

Lovibond® Water Testing

Tintometer® Group



Mini Catalogue | Lovibond® – The Original

Pool & Spa Water Analysis

www.lovibond.com



TRADITION



Always working for you

We employ approximately 360 employees at our locations in Germany, UK, USA, Switzerland, Spain, Brazil, India, China and Malaysia. Whether logistics specialists, design engineers or technicians, everyone of our employees is a professional in their field of work. Fast decision-making channels allow us to respond quickly and flexibly to our clients' wishes.

Teamwork, personal commitment and a strong sense of responsibility characterise the working environment in our company.

Family-operated for more than 130 years

Devoted to Water Quality. For more than 130 years, we have specialised in the development of innovative instruments for water analysis. Today, the lasting success of our flexible family-operated business is primarily attributed to the commitment and creativity of our employees. Our technically advanced products are sold in over 140 countries today and above all guarantee reliable and precise analysis results.

For over 20 years, we have been certified in compliance with the quality management standard DIN ISO 9001. The high standards of quality associated with this certificate have been manifested in all parts of our company.

Experience is what makes the difference!

This applies to the field of water analysis just as it does to „real“ life!
Yours, Maja Voss and Cay-Peter Voss



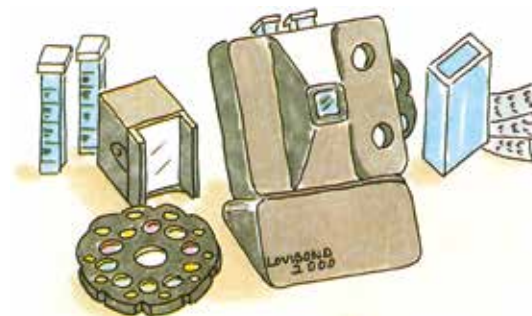
One step ahead

We never lose sight of the latest market requirements and trends. To stay competitive, you always have to be one step ahead of the competition.

From the initial idea right through to market maturity, we develop products in constant dialogue with our clients.

Decades of expertise and know-how in development and production allow us to combine chemistry with electronic measuring equipment to create the perfect products.

Our promise: We have the highest standards of development and production from one single source!



A clean business

Our original water analysis products are real all-rounders: they ensure the clear treatment and high quality of drinking water and waste water, surface, ground and untreated water as well as coolants and boiler water. And have been doing so for more than 130 years! We also achieve accurate measurement results even under difficult conditions thanks to our proven test equipment and reagents for modern water analysis.

Whether you are looking for MINIKITS for visual quick tests, highly sensitive electronic measuring equipment or industrial or waste water kits:

Our multi-functional equipment and reagents offer reliable solutions from one single source and for any task!

It is our aim to make analytical methods as environmentally compatible and safe as possible. In so doing, we want to achieve a favourably green profile. That is why we avoid using harmful chemicals such as boric acid in our formulations – although this additive is still rampant in the industry.

Rapid Tests

Three-Chamber-Tester

The Three-Chamber Tester is a competitively priced unit for the determination of disinfectants and the pH value.

Pooltester

The Pooltester is designed for the simultaneous determination of the most popular water treatment agents and the pH value.

Multi Pooltester

Beside free, combined, total chlorine and pH value the Multipooltester allows the determination of cyanuric acid, total alkalinity and calcium hardness.

Phosphate Test Kit

With a layer depth of 9 cm, the visual test kit is particularly sensitive and delivers reliable measurement results in the range of 0 - 1000 ppb (\approx 0 - 1.0 ppm PO_4). Algae are formed from a concentration of more than 200 ppb PO_4 . The use of phosphate binders counteracts this.

Three-Chamber-Tester



Pooltester



Multi Pooltester



Rapid Tests

MINIKIT

The Minikits are developed for fast testing, mainly based on titrimetric methods.

CHECKIT® Comparator

The Lovibond® CHECKIT® Comparator is a compact and handy colorimetric unit which is suitable for both mobile and static analysis work. Supplied with a generous number of different colour scales, it provides the basis for a comprehensive, easy-to-use colorimetric analysis system.

Comparator 2000+

With its accessories, the Lovibond® Comparator system 2000+ is an extremely versatile, modular system for testing water. It is simple to use yet is uncompromising in terms of precision and reproducibility of results. It is compact and portable. The integrated prism brings the glass standards of the test discs and the coloured sample into the same field of view.

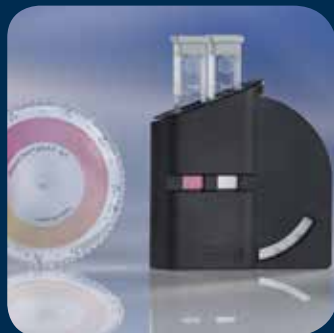
The required accuracy of results is only ensured if stable, fade-free colour standards are used.

Glass colour standards are fade-free, resistant to chemicals and scratchproof. Lovibond® standards are made from coloured glass filters. They comply with international standards, e.g. ISO 7393-2:2017-12

MINIKIT



CHECKIT® Comparator



Comparator 2000+



POOL WATER ANALYSIS



- Active Oxygen
- Biguanide (PHMB)
- Bromine
- Calcium Hardness
- Chloride
- Chlorine
- Copper
- Cyanuric acid
- Hydrogen Peroxide
- pH-value
- QAC
- Sulphate
- Total Alkalinity
- Total Hardness

SCUBA II

Scuba II - Electronic Pooltester

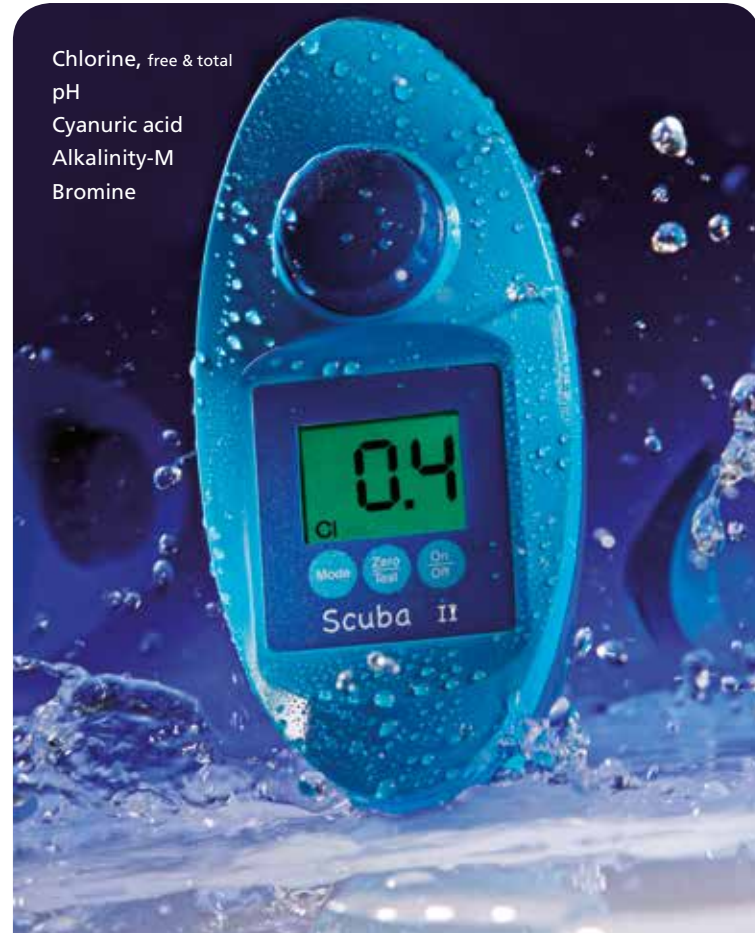
The Scuba II enables the operator to check the pool water quickly and accurately. The integrated sample chamber is filled by immersing it in the water. A tablet reagent is added and generates a characteristic colour which can be measured using the photometric principle. The result is then displayed on the screen.

Why not try this compact test equipment – after all, the knowledge that you are safe in a thoroughly hygienic pool is worth a little effort.

www.scuba-ii.lovibond.com



Chlorine, free & total
pH
Cyanuric acid
Alkalinity-M
Bromine



PHOTOMETERS

MD 100, MD 110 & MD 200 Photometers

This strong trio enables you to deal with any challenge in almost all fields of water analytics. These instruments are equipped with high-precision optics, long-term stable LEDs, high quality interference filters, and resistance to shocks – not to mention they are maintenance-free. Results are precise every time and can be reproduced in a relatively short period of time.

The special advantage for the user: the devices are not only precise and shock resistant, but also waterproof (analog IP 68).

MD 100 and MD 110 with Bluetooth®

It's small but has a huge impact in the industry. It is a handheld design. The single and multi-parameter photometers of the MD 100 and MD 110 series are best suited for mobile on-site analysis. Both instrument series can be used in almost all fields of water analytics.

The difference: the MD 110 instrument is equipped with low-energy **Bluetooth®**.

MD 200

The Benchtop Classic from Lovibond®. For years, this instrument has been providing excellent performance with the highest accuracy and quality.

The series includes several 2in1, 3in1, 4in1 and even 5in1 variants and is applicable in all fields of water analysis. This makes for a truly versatile portfolio.

MD 100



MD 110



Data transfer via
Bluetooth®-Interface

MD 200



The Lovibond® photometer series has pool water analysis decisively simplified. The PM 600 and PM 620 photometers meet all the requirements of demanding pool operators to a modern water analysis. The series is extended by the PM 630 with Bluetooth® data transmission.

PM 600

Analyzes the 13 most important swimming bath parameters for water conditioning. It is equipped with the proven Lovibond® reagent tablets and provides a reliable and safe solution for swimming pool operators and is a user-friendly solution for the analysis of the most important hygiene auxiliary parameters.

PM 620

Extends these capabilities to include up to 34 parameter variants from Alkalinity to Hydrogen peroxide. The unique approach makes it compatible with Lovibond® reagent tablets, liquid reagents and powder reagents, making it one of the most flexible and comprehensive photometers for analyzing water in pools and spas.

PM 630*

Corresponds to the further technical equipment of the PM 620 with 34 programmed, pool-relevant parameters.

Data can be transferred quickly and easily to a smartphone or tablet via the **Bluetooth®** interface.

PHOTOMETERS

The system is further enhanced by the free Lovibond® App, **AquaLX®**, enabling the immediate review, process and evaluation of measured results directly on-site. Data trends can be monitored with easy-to-view graphical displays with set minimum and maximum values.

*with **Bluetooth®**

PM 600



PM 620



PM 630



Data transfer via
Bluetooth®-Interface

Bluetooth® is a wireless technology subject to regional approval. The use of the PM 630 with **Bluetooth®** is currently only permitted in Europe, the USA, and in Canada. For current regions and further information, visit: www.lovibond.com/bluetooth for a list of regions where the PM 630 with Bluetooth® can currently be used (status: 01/2015); in Europe (according R&TTE Directive 1999/5/EC); USA (according to FCC part 15, comprised in FCC ID QOQBLE113); Canada (comprised in IC 5123A-BGTBLE113)

GREEN CHEMISTRY

Green chemistry

All our reagents for Pool & Spa water testing are free from boric acid, which is still frequently being used as an additive in the industry.

The Lovibond® DPD No. 1 tablets are not only 100% free from boric acid, they also guarantee compliance with the buffering effect required by the standard. This characteristic makes the tablet a leader in its field.

Tablet Reagents

- Secured storage in individually-packed aluminium strips
- Rapid dosage, even under in-field conditions
- High accuracy and simple handling

For several decades, Tintometer® in Dortmund has been manufacturing reagents for water testing and marketing these reagents around the world under the brand name Lovibond®.

Different forms of reagents are required for different fields of application.

Tintometer® is the only reagent producer in the world that offers a complete range of reagent forms.

Liquid Reagents

- Rapid solubility
- Easy dosage

Powder Reagents

- Fast and easy use
- Extended shelf life
- High stability



Tablet Reagents



Liquid Reagents



Powder Reagents



ELECTROCHEMISTRY

The SensoDirect 150 combines the features of several hand-held meters. It is designed for multi purpose operation.

- pH value
- ORP / Redox
- Oxygen (dissolved)
- Conductivity
- TDS
- Temperature (°C/°F)

The SensoDirect 110 series consists of multiple battery operated hand-held devices. They are designed for use under difficult conditions.

High measuring accuracy, light weight housing protective casing and a built-in electrode holder make this series very popular.

- pH
- Conductivity
- Salinity

The Lovibond® SD 50-90 series comprises a range of compact, easy-to-use, hand-held

instruments for the accurate measurement of pH, ORP, Con, TDS or Salt. With robust housing and fully waterproof (IP67) casing, these testers are the ideal solution for in-situ testing of pool & spa applications. The instruments are equipped with replaceable electrodes to ensure long-life functionality in the field.

- pH
- ORP/Redox
- Conductivity
- TDS
- Salt
- Temperature (°C / °F)

SensoDirect 150



SensoDirect 110-Series



SD 50 pH • SD 60 ORP • SD 70 Con • SD 80 TDS • SD 90 Salt



TURBIDITY

The term „turbidity“ is used to describe the cloudiness or milkiness of water.

In physical terms, turbidity is due to particles of varying sizes scattering or absorbing light, giving the water in question a cloudy appearance.

This turbidity is caused by suspended particles such as sludge, limestone, yeast or microorganisms.

The phenomenon of turbidity is measured using optoelectronic meters. An artificial light source emits a known intensity of light through a sample. The suspended particles scatter or absorb the light. The scattered light is then recorded on a photodetector.

Scattered light is generally measured at an angle of 90°. This measurement principle is known as nephelometry.

The results are expressed in terms of FNU (Formazin Nephelometric Units) - identical with NTU (Nephelometric Turbidity Units) and TE/F (Turbidity Units Formazin).



Turbidity measurement via infrared light source

Turbidity is measured according to EN ISO 7027 by nephelometric means (90° scattered light). The infrared light source permits measurement of coloured and colour-free samples.

TB 211 IR & TB 210 IR

The compact Lovibond® infrared turbidity measuring instruments TB 211 IR & TB 210 IR for fast and accurate on-site analysis. Turbidity measurement range from 0.01 to 1100 NTU with an accuracy of $\pm 2,5\%$ of reading up to 500 NTU and $\pm 5\%$ thereafter. A direct transfer of the measurement results to a PC is through the USB interface TB 211 IR easy to set up.

- TB 211 IR: USB-Interface
- Measurement with infrared light at an angle of 90°
- Measurement of coloured liquids
- Easy handling
- 600 tests without battery change

ON-LINE TURBIDITY



Bluetooth® is a wireless technology subject to regional approval. The use of PTV with Bluetooth® is currently only permitted within Europe, the USA, and in Canada. It will also be possible in other regions in the future. For current regions and further information, visit: www.lovibond.com/bluetooth for a list of regions where the PTV with Bluetooth® can currently be used (status: 01/2015): within Europe (according R&TTE Directive 1999/5/EC); USA (according to FCC part 15, comprised in FCC ID QOQ8LE113); Canada (comprised in IC 5123A-BGTBLE113)

On-Line Turbidity measuring instruments Process Simplified - A New Approach

PTV 1000

User Inspired System: The development of the PTV Series turbidimeters considered every aspect of process turbidity workflow - from installation and setup; daily measurement and control; routine procedures such as calibration, verification and maintenance to data collection and management.

We have created a secure system that is protected by several patents with significantly reduced complexity, allowing users to interact with an unlimited number of turbidimeters using a single mobile device App. This approach eliminates the requirement of dedicated controllers for each instrument and allows maximum flexibility if your needs and regulatory requirements change in the future.

The PTV 1000 is a instrument for unsurpassed low range accuracy online turbidity measurement for drinking water effluent

- Stable LED Light Sources, ISO and EPA compliance
- Low volume flow body design for larger water savings
- Integrated bubble trap and flow indication
- Intuitive instrument control app (Android™ and iOS®) and integrated touchscreen display
- Novel calibration and verification concept using stabilised formazine: T-CALplus™ -contactless and bubble-free

iOS® is a registered trademark of Cisco, Inc. and licensed to Apple, Inc. Android™ is a trademark of Google, Inc.

IMPORTANT PARAMETERS

Free Chlorine

Free chlorine is considered to be an effective means of disinfecting and oxidising water from swimming pools and spas.

How often and how much chlorine must be added depends on how often the pool is used, in addition to other factors such as water temperature, sunlight, and the addition of fresh water.

The build-up of free chlorine in the water provides a temporary disinfection effect and is virtually odourless. The recommended measuring range is between 0.3 and 3.0 mg/l, depending on whether inorganic or organic chlorine (see cyanuric acid) is used.

Combined chlorine

The reaction of free chlorine with organic contaminants creates chlorine-containing substances, known as combined chlorine or chloramine. This chloramine can irritate eyes and cause an unpleasant „chlorine smell“. In chloramine, the combined chlorine has a slight disinfecting effect. In order to break down combined chlorine and to render micro-organisms harmless or kill them, swimming pool water must be re-chlorinated on a regular basis. The amount of combined chlorine should be minimal, and ideally undetectable.

Total Chlorine

Total chlorine is the sum of free and combined chlorine. First the free chlorine is determined, and then the total chlorine. The difference between these two values is the amount of combined chlorine.

Bromine

Bromine, like chlorine, is suitable for disinfecting swimming pool water. Advantages of bromine: Unlike chloramine (combined chlorine) the corresponding bromamines are odourless, do not irritate the mucous membranes, and have ongoing disinfection efficiency.

The disadvantage, however, is the basic lower oxidation effect compared to chlorine.

Calcium Hardness

The calcium hardness is determined primarily by the fill water; evaporation increases the calcium hardness in the pool water. The proportion of calcium hypochlorite also leads to an increase in the calcium hardness.

If the level of calcium hardness is too high, this can lead to turbidity in the pool water, whereas a low level of calcium hardness will make the pool water aggressive meaning that grout, mortar and concrete will corrode.



IMPORTANT PARAMETERS

pH Value

The pH value indicates whether the pool water is acidic or alkaline, which is crucial for the disinfection effect of free chlorine.

If the pH falls below 6.5 (acidic range), this can lead to eye irritation.

In addition, metals can oxidise and corrosion phenomena can occur.

With pH values over 7.8 (alkaline range), the free chlorine becomes increasingly inefficient and lead to water turbidity and lime deposits.

The ideal pH range is between 7.0 and 7.4.

Cyanuric Acid

When found in concentrations of approximately 50 mg/l or higher, the organic carrier of chlorine, isocyanuric acid,

or so-called organic chlorine, influences the rate at which germs are killed so by way of compensation, higher chlorine levels in the pool water must be maintained.

It is therefore necessary to monitor the concentration of cyanuric acid as regularly as it is chlorine.

The following table shows the proportion of actual available free chlorine out of the amount of chlorine, measured using the DPD 1 reagent tablet.

Example

With a concentration of cyanuric acid of 50 mg/l, only about 33% of the disinfectant value determined using the DPD 1 reagent tablet is available.

Cyanuric acid mg/l	mg/l 30	mg/l 50	mg/l 70	mg/l 90	mg/l 100	mg/l 130	mg/l 140	mg/l 160	mg/l 180	mg/l 200
Available free chlorine in relation to DPD 1 measurement (pH 7,5 ; t = 25 °C)	45 ca. %	33 ca. %	28 ca. %	14 ca. %	12 ca. %	10 ca. %	9 ca. %	8 ca. %	7 ca. %	6 ca. %

Percentages: mean values from different literature references

Alkalinity

The acid-binding capacity of the pool water is referred to as alkalinity.

It is a part of the total hardness and is deemed to be temporary, which is thereby referred to as temporary hardness. High levels of alkalinity to prevent sharp fluctuations of the pH value. With high alkalinity, the pH value is difficult to influence.

Even small additions of acids or alkalis can cause strong fluctuations in the pH value at low alkalinity.

The alkalinity affects the stability of the pH value and the pH in turn determines the disinfection effect of free chlorine. The alkalinity should be set to a range from 100-160 mg/l calcium carbonate.

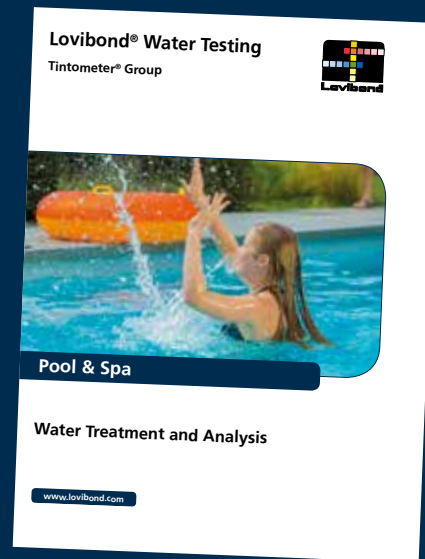
Lovibond®- Poolhandbook

Pool & Spa Water Treatment and Analysis

The handbook includes detailed information on topics relating to swimming pools and spas with reference to the standard methods used for water treatment and testing. National and international standards and regulations are also covered.

Handbook order code: 93 81 01

Visit the support area on our website at www.lovibond.com, to obtain a copy of the handbook.



Lovibond®-Poolcatalogue

Pool & Spa Water Analysis Instruments and Reagents

Instruments and Reagents

Detailed information about this topic analytics. Detailed instructions on the common methods of water analysis in private and public pools and spas.

Catalogue, order code:
93 80 40

Visit the download area on our website at www.lovibond.com, to obtain a copy of the catalogue.



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