Why Test CDS?

https://cdl-test.de

The market for CDS, a Chlorine Dioxide Solution (ClO2), has grown significantly in recent years. Triggered by the work of Jim Humble, who discovered MMS for health applications in the 1980s, and its subsequent refinement into pure CDS by Andreas Kalcker, ClO2 has secured a place in many home medicine cabinets. Furthermore, CDS is an excellent water disinfectant which, when used in the correct concentration, can even make heavily contaminated water safe to drink.

There are conflicting opinions regarding the health benefits of taking CDS. We do not wish to participate in this discussion. We have only examined the quality of the available products: **Our CDS testing gives you the opportunity to learn about the properties of available CLO2 solutions.** To this end, we examined three significant parameters: ClO2 concentration, conductivity (contaminates), and pH value. You can read about the details of these parameters and their importance for the evaluation after the product comparison. In short, the results show that the market is dominated by inferior products that pose significant health risks.

Test Result - Details

Quality:

- ppm: 2818
- µS: 104
- pH: 4.08

Cost:

- Price per liter: €75.00
- Price per 10 ml (with 3000 ppm): €0.80

Manufacturer: Muntendorf eK, Feuergräfenstr. 10, D-23879 Mölln (Germany)
Test date: February 2025

Test Result - Details

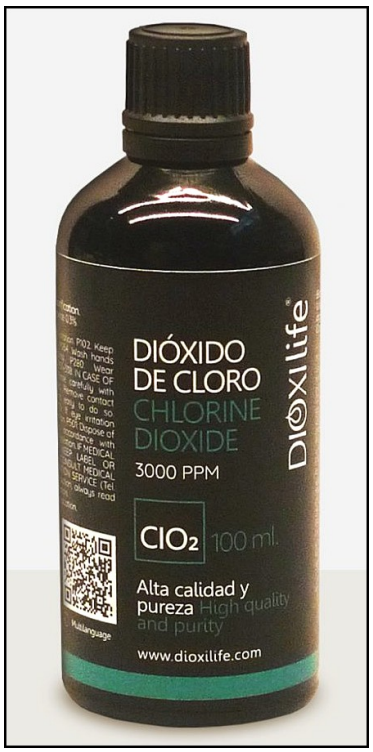
Quality:

- ppm: 2884
- µS: 293
- pH: 3.24

Cost:

- Price per liter: €179.00
- Price per 10 ml (with 3000 ppm): €1.79

Manufacturer: Dioxilife,
Poligono Ind el Campaner Vial 5
12570 Alcala de Xivert
Castellon (Spain)
Test date: July 2025



Test Result - Details

Quality:

- ppm: 2789
- µS: 320
- pH: 3.12

Cost:

- Price per liter: €132.00
- Price per 10 ml (with 3000 ppm): €1.32

Manufacturer: Ittermann electronic GmbH
Köhlergasse
16-18
99842 Ruhla (Germany)
Test date: July 2025

Test Result - Details

Quality:

- ppm: 2733
- µS: >3999
- pH: 5.15

Cost:

- Price per liter: €71.96
- Price per 10 ml (with 3000 ppm): €0.72

Manufacturer: Hanse Pro

Chlorine dioxide solution 0.3%

Test date: July 2025

Quality:

- ppm: 2981
- µS: > 3999
- pH: 2.62

Cost:

- Price per liter: €75.80
- Price per 10 ml (with 3000 ppm): €0.76

Manufacturer: NVS Group OÜ, Narva Str. 5, EE-10117 Tallin, Estonia

Test date: February 2025

Quality:

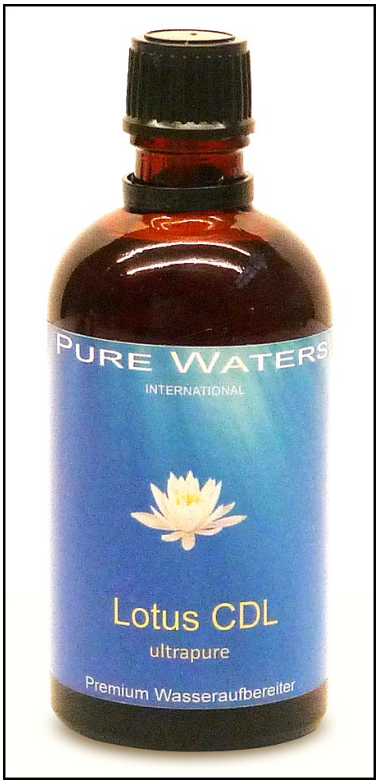
- ppm: 3005
- µS: >3999
- pH: 1.83

Cost:

- Price per liter: €199.00
- Price per 10 ml (with 3000 ppm): €1.99

Manufacturer: Pure Waters International GmbH, Im Zollstock 1, 91093 Hessdorf, Germany

Test date: July 2025



Quality:

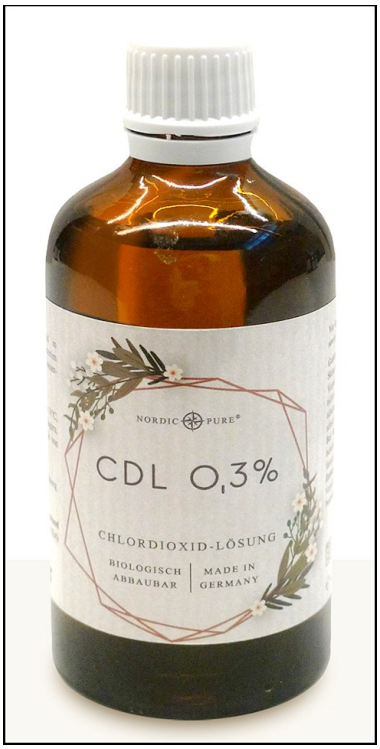
- ppm: 3026
- µS: > 3999
- pH: 2.56

Cost:

- Price per liter: €49.90
- Price per 10 ml (with 3000 ppm): €0.49

Manufacturer: NVS Group OÜ, Narva Str. 5, EE-10117 Tallin, Estonia

Test date: February 2025



Quality:

- ppm: 2502
- µS: 156
- pH: 3.53

Cost:

- Price per liter: €107.60
- Price per 10 ml (with 3000 ppm): €1.08

Manufacturer: LifeSolution.eu GmbH, Munster 3, 79244 Munstertal, Germany

Test date: February 2025

Quality:

- ppm: 2600
- µS: 3295
- pH: 2.40

Cost:

- Price per liter: €151.60
- Price per 10 ml (with 3000 ppm): €1.75

Manufacturer: Aquarius pro life (CY) Ltd. Lordou Vyronos 61-63, CY-2032 Larnaca, Cyprus

Test date: February 2025

Quality:

- ppm: 3399
- µS: >3999
- pH: 2.54

Cost:

- Price per liter: €116.00
- Price per 10 ml (with 3000 ppm): €1.16

Manufacturer: MYCHEM GmbH
Winterthurerstrasse 71, CH – 8006 Zurich, CH
Test date: July 2025

Quality:

- ppm: 3573
- µS: > 3999
- pH: 2.52

Cost:

- Price per liter: €83.00
- Price per 10 ml (with 3000 ppm): €0.70

Manufacturer: CurcuWid GmbH,
Hans-Neuner-Straße 16, A-6322 Kirchbichl, Austria
Test date: February 2025

Quality:

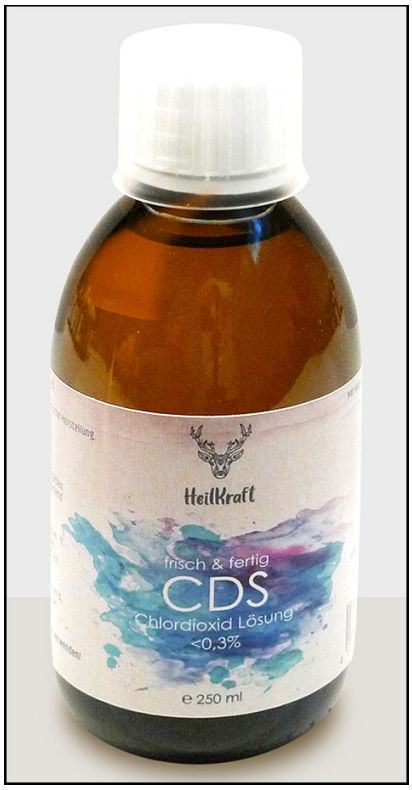
- ppm: 1846
- µS: 150
- pH: 3.51

Cost:

- Price per liter: €89.00
- Price per 10 ml (with 3000 ppm): €1.45

Manufacturer: Lebenskraft Manufaktur GmbH, Bei der Keulahütte 1, D-21339 Lüneburg, DE

Test date: February 2025



Quality:

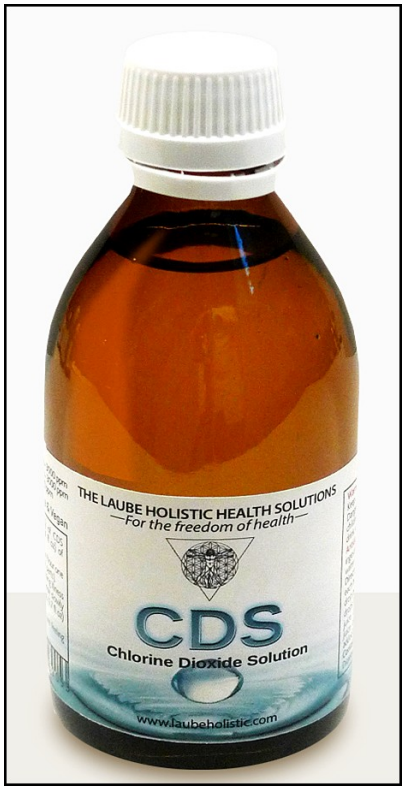
- ppm: 1514
- µS: 440
- pH: 3.08

Cost:

- Price per liter: €99.00
- Price per 10 ml (with 3000 ppm): €1.96

Manufacturer: Laube Holistic Solutions, Avenida de Lepanto 16, ES-03730 Javea, Alicante, Spain

Test date: February 2025



Quality:

- ppm: 2090
- µS: > 3999
- pH: 2.3

Cost:

- Price per liter: €99.80
- Price per 10 ml (with 3000 ppm): €1.43

Manufacturer: Ancevia Trade in Health Products, An der Weide 7, D-48291 Telgte-Westbevern, DE

Test date: February 2025

Quality:

- ppm: 659
- µS: > 3999
- pH: 1.83

Cost:

- Price per liter: €33.70
- Price per 10 ml (with 3000 ppm): €1.53

Manufacturer: BMUT UG, An der Kolonnade 11, D-10117 Berlin, DE

Test date: February 2025

Quality:

- ppm: 737
- µS: > 3999
- pH: 1.43

Cost:

- Price per liter: €19.89
- Price per 10 ml (with 3000 ppm): €0.81

Manufacturer: BMUT UG, An der Kolonnade 11, D-10117 Berlin, DE

Test date: February 2025

Quality:

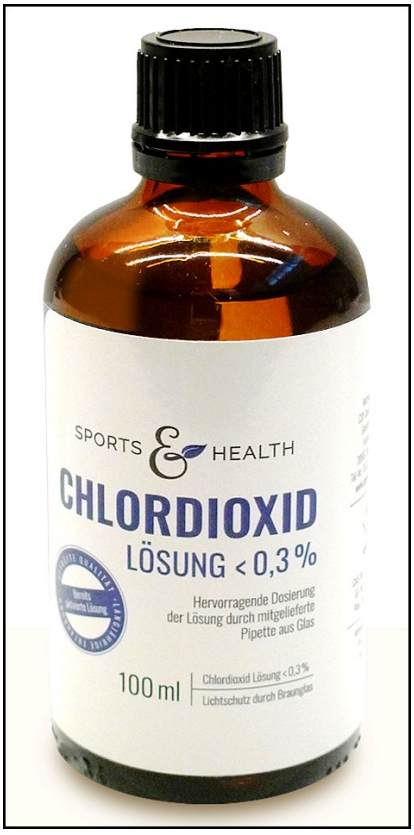
- ppm: > 4000
- µS: > 3999
- pH: 2.40

Cost:

- Price per liter: €43.90
- Price per 10 ml (with 3000 ppm): not predictable

Manufacturer: CDF Sports & Health Solutions GmbH, Haferkamp 2, D-38667 Bad Harzburg, DE

Test date: February 2025



Quality:

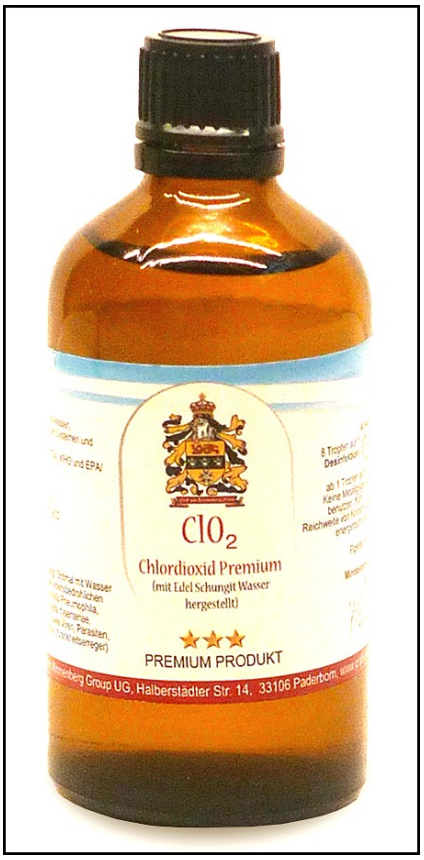
- ppm: 1510
- µS: >3999
- pH: 1.58

Cost:

- Price per liter: €179.00
- Price per 10 ml (with 3000 ppm): €1.79

Manufacturer: Graf von Kronenberg Group UG (Cellavita) Halberstädterstraße 14, 33106 Paderborn, DE

Test date: July 2025



Quality:

ppm: >4000

µS: >3999

pH: 1.85

Cost:

Price per liter: €99.60

Price per 10 ml (with 3000 ppm): €1.00

Manufacturer: onTrade GmbH Ahornweg 8, 29346 Langlingen, DE

Test date: July 2025

Quality:

- ppm: 1237
- µS: < 3999
- pH: 1.33

Cost:

- Price per liter: €33.80
- Price per 10 ml (with 3000 ppm): €0.82

Manufacturer: Freidank GmbH, Neuefahrt 3, D-34117 Kassel, DE

Test date: February 2025

Quality:

ppm: 3824

µS: > 3999

pH: 2.3

Cost:

Price per liter: €54.80

Price per 10 ml (with 3000 ppm): €0.43

Manufacturer: LifeSolution.eu GmbH, Münster 3, D-79244 Münstertal, DE

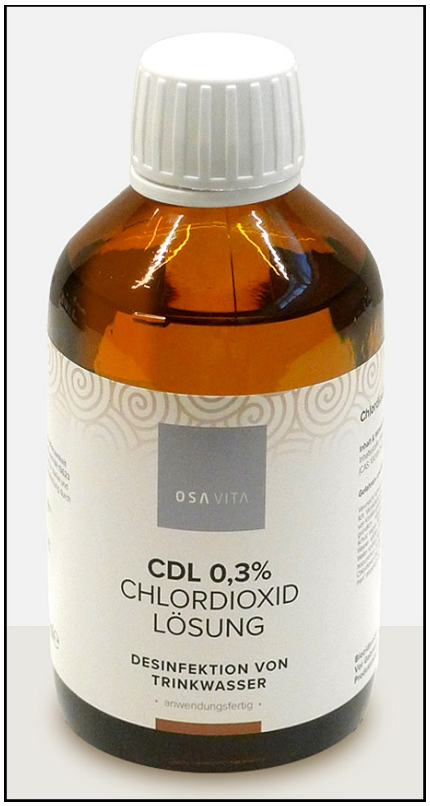
Test date: February 2025

Quality:
ppm: 3851
µS: > 3999
pH: 2.28
Cost:
Price per liter: €119.60
Price per 10 ml (with 3000 ppm): €0.94
Manufacturer: Maison Naturelle GmbH, Sernatingenstraße 19, D-78351 Bodman-Ludwigshafen
Test date: February 2025

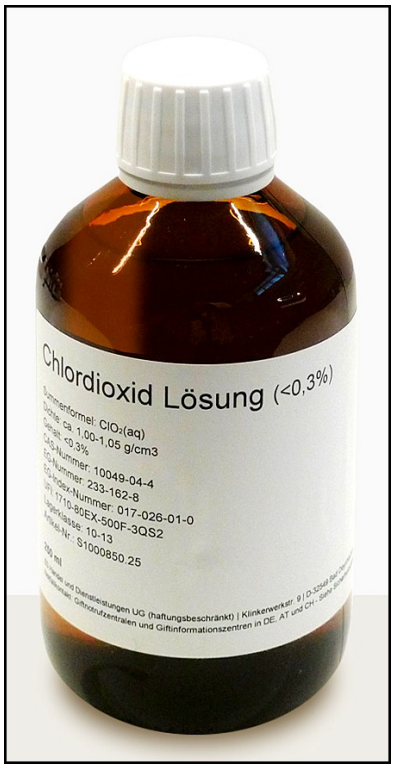
Quality:
ppm: 1052
µS: > 3999
pH: 1.41
Cost:
Price per liter: €24.89
Price per 10 ml (with 3000 ppm): €0.71
Manufacturer: Mediprovita, Casterfeldstr. 66-72, D-68199 Mannheim
Test date: February 2025

Quality:
ppm: 1927
µS: 3999
pH: 1.64
Cost:
Price per liter: €21.90
Price per 10 ml (with 3000 ppm): €0.34
Manufacturer: Natur Total Ltd, 87000 Labuan, Malaysia (registered LL12999)
Test date: February 2025

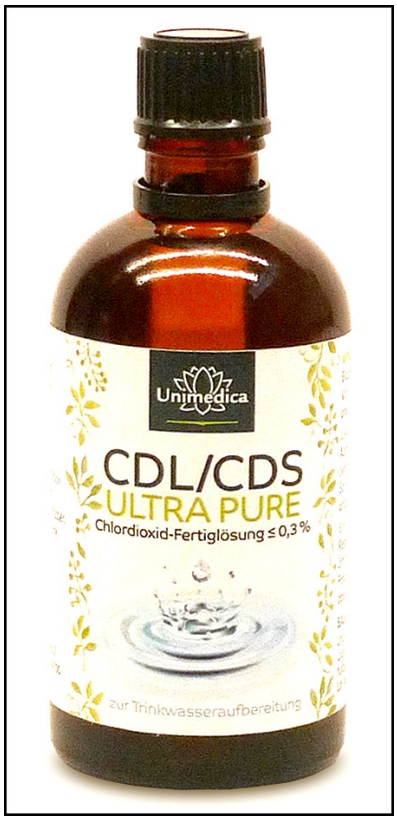
Quality:
ppm: 3932
µS: > 3999
pH: 2.27
Cost:
Price per liter: €91.96
Price per 10 ml (with 3000 ppm): €0.70
Manufacturer: OSA Brands UG, Dürrwiesen 16, D-73614 Schorndorf, DE
Test date: February 2025



Quality:
ppm: 1985
µS: 2400
pH: 2.33
Cost:
Price per liter: €59.00
Price per 10 ml (with 3000 ppm): €0.89
Manufacturer: S3 Handel und Services UG,
Klinkerwerkstraße 9, D-32549 Bad Oeynhausen, DE
Test date: February 2025



Quality:
ppm: 2333
µS: >3999
pH: 1.79
Cost:
Price per liter: €175.00
Price per 10 ml (with 3000 ppm): €1.75
Manufacturer: Narayana Verlag GmbH
Blumenplatz 2, 79400 Kandern, DE
Test date: July 2025



Quality:

ppm: 1941

µS: 3025

pH: 2.47

Cost:

Price per liter: €198.00

Price per 10 ml (with 3000 ppm): €3.06

Manufacturer: vitalundfitmit100 GmbH, Siemensstrasse 10, D-41363 Jüchen

Test date: February 2025

Quality:

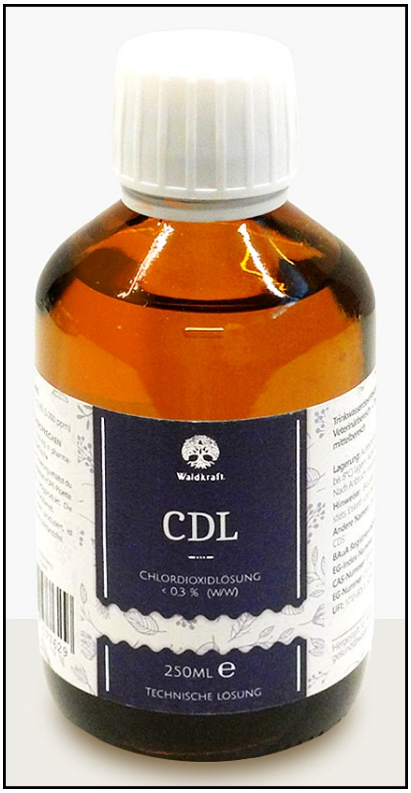
- ppm: 1987
- µS: 1715
- pH: 2.57

Cost:

- Price per liter: €132.80
- Price per 10 ml (with 3000 ppm): €2.01

Manufacturer: Forest power. Alveda GmbH, Am Stener Berg 41k, D-13125 Berlin, DE

Test date: February 2025



Buy or make CDS Yourself? What You Need to know.

Chlorine dioxide is a chemical compound of chlorine and oxygen with the molecular formula ClO2. The gas is usually produced by the reaction of sodium chlorite (NaClO2) and an acid, such as Hydrochloric acid. The reaction can be brought about in different ways. **What distinguishes the results is their purity. But not the ClO2 concentration (ppm)! That varies depending on the quality and quantity of the raw materials used.**

Since manufacturers usually do not explicitly identify their production method, it remains unclear to users whether the preparation is contaminated and whether taking it poses health risks. To clarify here, let's briefly introduce the methods. We'll introduce a new term for this: "**Purest CDS**".

The CLO2 production method determines the purity of the solution:

CDH is similar to MMS1. **CDH** is NaCLO2 plus an acid added to distilled water with no pre-activation delay. CDH is normally activated for 8 + hours, inside one bottle.

NaClO2 and acid are **added to water**. The reaction releases ClO2 into the water. A similar method is used for MMS1 production; (30 second pre-activation delay, then added to water). **Disadvantage:** the chemical components reaction residues remain in the solution and are consumed during ingestion. Such preparations are usually very acidic (pH 1.3-2.5) and can lead to problems in the intestinal tract.

Very Pure CDS: (NaClO2 + acid):
You combine NaClO2 and an acid **outside the CDS distilled water,** in contact with each other in a separate reactor container. The resulting gas (ClO2) binds to the distilled water. **Advantage:** Since almost no reaction residues enter the solution, this is a highly pure product. If used properly, it can be taken without side effects.

(**Editor's Note:** most acids used to extract CLO2 gas from NaCLO2 solutions (SCS) will also gas into the CDS water, adding contaminates to CDS. HCL is one of those acids. **There is an acid that will not do that,** and has been used since the early days of Jim Humble's MMS. That acid is **citric acid**. You can easily test this by measuring the TDS (**T**otal **D**issolved **S**olids) of CDS by using an inexpensive TDS meter.)

Most Pure CDS: (NaClO2 + electrical current = electrolysis)

Instead of acid, electrical current is used. With **electrolysis**, chlorine dioxide is obtained from NaClO2 through a redox reaction and bound in distilled water.

Conclusion: **Only pure CDS is suitable for ingesting.** Undesirable side effects can be ruled out. Andreas Kalcker therefore recommends producing chlorine dioxide solutions yourself **to be on the safe side**. (Further information can be found here **Video**) (**Editor's note:** AK is showing my overnight method and dual infusion method when 4% HCL is used. With 50% citric acid, only one infusion is needed.)

You can source your ingredients from a reliable supplier and receive high-quality raw materials. You can order NaClO2 25% and hydrochloric acid 4% cheaply online, but the price and quality varies widely. https://shop.es-drei.de and https://www.laboratoriumdiscounter.nl I experienced it myself (Video production).

Using the raw materials of S3 (5 ml NAClO2 + 5 ml HCL), we measured a ClO2 concentration of 545 ppm after 24 hours. Using the raw materials from laboratoriumdiscounter.nl (5 ml NAClO2 + 5 ml HCL) we measured a concentration of 1309 ppm after 24 hours (**Video result**). **A difference of 764 ppm!**

If the quality of the raw material is uncertain, you should give preference to a commercially available chlorine dioxide solution or purchase the appropriate measuring equipment. Thanks to our CDS testing, you have the opportunity to purchase the best CDS product.

Test procedure: This is how we proceeded

We decided on a simple, arbitrarily reproducible test setup. Two devices were used. With **Mara by Mara Quantics (ClO2 spectra-photometric meter)** we measured the CLO2 ppm value, i.e. the ClO2 concentration, and with the **Hanna Instruments Model HI98129** for the conductance as well as the pH value.

1. Unpacking the product.

2. Filling of 30 ml of test substance.

3. Measurement of ppm, conductance and pH (in that order).

The Mara Quantics apparatus must be calibrated for correct measurement. We used distilled osmosis water with a conductance of 1 µS. To ensure comparability of samples, we used the same water for all products.

Rating: This is how we judged

We assessed three factors: the **CLO2 ppm value, the conductance value, and the pH value.** They are the central quality features for chlorine dioxide solutions, as they provide information about the ClO2 concentration, as well as the possible impurities that could be added by sodium chlorite and acid.

Ratings are based on the traffic light colors:

(green, yellow-orange, red)

1. Factor: ppm value

Almost all chlorine dioxide solutions tested advertised a ClO2 content of 3000 ppm. For good reason.

The abbreviation for “parts per million“ is ppm. The value indicates how many parts of a substance are contained in one million parts of the total mixture. For the preparations examined, there should be 3,000 parts of ClO2 per million parts of water. This is equal to 0.3%. **All of Andreas Kalcker's protocols are based on this concentration.** It is considered the ideal measure for water disinfection and ingestion. **Due to this and the manufacturers' competition for their solutions, we set 3000 ppm as the target value.**

Different values mean a **dangerous consumer deception.** For correct use, you would have to dose the solution higher or lower. However, since the relations are unknown, **no safe use is possible!**

The introduction of ClO2 gas into water is subject to natural fluctuations. For this reason we hold one **Tolerance of ± 10%** still recommended. The **Deviations up to ± 20%** of the dosage becomes significantly more difficult, hence the gradation to yellow. **Differences above ± 20%** are in the red zone because practical dosage is no longer possible.

Assessment CLO2 ppm value: (set point = 3000 ppm):

ppm value: 2700 to 3300 ppm

Rating: recommendable

ppm value: 2400 - 3600 ppm

Rating: Still acceptable

ppm value: < 2400 ppm, > 3600 ppm

Rating: non-tolerable

Some providers show their products with concentrations of **< 0.3%**. The background is probably the biocides regulation, which requires registration from 3000 ppm. Since it remains unclear how much chlorine dioxide is actually present in such solutions, no useful amount can be determined: they are neither suitable for reliable water disinfection nor for the exact dosage of the Kalcker protocols. We marked the preparations in red. **They are simply unsuitable for use.**

2. Factor: Conductance

The electrical conductance indicates how many conductive substances (chlorides, sulfates, carbonates, salts) are present in the solution. It is measured in micro Siemens (µS) / cm.

Ideally, the conductance should be below 150 µS. Then it is guaranteed to be pure CDL. The “cucumber jar method“ according to Andreas Kalcker, i.e. the manual production method typical of self-catering people, leads to values of around 20 µS. (**Editor’s note:** my testing has shown measurements of >100 µS when 4% HCL is used as the acid activator). If produced on a larger scale, the smallest amounts of hydrochloric acid vapors rise, which slightly increases the conductivity. Back-

ground: If you introduce a drop of 4% hydrochloric acid into 100 ml of distilled water, the conductance will be approximately 250 µS; for 1 ml the values are > 3999 µS.

In our opinion, measured values speak up to **150 µS** for a production in which NaClO2 and acid **outside water** react with each other. We go from 1 µS to 500 µS **recommended small production**. Values between 500 and 1500 µS indicate one more **acceptable large-scale production** there. However, pure water was probably not used and/or the basic substances sodium chlorite and acid are present in the CDS solution.

Measured values **over 1500 µS** suggest that the substances necessary for production were introduced – at least partially – into the water, and not just the gaseous ClO2. **Those products are standard CDH or MMS1, which can lead to severe side effects when taken.** (**Editor's note:** I don't necessarily agree with this statement.)

Conductance (µS/cm) and (TDS) (set point < 150 µS / < 75 TDS):

Conductance: < 500 µS (< 250 TDS)

Rating: recommendable

Conductance: 500 to 1500 µS (250 to 750 TDS)

Rating: Still acceptable

Conductance: > 1500 µS (> 750 TDS)

Rating: non-tolerable

3. Factor: pH value

The lower the pH, the more likely impurities are by the acid used. In external applications (eyes, wounds, etc.), where small dilutions are often used, the residues can cause chemical burns.

Pure CDS has at least pH 4. But only one tested preparation got above pH 4! A deterrent result for users thinking about taking it. This plays no role in water disin-

fection. For comparison: If you add a drop of 4% hydrochloric acid to 100 ml of distilled water, the pH value drops from 5.8 to around 3.14. So clean work is required.

Assessment of pH (set point > 4):

pH value > 4

Rating: recommendable

pH value 3-4 Rating: Still acceptable

pH value < 3 Rating: non-tolerable

Conclusion: Attention, label fraud!

Determining the concentration of CDS proved extremely difficult until recently. No laboratory was found to determine ppm levels. When we asked some manufacturers, we were referred to ClO2 test strips; they work similarly to pH test strips. However, the available specimens only have a scale up to 500 ppm. Therefore, we had to dilute the solutions greatly, which led to insufficiently precise results.

Fortunately, the inaccuracy of the ClO2 test strips is now history. **The Mara measuring device from Mara Quantics has been available since autumn 2024.** It is the world's first instrument to measure chlorine dioxide concentrations in water **up to 4000 ppm measured exactly by spectro-photometry**. The use of Mara revealed sobering facts.

Dizzy labels, Mara doesn't:

- **That's right here:** Whatever it says is delivered – **3 solutions** are in the tolerance range +/ - 10% at the set-point 3000 ppm.
- **Misstatement of health risk:** in **4 products** are ppm levels so high that protocol applications are very likely to cause overdoses.
- **Deceptive packages:** In **13 offers** there is significantly less ClO2 in it than promised. In other words, you're being ripped off...

Conclusion: **Our CDS test reveals that there is a need for action.** The manufacturers must be given credit for the fact that it has hardly been possible to accurately

determine the actual ClO2 concentration due to unsuitable measurement methods. That has changed thanks to Mara. **We recommend that providers rehabilitate themselves with newly prepared and correctly calibrated chlorine dioxide solutions measuring devices.**

We are happy to help with this. If you as a manufacturer have optimized your production and would like a new test, **write to us:** **service@cdl-test.de**

Buying advice: How to choose the right offer

With CDS 0.3% distillate, only one of 20 products met all quality criteria. This can be called a pure CDS. Also healing power fresh & ready CDS chlorine dioxide solution < 0.3% and The Laube Holistic Health Solutions CDS 0.3%, although the duo has ppm concentrations that are far too low. **The 17 other preparations are standard CDH, i.e. MMS1.** This is not suitable for water disinfection or ingestion as it can severely irritate the gastrointestinal tract and proper dosage is impossible.

If you want an oral chlorine dioxide solution, be sure to pay attention to its purity and, above all, ClO2 concentration!

3000 ppm represents a strong chemical solution that causes chemical burns if used improperly. In our test, the range from 659 ppm reached into the no longer measurable range. Mara stops at 4000 ppm. Based on this, it can be assumed that **that the vast majority of users have no experience at all in dealing with "real CDS"**- i.e. pure CDS according to Andreas Kalcker. In our test, 4 solutions were dosed significantly too high, 13 products were far too low.

At 3000 ppm, it is no longer practical to estimate the amount of intake approximately. In order to avoid health-endangering applications, this must be precisely determined using a dosing aid. Some manufacturers supply plastic pipettes. **Since ClO2 strongly attacks certain plastics, glass containers / measuring instruments are preferable.**

1Nov'25 https://cdl-test.de service@cdl-test.de Editor was: