

## Technical Data Sheet

# LETZTESTER - Ultimate Visual Color

## Comparator Kit

**Alkalinity | Aluminum | Ammonia | Chloride | Chlorine free and total | Copper | Colour | Fluoride | Iron | Manganese | Nitrate | Nitrite | pH | Phosphate | Total Hardness**

Additional equipment and reagents available on demand for: Active Oxygen | Bromine | Calcium Hardness | Chlorine Diox. | Cyaunic Acid | DEHA | Hydr. Peroxide | Magnesium | Molybdate | Ozone | Potassium | Silica | Sodium | Sulphide | Hypochlorite | Zinc.



# Description

The LETZTESTER – Ultimate Visual Color Comparator Kit provides you with easy access to semi-professional water analysis. Ergonomic design and high-quality materials simplify measurements. Just a different parameter-stick and reagents are needed to extend your kit.

Advantages:

- Easy-to-use tool for measuring physico-chemical parameters in water samples.
- Cost-efficient, long-lasting reagents that don't need cooling. **Expiry Dates up to 10 years!**
- Reagents are compatible with [LETZTEST digital photometer](#) reducing complexity in purchase.
- Customizable kit with reagents according to your parameter needs.
- No maintenance or calibration required.
- Works independently of electricity or batteries.
- Rapid dissolving tablet reagents.
- Higher precision compared to other visual test devices with ongoing color scale on a parameter stick.
- Convenient single boxes for easy transport to testing sites by different persons.

## Specifications

- Art. no.: 1164
- Form: Hard Shell carrying case
- Dimensions: 432 x 381 x 191 mm
- Weight: 1 kg

### Content of kit

- individual basic LETZTESTER Tester box with magazin for up to 10 measurement sticks for individual transportation by technicians to field sites; 3pcs
- 10.5 cm stirring rod; 3pcs
- 20ml Luer-Lock syringe (filter syringe); 3pcs
- filter adapter for 20ml Luer-Lock syringe 3 x box with 50 filter papers "0.40 µ" (25mm); 3pcs
- cleaning brush; 3pcs
- 25ml shaker tube; 3pcs
- 10ml syringe; 3pcs
- 3ml syringe; 3pcs

- measurement sticks for priority parameters in drinking water; 3pcs of each:
  - "Alkalinity" (0 - 250 mg/l)
  - "Aluminium" (0.00 - 0.30 mg/l)
  - "Ammonia" (0.00 - 1.00 mg/l)
  - "Chloride" (0 - 40 mg/l)
  - "Chlorine" (0.0 - 5.0 mg/l)
  - "Colour (Hazen|Apha) " (15 - 500 units)
  - "Copper" (0.0 - 5.0 mg/l)
  - "Fluoride" (0.0 - 2.0 mg/l)
  - "Iron (LR)" (0.05 - 1.00 mg/l)
  - "Manganese" (0.0 - 5.0 mg/l)
  - "Nitrate (HR)" (0 - 100 mg/l)
  - "Nitrite (LR)" (0.00 - 0.50 mg/l)
  - "pH Universal" (4.0 - 10.0 pH)
  - "Phosphate (LR)" (0.00 - 4.00 mg/l)
  - "Total Hardness" (0 - 500 mg/l)
- Additional measurement sticks available **on demand** for: Active Oxygen | Bromine | Calcium Hardness | Chlorine Diox. | Cyaunic Acid | DEHA | Hydr. Peroxide | Magnesium | Molybdate | Ozone | Potassium | Silica | Sodium Hypochlorite | Sulphide | Zinc.

**Reagents for priority parameters:**

Parameter	Measurement Range	Reagent	Health-based guideline value for drinking water (WHO, 2017)	Remarks
Alkalinity	0 – 250 mg/l	100 tablets "Alkalinity" Photometer in a sales box	No Guideline value.	Alkalinity measures the ability of a solution to neutralize acids to the equivalence point of carbonate or bicarbonate, defined as pH 4.5. measuring alkalinity is important in determining a stream's ability to neutralize acidic pollution from rainfall or wastewater. It is one of the best measures of the sensitivity of the stream to acid inputs.
Aluminium	0.00 – 0.30 mg/l	100 tablets "Aluminium N°1" Photometer in a sales box 100 tablets "Aluminium N° 2" Photometer in a sales box	No Guideline value. A health-based value of 0.9 mg/l could be derived from previous studies	Aluminium salts are widely used in water treatment as coagulants to reduce organic matter, colour, turbidity and microorganism levels. High levels of Aluminium result in taste and can reduce acceptability.
Ammonia	0.00 – 1.00 mg/l	100 Powder-Pillows "Ammonia N°1" in a PE bag 100 Powder-Pillows "Ammonia N°2" in a PE bag	No Guideline value. Not of health concern at levels found in drinking-water.	The term ammonia includes the non-ionized (NH <sub>3</sub> ) and ionized (NH <sub>4</sub> <sup>+</sup> ) species. Ammonia in the environment originates from metabolic, agricultural and industrial processes and from disinfection with chloramine. Natural levels in groundwater and surface water are usually below 0.2 mg/l. Anaerobic groundwaters may contain up to 3 mg/l. Intensive rearing of farm animals can give rise to much higher levels in surface water. Ammonia in water is an indicator of possible bacterial, sewage and animal waste pollution. An excess of free ammonia entering the distribution system can lead to nitrification and the potential increase of nitrate and nitrite in drinking-water.
Chloride (0 - 40 ppm)	0 – 40 mg/l	100 tablets Chloride N° 1 Photometer in a sales box 100 tablets Chloride N° 2 Photometer in a sales box	No Guideline value. Not of health concern at levels found in drinking-water.	Chloride concentrations in excess of about 250 mg/l can give rise to detectable taste in water. Excessive chloride concentrations increase rates of corrosion of metals in the distribution system.
Chlorine free and total **	0.0 - 5.0 mg/l	100 tablets DPD 1-Photometer in a sales-box 100 tablets DPD 3-Photometer in a sales-box	5 mg/l	Present in most disinfected drinking-water at concentrations of 0.2–1 mg/l. Most individuals are able to taste or smell

Parameter	Measurement Range	Reagent	Health-based guideline value for drinking water (WHO, 2017)	Remarks
				chlorine in drinking-water at concentrations well below 5 mg/l. The taste threshold for chlorine is below the health-based guideline value of 5 mg/l. For effective disinfection, there should be a residual concentration of free chlorine of $\geq 0.5$ mg/l after at least 30 min contact time at pH < 8.0. A chlorine residual should be maintained throughout the distribution system. At the point of delivery, the minimum residual concentration of free chlorine should be 0.2 mg/l.
Copper	0.0 - 5.0 mg/l	100 tablets "Copper No. 1" in a sales box 100 tablets "Copper No. 2" in a sales box	2 mg/l	Concentrations in drinking-water range from $\leq 0.005$ to > 30 mg/l, primarily as a result of the corrosion of interior copper plumbing. Basis of guideline value derivation: To be protective against acute gastrointestinal effects of copper and provide an adequate margin of safety in populations with normal copper homeostasis.
Colour	15 - 500 units	No reagent	No Guideline value. Not of health concern	Typical physical parameter that can reduce acceptability
Fluoride **	0.0 - 2.0 mg/l	Liquid reagent: Bottle with 65ml of "PL Fluoride 1" Liquid reagent: Bottle with 65ml of "PL Fluoride 2"	1,5 mg/l	Usually occurs in groundwater. Epidemiological evidence that concentrations above 1,5 mg/l carry an increasing risk of dental fluorosis and that progressively higher concentrations lead to increasing risks of skeletal fluorosis.
Iron LR	0.05 - 1.00 mg/l	100 tablets Iron LR Photometer in a sales-box in a PE bag	No Guideline value. Not of health concern at levels found in drinking-water.	May affect acceptability of drinking-water. Anaerobic groundwater may contain ferrous iron at concentrations up to several milligrams per liter without discoloration or turbidity in the water when directly pumped from a well. On exposure to the atmosphere, however, the ferrous iron oxidizes to ferric iron, giving an objectionable reddish-brown colour to the water. Iron also promotes the growth of "iron bacteria", which derive their energy from the oxidation of ferrous iron to ferric iron and in the process deposit a slimy coating on the piping. At levels above 0.3

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				mg/l, iron stains laundry and plumbing fixtures. There is usually no noticeable taste at iron concentrations below 0.3 mg/l, although turbidity and colour may develop.
Manganese	0.0 - 5.0 mg/l	100 Powder-Pillows "Manganese LR N°1 Photometer" in a PE bag 100 Powder-Pillows "Manganese LR N°2 Photometer" in a PE bag	No Guideline value. A health-based value of 0.4 mg/l can be derived for manganese based on the up- per range value of manganese intake of 11 mg/day	May cause acceptability problems in drinking-water. At levels exceeding 0.1 mg/l, manganese in water supplies may cause an undesirable taste in beverages and stains sanitary ware and laundry. The presence of manganese in drinking-water, like that of iron, may lead to the accumulation of deposits in the distribution system. Concentrations below 0.1 mg/l are usually acceptable to consumers. Even at a concentration of 0.2 mg/l, manganese will often form a coating on pipes, which may slough off as a black precipitate. The health-based value of 0.4 mg/l for manganese is higher than this acceptability threshold of 0.1 mg/l.
Nitrate (HR) **	0 - 100 mg/l	100 Powder-Pillows "Nitrate N°1 Photometer" in a PE bag 100 Powder-Pillows "Nitrate N°2 Photometer" in a PE bag	50 mg/l  to be protective against methaemoglobi- naemia and thyroid effects in the most sensitive subpopulation, bottle-fed infants, and, consequently,)other population subgroups	Occurance: Nitrate (NO <sup>-</sup> ) is found naturally in the environment and is an important plant nutrient. Nitrate levels vary significantly, but levels in well water are often higher than those in surface water and, unless heavily influenced by surface water, are less likely to fluctuate. Concentrations often approach or exceed 50 mg/l where there are significant sources of contamination. Nitrite levels are normally lower, less than a few milligrams per liter.
Nitrite (LR) **	0.00 - 0.50 mg/l	100 Powder-Pillows "Nitrite LR Photometer" in a PE bag	3 mg/l  to be protective against methaemoglobinaemia induced by nitrite from both endogenous and exogenous sources in bottle-fed infants, the most sensitive subpopulation, and,	Nitrite (NO <sup>-</sup> ) is not usually present in significant concentrations except in a reducing environment, because nitrate is the more stable oxidation state. It can be formed by the microbial reduction of nitrate and in vivo by reduction from ingested nitrate.

Parameter	Measurement Range	Reagent	Health-based guideline value for drinking water (WHO, 2017)	Remarks
			consequently, the general population	
pH	4.0 - 10.0 pH	100 tablets "Universal pH" Photometer	No Guideline value. Not of health concern at levels found in drinking-water.	An important operational water quality parameter. Desinfection with chlorine is more effective at a pH value below 7,5.
Phosphate (LR)	0.00 - 4.00 mg/l	100 Powder-Pillows "Phosphate LR N°1 Photometer" in a PE bag 100 tablets Phosphate LR N° 2 Photometer in a sales box	No Guideline value. Not of health concern at levels found in drinking-water.	Phosphate will stimulate the growth of plankton and aquatic plants (algae growth)
Total Hardness	0 – 500 mg/l	100 tablets "Total Hardness" Photometer in a sales box *	No Guideline value. Not of health concern at levels found in drinking-water.	May affect acceptability of drinking-water. Hardness in water is caused by a variety of dissolved polyvalent metallic ions, predominantly calcium and magnesium cations. It is usually expressed as milligrams of calcium carbonate per litre. The degree of hardness of drinking-water is important for aesthetic acceptability by consumers and for economic and operational considerations.

\* Drinking water quality guideline (WHO, 2017)

\*\* Defined as priority parameter in drinking water analysis by WHO (WHO, 2018 - Developing drinking-water quality regulations and standards: general guidance with a special focus on countries with limited resources)

Note: additional reagents available on demand for: Active Oxygen | Bromine | Calcium Hardness | Chlorine Diox. | Cyaunic Acid | DEHA | Hydr. Peroxide | Magnesium | Molybdate | Ozone | Potassium | Silica | Sodium Hypochlorite | Sulphide | Zinc.

## Photos

