



Water Test • Ozone

for Determination of Ozone (O₃) (DPD Supplement Reagent)

(1/2)
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Principle

Determination of ozone after formation of a red violet dye with N,N-diethyl-1,4-phenylenediamine (DPD). The evaluation can be colorimetric (visual comparison of the color of the measuring solution with a color scale) or spectrophotometric.

Measuring range

O₃: 0.05 ... 6.00 mg/L

Reagents

The reagents are ready for use and originally sealed at a storage temperature of +15 ... 25 °C until the imprinted expiration date. Do not leave the reagent bottles open (danger of oxidation of the DPD by atmospheric oxygen), but close them immediately after use with the cap of the same colour code.

Risks and Safety

Please observe the necessary precautions for use of laboratory reagents. Applications should be performed by expert personnel only. Follow the national and laboratory internal guidelines for work safety. Wear suitable protective clothing, safety eyewear and disposable gloves while handling.



www.sds-id.com

For additional safety information please refer to the information on the label and the corresponding Safety Data Sheet (SDS).

Download by QR-Code or link:

072047-... www.sds-id.com/100141-2

Main Components/Contents

072047-0030 O₃ 1x 30ml Reagenz Ozone

Additional materials required

072041-0030 A1 1x 30ml Reagent Chlorine free + total + Ozone

072042-0030 A2 1x 30ml Reagent Chlorine free + total + Ozone

Additional materials recommended

035180-1010 1x 1.0L 1.0N Sulphuric acid

035110-1010 1x 1.0L 1.0N Sodium hydroxide

Specimen

Fresh water sample (< 1 h, storage dark and cool, avoid shaking, free of turbidity and particles). *1)

Reference Range

Ozone (with simultaneous chlorination) ^[1]	mg/l Ozone
Poolwasser <28 °C:	0,8 ... 1,0
Poolwasser >28 °C:	1,0 ... 1,2

Preparation

Rinse all test devices several times with the sample before use. Use glassware that does not consume chlorine. *2)

The colouring is formed at a pH value of 6.3...6.5 The reagents contain a buffer for pH value adjustment, strongly alkaline or acidic samples should however be adjusted to a pH value of 4...8.

For zero adjustment in spectrophotometric determination, use a sample without the addition of reagents.

Reagents must have reached the measuring temperature +20 ... +37 °C before use. Mix before use.

Procedure

Measurement

Wavelength:..... 510nm* oder 530nm**

Cuvette: 10mm

Temperature:..... +20...+37°C

Type of measurement:..... Endpoint

* Extinction maximum

** Common wavelength for small photometers (LED wavelength).

Determination of Ozone

Ozone is a strong oxidizing agent and therefore reacts analogously to chlorine with DPD to form a red dye. When ozone is determined using this method, not only the ozone content is determined in the presence of other oxidizing agents, but also the total content of oxidizing agents in the sample (including chlorine and bromine).

To determine ozone in addition to chlorine, the chlorine must therefore be removed by adding glycine solution. Chlorine reacts with glycine and is thus eliminated from the sample.

Ozone is a gas that escapes very quickly from the sample and is decomposed by UV radiation. Therefore, make sure that the sample is sealed between sampling and measurement and is not exposed to air or sunlight for too long.

Prepare the measuring mixture as shown in the following table. To do this, hold dropper bottles vertically during addition and add drops of the same size by pressing slowly.

Measuring mixture:	up to 3 mg/l O ₃	up to 6 mg/l O ₃
SA Sample	10ml	10ml
O ₃ Reagent	Drops 3x	Drops 6x

Mix well, wait 3 minutes.

A1 Reagent	Drops 3x	Drops 6x
A2 Reagent	Drops 2x	Drops 4x

Mix well, wait 1 min, complete measurement.

Produktinformation
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Analysis / Calculation

Visual-comperative

After complete colour formation, the colour of the test solution is compared with the colour scale of a comparator for this method and the corresponding O₃ concentration is read off in mg/L.

If the color of the test sample corresponds to the darkest color of the scale or if it is more intense, the measurement must be repeated with a fresh, diluted sample.

The dilution must be taken into account during evaluation:

$$\text{Measured value} \times \text{Dilution Factor} = \text{mg/l Ozone}$$

Hold the mass comparator for visual comparison so that light falls on the samples from behind.

Spectrophotometric (recommended method)

The measured absorbance multiplied by a previously determined factor gives the Cl₂ concentration in mg/L (ppm).

$$E_{510} \times \text{Factor} = \text{mg/L O}_3$$

$$E_{530} \times \text{Factor} = \text{mg/L O}_3$$

$$\text{mg/L} = \text{ppm}$$

Method-specific factors are also stored in water-analytical photometers. Photometers with factor already stored directly display the Cl₂ concentration as the measurement result ²⁾.

If necessary, it is recommended to check the factor for each type of instrument by measuring with standard solution.

Notes

General

For the determinations, either use disposable items (and really use them only once) or, in the case of reusable glassware, rinse well after each determination with approx. 1 N sulphuric acid and then with distilled water to avoid carry-over.

During spectrophotometric measurement, make sure that the cuvette is free of dirt and scratches or fingerprints.

All oxidizing agents present in the sample react analogously to the chlorine/ozone to be determined and therefore lead to higher analysis results. Examples of such compounds are: Bromine, iodine, bromamine, chlorine dioxide, hydrogen peroxide, nitrite, manganese dioxide, chromate, iron(III) or copper ions. However, the concentrations of these compounds are normally so low that they do not carry any weight. If anomalies or discrepancies are observed during the analysis, disturbances of this kind should be considered and, if necessary, removed.

Support / Information service

For methodological and technical support, please contact us by E-Mail at support@bioanalytic.de (German, English).

Periodically check for updates of this product information on our website.

Feedback

Information from users can be reported to support@bioanalytic.de (German, English).

Suggestions for further developments will be considered.

Waste Management

Please observe your national laws and regulations.

Used and expired solutions must be disposed of in accordance with your local regulations.

Inside the EU, national regulations apply that are based on the current, amended version of Council Directive 67/548/EEG on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

Decontaminated packaging can be disposed of as household waste or recycled, unless otherwise specified.

Literature & Footnotes

Legends for the graphic symbols and tags used follow relevant norms or are available on our internet pages.

- [1] DIN 19643-3:2012-11, Treatment of swimming and bathing pool water. Part 3: Process combinations with ozonation.

*1) Particles and turbidity can lead to interference during spectrophotometric measurement. To detect interference from particles, it is recommended to perform multiple measurements of a sample and check for agreement. Perform filtration if necessary.

*2) See the instructions for use of the photometer manufacturer