



KYORITSU

PACKTEST

INSTRUCTIONS

COD(10000)

Model WAK-COD-WR

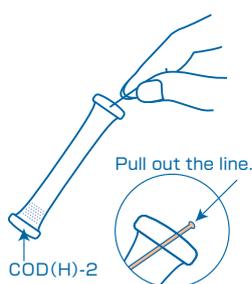
Oxidation with Potassium Permanganate  
in Alkalinity and Visual Colorimetric Method  
Main Reagent: Potassium Permanganate

Measuring Range:  
High Range 0 -  $\geq 10,000$  mg/L(ppm)(Reaction Time at 30 sec)  
Low Range 0 -  $\geq 1,000$  mg/L(ppm)(Reaction Time 1 min)



## How to Use

Perform procedure ③ to ④ quickly.



Pull out the line.

COD(H)-2

①

① Remove the colored line at the top of the tube to clear the aperture.

② Press the tube's side wall to expel the air, and hold the tube.



②



About half

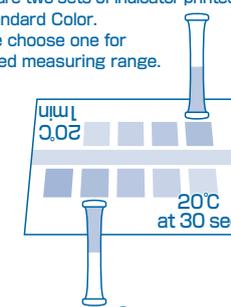
5-6 Times

③

③ Immerse the aperture of the tube into the sample, release the finger to fill the tube halfway. Invert the tube back and forth lightly for 5 to 6 times.

④ Compare the actual color in the tube with provided Standard Color immediately at 30 sec or after 1min (Color development is proceeds fast, so please be sure to adhere to specified reaction time).

※ There are two sets of indicator printed on Standard Color. Please choose one for intended measuring range.



④

## How to Read the Result

At the reaction time, compare the color of the tube with Standard Color. The nearest color indicates the concentration value of the analyte in your sample. A color between two standard colors indicates the value between them.

## Handling of PACKTEST Before and After Use

The content of the tube is **Strong Alkali**. Hazardous when contacting with eyes.

**First Aid** **Eye contact** → Immediately flush eyes with water for at least 15 minutes, followed by consult with Ophthalmologist, even without any symptom.

**Skin contact** → Immediately flush contacted area with water.

**Ingestion** → Immediately rinse mouth.

If swallowed the content or any symptom appears, seek medical advice immediately. Please refer to SDS for further information.

**Storage** Keep unused PACKTEST tubes in the provided preserving bag after opening the laminated package and use them as soon as possible. Depending on the storage condition, the reagent may deteriorate in several days especially under the hot and humid weather.

**Disposal** For business use, please follow in a manner consistent with relevant laws and regulations. Otherwise, the tube can be disposed as combustible waste.



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## Caution

1. Unclean container used to collect sample or stains on hands may affect the result. Please use clean container and wash hands thoroughly prior to measure.
2. In this method, the color development of the solution shifts from red-purple → green → orange. Please strictly follow the measuring time from when drawing the sample into the tube to color comparison. After passing the specified reaction time, the reaction will proceed and result in false positive reading.
3. Specified reaction time is different, depending on the measuring range (High Range immediately at 30 sec and Low Range at 1 min).
4. The optimum pH upon reaction will be around 13. If the pH of the sample will be less than 5, please adjust pH 7 or higher with diluted sodium hydroxide solution prior to measurement.
5. Ensure that the PACKTEST tube is filled up to half. Larger or smaller sample volume will imply higher or lower value, respectively.
6. PACKTEST Square Cup (Model: WAK-CC10) is sold separately. It will help getting sample at 1.5mL constantly, also help drawing the sample into tube easily.
7. When comparing to the Standard Color, please be sure to read under the daylight. It may be difficult to determine the color under the direct sunlight, certain florescent lights, mercury lamp or LED.
8. You can put the line back into the aperture to seal. This will avoid possibility of spilling the content of the tube.

## Influence of Sample Temperature

Recommended sample temperature is at 20°C. When the sample temperature is high, the result becomes higher.

When the sample temperature is at 10°C, it results in lower value. In this case, please read half to one indicator higher on Standard Color.

When the sample temperature is at 30°C, it results in higher value. In this case, please read half to one indicator lower on Standard Color.

## About COD

COD is an abbreviation for Chemical Oxygen Demand. There are various methods for measuring COD, that differ in oxidizing agent, reaction time, and reaction temperature; and each method has different oxidizing ratio depending on the type and concentration volume of oxidizable substances. In Japan, standard procedure for using the potassium permanganate method (COD-Mn) indicated in JIS K 0102 17. carried out in acidic medium for 30 min in water bath (100°C) is generally used, but PACKTEST COD utilizes JIS K 0102 19. using the alkaline medium (COD-OH) for presenting the advantage of fast and simple method. Alkaline medium method for JIS, the amount of potassium permanganate consumed in a boiling water bath for 20 min is determined by titration. On the other hand, PACKTEST COD determines the value by change of colors which potassium permanganate is consumed at ordinary temperature. The standard protocol uses glucose for standard solution. Water from the river may have good correlation with official COD-Mn method, but most of the oil, detergents, and other solids do not. When using PACKTEST for wastewater, please check correlation with official method, like JIS in Japan, for better reading.

## Measuring Seawater

When measuring seawater, the reaction tends to proceed faster and result in positive false reading, so reading half to one indicator below matching color may provide the estimated value.

## **【Caution】**

- This product is made for analyzing water quality purpose only. Do not use for any other purpose.
  - This product contains small amount of chemicals. Please read instruction manual, GHS labels, SDS, and other necessary document thoroughly prior to use.
  - Please keep this information handy for future reference.
- <Safety>
- Please wash your hands thoroughly before and after the test. Do not inhale the chemical reagents.
    - It is highly recommended to wear protective gloves, eye protection, and mask upon using this product.
    - Avoid release chemical reagents or waste solution to the environment.
- <Storage>
- Please keep this product out of reach of children. Keep it in the dry and dark place at room temperature.
- <Other>
- Please check the expiration date shown on the box, and make sure to use within the date.
    - Specifications are subject to change without notice.



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