

Lovibond® Water Testing

Tintometer® Group



Mini Catalogue | Lovibond® – The Original

Pool & Spa Water Analysis

www.lovibond.com



TRADITION



Always working for you

We employ more than 400 employees at our locations in Germany, UK, USA, Spain, Brazil, India, China, Hong Kong 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



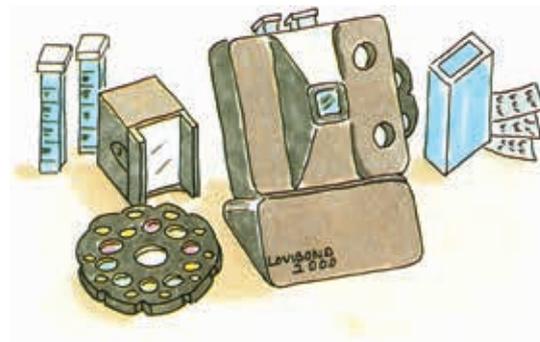
One step ahead

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. Interferences from the colour of the pool water are eliminated by the third, middle chamber.

Pooltester

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

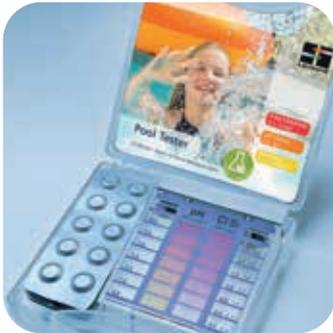
Multi Pooltester

Besides 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 (= 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



Phosphate Test Kit



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

Lovibond® Pooltester - The Original

Nowadays, pool owners can choose from a range of modern water treatment agents that are often used in combination.

These water treatment chemicals are only effective within a limited pH range. Therefore, in addition to checking the concentration of the water treatment chemicals, the owner / operator should also monitor the pH value of pool water and adjust it if necessary.

The Pooltester enables the fast simultaneous determination of the most popular water treatment agents and the pH value.



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.

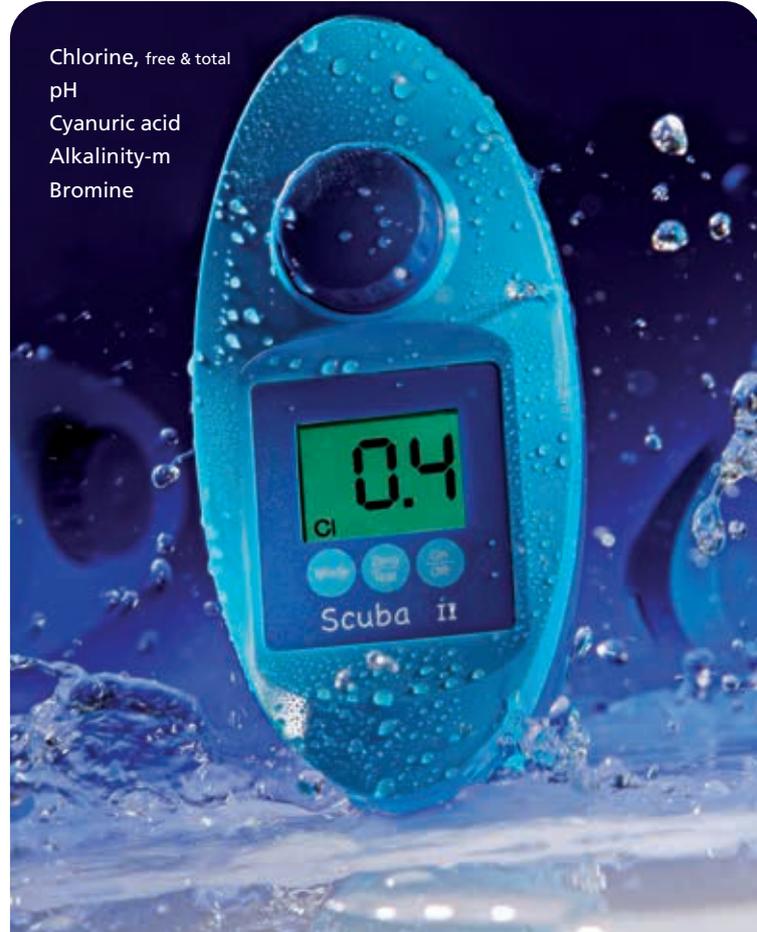
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*Get
the
clip!*



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



Precise water analysis in a high-quality design with interference filter technology

MD 110



Data transfer via Bluetooth®-Interface

MD 200



Bluetooth® is a wireless technology subject to regional approval. The use of the MD 110 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada.

The use of the MD 110 will also be possible in other regions in the future. For current regions and further information, visit: bluetooth.lovibond.com

Regions in which the MD 110 with **Bluetooth®** can currently be used (status: 01/2019): within 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), Japan (includes CAB ID 007-ABO 103)

PHOTOMETERS

Photometers PM 600, PM 620 & PM 630

The PM 600 photometer range brings pool testing to the next level for discerning pool operators. The ergonomic, portable, waterproof design enables users to select just one unit for accurate analysis of up to 34 parameters anytime and anywhere.

The **PM 600** focusses on the main pool parameters required for balanced water including: Alkalinity, Bromine, Chlorine, Cyanuric Acid, Iron, Calcium Hardness, Copper, Sodium Hypochlorite, Phosphate, Ozone and pH-value.

The **PM 620** extends these capabilities to include up to 34 parameter variants from Acid Demand to Urea.

The **PM 630** corresponds to the PM 620 and comes with **Bluetooth®** data transmission for easy data transfer to smartphones or tablets.

The ultimate range
in Pool Photometers

For reliable pool
water analysis



Data transfer via **Bluetooth®**

Update via internet

Data transfer via infrared interface



Bluetooth® is a wireless technology subject to regional approval. The use of the PM 630 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada.

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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
- Accurate dosage, even under in-field conditions
- High accuracy and simple handling
- Shelf life of 5-10 years

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 dosing
- No resolution required

Powder Reagents

- Fast and easy use
- 2 years shelf life
- Best trickling ability



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, light weight housing protective casing.

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



Exchangeables electrodes

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

The compact Lovibond® infrared turbidity measuring instrument TB 211 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 easy to set up.

- 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



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

PTV Series

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 turbidimeter series are instruments for unsurpassed low range accuracy on-line 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

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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: 938101

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: 938040

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



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