10 - 3000	CFU/g	No
P_SPEC8	Pseudomonas species	10 - 1000	CFU/g	No
MICROFUNGS	Microfungi	10- 1000	CFU/g	No
MicroscopS	Microscopy	NA	NA	No

Ingress of water can occur in many ways and cause large amounts of damage to properties and assets within properties. It is important to ascertain the source of the water ingress to be able to stop the ingress quickly and also help prevent it from reoccurring.

In cases where water appears in buildings from an unknown source, we offer expert investigatory techniques to establish the nature of the problem. Assessing the nature of these waters is highly specialised work and speed is always vital, as the water ingress may pose a serious threat to the structure of the building.

Our team are available to visit your site, or alternatively we can also offer the testing and interpretation of sample water submitted by our customers.

To be tested from the ingress water.

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation
COLI1	Total Coliforms	0 - 24000	MPN/100ml	Yes*
ECOLI1	Escherichia coli	0 - 24000	MPN/100ml	Yes*
F_ENT1	Enterococci	0 - 1000	CFU/100ml	Yes*

* UKAS accreditation for Process, Potable, Recreational, Ground, Surface, Effluent and Sewage waters. Ingress water will be classified as an 'unknown' matrix type and UKAS accreditation will not apply.

If you would like to order this suite, when you contact us please quote code: IWB

To be tested from the ingress water and a comparison source.

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Potable waters*
Alk11	Alkalinity, Total as CaCO3	10	mg/l	Yes
Alk13	Alkalinity, Bicarbonate as CaCO3	10	mg/l	Yes
Alk15	Alkalinity, Carbonate as CaCO3	10	mg/l	Yes
Alk17	Alkalinity, Hydroxide as CaCO3	10	mg/l	Yes
Amm01	Ammoniacal Nitrogen as N	0.04	mg/l	Yes
Amm07	Albuminoid Nitrogen as N	0.04	mg/l	Yes
Appear02	Colour	n/a	n/a	No
Appear04	Clarity	n/a	n/a	No
Appear05	Odour	n/a	n/a	No
Appear08	Solids - Visual	n/a	n/a	No
Chloride01	Chloride	5	mg/l	Yes
Deter10	Anionic Surfactants	0.05	mg/l	No
EC05	Electrical Conductivity @ 20°C	100	µS/cm	Yes
Hard08	Hardness, Total as CaCO3	1	mg/l	No
K04	Potassium, Total	0.5	mg/l	Yes
Na04	Sodium, Total	0.1	mg/l	Yes
Nitrate01	Nitrate as N	0.5	mg/l	Yes
Nitrite04	Nitrite as N	0.01	mg/l	Yes
pH05	pH	2 - 13	pH Unit	Yes
Phosphat03	Phosphate, Total Inorganic as P	0.01	mg/l	Yes
PV01	Permanganate Value - 4hrs @ 27°C	0.5	mg/l	Yes
Solids18	Total Dissolved Solids - Meter	100	mg/l	No
Sulphate01	Sulphate	5	mg/l	Yes

If you would like to order this suite, when you contact us please quote code: IWCH

Different types of washer disinfectors may be found in healthcare facilities which are used to clean and disinfect equipment such as bedpans, surgical instruments, dental instruments and flexible endoscopes.

Periodic validation tests for surgical instrument washers and flexible endoscope washers are outlined in HTM 01-01 and HTM 01-06 series of documents.

Surgical Instrument Washer Disinfectant

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for purified waters	Max. permitted values for Rinse Water (HTM 01-01 part D)
HMETAL01	Heavy Metals	0.1	mg/l	No	10
Appear01	Appearance	NA	NA	No	clear, colourless
pH05	pH	2 - 13	pH Unit	Yes	5.5 - 8.0
EC02	Electrical Conductivity @ 25°C	5	vs./cm	No	30
Hard01	Hardness, Total as CaCO ₃	10	mg/l	Yes	50
Chloride07	Chloride	0.5	mg/l	No	10
Fe04	Iron, Total	0.05	mg/l	Yes	2
Silicate01	Silicate, Soluble	0.1	mg/l	No	0.2
P11	Phosphorus, Total as P ₂ O ₅	0.046	mg/l	Yes	0.2
Solids24	Total Dissolved Solids - Meter from EC 25C	5	mg/l	No	40

If you would like to order this suite, when you contact us please quote code: CFPP0101D

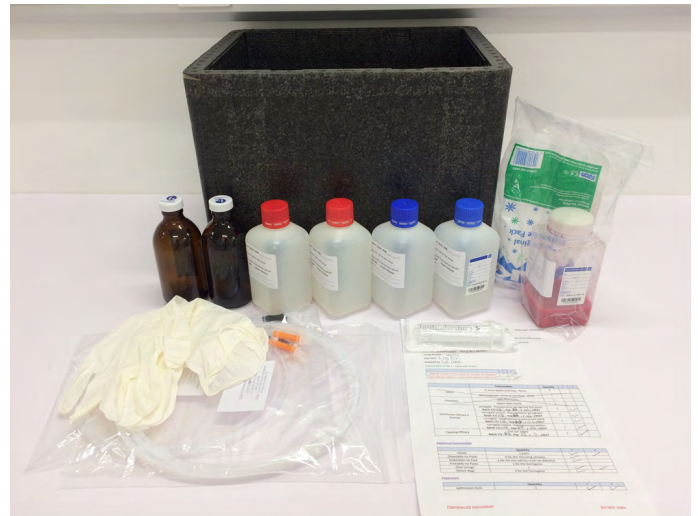
Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for purified waters	Max. permitted values for Rinse Water (HTM 01-01 part D)
TVC_17	Total viable count @ 35°C (Average from duplicate)	0 - 100	CFU/100ml	Yes	100
ALPHA01	Bacterial Endotoxin	0.01 - 30.00	EU/ml	Yes	0.25

If you would like to order this suite, when you contact us please quote code: CCFPP0101DB

Flexible Endoscope Washer Disinfectors

We offer the complete set of water testing for weekly, quarterly and yearly validation, as well as cleaning efficacy test soils and surrogate devices as required.

All water sample bottles are pre-registered on our system, saving you time on site and facilitating trend analysis of your results. Quarterly and Annual kits are delivered in cool boxes with consumables such as ice packs, gloves, aprons and syringes.



Weekly Water Testing

Determination for the presence of *Pseudomonas aeruginosa* is carried out where the weekly bacterial count is above 10 cfu/100ml. This is done through presumptive

identification using the oxidase test and further confirmation where required by sub-culturing the growth on *Pseudomonas aeruginosa* selective media.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for purified waters	Satisfactory results HTM 01-06
TVC_28	Total viable count @ 30°C	0 - 100	CFU/100ml	Yes	10

If you would like to order this suite, when you contact us please quote code: TVC_28

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation for purified waters	Satisfactory results HTM 01-06
EC02	Electrical Conductivity @ 25°C	5	vs./cm	No	40
Hard01	Hardness, Total as CaCO ₃	10	mg/l	Yes	50

If you would like to order this suite, when you contact us please quote code: ENDOWK

Quarterly Water Testing

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for purified waters	Satisfactory results HTM 01-06
Appear01	Appearance	n/a	n/a	No	Clear, bright and colourless
EC02	Electrical Conductivity @ 25°C	5	vs./cm	No	40
Hard01	Hardness, Total as CaCO ₃	10	mg/l	Yes	50
pH05	pH	2 - 13	pH Unit	Yes	5.5 - 8.0
TOC-man3LL	Total Organic Carbon	0.1	mg/l	No	1

If you would like to order this suite, when you contact us please quote code: CFPP0106

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for purified waters	Satisfactory results HTM 01-06
TVC_28	Total viable count @ 30°C	0 - 100	CFU/100ml	Yes	10
P_AERU1	Pseudomonas aeruginosa	0 - 100	CFU/100ml	No	Not Detected
ENV_MYCO14	Environmental Mycobacteria	0 - 100	CFU/100ml	Yes	Not Detected

If you would like to order this suite, when you contact us please quote code: HTM0106B

Cleaning Efficacy Test Soils

Test soil used to demonstrate cleaning efficacy is made according to ISO 15883-5 Annex R. Surrogate device, brush and syringes are available on request.

Disinfection Efficacy Surrogate Devices

Surrogate device for the testing of chemical disinfection efficacy is available for a variety of specifications to meet your requirements.



Endoscope storage cabinets provide a controlled environment where decontaminated endoscopes can be stored safely without being recontaminated.

Sample kits for storage cabinets are delivered to site with all necessary consumables and pre-registered for your convenience.

Surface contact plates

The efficacy of the cleaning/disinfection procedure is verified by determining the contamination levels inside the chamber using contact plate. We can arrange for contact plate kits to be delivered to and collected from site.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation
DryCCBac_1	Bacterial Count @ 30C/5 Days	0 - 100	CFU/plate	No
DryCCFun_1	Fungal Count @ 30C/5 Days	0 - 100	CFU/plate	No
DryCCTVC_1	Total Viable Count @ 30C/5 Days (Plate)	0 - 100	CFU/plate	No

Sterile surrogate endoscope devices

Sterile surrogates are made to client specification and installed in the cabinet. They are removed after the maximum storage period and tested to check that the cabinet is capable of maintaining the microbiological quality of the endoscopes intended to be stored inside.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation
DryCFun_2	Fungal Count @ 30C/ 5 Days (Endoscope)	0-100	CFU/Endoscope surrogate	No
DryCTotal	Total Viable Count @ 30C/5 Days (Endoscope)	0-200	CFU/Endoscope surrogate	No
DryCTVC_2	Bacterial Count @ 30C/5 Days (Endoscope)	0-100	CFU/Endoscope surrogate	No

Air plates

Airborne microbial contamination is evaluated using either active sampling air plates or sedimentation plates.

Latis Determinant Code:	Determinant	Reporting range	Units	UKAS accreditation
DryCCBac_1	Bacterial Count @ 30C/5 Days	0 - 100	CFU/plate	No
DryCCFun_1	Fungal Count @ 30C/5 Days	0 - 100	CFU/plate	No
DryCCTVC_1	Total Viable Count @ 30C/5 Days (Plate)	0 - 100	CFU/plate	No

Patients going through dialysis treatments are exposed to a large volume of water through the treatment. As such, ensuring the quality of dialysis water is essential. Latis Scientific offer dialysis water quality testing according to

BS ISO 13959:2014 Water for haemodialysis and related therapies and also to the Clinical Practice Guidelines by the UK Renal Association and Association of Renal Technologists.

Latis Suite	Latis Determinant Code:	Determinant	Reporting Limit (Chemistry) Reporting range (Microbiology)	Reporting Units	UKAS accreditation for Purified waters	BS ISO 13959:2014 Max. Limits	Notes derived from RA/ART Clinical Practice Guidelines
RATM	ALPHA01	Bacterial Endotoxin	0.01 - 10	EU/ml	Yes	0.25 EU/ml	Test at least Monthly (Action limit at 50% max limits)
	TVC_06	Total viable count @ 22°C/7 Days	0 - 100,000	CFU/100ml	Yes	100 CFU/ml	
N/A	Chlorine03	Chlorine, Total	0.02	mg/l	No	0.1 mg/l	At least weekly, to be performed immediately after drawing sample
RA 1	Al57	Aluminium, Total - Purified ICPMS	0.005	mg/l	Yes	0.01 mg/l	Mandatory monitoring suite, testing every 3 months
	Ca05	Calcium, Total	0.05	mg/l	No	2 mg/l	
	Fluoride01	Fluoride	0.1	mg/l	Yes	0.2 mg/l	
	K04	Potassium, Total	0.5	mg/l	Yes	8 mg/l	
	Mg05	Magnesium, Total	0.1	mg/l	No	4 mg/l	
	Na04	Sodium, Total	0.1	mg/l	Yes	70 mg/l	
	Cu04	Copper, Total	0.02	mg/l	Yes	0.1 mg/l	
	Nitrate01	Nitrate as N	0.5	mg/l	Yes	2 mg/l	
RA2	As57	Arsenic, Total - Purified ICPMS	0.001	mg/l	Yes	0.005 mg/l	In water treated by RO, these contaminants will only exceed the limits if they occur at relatively high levels in the water supplied to the unit. These contaminants can be omitted from routine tests if data is available to show that the levels in the water supplied to the unit rarely exceed the limit.
	Cd57	Cadmium, Total - Purified ICPMS	0.001	mg/l	Yes	0.001 mg/l	
	Cr57	Chromium, Total - Purified ICPMS	0.001	mg/l	Yes	0.014 mg/l	
	Hg59	Mercury, Total	0.025	µg/l	Yes	0.0002 mg/l	
	Pb57	Lead, Total - Purified ICPMS	0.001	mg/l	Yes	0.005 mg/l	
	Sulphate01	Sulphate	5	mg/l	Yes	100 mg/l	
RA 3	Ag57	Silver, Total - Purified ICPMS	0.002	mg/l	Yes	0.005 mg/l	Levels not specified in Drinking Water but not considered to occur in levels which would cause concern. Testing is only required where there is evidence of high levels in water supply.
	Ba57	Barium, Total - Purified ICPMS	0.002	mg/l	Yes	0.1 mg/l	
	Be57	Beryllium, Total - Purified ICPMS	0.0002	mg/l	Yes	0.0004 mg/l	
	Tl57	Thallium, Total - Purified ICPMS	0.001	mg/l	Yes	0.002 mg/l	
	Zn57	Zinc, Total - Purified ICPMS	0.001	mg/l	Yes	0.1 mg/l	
N/A	Sb57	Antimony, Total - Purified ICPMS	0.001	mg/l	Yes	0.006 mg/l	Excluded from RA/RAT - Limits for UK Drinking Water is lower than limit for dialysis water

The quality of steam used in sterilisation will affect the longevity of the steriliser alongside the efficacy of the sterilisation process and thereby the safety of the end product.

Full steam purity test is available for operational and performance qualification.

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for Purified waters	HTM 01-01 Part C Table 5 specifications
ALPHA01	Bacterial Endotoxin	0.01 - 10	EU/ml	Yes	<0.25 EU/mL (load)

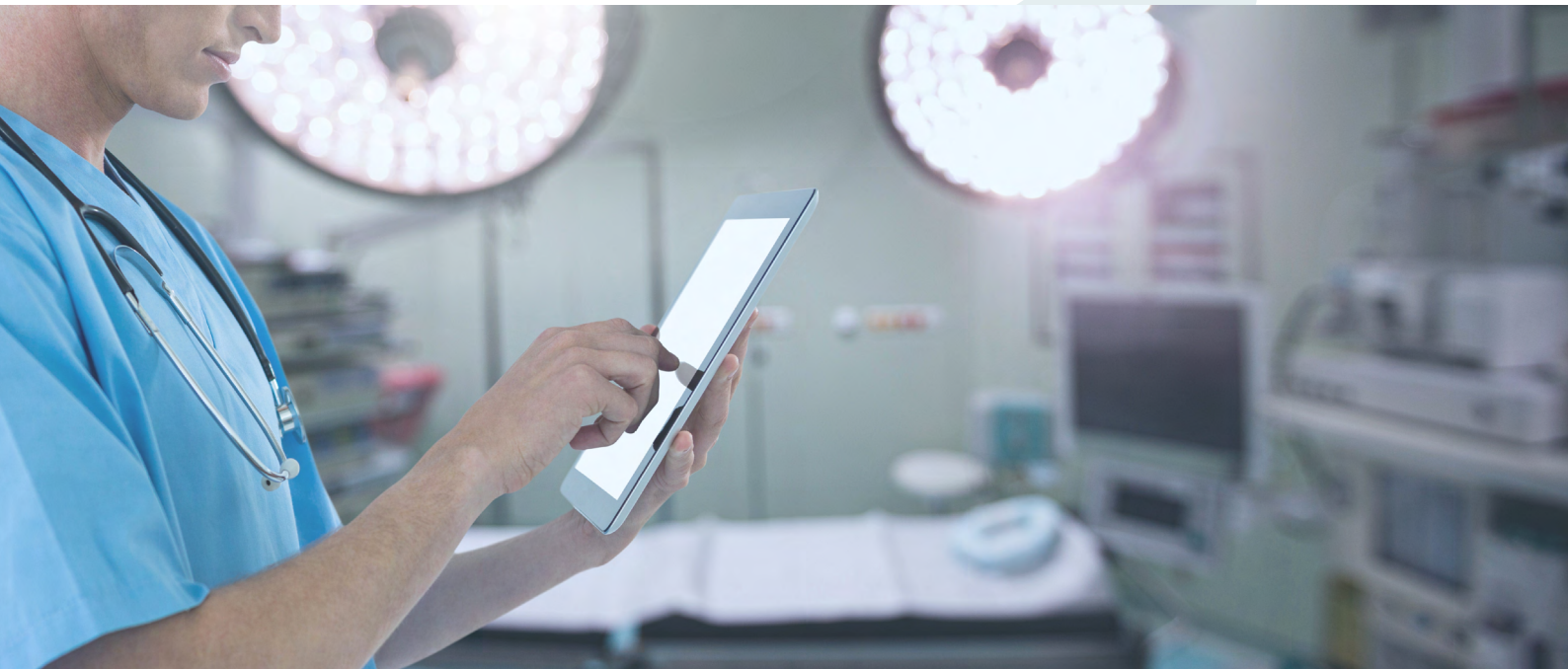
If you would like to order this suite, when you contact us please quote code: CFPSTB

Latis Determinant Code:	Determinant	Reporting Limit	Units	UKAS accreditation for Purified waters	HTM 01-01 Part C Table 5 specifications
Amm02	Ammoniacal Nitrogen as NH ₄	0.04	mg/l	Yes	<0.2 mg/L (load)
Chloride07	Chloride	0.5	mg/l	No	<0.1 mg/L (corrosion), <0.5 mg/L (load)
HMETAL01	Heavy Metals	0.1	mg/l	No	<0.1 mg/L (corrosion and load)
Nitrate05	Nitrate as NO ₃	0.2	mg/l	Yes	<0.2 mg/L (load)
OXSUB01	Oxidisable Substances	0.5	mg/l	Yes	(load)
P11	Phosphorus, Total as P ₂₀₅	0.046	mg/l	Yes	<0.1 mg/L (corrosion and load)
RESONEVAP1	Residue on Evaporation	30	mg/l	No	<30 mg/L (load)
Silicate01	Silicate, Soluble	0.1	mg/l	No	<0.1 mg/L (corrosion)
Sulphate01	Sulphate	5	mg/l	Yes	(load)
Hard18	Hardness, Total as CaCO ₃	0.02	mmol/l	Yes	<0.02 mmol/L (corrosion)
EC01	Electrical Conductivity @ 20°C	0	µS/cm	No	<3 µS/cm (corrosion), <35 µS/cm (load)
Appear01	Appearance	N/A		No	clear, colourless, no sediment (corrosion), clear and colourless (load)
Cd04	Cadmium, Total	0.005	mg/l	Yes	<0.005 mg/L (corrosion)
Pb04	Lead, Total	0.01	mg/l	Yes	<0.05 mg/L (corrosion)
pH05	pH	2 - 13	pH Unit	Yes	5-7 (corrosion)
Ca05	Calcium, Total	0.05	mg/l	No	(load)
Mg05	Magnesium, Total	0.1	mg/l	No	(load)

If you would like to order this suite, when you contact us please quote code: CFPST

An environmental sampling protocol for heater-cooler units was issued by the Public Health England (PHE) following a series of investigation which revealed a small risk of *Mycobacterium chimaera* infection in patients following cardiac surgery.

This has been attributed to contaminated water from heater cooler units being transmitted as aerosols during cardiothorathic surgery, where the device is utilised as part of the cardiopulmonary bypass equipment.



Air Sampling

Our trained consultancy staff offer air sampling of the theatre following the procedure outlined in Environmental Sampling, Processing and Culturing of Water and Air Samples for the Isolation of Slow-Growing Mycobacteria; Public Health England, July 2016. Please contact us for details of the test.

Water sampling/testing

Latis Scientific offer testing of water taken from the Heater Cooler Unit. Our consultancy team offer a sampling service but a sample can also be submitted by site.

Environmental Mycobacteria

Latis Scientific holds UKAS accreditation for the testing of Mycobacteria in purified waters. The current method MIC018 uses a solid media Middlebrook 7H10 agar plate and do not conform to the protocol issued by Public Health England Environmental Sampling, Processing and culturing of Water and Air Samples for the Isolation of Slow Growing Mycobacteria, July 2016.

Latis Scientific will, if requested, arrange for positive Environmental Mycobacteria isolates to be retained and/or sent to PHE to be tested for the identification of *Mycobacterium chimaera*.

Legionella

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for process waters
LEGI0ND1	Other Legionella Species	50 - 15000	CFU/Vol	Yes
LEGI0ND2	Legionella pneumophila SG 1	50 - 15000	CFU/Vol	Yes
LEGI0ND3	Legionella pneumophila SG 2-14	50 - 15000	CFU/Vol	Yes

If you would like to order this suite, when you contact us please quote code: LEGP

Pseudomonas aeruginosa

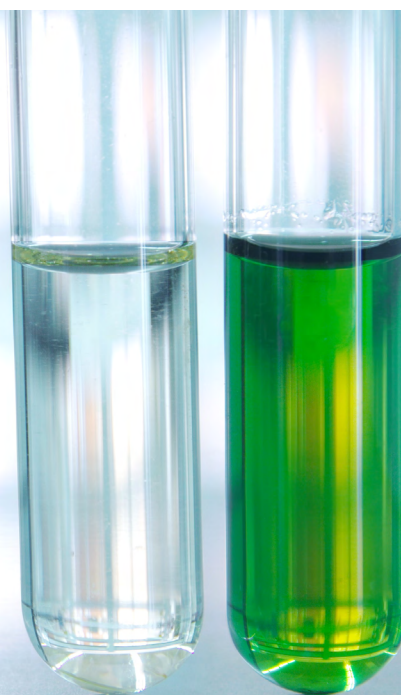
Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for process waters
P_AERU5	Pseudomonas aeruginosa (250ml)	0 - 100	CFU/250ml	No

Total Viable Count (Colony Count)

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for process waters
TVC_01	Total viable count @ 22°C/72hrs	0 - 15000	CFU/ml	Yes
TVC_02	Total viable count @ 37°C/48hrs	0 - 15000	CFU/ml	Yes

Mould

Latis Determinant Code:	Determinant	Reporting Range	Units	UKAS accreditation for process waters
MOULD2	Mould	0 - 100	CFU/100ml	No



BOTTLE GUIDE

MARKET LEADING PROVIDER
OF LABORATORY AND
CONSULTANCY SERVICES

Microbiology Suites

All samples for microbiological analysis except **legionella**, should be stored and transported at a temperature between 2-8°C and tested within 24hrs. Samples for legionella analysis should be stored at room temperature and tested within 48hrs.

Any sample water not containing oxidising biocides such as chlorine and bromine, can also be taken in our blue cap bottles.

Suite Code	Suite Name	Sample Volume
BG29B	BSRIA BG29:2012 Microbiology - 7 Days after Completion of Pre-comm Clean	250ml red cap bottle
BG29B2	BSRIA BG29:2012 Microbiology - Between Pre-comm Clean and Completion	250ml red cap bottle
BG29B3	BSRIA BG29:2012 Microbiology - Fill Water Quality	250ml red cap bottle
BSBM	BSRIA AG1.2001.1 Microbiology - 5 Day SRB	250ml red cap bottle
BSBM-21DAY	BSRIA AG1.2001.1 Microbiology - 21 Day SRB	250ml red cap bottle
CT	Cooling Tower - TVC@22 & 37 °C + <i>Pseudomonas</i> spp.	250ml red cap bottle
CTG	Cooling Tower - TVC@30 °C + <i>Pseudomonas</i> spp.	250ml red cap bottle
DWB	Drinking Water - With Assessment	250ml red cap bottle
DWM	Drinking Water + Fungi - With Assessment	250ml red cap bottle
DVM	<i>Drinking Water + Pseudomonas</i> spp. + <i>Pseudomonas aeruginosa</i>	250ml red cap bottle
DWP	Drinking Water + <i>Pseudomonas</i> spp.	250ml red cap bottle
ECC	<i>Coliforms & E.coli</i>	250ml red cap bottle
FD	Full Differential - 5 Day SRB	500ml red cap bottle
FD-21DAY	Full Differential - 21 Day SRB	500ml red cap bottle
HTM2030B	HTM2030 - Microbiology	500ml red cap bottle + 15ml glass Endotoxin vial
HTM2031B	HTM2031 - Microbiology	15ml glass Endotoxin vial
IWB	Ingress Water - Microbiology	250ml red cap bottle
LEGP	Legionella	1L red cap bottle
LWB	Lake Water - Microbiology	1L + 500ml red cap bottle

Microbiology Suites (2)

Suite Code	Suite Name	Sample Volume
LWB2	Lake Water - No <i>Salmonella</i>	500ml red cap bottle
POT	Drinking Water - No Assessment	250ml red cap bottle
PSEUDS	<i>Pseudomonas Species</i> + <i>Pseudomonas aeruginosa</i>	250ml red cap bottle
PWSMIC1	Private Water Supply Microbiology Audit Monitoring - Non-Regulatory	500ml red cap bottle
PWSMIC2	Private Water Supply Microbiology Check Monitoring - Non-Regulatory	250ml red cap bottle
PWSMICREG1	Private Water Supply Microbiology Audit Monitoring - Regulatory	A sampling kit containing the appropriate bottles will be provided to you on request
PWSMICREG2	Private Water Supply Microbiology Check Monitoring - Regulatory	
RATM	Renal Association Table - Microbiology	250ml red cap bottle + 15ml glass Endotoxin vial
RDF-21DAY	Reduced Differential - SRB 21 Day	250ml red cap bottle
SPB	Swimming Pool + <i>Pseudomonas</i> spp. - Microbiology	500ml red cap bottle
SPB1	Swimming Pool - Microbiology	250ml red cap bottle
TP	TVC @ 22 & 37 °C + <i>Pseudomonas</i> spp.	250ml red cap bottle
TPN	TVC @ 22 & 37 °C + <i>Pseudomonas</i> spp. + NRB	250ml red cap bottle
TPSN	BSRIA + NRB - 5 Day SRB	250ml red cap bottle
TPSN-21DAY	BSRIA + NRB - 21 Day SRB	250ml red cap bottle
TVC	TVC @ 22 & 37 °C	250ml red cap bottle
TWB	Thames Drinking Water - Microbiology	250ml red cap bottle
WFB	Water Feature or Vending Machine Analysis	500ml red cap bottle

For any analysis outside this bottle guide, please contact us on bottlerequests@latisscientific.co.uk or +44 (0)208 853 3900 (select Option 4).

For accreditation status of any analysis, please check our website or the following link

<http://www.ukas.com/services/accreditation-services/laboratory-accreditation-isoiec-17025>

Individual Microbiology Tests

All samples for microbiological analysis except legionella should be stored and transported at a temperature between 2-8°C and tested within 24hrs. Samples for legionella analysis should be stored at room temperature and tested within 48hrs.

Any sample water not containing oxidising biocides such as chlorine and bromine, can also be taken in our blue cap bottles.

Test Name	Minimum Sample Volume
Algae	30ml red cap bottle
<i>Bacillus</i> (per ml)	5ml red cap bottle
<i>Clostridium perfringens</i> per 100ml	100ml red cap bottle
Coliforms per 100ml Idexx	100ml red cap bottle (both analyses can be tested from the same volume)
<i>Escherichia coli</i> per 100ml Idexx	
Cyanobacteria	30ml red cap bottle
Endotoxin	15ml glass endotoxin vial
Environmental Mycobacteria	200ml red cap bottle
<i>Flavobacterium</i> (per ml)	5ml red cap bottle
<i>Enterococci</i> per 100ml	100ml red cap bottle
<i>Enterococci</i> per 100ml - Idexx	100ml red cap bottle
Faecal Coliforms	100ml red cap bottle
Intestinal enterocci	115ml red cap bottle
<i>Listeria</i>	100ml red cap bottle
<i>Legionella pneumophila</i> PCR	1000ml red cap bottle (both analyses can be tested from the same volume)
<i>Legionella</i> species PCR	
<i>Mycobacterium</i> PCR	1000ml red cap bottle
Mould (per ml)	5ml red cap bottle
Mould (per 100ml)	100ml red cap bottle
Microfungi	100ml red cap bottle
Nitrite Oxidising Bacteria	5ml red cap bottle
Nitrate / Nitrite Reducing Bacteria	5ml red cap bottle

Individual Microbiology Tests (2)

Test Name	Minimum Sample Volume
<i>Pseudomonas aeruginosa</i>	100ml red cap bottle
<i>Pseudomonas aeruginosa</i> per 100ml Idexx	100ml red cap bottle
<i>Pseudomonas</i> species (100ml) - Clean waters	100ml red cap bottle
Pseudomonads - Process Waters	5ml red cap bottle
<i>Salmonella</i> spp.	1000ml red cap bottle
Sulphate reducing bacteria - 5 day	5ml red cap bottle
Suphate reducing bacteria - 21 day	5ml red cap bottle
<i>Staphylococcus aureus</i>	100ml red cap bottle
<i>Staphylococcus</i> species	100ml red cap bottle
<i>Streptococcus</i> species	100ml red cap bottle
TVC @ 22°C (Potable)	5ml red cap bottle
TVC @ 37°C (Potable)	5ml red cap bottle
TVC @ 30°C (cooling Towers)	5ml red cap bottle
TVC @ 37°C (pool waters)	5ml red cap bottle
TVC @ 22°C (Dialysis 100ml)	105ml red cap bottle
TVC @ 22°C (Dialysis 1000ml)	1010ml red cap bottle
TVC @ 35°C (Washers CFPP01-01 Part D/HTM2030)	200ml red cap bottle
TVC @ 30°C (Washers CFPP 01-06))	200ml red cap bottle
Yeasts (per ml)	5ml red cap bottle
Yeasts (per 100ml)	100ml red cap bottle

For any analysis outside this bottle guide, please contact us on bottlerequests@latisscientific.co.uk or +44 (0)208 853 3900 (select Option 4).

For accreditation status of any analysis, please check our website or the following link

<http://www.ukas.com/services/accreditation-services/laboratory-accreditation-isoiec-17025>

Chemistry Suites

All samples for chemical analysis should be stored and transported at a temperature between 2-8°C
Please note that DWC, IWCH and LWCH suites include analyses with holding times of 24hrs.

Suite Code	Suite Name	Recommended Sample Volumes
BG29C	BSRIA BG29:2012 Chemistry - 7 Days after Completion of Pre-comm Clean	1000ml blue cap bottle
BG29C2	BSRIA BG29:2012 Chemistry - Between Pre-comm Clean & Completion	1000ml blue cap bottle
BG29C3	BSRIA BG29:2012 Chemistry - Between Pre-comm Clean & Completion + Glycol	1000ml blue cap bottle
BG29C4	BSRIA BG29:2012 Chemistry - Fill Water Quality	500ml blue cap bottle
BSCH	BSRIA AG1.2001.1 - Chemistry	1000ml blue cap bottle
CTCH/CTEXTERNAL	Cooling Tower - Chemistry	1000ml blue cap bottle
DWC *1	Drinking Water - Chemistry	1000ml blue cap bottle
HCFC/PH	Closed System - Full Chemistry	1000ml blue cap bottle + 500ml blue cap bottle
HCG	Closed System - Partial Chemistry with Glycol	500ml blue cap bottle
HCM	Closed System - Partial Chemistry with Molybdate	500ml blue cap bottle
HCMN	Closed System - Partial Chemistry with Nitrite & Molybdate	500ml blue cap bottle
HCN	Closed System - Partial Chemistry with Nitrite	500ml blue cap bottle
HTM2030/CFPP0101D	Washer Chemical Purity	1000ml blue cap bottle
CFPP0106	CFPP 01-06 Washer Chemical Purity	500ml blue cap bottle + TOC vial
HTM2031/CFPPST	Steriliser Chemical Purity	2 x 1000ml blue cap bottle
IWCH	Ingress Water - Chemistry	1000ml blue cap bottle for Mains Water, 1000ml blue cap for Ingress Water
LWCH	Lake Water - Chemistry	2 x 1000ml blue cap bottle + 500ml blue cap bottle + Dissolved Oxygen Bottle
PWSCHEM1 *2	Private Water Supply Chemistry Audit Monitoring - non-regulatory	5 x 1litre Amber Glass bottles, 3 x 1000ml blue cap bottle, 1 x TOC bottle, 1 x VOC vial, 1 x THM Bottle
PWSCHEM2	Private Water Supply Chemistry Check Monitoring - non-regulatory	2 x 1litre blue cap bottle

*1: DWC suites includes taste test - 'Sample Submission for Taste' on page 9

*2: LWCH suite includes oxygen saturation - please provide a on-site temperature reading on the sample submission form

Chemistry Suites (2)

Suite Code	Suite Name	Recommended Sample Volumes
PWSCHEMREG1	Private Water Supply Chemistry Audit Monitoring - Regulatory	A sampling kit containing the appropriate bottles will be provided to you on request
PWSCHEMREG2	Private Water Supply Chemistry Check Monitoring - Regulatory	
RAT1/RA1	Renal Association Table 1	1000ml blue cap bottle (All RAT analysis can be tested from the same volume)
RAT2/RA2	Renal Association Table 2	
RAT3/RA3	Renal Association Table 3	
SPCH1A, SPCH2A or SPCH3 *	Swimming Pool Suites 1, 2 or 3 - Chemistry	2 x 1000ml blue cap bottle + 1 TOC Bottle + 1 THM Bottle (TOC & THM Bottles for SPCH1 and SPCH1A Suites Only)
STD	Closed System - Partial Chemistry	500ml blue cap bottle
TWCH	Thames Drinking Water - Chemistry	500ml blue cap bottle

* Please provide on-site free/total chlorine readings on the sample submission form.

For any analysis outside this bottle guide, please contact us on bottlerequests@latisscientific.co.uk or +44 (0)208 853 3900 (select Option 4).

For accreditation status of any analysis, please check our website or the following link

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Individual Chemistry Tests

All samples for chemical analysis should be stored and transported at a temperature between 2-8°C.

Please note that samples for the following chemical analyses have a holding time of 24hrs:

- Biochemical Oxygen Demand (BOD)
- Dissolved Oxygen
- Permanganate Value (PV)
- Nitrite for Clean/Potable Waters
- Oxygen Saturation

Test Name	Recommended Sample Volume
ICP Metals (Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mn, Mo, Na, Ni, Pb, P, Sb, Se, Si, Sn, Ti, Tl, V & Zn)	100ml blue cap bottle
Calculations using ICP Metals - P as PO ₄ , P as P ₂ O ₅ , P as H ₃ PO ₄ , Si as SiO ₂ , Si as SiO ₃ & B as B ₂ O ₃	100ml blue cap bottle
Heavy Metals	100ml blue cap bottle
Manual Alkalinity	200ml blue cap bottle
Alkalinity by Kapsap	100ml blue cap bottle
Ammoniacal Nitrogen as N	500ml blue cap bottle
Albuminoid Nitrogen as N	500ml blue cap bottle
Biochemical Oxygen Demand (BOD)	1000ml blue cap bottle
Biochemical Oxygen Demand (BOD) - Settled	1000ml blue cap bottle
Routine Anions by IC - Br, Cl, F, NO ₂ as N, NO ₂ as NO ₂ , NO ₂ as NaNO ₂ , NO ₃ as N, NO ₃ as NO ₃ , NO ₃ as NaNO ₃ , SO ₄	50ml blue cap bottle
Non-routine Anions by IC - BrO ₃ , ClO ₂ , ClO ₃	50ml blue cap bottle
Total, Free and Combined Bromine	50ml blue cap bottle
Total or Free Cyanide	25ml blue cap bottle
Total, Filtered or Settled Chemical Oxygen Demand (COD) - Open Digestion	100ml blue cap bottle
Total, Filtered or Settled Chemical Oxygen Demand (COD) - Closed Digestion	100ml blue cap bottle
Cyanuric Acid	50ml blue cap bottle
Total, Free and Combined Chlorine	50ml blue cap bottle
Dissolved Oxygen (DO)	One full Dissolved Oxygen Bottle
Oxygen Saturation *	One full Dissolved Oxygen Bottle
Dissolved Oxygen by DO Probe (process waters)	80ml blue cap bottle
Oxygen Saturation by DO Probe (process waters) *	80ml blue cap bottle
Anionic, Cationic, Ionic, Non-ionic Detergents by Titration	100ml blue cap bottle per detergent type

* Please provide on-site temperature reading on the sample submission form

Individual Chemistry Tests (2)

Test Name	Recommended Sample Volume
Dichlorophen	25ml blue cap bottle
Electrical Conductivity (EC) @ 20°C or 25°C	50ml blue cap bottle
Monoethylene Glycol (MEG) - By Specific Gravity	100ml blue cap bottle
Monoethylene Glycol (MEG) - Refractometer	50ml blue cap bottle
Formaldehyde	250ml blue cap bottle
Isothiazalone, Total	50ml blue cap bottle
Molybdate by Molybdenum by ICP	25ml blue cap bottle
Nitrite as N or NO ₂ by Colourimetry (low level, non-process waters)	100ml blue cap bottle
Total, Saponifiable and Unsaponifiable Oil & Grease	200ml Amber Glass bottle
Oxidisable Substances	200ml blue cap bottle
Propylene Glycol - By Specific Gravity	100ml blue cap bottle
Permanganate Value (PV)	200ml blue cap bottle
Total Phenols	50ml blue cap bottle
Total Inorganic and/or Orthophosphate as P or PO ₄	100ml blue cap bottle
Residue on Evaporation	250ml blue cap bottle
Total or Soluble Silicate by colour	100ml blue cap bottle
Total Dissolved Solids (TDS) - Meter	50ml blue cap bottle
Total Dissolved Solids (TDS) @ 105°C	250ml blue cap bottle
Total Solids (TS), Suspended Solids @ 105°C (SS)	250ml blue cap bottle per solids type
Settleable Solids, Rapidly Settleable Solids	1000ml blue cap bottle
Non Volatile Solids (NVS), Volatile Solids, Volatile Suspended Solids (VSS)	250ml blue cap bottle per solids type
Total Dissolved Solids (TDS) by Kapsap	50ml blue cap bottle
Available Sulphur Dioxide by IC	200ml in Sulphur dioxide fixed bottle + 200ml in blue cap bottle
Sulphide as H ₂ S, Free Hydrogen Sulphide, Sulphide as S ²⁻	500ml in Sulphide fixed bottle
Sulphite as Na ₂ SO ₃	200ml blue cap bottle
Tannin	500ml blue cap bottle
Turbidity	50ml blue cap bottle
pH @ 20°C or 25°C by Meter	50ml blue cap bottle
pH by Kapsap	50ml blue cap bottle
Taste	500ml blue cap bottle + 500ml red cap bottle for micro analysis Please refer to 'Sample Submission for Taste' (page 9)
Appearance	25ml blue cap bottle
Hardness	50ml blue cap bottle
Hardness for purified waters	250ml blue cap bottle

Sample Submission for Taste

For the laboratory to perform taste analysis we kindly ask that when taking and submitting samples, the following criteria are met:

- The sample is taken from a source covered by the European Drinking Water Council Directive 98/83/EC and from a point that would normally supply drinking water e.g. kitchen/bathroom sink tap, drinking water fountain or private water supplies for human consumption at the point of use.
- Bottle water is submitted as supplied to the user, within the expiration date and sealed.
- An additional sample is provided from the same sample point or bottled water batch for microbiological analysis to be undertaken.
- The sample should be delivered on the day of sampling, or at the latest within 24 hours, to allow the laboratory to perform additional quality checks and carry out the taste analysis within the required three day holding time. Samples received exceeding 24 hours from sampling will not be analysed for taste.
- The sample bottle is clearly labelled and all corresponding paperwork legible, as the laboratory will not perform analysis if the sample matrix and relevant details are not provided.

The laboratory will not perform taste analysis on the following samples:

- Samples from taps that would not normally be used for drinking water e.g. garden, cleaner's cupboard, garage, toilet, wash hand basin taps.
- Samples that are from new mains connections which may be contaminated with residues arising from construction or disinfection of the system.
- Samples taken from water storage tanks.

Following the receipt of a sample which meets the required criteria, taste analysis will only be performed by the laboratory if the below water quality parameters are achieved:

Potable water:

- Coliforms/E. coli result of 0cfu/100ml
- TVC37°C / 48h result of <1000cfu/ml
- pH in the range of 6.5 – 9.0
- Electrical Conductivity of <2500µS/cm
- Colourless and clear appearance without visual solids
- No odour (a slight chlorine odour is acceptable for a potable water)

Bottled water:

- Coliforms/E. coli result of 0cfu/250ml
- TVC37°C / 24h result of <500cfu/ml
- Colourless and clear appearance without visual solids
- No odour.

Sample Bottles and other consumables

Consumable Orders

Sample bottles can be ordered through our consumables team who can be contacted on:

- 020 8853 3900 (option 4)
- bottlerequests@latisscientific.co.uk.

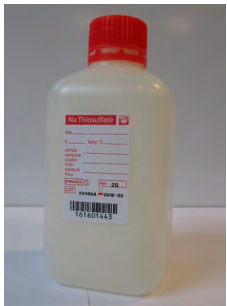
In order to process your requests efficiently, please kindly provide us with the following information:

- Number of bottles required
- Type of bottle required or analysis to be undertaken
- For bottle deliveries, address and contact name/number
- For bottle collection, please specify Latis location you would like to collect from

Please allow 2 working days for all bottle requests to be completed

Bottle Types

The majority of the tests we carry out are processed from the following types of bottles. Please refer to the Required Volumes section of this document in order to select the correct bottle for each suite/test.



Red cap Microbiology Bottle

These sterile bottles are dosed with sodium thiosulphate to neutralise oxidising biocides, and are available in 1L, 500ml and 250ml.



Blue cap Chemistry Bottle

These sterile plastic bottles are suitable for a wide range of chemical analysis and as well as microbiological analyses on waters which do not contain oxidising biocides. The bottles are available in 1L and 500ml.

High Dose Sodium Thiosulphate Bottle

Bottles for sampling silver-copper ionisation systems are available for a small fee; prices available on request. Please allow a week for bottle delivery.

Sample Bottles and other consumables

Endotoxin vial

These vials are used exclusively for Endotoxin sampling.



Chemistry Bottle

Bottles are available in 500ml and 1L

Organic Chemistry Bottle

Please contact our consumables team for information on subcontracted organic chemistry bottles types. All samples which require analysis for volatile matter (VOC, SVOC, TOC, THM etc) should be taken without head-space.

Dosed Chemistry Bottles

A number of other containers are used for preserving analytes within the sample collected. Please carefully note the safety instructions which should be provided on the bottle labels the following bottles are dosed with chemicals which are corrosive and/or toxic.

Cyanide Analysis Bottle

Plastic bottles are dosed with 5M Sodium Hydroxide solution to ensure any Cyanide present in the sample water is preserved until analysis commences.

Sulphide Analysis Bottle

Plastic bottles are dosed with Zinc Acetate solution to ensure any Sulphide present in the sample water is preserved until analysis commences.

Sulphur Dioxide Analysis Bottle

Two plastic bottles are required; one undosed and the other dosed with 30% Hydrogen Peroxide solution.

Sample Bottles and other consumables



Dissolved Oxygen (DO) Bottle

This bottle is used exclusively for Dissolved Oxygen Analysis and is supplied with a quantity of Manganous Sulphate and Potassium Iodide/Azide preservatives and plastic pipettes. The bottle must be filled to the brim, with 2ml of each preservative added using the plastic pipettes and then capped. Detailed sampling instructions are provided with the bottles.

Plates

Plates are available in 2 sizes: 55mm plates suitable for surface sampling or for active air sampling, and 90mm plates suitable for settle air sampling. Both types come in irradiated packs of 10.

Unless otherwise specified, plates will be provided as a set of Tryptone Soy Agar (TSA) and Sabouraud Dextrose Agar (SDA). Please check the information printed on the plates and ensure that each location is sampled using both types of agar plates.



Tryptone Soy Agar (TSA)

Used for Total Viable Count (TVC) analysis



Sabouraud Dextrose Agar (SDA)

Used for Moulds/ Yeast analysis

Swabs

Surface sampling swabs are available in three types: 'Black/charcoal' swabs for legionella analysis, 'Blue' swabs for all other microbiological analyses, and a 'non-media' swab for chemical analysis.



Blue Swab



Black/Charcoal Swab



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