

THE DEFINITIVE GUIDE TO PORTABLE WATER TESTING





Unicef and WHO estimate that 88% of diarrhoeal disease can be attributed to unsafe water supply, inadequate sanitation and hygiene.

With 40% of the worlds population lacking basic sanitation facilities, and over 1 billion people drinking unsafe water, providing improved access to safe, affordable water supply and sanitation is a key component of the Millennium Development Goals.

Lack of access to clean water and basic sanitation is a clear determinant of poverty. It is responsible for 1.6 million preventable child deaths each year. Millions more suffer from waterborne illnesses such as Cholera, Typhoid, Worms and Diarrhoea.

At present over a billion people have to travel a significant distance from their home in order to collect clean water. Women and children are forced to spend large parts of their day fetching water. It is tiresome and time consuming.

Improved access to safe water and sanitation not only improves health but saves time, energy and enhances livelihood opportunities.

“Access to safe water is a fundamental human need and therefore a basic human right”

WELCOME TO THE WAGTECH DEFINITIVE GUIDE TO PORTABLE WATER TESTING

This shortform catalogue focuses entirely on the Wagtech manufactured range of portable water quality testing equipment.

This comprehensive range of products offer testing options across a wide range of applications and parameters. These products contain a whole host of innovative features and cutting edge technology which make them unique.

If you need to test drinking water quality in the field, then Wagtech can provide you with a kit to meet your needs.

If you have a technical question and wish to speak to someone about our water testing kits then, why not contact Neil Wrigglesworth and his team personally? He's ready and waiting to answer all your questions on portable water testing.

Email him at
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Find out more about what we have to offer by visiting our website.

www.wagtech.co.uk

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Water is sometimes sharp and sometimes strong, sometimes acid and sometimes bitter, sometimes sweet and sometimes thick or thin, sometimes it is seen bringing hurt or pestilence, sometimes health - giving, sometimes poisonous. It suffers change into so many natures as are the different places through which it passes. And as the mirror changes with the colour of its subject, so it alters with the nature of the place.

In time and with water, everything changes. *Leonardo da Vinci*

The reasons why we need to test whether or not drinking water is safe are obvious. In many parts of the world, poor access to basic water supply & sanitation has devastating consequences on public health. With a focus on the developing world, and in partnership with some of the major organisations operating in the WATSAN field, Wagtech is helping to make widespread, affordable and accurate testing a reality. This testing can take many forms. From simple, low cost testing in a rapid response emergency situation, to more advanced, longer term surveillance, Wagtech has a kit that will allow you to determine the quality of your water, quickly and easily.

Co-ordinated from our UK head-office we are able to provide unrivalled service to our customers in all parts of the world. We achieve this through a well-established network of Wagtech regional offices, strategic global stocking centres and local distributors and sales agents. This allows us to supply large numbers of kits, reagents and consumables within hours of an order being placed.

In addition, through our links with regional centres of excellence, universities and technical partners, and coupled with a commitment to continuous product development, Wagtech is constantly researching new ideas, looking for affordable portable water quality testing technologies, striving to provide lower costs and innovative testing solutions.

We encourage partnerships between governments, donors, the UN, NGOs, the private sector and civil society. By manufacturing locally in some countries and investing in the markets to which we sell we are stimulating and empowering local communities, promoting sustainable development.

This last year has seen impressive sales of the kits to the UN and NGOs. This sector will always provide the bulk of our business on the kits and as such we have a range of measures that offer favourable terms to these organisations. We have special pricing available and reserve significant stock for these customers on a “no commitment” basis. This gives us the ability to respond immediately to the needs of the relief community following a natural disaster, as we did after the Tsunami in 2004, and then again the following year after the earthquake in Pakistan.

A key factor in the success we have enjoyed with these organisations is the additional after-sales support we can offer. A frequent component of our supply programme is the ability to provide local, in-country training on the kits, directly to the end-user. We have a number of highly skilled staff who travel all over the world to carry out training in diverse locations such as Darfur in Sudan, Banda Aceh in Indonesia and Pyongyang in North Korea.

I'm confident that the progress we have made will continue to develop positively as we strengthen our organisational capacity and build upon the already strong relationships we have with the UN, the NGOs and the donor agencies. The introduction of a number of new initiatives should ensure that this is the case and that the level of service offered by Wagtech remains of the highest level.

This short form catalogue is one such initiative and is intended to make your choice of test kit as simple as possible. You will find details on all the portable kits we manufacture in this document as well as additional information on the other products and services we can provide. To compliment the information on the kits we have also included a number of case studies that I hope you will find both relevant as well as interesting.

Neil F Durham
Managing Director - Wagtech International.

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HOW TO CHOOSE YOUR...

What type of Testing???

COMBINED
Physico-Chemical + Microbiological

**Advanced
Long-Term
Monitoring**

**Intermediate
Low-Budget
Testing**

**Extreme
Portability**

**Emergency
Rapid
Response
Testing**

POTAKIT



POTATEST



POTALAB



WSK POTALITE



PORTABLE TEST KIT

Microbiological

Physico-Chemical

Multi-Parameter

Arsenic Only

POTAFLEX

CP1000

ARSENATOR

ASK

VCDK



POTATEST

EMERG



pH Meter



3-Part Turbidity Tube



Colour Comparator



Incubator

Lightweight, low cost emergency water test kit

Widely used by the humanitarian organisations involved in the immediate aftermath of natural disasters, large scale emergencies or refugee camps, where simple, low-cost, rapid response testing of the basic water quality parameters is essential to determine the safety of the water supply.

Total & Faecal Coliforms/pH/Turbidity/Free Chlorine Residual.

- For the combined testing of microbiological and physico-chemical water quality parameters
- Single incubator, lightweight polymer construction, with a capacity of 18 petri dishes
- Temperature switchable between 37 and 44°C, allows incubation of either faecal or total coliforms
- Fully portable - can be powered via external rechargeable battery, AC mains operation, DC operation via vehicle lighter socket or even solar power
- Separate instruments to measure pH and Chlorine
- Highly accurate, waterproof, digital pocket meter for pH
- Colour Comparator with disc and reagents for 250 tests of free and total Chlorine
- Flexible chemical testing options - comparator allows further testing of over 30 chemical parameters if required
- Special pricing available for NGOs/Aid Agencies
- Uses, long-life, low-cost reagents and consumables available locally through Wagtech in-country representatives
- Supplied with reagents & consumables to carry out 200 micro-biological tests
- Comprehensive but simple to use operation manuals for all instruments
- All components housed in a single, lockable, water-proof plastic carry case

(Contact Wagtech for full ordering specification)
(See pages 30-33 for accessories, spares & consumables)

Wag-WE10005 POTATEST

AGENCY

EMERGENCY

EMERGENCY



In an emergency or rapid response situation, the Potatest is widely becoming recognised as the kit of choice for a large number of organisations involved in water quality testing. As part of the emergency relief response in the immediate aftermath of the 2004 Tsunami in Southern Asia, Wagtech supplied 112 of the kits to UNICEF for use in Banda Aceh. The whole order was turned around in less than seven days illustrating clearly Wagtech's capability to respond instantly in times of dire emergency. Not only were large numbers of kits supplied quickly but staff from Wagtech's regional office in Bangladesh travelled on a number of occasions to Banda Aceh to assist with training and ensure that the kits were used properly.

The Potatest is stocked in large numbers by Wagtech at all times and this type of natural disaster is exactly the type of situation that the kit was designed for. In response to the same emergency Wagtech also supplied the kit to WHO in both the Maldives and Sri Lanka.

Although ideally suited to emergencies, it was also the kit of choice when the Department for Public Health Engineering (DPHE) in Bangladesh decided that they needed a basic kit to implement a water quality testing programme in 75 Upazilla regions of the country. In a UNICEF funded project, the Wagtech Bangladesh regional office worked closely with DPHE, offering high levels of local support at all stages, including a comprehensive 3-day training programme on the use of the kits.

Other notable successes with the Potatest have involved recently supplying 40 to UNICEF in Afghanistan and securing a central contract with the International Rescue Committee (IRC) in New York. After a strict technical and financial evaluation of the Potatest it was decided by IRC that this kit was the most cost-effective, technically compliant option for rapid response testing that was available. As a result if the IRC wanted to order a test kit, it came to Wagtech and ordered the Potatest.

With its unique specification and flexible testing options then the Potatest is the number one choice for cost-effective, basic level water quality testing.

RAPID RESPONSE KIT

BUILD YOUR OWN EMERGENCY KIT



Turbidity Tube



Colour Comparator



Turbidity Meter



pH Meter



TDS Meter



Colorimeter



Chlorine Tester



Conductivity Meter

The following equipment is available separately or for inclusion in a kit:

2-part Turbidity tube, 5-500JTU, (Potakit)

Wag-WE10438

3-part Turbidity tube, 5-500JTU, (Potatest)

Wag-WE10437

Digital Turbidity Meter (Potalab)

Wag-WE30140

Pocket pH Meter

-1 to 15pH, single point calibration ± 0.2 pH accuracy (Potatest)

Wag-WE30005

Pocket pH Meter

-1 to 15pH, multi-point calibration, ATC, ± 0.1 pH accuracy (Potakit)

Wag-WE30010

Pocket Conductivity Meter

- 0-1990 μ S/cm, ATC, Temperature Display (Potakit)

Wag-WE30040

Pocket TDS Meter - 0-1999ppm, ATC

Wag-WE30080

Chlorine Tester - Dual scale for chlorine, also measures pH, supplied with 20 reagents each for Chlorine & pH

Wag-WE00610

Colour Comparator Kit - Comparator, 4 Cuvettes & Dilution Tube in carry case

Wag-WE10195

Portable Colorimeter - Digital, for free and total chlorine, with 100 DPD1 & 3 reagents & carrying case

Wag-WE10195

Bacteriological Test Strips - Hydrogen Sulphide Detection - pack 100 vials

Wag-WE10068



Other equipment is available upon request and there are additional reagents and consumables listed on pages 30-33. Please contact Wagtech International directly to talk about your requirements with our staff.

BUILD YOUR OWN EMERGENCY KIT



The last few years have seen a spate of devastating natural disasters that have shocked the world with their power and the devastating impact they have had on people's lives. The earthquake in Bam, Iran, in 2003 and then the South East Asia tsunami exactly a year later resulted in hundreds of thousands of people losing their lives and the almost total destruction of huge areas of land. The Pakistan earthquake in 2005 once again highlighted how vulnerable people can be living in remote, rural areas when something catastrophic like this occurs.

Inevitably after events such as these, there is an immediate response by the aid agencies as relief operations get underway to try and restore basic infra-structure and provide the basic fundamental items that are necessary for survival and subsequent recovery. It is fair to say that access to clean drinking water & adequate sanitation is a priority at times like this. The threat of disease increases hugely due to the large numbers of people living close together, often in squalid conditions, and without proper sanitation.

After a natural disaster, as far as water quality testing is concerned there are widespread views on the best course of action to take and a variety of methods can be employed.

At Wagetch we realise that one of our more sophisticated kits may not be practical at a time like this. There may not be time to carry out overnight incubations, or the scale of the testing required means procurement of large numbers of expensive kits is not possible.

The key basic water quality parameters that need to be addressed in an emergency are bacteriological indicators of faecal contamination, Free Chlorine Residual, pH, turbidity and possibly Conductivity/TDS. Wagtech is able to offer a range of low-cost instruments that can be purchased separately, or in instances where demand is high, grouped together to make a specifically designed test kit.

These kits can be tailored exactly to the end-users specification, with manuals in local languages and purpose built carrying/storage options. Due to a commitment to hold high stock levels of these rapid response components, delivery is guaranteed to be immediate.

After the Tsunami in 2004, Wagtech were approached by both UNICEF and World Health Organisation in Sri Lanka looking for low cost testing solutions. Working closely with these organisations, what we came up with was called the Public Health Inspectors Kit.

The basic request was for an extremely portable kit that was able to test the basic parameters of water quality in the remote rural areas that had been badly affected by the Tsunami. The kit comprised pocket pH and TDS meters, a chlorine colour comparator, and a two-part turbidity tube. The operation manuals were translated into three local languages and all the components were supplied in a specially designed backpack. We managed to supply over 1000 of these kits in a little under two weeks. In addition Wagtech provided free of charge instruction on the kits through a combination of local and UK based staff.

WATER SAFETY PLANS – A FUNDAMENTAL CHANGE IN THE APPROACH TO WATER QUALITY MONITORING!

In much of the world, water quality monitoring follows national standards which are established based on scientific guidelines provided by the World Health Organisation-WHO (termed Guidelines for Drinking-Water Quality).

In 2004, the WHO launched the third edition of their guidelines. This edition outlined a fundamental difference in approach to water quality monitoring.

The guidelines stated that:

“The most effective means of consistently ensuring the safety of a drinking-water supply is through the use of a comprehensive risk assessment and risk management approaches that encompass all steps in water supply from catchment to consumer” (WHO, 2004 pp 48).

This change in approach was based on scientific studies that showed that traditional water quality monitoring often produces results which are too little and too late.

- Too little because so few samples are taken compared to the amount of water produced.
- Too late because usually by the time the results are available, the water has been supplied and may have been consumed. [Payment, 1998, Medema, 2003]

As a result, a “risk-based” approach was recommended. The approach broadens the significance of water quality monitoring by placing it as a component of a “Framework for Drinking-Water Safety.” It advocated the formation and use of what were called Water Safety Plans (WSP).

This framework has a number of components. These include:

1. Setting up **health based water quality targets** based on health concerns
2. Undertaking **system assessments** to determine the safety of the water supply
3. Establishing **operational monitoring** of control measures in the water supply
4. Developing **management plans** documenting the system assessment and monitoring

The Water Safety framework makes a distinction between:

- **Monitoring-Operational monitoring** of the control measures in the drinking-water supply
- **Surveillance/Verification** - Water quality verification to verify WSP is operating properly

With this new approach in mind Wagtech realised that a more flexible approach to field based testing was required, a kit that in line with the Water Safety Plan approach promoted increased time on site/in the field inspecting water systems and undertaking physico-chemical monitoring, but still offering the appropriate means to provide accurate Micro-biological verification.

The result is the Potalite, a new generation of modular kit designed to compliment the increased emphasis now being placed upon Water Safety Plans (WSPs) and their role in assessing and managing risk throughout each step of the drinking water supply process. It has been developed in collaboration with the Water, Engineering and Development Centre (WEDC), Loughborough University, UK and encompasses various unique features to make it the world's most lightweight and portable testing kit.

Clearly, the implementation of the Water Safety Framework requires more than a portable field test kit and the Potalite is not the only Wagtech kit capable of integrating into the framework. It does however, provide the basis, by allowing the end user to undertake the main Water Safety components, and with its range of unique and innovative features, such as its extreme portability and removable monitoring kit, it offers a a level of flexible testing which has not been seen before.

POTALITE

BRAND NEW FOR 2006



Ultra-portable, lightweight, kit for the analysis of both microbiological and physico-chemical water quality parameters. Specially designed for the NGOs and village technicians operating in difficult remote terrains, where vehicle access is not always an option and on-site analysis is essential.

Removable Physico-Chemical kit (WSK) for enhanced operational monitoring as advocated by the Water Safety Plan approach.

Unique Micro-biological testing capability – Thermo Traveller – a portable, lightweight incubator and battery system based in the backpack. Eliminates the need for a fixed incubator and bulky battery.

Measures Total & Faecal Coliforms, pH, Conductivity, Turbidity, Free & Total Chlorine as standard.

- Thermo Traveller Portable Incubator - polymer construction, with a capacity of 20 aluminium petri dishes or 8 Nutri Disks
- Inserted into Thermo Traveller Docking station fixed into backpack, connected and powered by a lightweight battery control unit
- Battery control unit re-charged via mains supply or integral solar panel
- Temperature switchable between 37 and 44°C, allows incubation of either faecal or total coliforms
- Supplied with reagents & consumables to carry out 200 micro-biological test
- Removable Physico-chemical monitoring kit, Water Safety Kit (WSK) containing:**
- Separate waterproof digital pocket meters to measure pH and conductivity
- Colour Comparator with disc and reagents for 100 tests of Chlorine
- Two part turbidity tube
- Sanitary Inspection forms/Water Quality report sheets
- Supplied with Monitoring Tools – advice on Water Safety Plan design and implementation
- Comprehensive but simple to use operation manuals for all instruments
- All housed in ergonomically designed, lightweight backpack
- **Optional chemical testing module** – discs and reagents for testing Ammonia, Aluminium, Copper, Fluoride, Iron, Manganese, Nitrate, Nitrite and Phosphate
- **Optional Base Unit** – comprises external docking station, rechargeable 12V battery, and mains adapter. For Thermo Traveller portable incubator to be operated via alternative power source.
- **Optional add-on Arsenic testing module** – enough for 100 tests

Wag-WE10000 Potalite Water Testing Kit
(see pages 30-33 for accessories, spares & consumables)



POTALITE...

A self-contained, ultra-portable, lightweight, backpack based kit for the analysis of both micro-biological and physico-chemical water quality parameters. Ideal for the water engineer carrying out remote rural monitoring or testing in rough terrain and on the move.

Contains the essential monitoring tools required to address the new Water Safety Plan approach, this is basically a greater emphasis on increased operational monitoring of the control measures in drinking water supply and increased time in the field inspecting water systems.

The kit includes examples of sanitary inspection forms and advice on designing and implementing Water Safety Plans. These are intended to act as a guide and should be adapted and modified to suit local conditions. They allow you to identify hazard events and define critical limits in the field.

The backpack is designed to be lightweight, strong and features an ergonomic design that makes it comfortable to carry over an extended period of time. The interior of the backpack is compartmentalised and clearly labelled.

There is a removable section, the Water Safety Kit, which contains the physico-chemical monitoring tools. This kit features digital pocket meters for testing pH and Conductivity, a thermometer for temperature measurement, a two part turbidity tube, and a Colour Comparator with discs and reagents for 100 tests of Free & Total Chlorine.

The Comparator in the Potalite gives flexibility with regards to the chemical testing options.

As an add-on module, there is a chemical test set that contains discs and reagents to allow 100 tests of each of the following common parameters: Aluminium, Ammonia, Copper, Fluoride, Iron, Manganese, Nitrate, Nitrite and Phosphate. Reagents and discs can also be ordered individually.

The unique Wagtech Arsenic Testing technology is also available as an add-on testing module. Allows 100 tests for Arsenic.

In addition, there is a portable rigid work-surface, integral clip board with waterproof cover and designated areas for the storage of S.I. forms and water report sheets.



The Potalite Rucksack internal view

Water Safety Kit (WSK)



[explained]



Thermal Traveller, Portable TT Docking Station & Ultra lightweight Battery Unit



Potalite Solar Panel

Whilst the emphasis is placed upon greater physico-chemical monitoring, the Potalite features a unique innovation that also allows Microbiological testing, but in a highly portable, lightweight way, without the need to carry around a bulky incubator and battery.

The integral component of the micro-biological testing equipment is the Thermo Traveller (TT) – in terms of size it is essentially the chamber of a standard portable incubator. However, It is made from a lightweight but extremely durable plastic and accommodates 20 standard sized aluminium petri dishes or 8 Nutri-discs. It is well insulated and offers excellent heat retention properties. The TT features integrated electronics that allow it to be powered via a lightweight, rechargeable battery unit and a portable TT docking station, which sit in insulated pockets of the Potalite backpack.

When the user is ready to start incubation in the field he simply slots the TT into the portable backpack docking station, which is fixed in the backpack. The docking station is then connected to the charged TT battery unit and incubation begins. This offers extreme portability and gives the user of the Potalite the flexibility to start his incubation in the field, if required, and on the move. The backpack also features an integral solar panel. Using the latest flexible materials, the solar panel is wired indirectly to the TT Battery unit, so in hot countries, or anywhere with sufficient sunlight, the TT battery unit is continually re-charged as you go.

In favourable conditions it is possible to get a full incubation period of 14 hours from the TT battery unit.

An optional incubator base unit is also available. This comprises an external docking station, into which the TT fits, a 12V rechargeable battery and a mains adapter. This allows the TT to be operated via more traditional power sources upon returning to base.

In order to complete the micro-biological testing capability, the kit is supplied with a membrane filtration apparatus, hand vacuum pump, absorbent pads, filter membranes and media to carry out 200 tests for Coliform bacteria.

POTAKIT



The kit of choice for the NGOs and water technicians implementing rural water and sanitation programmes and who only have access to limited funds but still wish to conduct an accurate assessment of the full range of drinking water quality parameters in the field.

Uses low-cost, accurate instruments, is self-contained and fully portable and conforms to WHO guidelines on water quality monitoring.

The Potakit offers an affordable, yet accurate solution to water quality monitoring and has a number of innovative and unique features.

- Single incubator, capacity of 20 petri dishes, temperature switchable between 37 and 44°C, allows incubation of either faecal or total coliforms
- Fully portable Incubator - can be powered via external rechargeable battery, AC mains operation, DC operation via vehicle lighter socket or even solar power
- Waterproof, digital pocket meters for pH and Conductivity
- Two part turbidity tube
- Colour Comparator for testing over 30 different chemical parameters
- Includes the VCDK arsenic testing device for the visual, quantitative analysis of arsenic to ppb levels
- Uses, long-life, low-cost reagents and consumables available locally through Wagtech in-country representatives
- Supplied with reagents & consumables to carry out 200 microbiological tests and 200 tests each of Ammonia, Arsenic, Chlorine (DPD1 & 3), Fluoride, Nitrites and Nitrates
- Comprehensive but simple to use operation manuals for all instruments
- All components housed in a single, lockable, water-proof aluminium carry case

Wag-WE10030 Potakit
(Contact Wagtech for full ordering specification)
(See pages 30-33 for accessories, spares & consumables)



Conductivity Meter



pH Meter



Colour Comparator



Visual Detection Kit (VCDK)



The Potakit is in effect Wagtech's intermediate water testing kit. It's a popular choice for those organisations without the budget for a Potalab but still looking for something a little more advanced than the Potatest. It is capable of carrying out all the same tests as the Potalab but it does this using a range of slightly less sophisticated instrumentation. It tends to be the kit of choice for the majority of the NGOs we work with as it is cost-effective and they can supply it in relatively large numbers. For organisations that do not have specialist trained staff or just want simpler, less complicated testing, the Potakit has proved to be a popular choice.

It was the Potakit, or a slightly modified version of it, that was supplied under the JMP project. This was a joint project overseen by UNICEF and the World Health Organisation, this particular aspect focussing on providing accurate, comparable, field-based water quality testing data. Six different countries were chosen to pilot the initiative. These were China, Ethiopia, Jordan, Nicaragua, Nigeria and Tajikistan.

UNICEF Supply Division released an international competitive tender, and selected companies were asked to submit their offers against a list of equipment specifications. The requirement was for a portable water testing laboratory that was to be used to perform a Rapid Assessment of Drinking Water Quality (RADWQ) in the field.

Wagtech International was successful in securing the contract to supply the equipment that was to be used for the JMP programme. Based around a Potakit, the JMP kit was designed by Wagtech purely to meet the requirements of this project and to address the need to test for a diverse range of specific parameters.

In the subsequent months Wagtech successfully delivered 24 of the JMP kits and in co-operation with international consultants from WEDC, Wagtech staff carried out training on the kits in each of the six participating countries. This included a field based element, in each of the countries the end-users experienced for themselves the problems associated with testing drinking water quality in extreme & variable outdoor conditions. This extensive training was offered free of charge as a sign of our commitment to the programme.

The JMP kit proved to be an excellent choice, performing faultlessly and all of the pilot countries are now using the kits regularly, using standardised methodology and techniques to test water quality in the field as part of national frameworks established during the project.

POTALAB



7100 Photometer



Digital Arsenator



Turbidity Meter



pH/temp/mV Meter



Conductivity/
TDS Meter

ADVANCED Portable Water Quality Testing Laboratory

For the technician, or laboratory, involved in the long term monitoring & surveillance of a wide and varied range of water quality parameters, where budget is not a constraint, and the most important factor is to obtain highly accurate, consistent results time after time.

With sophisticated digital instruments the Potalab is suitable for use in a fixed site central lab, but remains fully self-contained and easily portable for use in the field or a vehicle based mobile laboratory.

Used extensively by UNICEF, WHO and many major NGOs the world over.

- Digital twin incubator, featuring automatic timer and LCD display for up to 50 bacteriological tests
- Fully portable Incubator - can be powered via external rechargeable battery, AC mains operation, DC operation via vehicle lighter socket or even solar power
- Independent chamber temperature control, with an accuracy of $\pm 0.1^{\circ}\text{C}$, allows simultaneous incubation of both faecal & total coliforms
- Sophisticated hand-held digital meters for pH, Conductivity/TDS & Turbidity
- Direct reading Digital Photometer for testing up to 40 different chemical parameters
- Includes the Arsenator digital arsenic testing device, the worlds first low-cost field instrument capable of measuring arsenic down to ppb levels
- Reduces the reliance upon costly lab-based analyses for advanced levels of monitoring
- Uses, long-life, low-cost reagents and consumables available locally through Wagtech in-country representatives
- Supplied with reagents & consumables to carry out 200 microbiological tests and 200 tests each of Ammonia, Arsenic, Chlorine (DPD1 & 3), Fluoride, Nitrites and Nitrates
- Comprehensive but simple to use operation manuals for all instruments
- All components housed in a single, lockable, water-proof aluminium carry case

Wag-WE10010 Potalab

(Contact Wagtech for full ordering specification)

(See pages 30-33 for accessories, spares & consumables)

For long term monitoring or surveillance, where cost and time are not the main factors, and where a greater emphasis is placed upon obtaining more accurate results, a more comprehensive testing solution may be appropriate. The Potalab, Wagtech's top-end portable laboratory, is quite simply the most complete water testing resource available today. It features a full suite of sophisticated digital instruments and unique Arsenic testing capability.

Many years ago, when UNICEF in Sudan first addressed their monitoring requirements they approached the Wagtech local agent in Khartoum and asked for advice. Through close consultation, and with feedback from the head-office in the UK it was decided that the Potalab was the most suitable kit for the monitoring programmes they wished to initiate in a number of regions throughout the country. This resulted in the purchase of five of the kits which were immediately put to good use. The performance of the kits was excellent and good reports were received from everyone.

So, recently when the problems in Darfur arose and it was realised that a water quality monitoring programme needed to be established in all areas of Darfur, naturally, given the proven levels of past performance of the Potalab, Wagtech was once again asked to offer the Potalab. Although the purchase of the kits was handled through the UNICEF Supply division in Copenhagen, and subject to competitive bidding protocol, Wagtech was once again successful in securing the order. Eight more of the Potalabs were shipped to Sudan.

Given the high levels of inter-agency co-operation in the Darfur region the Potalabs were soon noticed by staff working for some of the other agencies involved in Water and Sanitation projects. In an effort to co-ordinate their efforts and attempt to adopt standard testing procedures it was soon apparent that there would be further demand for the kit as it had proved itself to be reliable and simple to use. The Emergency Health Action (EHA) team of the WHO soon placed an order for a large number of the kits and NGOs such as World Vision, ADRA and International Aid Services (IAS) also took delivery of the kit .

This pattern looks set to repeat itself in South Sudan, and indeed in many countries world wide. Once again, through a combination of word of mouth, Wagtech's increased international profile and the unique testing capabilities of the Potalab, more and more of these kits are being requested. Oxfam South Sudan have purchased three Potalabs, with Catholic Relief Services likely to follow suit in the near future and UNICEF once again are expressing an interest.

Outside of Africa demand is just as high. UNDP in Mynamar have re-ordered 15 of the kits to complement 6 they purchased a number of years ago and in Guatemala another 30 were shipped to UNICEF in the aftermath of the devastating hurricanes that swept the country.

By detailed consultation with the end-user, and by offering good value, unique testing solutions, backed up with in-country support and training, for advanced level monitoring, the Potalab has virtually been adopted as the water testing kit of choice for many organisations throughout the world.



POTAFLEX



Microbiological Water Testing Kit

Fully portable kit designed and developed in conjunction with the International Committee of the Red Cross (ICRC) and now in widespread use by their field teams all around the globe.

For the dedicated testing of microbiological parameters.

Unique design features allow a wide range of different bacteria to be tested for. Faecal & Total Coliforms/Faecal Streptococci/Pseudomonas/Salmonella.

Features a digital incubator with LCD display and variable temperature setting between 20 and 50°C - accuracy $\pm 0.1^{\circ}\text{C}$.

- Innovative incubator design with Flexi-Rack System (FRS), which allows a wide range of media options such as pre-prepared Nutri-Discs, pre-prepared Dipslides or traditional aluminium petri dishes
- Can accommodate 20 disposable Nutri-discs, up to 40 re-usable aluminium petri dishes, or up to 10 Dip slides. Or a combination of all three
- 12V DC power supply to incubator via an integral 230V AC mains adaptor/battery charger via vehicle lighter socket
- Supplied with Membrane Filtration Unit, Pistol Grip Vacuum Pump and consumables (media/pads/membranes) for 200 Coliform tests
- Comprehensive but simple to use operation manual included. All components housed in a single, lockable, water-proof aluminium carry case.

Wag-WE10050 Potaflex

(Contact Wagtech for full ordering specification)

(See pages 30-33 for accessories, spares & consumables)



Incubator



Flexi Rack System



Pre-prepared dip slide



Aluminium Petri Dishes



The Potaflex has been specially designed based upon the requirements of the international committee for the Red Cross (ICRC). This major Geneva based UN organisation is of course a significant organisation within countries suffering from poor quality water, especially during periods of conflict. Thus, any equipment and technology used within the ICRC programmes needs to be robust, durable, lightweight, simple to use and importantly, covering those essential parameters during rapid response situations.

Essentially, the Potaflex is a microbiological type kit, however, physico-chemical tests are easily carried out by simply adding appropriate instruments to the Potaflex carrying case. The concept of the Potaflex involved Jost Widemar, who originally was based within a technical capacity at ICRC's Geneva base. Jost wanted to test for faecal and total coliforms, but in addition, test for an important indicator of faecal contamination, faecal streptococci. Whilst Jost found the standard technique of membrane filtration useful, he commented that it was essential to be able to monitor water for bacteriological contamination using simpler and quicker techniques.

Thus, a 'flexi' system was created using the flexi rack system. This unique mechanism allows the employment of standard aluminium petri dishes (for faecal and total coliforms), Pre-prepared nutri dishes (for the analysis of faecal streptococci) and also dip slides (slides that can be simply dipped into the water, placed into the incubator and processed).

In addition to ICRC, many other UN organisations and NGOs are using Potaflex's around the world and in addition to the other tests already mentioned it is possible to also analyse for other parameters such as pseudomonas, cholera etc.

CP1000



The CP1000 has been specifically designed for testing a wide range of physical & chemical water quality parameters. The kit contains a carefully selected range of high quality digital instruments that makes it ideally suited for field based drilling engineers and groundwater testing applications.

The kit is based around the new direct reading Photometer 7100. It is capable of the analysis of over 40 different chemical parameters. It is fully portable, waterproof, and features pre-programmed test methods and touch screen operation. It provides instant and highly accurate results.

pH and Conductivity/TDS are measured using separate, waterproof, hand-held meters.

Turbidity is measured using a waterproof, hand-held digital meter. It is accurate in the range 0-1000NTU.

Also includes the Wagtech Digital Arsenator – the worlds only digital field instrument for the determination of arsenic in water down to ppb levels.

Supplied with all the necessary calibration consumables & solutions, dilution tube, full operating instructions and water quality report sheets. All components are housed in a waterproof, lightweight carry case for easy handling and storage.

Wag-WE10720 Wagtech CP1000 Portable Physico-Chemical Testing Laboratory.

Please Note: Reagents ordered separately (See pages 30 and 32 for a full list of available photometer reagents, & accessories).



7100 Photometer



Digital Arsenator



Turbidity Meter



pH/temp/mV Meter



**Conductivity/
TDS Meter**

In many parts of the developing world, particularly in the dry and arid regions with limited rainfall or without access to surface water sources the reliance is very much upon developing alternative safe sources of drinking water. More often than not this means taking water from deep groundwater sources and aquifers. All over the world huge resource is employed in drilling borehole wells, its an expensive and skilled process requiring dedicated drilling rigs and trained engineers.

Given that so much time and effort is spent by numerous organisations trying to locate viable new water resources it seems crazy that the water obtained from these boreholes is virtually never tested with regards its suitability to drink. i.e. the water quality. Groundwater can contain various chemical substances that can be incredibly harmful to public health. Chemicals such as Fluoride, Nitrate, Manganese and Arsenic are just a few.

The problems with large populations drinking contaminated groundwater are highlighted by the scale of the Arsenic contamination problem in Bangladesh, and its devastating effect on poor, rural communities across a large area. It has been called the “Biggest Mass Poisoning in History”.

This highlights perfectly why “Water Quality Monitoring” has to be an integral part of the water supply process, and it’s a message Wagtech has been trying spread for a number of years.

It was a message that was listened to by N.P.N.W. Drilling, a Kenyan drilling contractor working regularly with the NGOs in remote areas of Northern Uganda. With the help of the Wagtech regional office in Kampala, they decided they should be testing the water from the boreholes they drill. With water taken from deep underground, micro-biological contamination is not generally an issue, so the requirement was for a kit that concentrated on the Physico-chemical parameters only. The CP1000 kit was what they decided upon. With its advanced digital instruments the results obtained were guaranteed to be accurate but it was the ease of use of the advanced photometer which so appealed to them. With next to no training at all, using the portable test kit the engineers drilling the boreholes were also able to provide instant on-site analysis of the chemical quality of the water. This approach led almost immediately to the identification of a serious fluoride problem at one of the drilling sites. Steps were taken to rectify the problem and the supply of potentially dangerous drinking water was averted.



ARSENIC TESTING

Arsenic is an important drinking-water contaminant. Drinking water rich in arsenic over a long period leads to arsenic poisoning or arsenicosis. This results in various health effects including skin problems (such as colour changes on the skin, and hard patches on the palms and soles of the feet), skin cancer, cancers of the bladder, kidney and lung, and diseases of the blood vessels of the legs and feet, and possibly also diabetes, high blood pressure and reproductive disorders. The most effective preventive measure is supply of drinking water low in arsenic concentration.

Arsenic exists naturally in the groundwater throughout Asia above levels considered safe for human consumption. The exact impact of arsenic on the rural populations is still unclear. So far, dangerous levels of arsenic have been found in Pakistan, India (West Bengal), Bangladesh, Nepal, Vietnam, Cambodia, Laos, and Myanmar. There may be many other countries affected, but only through accurate testing will the magnitude of the problem be uncovered.

The worst affected countries are Bangladesh and West Bengal, India. It is estimated that there are upwards of 9 million tube-wells supplying households daily drinking water throughout rural Bangladesh. It is also estimated that as many as 25 million people are affected and the problem is so wide-spread that many do not have alternative safe water sources. Clearly there are 100 million people affected in the arsenic prone areas throughout the region.

There are currently over 40,000 diagnosed cases of Arsenicosis in Bangladesh alone and it is thought that less than 10% of Arsenicosis patients demonstrate external symptoms of the disease. Without safe water options for the affected households, it is agreed that these numbers could grow dramatically over the coming years.

It is therefore clear that testing for arsenic throughout the region is key to identifying where the problem exists and more importantly, identifying safe sources which are acceptable to those living in arsenic prone areas.

Wagtech International has been engaged in supplying accurate and easy to use arsenic testing equipment to the region for the past several years. Its digital Arsenator system is now recognised as the most reliable and accurate option for field based testing and is in widespread use by organisations such as UNICEF and the WHO. Large scale arsenic testing using Wagtech products is actively helping to identify the contaminated sources.



ARSENATOR®

DIGITAL ARSENIC TESTING IN THE FIELD

- **Combines laboratory accuracy with field portability, accurate down to ppb levels and in the critical range of 2 to 100ppb mg/l.**
- **Immediate results in the field (20 minutes).**
- **Features a unique tri-filter arsenic trap system, which removes both excess arsine gas as well as Hydrogen Sulphide by-products.**
- **Reduces reliance on costly, lab-based analytical techniques.**
- **Simple & easy to operate, environmentally friendly.**
- **Supplied with reagents for 420 tests.**
- **Stable, long shelf-life reagents, available locally as refill packs.**

At the top-end of Wagtech's unique family of Arsenic testing products, the Arsenator is the worlds first digital field instrument capable of measuring arsenic in water down to ppb levels.

With a host of innovative design features the Arsenator was developed in conjunction with Professor Walter Kosmos and laboratory tested by Imperial College, London. The chemistry behind the product is based on the Gutzeit colorimetric method.

Now an established product the Arsenator is in widespread use all over the world by UNICEF, WHO and a whole host of other organisations.

It has been proven to be reliable, accurate and easy to use. It is now widely accepted as the most effective way of measuring Arsenic in the field.

Wag-WE10500 Wagtech Digital Arsenator -

Fully complete and supplied with reagents and consumables to carry out 420 tests. Housed in a robust carrying case for easy handling and storage.



ARSENIC



VISUAL COLOUR DETECTION KIT (VCDK)

- **Low Cost Visual Arsenic testing system**
- **Fully portable, allows visual analysis of arsenic in drinking water from 10µg/ml (ppb) up to 500µg/l (ppb)**
- **Ideal for mass screening**
- **Uses all the same reagents and consumables as the arsenator**
- **Housed in a robust, custom built case**
- **System is compatible with the Arsenator results obtained using the VCDK can be verified digitally using the Arsenator**

Wag-WE10600 Visual Colour Detection Kit - Fully complete and supplied with reagents and consumables to carry out 200 tests.



ARSENIC MULTI-PACK

- **Kit comprises 5 complete sets of Arsenic generators**
- **Allows up to five tests to be conducted simultaneously**

Wag-WE10540 Multi-Pack Accessory - Fully complete - contains five additional Arsenic Workstations for multiple testing.

Wag-WE10560 Arsenic Refill Pack- Contains sufficient filter holders & reagents for 200 tests.



AsK SERIES- ARSENIC SAFETY KITS

- **Low Cost, Visual Detection Kits for Field Arsenic Testing**
- **Produced locally in Bangladesh for regional market only**
- **Available in other parts of the world in the event of large quantity order**
- **Allows, visual analysis of arsenic in drinking water**
- **Results can be verified using the Digital Arsenator®**

Wag-WB10640 AsK 100 Kit - Sufficient tablets, powders and filters to perform 100 tests.

Wag-WB10650 AsK 50 Kit - Sufficient tablets, powders and filters to perform 50 tests.

Accessories

Wag-WE10660 - AsK Series Refill Pack - enough for 50 arsenic tests.

TESTING



Arsenicosis Victim – [Halima, Bangladesh] BEFORE



Arsenicosis Victim – [Halima, Bangladesh] AFTER

Following on from the success of the established range of arsenic testing products Wagtech has produced a simple, low-cost, portable arsenic visual detection kit.

Keen to promote sustainable development and adopt a community led approach, the AsK 50 & 100 Test Kits are produced in Bangladesh and sold through Wagtech's dealer network in all the affected countries of the region. This aim was to allow governments and development organisations to buy locally at a lower cost and conduct testing programs throughout the region.

These low-cost kits use the same innovative technology as the standard products and are fully compatible with the Digital Arsenator. The kits are put together by a team of local employees based at the Wagtech Regional Training & Research Centre in Dhaka.

Considerable investment has been made to ensure there are significant levels of stock of these kits at all times.

With an estimated 11 million tube wells in the country, the sheer scale of assessing the Arsenic contamination issue in Bangladesh cannot be emphasised enough. At Wagtech, our aim is to provide accurate, low cost arsenic testing to an increased percentage of the affected local population.

Our aim is to create a regional Arsenic Centre of Excellence. A local resource that can be used by anyone with an interest in Arsenic testing technologies. However, we realise that once an arsenic problem has been identified, the problem then has to be rectified.

In our eyes, testing and mitigation go hand in hand. Due to our position at the forefront of field based Arsenic testing technology it was felt we were ideally placed to promote sustainable local mitigation solutions. In partnership with IACD, a not-for-profit development organisation based in Dhaka, Bangladesh, our mission is to improve the social, economic and environmental conditions of Bangladesh's poorest people by identifying, developing, testing and finally, promoting a private sector marketing approach in the delivery of these affordable technologies.

In this context, these deliverable technologies must be produced locally and sold to the poor at a fair market price through a private sector supply chain. IACD's work is specifically focused on Water and Sanitation issues and in this proposed project, our aim is to address and aid those people in the project area who currently are faced with serious arsenic contamination of their groundwater and have no alternative clean water source.

MOBILE LABORATORIES

Water and Environmental surveys frequently require the analysis to be carried out in remote areas. The use of a well equipped mobile laboratory is often the ideal solution. More and more they are becoming widely used, especially in developing countries, where accurate results are required quickly, usually in areas where no fixed laboratory facilities exist.

Wagtech International has the capability to manufacture a range of mobile laboratories designed to meet all possible requirements for rugged use in cold or tropical climates.

These labs can be supplied with instrumentation inside tailored to numerous applications such as:

- Water & Environmental Monitoring
- Materials Testing
- Scene of Crime (SOCO) / Forensics
- Health clinics

The mobile laboratories can be supplied in various forms:

1. Vehicle lab based upon a standard 4-wheel drive, long-wheel base model. Ideal where extreme mobility and manouvability are required, they allow a rapid response to monitoring requirements and results can be obtained whilst on site.
2. Trailer mounted on close coupled twin axle chassis for towing by a suitable vehicle. Designed to be suitable for a wide range of applications and environments, the trailer laboratory is a flexible, secure and robust testing option.

The interiors of these mobile laboratories can be skillfully modified to the customers exact requirements with features such as:

- laminated work tops
- cupboards
- sink units & plumbing
- foot/hand pumps
- refrigerator / freezer
- overhead lighting and power sockets
- fully tropicalised climate control
- laboratory furniture
- water storage & heating
- waste disposal

Wagtech's team of engineers and technicians can recommend appropriate internal layouts as well as advise on suitable instruments and equipment, ensuring that the end-user gets the laboratory they really want and is relevant to their application.

Contact Wagtech International for more information or pricing upon, layout design, equipment specification, delivery, training and installation





The Vehicle based units have been used extensively in East Africa, in particular in Ethiopia with the Oromia Water Mineral and Energy Resources Development Bureau who have used them for a number of years in their rural water supply projects in the remote parts of the region.

The Oromia region of Ethiopia has a population of about 18 million people with 90% living in the rural areas. The topography of the land is very diverse with high and rugged mountain ranges, undulating plateaus, deep incised river valleys, and rolling plains.

Transport in this area is naturally difficult and in order to cope with the requirement to check both surface and groundwater water quality over this wide area it was necessary to use rugged vehicles with in-built basic laboratory facilities. This enabled water quality tests, (bacteriological, physical and chemical) to be carried out on sight without the need to return the samples to a central or regional laboratory which takes time and can lead to sample deterioration. When laboratory analysis was considered essential e.g. for measuring pesticides, the samples were stored in the onboard refrigerator for later transfer to the central laboratory in Addis Ababa.

Wagtech International have also supplied 13 of the mobile trailer laboratories to Northern Iraq for use by the Kurdistan Regional Government. Here they are being used in remote locations in this mountainous region to carry out an extensive assessment of the water and natural materials resources of the region.

The internal layout of the mobile laboratories was designed especially for the purpose and enabled a wide variety of laboratory equipment to be accommodated to enable tests to be carried out on drinking water quality, soil, aggregates and rocks.

GROUND & SURFACE WATER MONITORING

Dipmeter

Wagtech dipmeters are robust, light and convenient in use, and are all fitted with an extremely strong tape marked in metres and centimetres. Powered by a 9V PP3 battery, the dipmeters produce an amplified audio signal (buzzer) when the probe contacts a water surface.

Standard Dipmeter - The graduated tape is wound on a robust open PVC reel which is mounted on a small steel carrying frame.

Length of tape: 50m Wag-WE50160
Length of tape: 100m Wag-WE50170
Length of tape: 150m Wag-WE50174
Length of tape: 200m Wag-WE50180



Water Samplers

Polypropylene, with a nylon coated handle, also will accept a BOD bottle.

60ml: Wag-WE50270
1000ml: Wag-WE50280
1400ml: Wag-WE50290



Combined Water Sampling & Measurement Kit

The Wagtech Combined Water Sampling and Measurement Kit is ideal for collecting a wide variety of different water samples. Bottom sampling, plankton, turbidity, temperature and colour are all covered. Lightweight and compact for easy transport and simple to operate without extensive training.

The kit is supplied complete with a DO water sample bottle, a bottom sampling dredge, a secchi disc, a sounding lead and calibrated line, a plankton net, a colour scale and armoured thermometer (-5°C to 50°C in 0.5° graduations). All packed in a 350mm x 180mm foam-lined carrying case.

Wag-WE50260



For further details of these and other products in our monitoring range please refer to our website – www.wagtech.co.uk

Flow Master

The Wagtech Flow Master is a highly accurate water velocity instrument for measuring flows in open flow channels and partially filled pipes. The Flow Master consists of the protected Turbo Prop positive displacement sensor coupled with the expandable probe handle to the digital readout display.

The water instrument is ideal for storm water run-off studies, sewer flow measurements, measuring flows in rivers and streams, and also in monitoring velocity in ditches and canals.

WagFM101:

Water Flow Master, 1m-2m

Wag-WE50430

WagFM102:

Water Flow Master, 1.5m-4.5m

Wag-WE50440



Water Level Monitor

The Water Level Monitor provides a datalogger with a submersible pressure transducer for remote monitoring and recording of water level, flow and pressure data. This water testing instrument can be used in various applications, i.e. Groundwater Monitoring, Irrigation Canals, Wetlands, infiltration/Inflow studies and much more.

Water Level Monitor:

Supplied complete with Datalogger, housed in a weatherproof cylindrical enclosure, pressure sensor, PC software, 7.5m of cable & 9Vdc battery.

Wag-WE50120

Extra Cable Lengths:

from 7.5m to 150m price per metre.

Wag-WE50130

Data Removal Pack:

Includes handheld computer, field cable, and robust carrying case.

Wag-WE50140



CHEMICAL ANALYSIS PHOTOMETER REAGENTS

Reagents for use with 7100 Photometer

Test	Range mg/l	250/200* Test Packs
Alkalinity, total (Alkaphot)	0 – 500	Wag-WE10100
Alkalinity M (Alkaphot M)	0 – 500	Wag-WE10102
Alkalinity P (Alkaphot P)	0 – 500	Wag-WE10104
Aluminium	0 – 0.5	Wag-WE10106
Ammonia	0 – 1.0 (N)	Wag-WE10108
* Boron	0 – 2.5	Wag-WE10110
Bromine	0 – 6.0	Wag-WE10112
Calcium Hardness (Calcicol)	0 – 0.5 (N)	Wag-WE10114
Chloride	0 – 5.0	Wag-WE10115
Chlorine DPD 1	0 – 5.0	Wag-WE10116
Chlorine DPD 2 (Free, Mono & Di chloroamine)	0 – 5.0	Wag-WE10118
Chlorine DPD 3 (Free, Combined & Total)	0 – 5.0	Wag-WE10120
Chlorine DPD 4	0 – 5.0	Wag-WE10121
Chlorine HR	0 – 250	Wag-WE10122
Copper (Coppercol)	0 – 5.0	Wag-WE10124
Cyanuric Acid	0 – 200	Wag-WE10126
* Fluoride	0 – 1.5	Wag-WE10128
Hardness (Hardicol)	0 – 500	Wag-WE10130
Hydrogen Peroxide LR	0 – 2.0	Wag-WE10132
Hydrogen Peroxide HR	0 – 100	Wag-WE10134
Iron LR	0 – 1.0	Wag-WE10136
Iron HR	0 – 10	Wag-WE10138
Magnesium (Magnecol)	0 – 100	Wag-WE10140
Manganese	0 – 0.03	Wag-WE10142
Molybdate LR	0 – 15	Wag-WE10144
* Molybdate HR	0 – 100	Wag-WE10146
Nitrate (Nitratetest)	0 – 20 (N)	Wag-WE10148
Nitrite (Nitricol)	0 – 0.5 (N)	Wag-WE10150
Nitrite (Nitriphot)	0 – 1500	Wag-WE10152
Organophosphate	0 – 20	Wag-WE10154
Ozone	0 – 2.0	Wag-WE10156
* pH (Phenol Red)	6.8 – 8.4	Wag-WE10158
Phenol	0 – 5.0	Wag-WE10159
Phosphate LR	0 – 4.0	Wag-WE10160
Phosphate HR	0 – 100	Wag-WE10162
* Potassium	0 – 12	Wag-WE10164
Silica	0 – 4.0	Wag-WE10166
* Sulphate	0 – 200	Wag-WE10168
Sulphide	0 – 0.5	Wag-WE10170
Sulphite (Sulphitest)	0 – 500	Wag-WE10172
Zinc	0 – 4.0	Wag-WE10174

The Potalab Photometer 7100 offers a precise modern means of water analysis using an advanced solid-state digital readout colorimeter. The New Photometer 7100 is fully integrated with the Wagtech system of water analysis. It offers a great value instrumental analysis for an extensive range of water tests.

The photometer 7100 accurately assesses the colour formed in the test sample and displays the readings directly in concentration units on its large LCD screen - no more inaccurate results due to variation in operator eyesight or lighting conditions.



Wag-WE10441 - Portable Photometer

Specifications

Instrument Type	Direct reading colorimeter with automatic set up
Operating wavelengths	450nm 500nm 550nm 575nm 600nm 650nm
Display	Large Backlit graphic LCD screen
Accuracy	+/- 0.5% at 4% transmittance +/- 0.005 at 0.3au
Resolution	0.001au
User Selectable Options	Display language (French, German, Spanish, English, Italian) Test units
Test Cells	Automatic adjustment for round test tubes from 12-20mm diameter
Power	Battery power (3 x AA)
Size and Weight	W 146mm D 275mm H 75mm 975g
Instrument rating	Waterproof (IP67)

CHEMICAL ANALYSIS- COMPARATOR REAGENTS & DISCS



The Colour Comparator Kit is quick and easy to use and gives accurate reliable results. The kit is used in conjunction with tablet reagents and colour charts to test 32 different parameters. Just add a tablet reagent to the test sample, place the tube in the comparator and match the colour against the appropriate colour disc.

The standard Comparator Kit includes:
Comparator, 4 square cuvettes and dilution tube.

The kit contains no reagents or discs.
These should be ordered separately.

Wag-Sac Rucksack available which is ideal
for carrying discs and reagents.

Wag-WE10195 - Colour Comparator Kit

Colour Discs

Test	Range mg/l	
Alkalinity (Alkavis)	0 – 250	Wag-WE10200
Aluminium	0 – 0.5	Wag-WE10202
Ammonia	0 – 1.0 (N)	Wag-WE10204
Bromine	0 – 2.0	Wag-WE10206
Bromine	0 – 8.0	Wag-WE10208
Chlorine DPD	0 – 5.0	Wag-WE10210
Chlorine DPD (Mono & Di Chloramine)	0 – 5.0	Wag-WE10212
Chlorine DPD (combined & total)	0 – 5.0	Wag-WE10214
Chlorine DPD (total)		Wag-WE10216
Chlorine HR	0 – 50	Wag-WE10218
Chlorine HR	0 – 250	Wag-WE10220
Copper (Coppercol)	0 – 5.0	Wag-WE10222
Fluoride	0 – 1.5	Wag-WE10224
Hydrogen Peroxide LR	0 – 2.0	Wag-WE10226
Hydrogen Peroxide HR	0 – 100	Wag-WE10228
Iron LR	0 – 1.0	Wag-WE10230
Iron MR	0 – 5	Wag-WE10232
Maganese	0 – 0.03	Wag-WE10234
Molybdate HR	0 – 100	Wag-WE10236
Nitrate (Nitratetest)	0 – 20 (N)	Wag-WE10238
Nitrite (Nitricol)	0 – 0.5 (N)	Wag-WE10240
Ozone	0 – 2.0	Wag-WE10242
pH value (Bromocresol Purple)		Wag-WE10244
pH value (Bromothymol Blue)		Wag-WE10246
pH value (Phenol Red)	6.8 – 8.4	Wag-WE10248
pH value (Thymol Blue)		Wag-WE10250
pH value (Universal pH)		Wag-WE10252
Phosphate LR	0 – 4.0	Wag-WE10254
Phosphate HR	0 – 100	Wag-WE10256
Silica	0 – 4.0	Wag-WE10258
Sulphide	0 – 0.5	Wag-WE10260
Zinc	0 – 4.0	Wag-WE10262

Comparator Reagents, Pack 250 tests

Test	Range mg/l	
Alkalinity (Alkavis)	0 – 250	Wag-WE10300
Aluminium	0 – 0.5	Wag-WE10302
Ammonia	0 – 1.0 (N)	Wag-WE10304
Bromine	0 – 2.0	Wag-WE10306
Bromine	0 – 8.0	Wag-WE10308
Chlorine DPD	0 – 5.0	Wag-WE10310
Chlorine DPD (Mono & Di Chloramine)	0 – 5.0	Wag-WE10312
Chlorine DPD (combined & total)	0 – 5.0	Wag-WE10314
Chlorine DPD (total)		Wag-WE10316
Chlorine HR	0 – 250	Wag-WE10318
Copper (Coppercol)	0 – 5.0	Wag-WE10320
Fluoride	0 – 1.5	Wag-WE10322
Hydrazine Powder	0 – 0.5	Wag-WE10324
Hydrogen Peroxide LR	0 – 2.0	Wag-WE10326
Hydrogen Peroxide HR	0 – 100	Wag-WE10328
Iron LR	0 – 1.0	Wag-WE10330
Iron MR	0 – 5	Wag-WE10332
Maganese	0 – 0.03	Wag-WE10336
Molybdate HR	0 – 100	Wag-WE10338
Nitrate (Nitratetest)	0 – 20 (N)	Wag-WE10340
Nitrite (Nitricol)	0 – 0.5 (N)	Wag-WE10342
Ozone	0 – 2.0	Wag-WE10344
pH value (Bromocresol Purple)		Wag-WE10346
pH value (Bromothymol Blue)		Wag-WE10348
pH value (Phenol Red)	6.8 – 8.4	Wag-WE10350
pH value (Thymol Blue)		Wag-WE10352
pH value (Universal pH)		Wag-WE10354
Phosphate LR	0 – 4.0	Wag-WE10356
Phosphate HR	0 – 100	Wag-WE10358
Silica	0 – 4.0	Wag-WE10360
Sulphide	0 – 0.5	Wag-WE10362
Zinc	0 – 4.0	Wag-WE10364

PHYSICO-CHEMICAL TESTING ACCESSORIES/CONSUMABLES

Individual Physico-Chemical Meters & Instruments

- 2-part turbidity tube, 5-500JTU,	(Potakit)	Wag-WE 10438
- 3-part turbidity tube, 5-500JTU,	(Potatest)	Wag-WE 10437
- Digital Turbidity meter	(Potalab)	Wag-WE 30140
- Pocket pH Meter		
-1 to 15pH, single point calibration \pm 0.2pH accuracy	(Potatest)	Wag-WE 30005
- Pocket pH Meter		
-1 to 15pH, multi-point calibration, ATC, \pm 0.1pH accuracy	(Potakit)	Wag-WE 30010
- Pocket Conductivity Meter		
0-1990 μ S/cm, ATC, Temperature Display	(Potakit)	Wag-WE 30040
- Pocket TDS Meter		
0-1999ppm, ATC		Wag-WE 30080
- Hand-held pH /Temp Meter -		
2 to 16pH, \pm 0.01 accuracy, ATC, Automatic 5-point Calibration	(Potalab)	Wag-WE 30200
- Hand-held Conductivity/TDS Meter		
0-1999 μ S/cm/0-999ppm, ATC, Automatic 5-point Calibration	(Potalab)	Wag-WE 30215
- Hand-held Dissolved Oxygen Meter		Wag-WE 30240
- Chlorine/pH Tester		
Dual scale for chlorine, also measures pH, supplied with 20 reagents each for Chlorine & pH		Wag-WE 10610
- Colour Comparator Kit		
Comparator, 4 Cuvettes & Dilution Tube in carry case.		Wag-WE 10195
- Portable Colorimeter		
Digital, for free and total chlorine, with 100 DPD1 & 3 reagents & carrying case		Wag-WE 10190
- Photometer 7100		
Direct Reading photometer		Wag-WE 10441
- Photometer 8000		
Advanced direct reading photometer		Wag-WE 10750

Reagents and Consumables Physico-Chemical Meters & Instruments

Glass Test tubes (10ml) for Photometer 7100/8000 Pack of 5	Wag-WE 10755
Plastic Cuvettes (10ml) for Colour Comparator Pack of 5	Wag-WE 10197
Dilution Tube	Wag-WE 10420
De-Ion Pack – Makes approx 5 litres de-ionised water	Wag-WE 10439

Potalite Testing Module

Contains comparator discs and reagents for 200 tests each of Ammonia, Aluminium, Copper, Fluoride, Iron, Manganese, Nitrates, Nitrites and Phosphate.	Wag-WE 10730
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Groundwater Testing Reagent starter pack – Ideal for use with CP1000

Photometer reagents for use with the kit. 200 tests each for the following chemical parameters. Arsenic, Boron, Calcium Hardness, Chloride, Chlorine, Copper, Fluoride, Hardness (Total), Iron, Magnesium, Manganese, Nitrate, Nitrite, Phosphate, Silica, Sulphate and Zinc.	Wag-WE 10740
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For additional photometer and comparator reagents/discs please see page 31 & 32

pH Buffer Solution, pH4, 500ml	Wag-WE 30552
pH Buffer Solution, pH7, 500ml	Wag-WE 30554
pH Buffer Solution, pH10, 500ml	Wag-WE 30558
Conductivity Standard Solution, 1413 μ S, 500ml	Wag-WE 30562
Conductivity Standard Solution, 12.88mS, 500ml	Wag-WE 30564

Free Chlorine DPD1 Reagents for Chlorine/pH Tester, (Wag-WE00610), pack 250	Wag-WE 10611
Total Chlorine DPD3 Reagents for Chlorine/pH Tester, (Wag-WE00610), pack 250	Wag-WE 10612
pH Phenol Red Reagents for Chlorine/pH Tester, (Wag-WE00610), pack 250	Wag-WE 10613

Free Chlorine DPD Reagent Pouch for Chlorine Colorimeter (Wag-WE00610), pack 100	Wag-WE 10182
Total Chlorine DPD Reagent Pouch for Chlorine Colorimeter (Wag-WE00610), pack 100	Wag-WE 10184

Pack of 3 sample vials - for use with Chlorine Colorimeter or Portable Turbidity Meter	Wag-WE 10186
Calibration Set for Portable Turbidity Meter (0.02, 10.0, 100 and 800NTU)	Wag-WE 30142
Silicone Oil (10ml) - for use with portable turbidity meter	Wag-WE 30144

MICROBIOLOGICAL TESTING ACCESSORIES/CONSUMABLES

Membrane Filtration Unit.	Wag-WE 10400
Spares Kit for Filtration Unit, comprising filter disc and gasket kit.	Wag-WE 10402
Aluminium Petri Dishes (55mm diameter by 4mm depth, pack 18 for Potatest)	Wag-WE 10403
Aluminium Petri Dishes (55mm diameter by 4mm depth, pack 25 for Potalab)	Wag-WE 10404
Aluminium Petri Dishes (55mm diameter by 4mm depth, pack 20 for Potakit)	Wag-WE 10406
Forceps, pair	Wag-WE 10412
Methanol Flame Injector	Wag-WE 10414
Methanol Dispenser	Wag-WE 10415
Hand Lens	Wag-WE 10416
Lubricating Grease	Wag-WE 10420
Incubator Calibration Kit, comprises modified Petri dishes and sealant.	Wag-WE 10424
Spirit Thermometer	Wag-WE 10426
Digital Temperature Probe	Wag-WE 10427
WagPac – disposable water sample bags, pack 500.	Wag-WE 10428
Media Measuring Device, pack 5.	Wag-WE 10429
Field Spares Kit for Potalab 1	Wag-WE 10430
Field Spares Kit for Potalab 2	Wag-WE 10431
Field Spares Kit for Potakit 1	Wag-WE 10432
Field Spares Kit for Potatest	Wag-WE 10433
Portable Steriliser/Autoclave –	
Aluminium, non-electric, 14litre capacity, 120°C, UNICEF approved	Wag-WE 10446
- Coliform Starter Pack, 200 membrane filters, absorbent pads and growth medium for 200 tests	Wag-WE 10450
- Faecal Streptococci Starter Pack for 200 tests (Slanetz & Bartley Medium)	Wag-WE 10458
- Membrane Lauryl Sulphate Broth, 38.1g (200 tests)	Wag-WE 10454
- Membrane Lauryl Sulphate Broth, 500g (2,600 tests)	Wag-WE 10452
- Absorbent Pads and Membrane Filters:	
Pack of 200	Wag-WE 10460
Pack of 1000	Wag-WE 10462
- Pad Dispenser	Wag-WE 10464
Nutri Disks	
Disposable, single use, plastic petri dishes containing absorbent pads pre-impregnated with bacteria specific media. Require re-hydration with de-ionised/distilled water before use. Can be used in the incubators of all Wagtech kits.	
- Azide Nutri Disks For the detection of Faecal Streptococci in water	Wag-WE 10060
- Cetrimide Nutri Disks For the detection of Pseudomonas aeruginosa in water	Wag-WE 10062
- M-FC Nutri Disks For the detection of E.Coli and faecal coliforms in water	Wag-WE 10064
- Plate Count Nutri Disks For the determination of Colony Counts in Water, Milk and Food	Wag-WE 10066
- Bismuth-Sulphite Nutri Disk For the detection of Salmonella	Wag-WE 10067
Pre-prepared Dip Slides Single-use, sterilised gridded slides, impregnated with coliform media – pack 25	Wag-WE 10472

TRAINING

“Testing Water Worldwide” is an informal Wagtech motto and it’s becoming more and more appropriate. Increasingly, as we continue to supply kits all over the world, the importance of both training and technical support are being recognised and acknowledged as being instrumental in the long term success and sustainability of any project.

Through a well established network of regional offices, agents and distributors, we can offer a range of services. Training is one of these.

At Wagtech, the provision of training has been an integral part of our strategy for a long time. As highlighted previously, the ability to support our test kits in remote locations is essential to us, as well as to the end-user, and it’s what sets Wagtech aside from other companies.

Training is always tailored around customer’s specific requirements, everyone is different, and at Wagtech we are flexible enough to be able to accommodate most people’s wishes. For small informal training sessions our local representatives are often better placed and knowledgeable enough to provide this service and more often than not they will offer this service for no charge.

Alternatively for bigger projects where complex training of large groups is required and on a number of different products, then our own UK based consultants will travel to country to carry it out. Our staff travel all over the world, to locations where you might not expect to find us! Over the past year we have travelled to numerous countries to carry out training and these include Iraq, North Korea, Darfur (Sudan), Banda Aceh (Indonesia), Mali, Niger and Afghanistan. There are many more.

In instances where large numbers of the Wagtech test kits are purchased we will often carrying out the training Free of Charge, however, when we do have to charge a fee, it is only ever on a cost basis and purely to cover our expenses. We do not look to make a profit from a service we consider as vital to the successful use of our products.

Organisations all over the world, such as UNICEF, WHO and many of the NGOs have all had in-country training provided by Wagtech.

For the portable test kits we have a basic water monitoring course that provides an ideal platform for both first time users and experienced technicians alike. The kits are designed to be easy to use and after the standard three day course even a beginner will be capable of carrying out their own field based water quality testing, even using the advanced Potalab kit.

So feel free to contact us for more information on any training issues you have in mind. We are always pleased to provide advice on equipment selection, or any technical queries that you may have.

We look forward to hearing from you.



PUBLICATIONS

1. WHO - Guidelines for Drinking Water Quality - Volume 1 Recommendations (1996 – 2nd Edition) Wag-WE90500
2. WHO – Guidelines for Drinking Water Quality – Volume 2 Health Criteria & Other Supporting Information (1996 – 2nd Edition) Wag-WE90510
3. WHO – Guidelines for Drinking Water Quality – Volume 3 Surveillance & Control of Community Supplies (1996 – 2nd Edition) Wag-WE90515
4. WHO – Technology for Water Supply & Sanitation in Developing Countries (1987) Wag-WE90525
5. Sarah House & Bob Reed – Emergency Water Sources – Guidelines for Selection & Treatment (2000) Wag-WE90535
6. DFID – Guidance Manual on Water Supply & Sanitation Programs (1999) Wag-WE90545
7. Guy Howard – Water Quality Surveillance – A Practical Guide (2002) Wag-WE90550
8. Guy Howard – Water Supply Surveillance – A Reference Manual (2002) Wag-WE90555
9. John Pickford – The Worth of Water – Technical Briefs on Health Water & Sanitation (1991) Wag-WE90560
10. Jamie Bartram & Richard Ballance (Published on behalf of WHO and UNEP) - Water Quality Monitoring – A practical guide to the design and implementation of freshwater quality studies and monitoring programmes (1996 – 2nd Edition) Wag-WE90570
11. AWWA – Introduction to Water Quality Analyses – Principles and Practices of Water Supply Operations - Volume 4 (1982) Wag-WE90575
12. Cara Gleeson & Nick Gray – The Coliform Index and Waterborne Disease – Problems of Microbial Drinking Water Assessment (1997 – 1st Edition) Wag-WE90580
13. Neil.F.Durham & Professor Walter Kosmus – Analytical Considerations of Arsenic Contamination in water Wag-WE90585
14. Sam Godfrey & Guy Howard - Water Safety Plans 1 (2005)
15. Sam Godfrey & Guy Howard - Water Safety Plans 2 (2005)
16. Ian Smout and Sarah Parry-Jones - Lessons Learned from NGO Experiences in the Water and Sanitation Sector (1999)
17. Ian Smout - Water and NGOs (1996)



Wagtech International Regional Testing and Training Centre (RTTC) Dhaka, Bangladesh....

In June 2004, Wagtech International, together with a local technology development NGO, Integrated Approach for Community Development (IACD), took the initiative to build and operate a Regional Testing and Training Centre near Dhaka, Bangladesh. The hope of Wagtech and IACD is to establish a "Centre of Excellence" for the research, development and design of appropriate and affordable water technologies for the developing world.

This centre is a totally new and unique concept which brings together a private sector company and NGO partners under a common goal. The participating partners have agreed to make the centre available and open to other NGO, Development and Donor organisations for the sharing of information and technology developments.

Created specifically to serve the needs of the many development organisations in Bangladesh and throughout the region, the primary purpose of the RTTC is to carry out research & development of low cost, safe water and sanitation options for the poor of the region. The centre provides realistic conditions for Wagtech International to conduct research and testing of new technologies before bringing them to the marketplace as well as a natural setting to conduct the necessary training for our customers in local languages wherever possible.

IACD were selected to carry out the technology development, design and practical demonstration component and Wagtech International provides funding to run the Centre and for IACD to conduct their research and development. Wagtech supports the on-site laboratory set up to test the effectiveness of these technologies. Technologies under development must meet stringent criteria such as; affordable to the poor, ability to be produced locally from locally available materials and socially acceptable to the families who will use them.

The Centre was established on one acre of land and was designed to represent a typical rural village setting with authentic village households. The site features both water testing and remediation technologies. There are working examples of hand-dug wells, boreholes with hand-pumps, bladder tanks, portable distribution systems with stand-pipes, pit latrines and basic water treatment systems. The site also features an advanced water quality testing laboratory and manufacturing capability for the Wagtech low-cost Arsenic test kits.

International and Local NGOs utilise the RTTC for practical demonstrations of appropriate, low-cost, environmentally friendly, safe water and sanitation technologies which may then be implemented within their own projects.

Wagtech International feels strongly that in order to participate in the development market with its advanced testing technologies, it must also actively participate in the development itself. All over the developing world it is generally the poor that are most severely affected by issues of unsafe water and sanitation.

Wagtech believes that if tests are conducted and unsafe water conditions are revealed, then the testing organisation should also be able to offer affordable remediation advice and technologies which allow the provision of safe drinking water. This is the focus of the centre, to research, develop and test such safe water options.





Central to the Wagtech business is the capability to provide local support in-country. We view this as being as important as the products themselves and unlike many of our competitors, we have invested heavily in a programme to put into place a comprehensive worldwide network of regional offices, agents and distributors.

We now have regional offices located all over the world. In Africa we have Wagtech Uganda, Wagtech Ethiopia, Wagtech Ghana, Wagtech Rwanda, Wagtech South Sudan and Wagtech Medical. Covering the Asia-Pacific region is our Wagtech Bangladesh regional office, based in Dhaka, and the Wagtech China office will hopefully be established soon. These offices work solely on behalf of Wagtech International but we also provide additional local support through a dealer network that covers most countries in the world. We encourage our offices to create further opportunities locally and to stimulate both private and public sectors alike.

www.wagtech.co.uk

The advantages of this approach are obvious, when you buy a Wagtech kit, no matter where you are, you have the peace of mind to know that in most instances help is on hand locally. Our offices and dealers have been established in order to act as stocking centres, not only for the kits themselves, but also the low cost reagents and consumables required for continual operation of the kits. Purchases can be made in country and using local currency, without the need to source or procure from overseas.

We recognise the importance of issues such as installation, commissioning and training. They are instrumental towards the long term success and sustainability of any project and through our global network we are able to offer unrivalled levels of customer service in these areas.

**WORLDWIDE
OFFICES**

Organisations using wagtech kits...

UNICEF

WHO

UNDP

ICRC/IFRC

Oxfam

WaterAid

Action Contre le Faim (ACF)

Acción Contra el Hambre (ACH)

Save The Children UK (SCUK)

Islamic Relief

CARE International

Plan International

DACAAR

International Rescue Committee (IRC)

International Aid Services (IAS)

Norwegian Church Aid (NCA)

Mercy Corps

Merlin

CESVI

INTERSOS

Concern Worldwide

GOAL

German Agro Action (DWHH/GAA)

Catholic Relief Services (CRS)

Adventist Development and Relief Agency (ADRA)

World Vision International (WVI)

Department for International Development (D.F.I.D)

University of Cambridge - Centre for Sustainable

Development

Water & Engineering Development Centre

Loughborough University (W.E.D.C)

Centre for Affordable Water & Sanitation Technology

(C.A.W.S.T.)

The World Bank

Department for Public Health Engineering

(DPHE), Bangladesh

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THE DEFINITIVE GUIDE TO PORTABLE WATER TESTING

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