



Portable BioDetector

● Biological Threat Mitigation: Bruker **pBDi**

Choose Innovation – Choose Bruker

Bruker is recognised as the leading authority on the use of detection and identification technologies to mitigate the threat from the accidental or deliberate release of toxic gases, explosives and radioactive materials that could kill and injure civilians.

We offer the world’s most comprehensive range of threat detection and identification solutions and can help you to assess how these can be best employed to protect people and property.

We develop, manufacture and supply technology worldwide for a range of customers and end users that need to protect people and property.

These include, but are not limited to governments, commercial enterprises and multi-national corporations who need to protect their employees and clients from the ever-increasing threat from terrorism.

Bruker is strongly committed to meeting its customers’ needs by continuing to revolutionise the design, manufacture and distribution of detection tools based on our core technologies; by providing solutions that are regarded as the ‘Gold Standard’ by threat mitigation experts.



pBDi – Portable BioDetector

Emergencies involving biothreat agents can occur because of a natural catastrophe, a localized outbreak (epidemic) or a worldwide outbreak (pandemic) of an infectious agent, warfare, or acts of terrorism. Rapid and reliable identification of biothreat agents is of utmost importance not only to confirm that a bioterrorism event has occurred, but also to initiate appropriate organizational as well as medical countermeasures.

The Bruker pBDi is a portable detection platform for rapid and sensitive on-site identification of biothreat agents. Developed for use by non-scientific personnel, the pBDi is easily operated, even while working in protective equipment under extreme conditions. Fully portable and operating from internal batteries, pBDi can be used in the hot zone. Equally pBDi can be integrated with various mobile platform solutions, where it can be powered from an external supply.

The pBDi employs a sensitive electrochemical biochip technology for multiplex ELISA-based (enzyme-linked immunosorbent assay) detection of biothreat agents. The pBDi builds on the technology of the Bruker portable Toxin Detector and offers new features such as integration with a mobile suitcase, battery operation, Bluetooth connection to a ruggedized tablet PC and assays for bacteria, viruses and toxins identification.



Why specify pBDi?

- Universal detection for toxins, bacteria and viruses
Direct identification of up to 6 agents in 20 mins
- Powerful and simple-to-use ELISA-based technology
Achieves optimum results with minimum effort
- Offers a sensitive system for toxins, bacteria and viruses
pg/ml for toxins, up to 10³ CFU/ml for bacteria, 10⁴ PFU/ml for viruses
- A battery-operated system with a ruggedized tablet PC
A portable solution for first responder, and other mobile applications
- Minimum sample preparation required
Extremely tolerant of variable sample matrices
- Automated data processing and “Traffic Light” based displays
Unambiguous interpretation of positive detection events

pBDi – Operating Principles

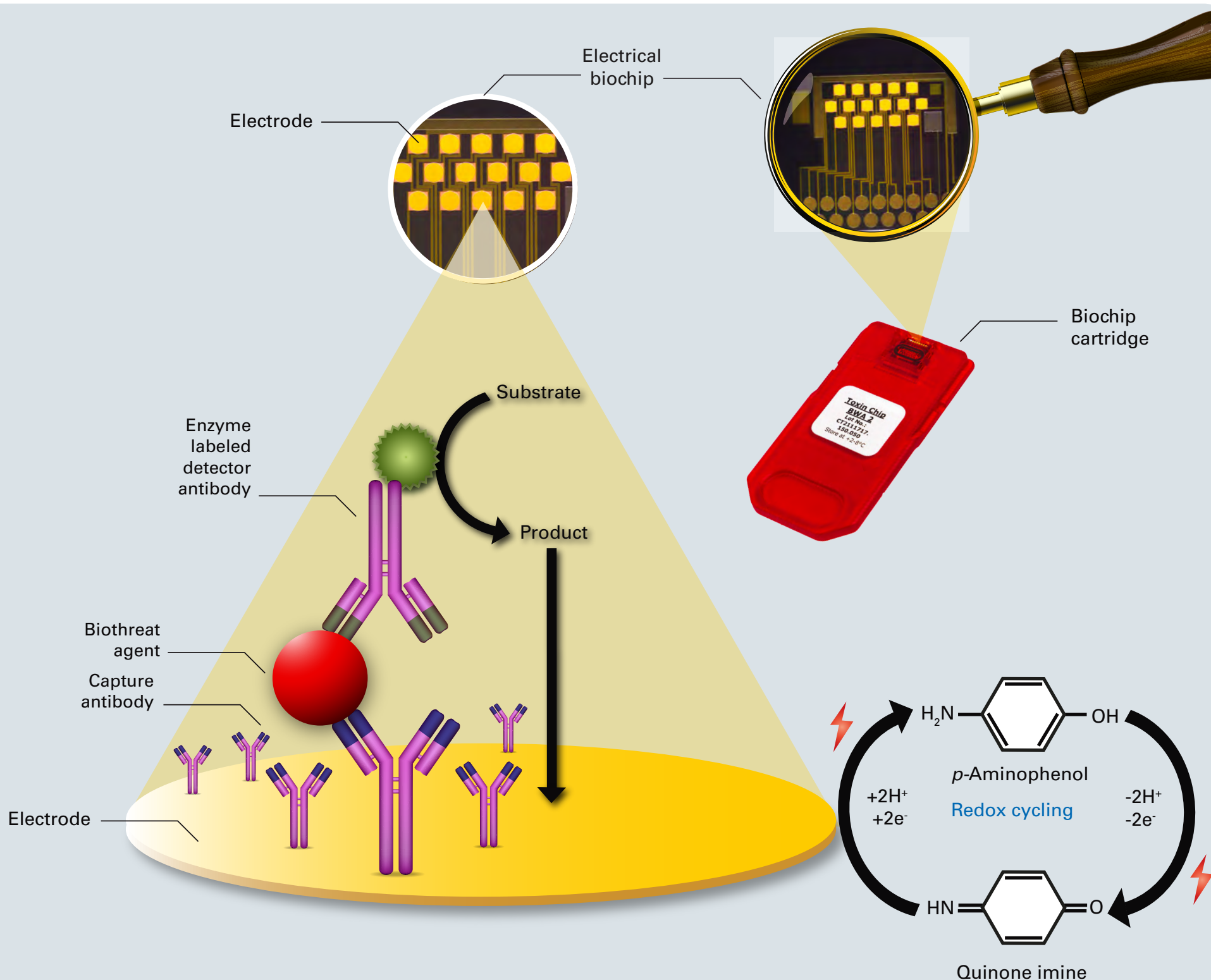
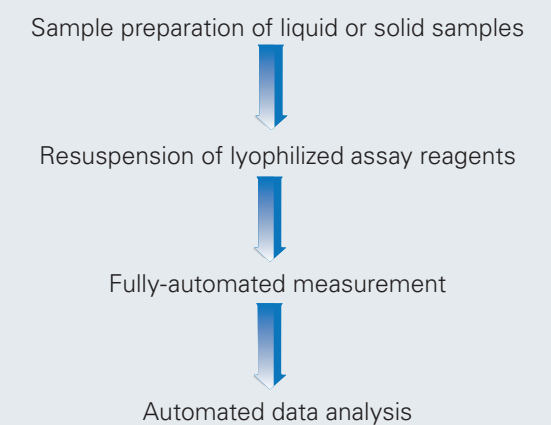
The detection principle of the pBDi is based on the well established ELISA procedure combined with an electrochemical readout.

Capture antibodies immobilized on gold electrodes facilitate the specific binding of corresponding biothreat agents. Detection of bound biothreat agents is realized by application of a detector-antibody-enzyme conjugate and measurement of the electrical current of an enzymatic redox reaction.

The detection event is strongly amplified in this system and allows very sensitive biothreat agent in approx. 20 minutes. First, the high turnover of enzymatic reaction contributes to the signal amplification and second, a redox cycling procedure built into the experimental procedure, provides a second signal amplification.

The straightforward workflow starts with resuspension of a liquid or solid sample in a supplied sample buffer. The pBDi Test Kits contain optimized reagents to perform multiplex electrochemical ELISA's in a stable, easy to use lyophilized format. After fully-automated measurement of a suspicious sample the software pBDi Control performs automatic analysis of results and indicates biothreat agent detection.

WORKFLOW IN BRIEF





pBDi – At a Glance

INSTRUMENT SPECIFICATIONS

Technology: Electrochemical biochip technology
Weight: 14.6 kg
Size: 412 x 337 x 211 mm
Power Requirements: 19 V DC
Battery mode: Yes (up to 15 consecutive measurements)

ENVIRONMENTAL SPECIFICATIONS

Operation temperature: +10°C...+40°C
Storage temperature: -40°C...+70°C

CONTROL SOFTWARE

Software: Windows based control and analysis software
Connection: USB or Bluetooth
Analysis report: Automated report file generation

SAMPLE HANDLING

Sample types: Liquid, solid, culture, powder, swabs
Sample volume: 0.5 - 1.5 mL
Sample preparation: Minimal

REAGENTS

Reagent chemistry: Freeze-dried
Shelf life: 12 months
Assay kit: Ready-to-use kits (10 assays per kit box)

PERFORMANCE PARAMETERS

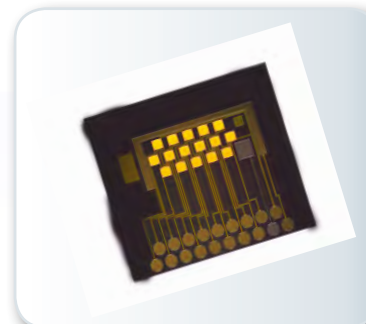
Hands on time: Approx. 2 minutes
Assay kit: Approx. 20 minutes

DETECTABLE AGENTS

- *Bacillus anthracis* (Anthrax)
- *Yersinia pestis* (Plague)
- *Francisella tularensis* (Tularemia)
- *Brucella melitensis* (Brucellosis)
- *Burkholderia mallei* (Glanders)
- Orthopox viruses (Smallpox)
- Botulinum Toxin A, B, C, D, E, F
- Staphylococcal Enterotoxin A, B
- Ricin
- Abrin

OPTIONAL ACCESSORIES

- Training kit
- Sample preparation kit
- Customer specific assay development



Global Resources – Local Focus



Bruker has support centres of technical expertise in every major area of the world providing sales, applications and engineering support for our complete product range. With more than 6,000 employees at 90 locations worldwide you can be confident that the support team fronts a uniquely integrated global resource. Research and development specialists, applications professionals and highly trained engineers in every field are dedicated to your investment in our equipment.

Superior Detector Performance

For highly sensitive detection, identification and quantification of chemical, biological, explosive and radiation threats. Superior performance and high reliability comes as standard.

Applications Support

Systems are configured to meet your needs and result from our detailed evaluation of your requirements.

Standards & Compliance

All our systems are manufactured in ISO9001 compliant factories; so you can be assured of superior quality and performance.

Software & Data Systems

Designed to industry standards on the Microsoft® platform, our software can be integrated with your security management software.

Training

User Training and User-Level Maintenance is part of our standard Scope of Supply. Our goal is simple; to minimise your cost of ownership.

Low Maintenance

All our systems are designed for extended maintenance periods and reduce the through-life-costs of your investment.



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