

REF 918 163

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Test 1-163

12.16

**NANOCOLOR® Chlorine dioxide**

chlorine – chlorine dioxide – chlorite simultaneously

**Method:**Photometric determination of chlorine components with *N,N*-diethyl-1,4-phenylene diamine (DPD)

Cuvette:	50 mm	20 mm	10 mm
Range (mg/L ClO <sub>2</sub> ):	0.04–4.00	0.1–4.0	0.2–4.0
Factor:	02.07	005.2	010.4
Wavelength (HW = 5–12 nm):	540 nm		
Reaction time:	0 min		
Reaction temperature:	20–25 °C		

**Contents of reagent set:**

100 mL Chlorine R1	50 mL Chlorine R4	1 measuring spoon 85 mm, black
20 g Chlorine R2	50 mL Chlorine R5	1 measuring spoon 85 mm, orange
25 g Chlorine R3	50 mL Chlorine R6	

**Hazard warning:**

Reagent R3 contains potassium iodide 25–100 %. For further information ask for a safety data sheet.

**Interferences:**

For a good reproducibility we recommend uninterrupted speedy work during sampling (prepare values A through D in parallel, measure sample with 25 mL measuring cylinder). To avoid errors, always use the same volumetric flasks for values A to D.

The method can also be applied for the analysis of sea water after dilution (1+3).

**Procedure chlorine dioxide separately:**

Pour into two separate volumetric flasks 25 mL:

Test sample	Blank value
20 mL test sample (the pH value of the sample must be between pH 4 and 7)	20 mL distilled water
1 mL Chlorine R4, mix	
1 mL Chlorine R1, mix	1 mL Chlorine R1, mix
1 black spoon Chlorine R2, mix	1 black spoon Chlorine R2, mix

Fill up test sample and blank value to 25 mL mark with distilled water, mix again and pour into cuvettes. Measure **immediately** the chlorine dioxide. Chlorine R3, R5 and R6 are not used for this procedure.**Procedure**

chlorine – chlorine dioxide – chlorite simultaneously:

Pour into five separate volumetric flasks 25 mL:

Value A – chlorine dioxide	Value B – free chlorine
1 mL Chlorine R4	20 mL test sample (the pH value of the sample must be between pH 4 and 7)
20 mL test sample (the pH value of the sample must be between pH 4 and 7), mix	1 mL Chlorine R1, mix
1 mL Chlorine R1, mix	1 black spoon Chlorine R2, mix
1 black spoon Chlorine R2, mix	

Fill up test sample (value A and B) to 25 mL mark with distilled water, mix again and pour into cuvettes. Place **immediately** the cuvette with blank value into the photometer. Measurement of extinctions (value A and B).

Value C – combined chlorine	Value D – chlorite
20 mL test sample (the pH value of the sample must be between pH 4 and 7)	1 mL Chlorine R5
1 mL Chlorine R1, mix	1 orange spoon Chlorine R3
1 black spoon Chlorine R2, mix	20 mL test sample (the pH value of the sample must be between pH 4 and 7), mix
1 orange spoon Chlorine R3, mix	wait 3 min
wait 3 min	1 mL Chlorine R6, mix
	1 black spoon Chlorine R2, mix

Fill up test sample (value C and D) to 25 mL mark with distilled water, mix again and pour into cuvettes. Measurement of extinctions (value C and D).

**Measurement:**For *NANOCOLOR®* photometers see manual, test 1-163/1-164.**Photometers of other manufacturers:**

Verify factors of evaluation for each type of instrument.

**Evaluation (mg/L):**

		Rectangular cuvette		
		50 mm	20 mm	10 mm
chlorine dioxide (ClO <sub>2</sub> )	= A	x 2.07	x 5.20	x 10.4
free chlorine (Cl <sub>2</sub> )	= (B-A)	x 1.09	x 2.72	x 5.4
combined chlorine (Cl <sub>2</sub> )	= (C-B)	x 1.09	x 2.72	x 5.4
chlorite (ClO <sub>2</sub> <sup>-</sup> )	= [D-(4A+C)]	x 0.52	x 1.30	x 2.6

**Note:**

Chlorite is only present if value D &gt; (4A+C). A negative result for chlorite means that no chlorite is present.

**Disposal:**

The contents of cuvettes and flasks can be washed into drain with plenty of water.