COD　COD with $KMnO_4$

Color development: Red purple → Green
Method　　: Oxidation by potassium permanganate in alkaline
Range　　: 2.0 — 10.0 mg/L(ppm)
Reagent　　: LR-COD-B　No.44　R-1（Liquid）, R-2（Pack）, Neutralizer（Dropper）
Reaction time ：10 min. after R-2 reagent is added.

Cell：PACKTEST Square Cup
Wavelength：525 nm

Procedure

1. Press【COD】.
2. Press【OK】to switch to the photometry window.
3. Fill the Cell with the sample for 1.5 mL (up to line) and fill the Round Cell with the sample for 25 mL (up to white line). (Fig.1)
4. Put the Cell in the cell box and press【Zero】. Discard the sample in the Cell. (Fig.2)
5. Add 0.5 mL of R-1 reagent into the Round Cell using the supplied syringe, tightly attach the cap, and stir the solution 5 to 6 times. (Fig.3)
6. Add the R-2 reagent into the Round Cell and press【Start】. (Fig.4)
7. Tightly attach the cap and shake the Round Cell strongly for 20 seconds. (Fig.5)
8. Within 10 minutes, pour 1.5 mL of the solution in the Round Cell into the Cell that has gone through zero adjustment, and put the Cell in the cell box. (At this point, clean the Cell with the solution contained in the Round Cell.)(Fig.6)
9. After 10 minutes have elapsed, the concentration will be automatically displayed.
10. Dispose of the wastewater in the Round Cell as of after measurement by adding 8 droplets (0.5 mL) of neutralizer to it and confirming that it has become approximately neutral.

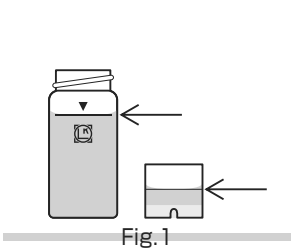
Fig.1

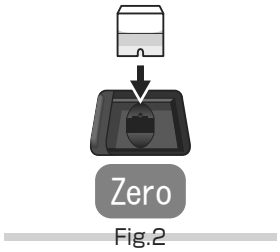

Fig.2

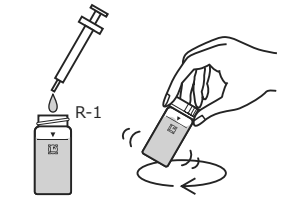

Fig.3

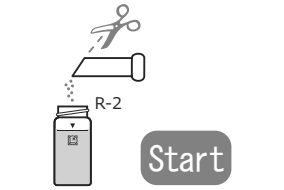

Fig.4


Fig.5

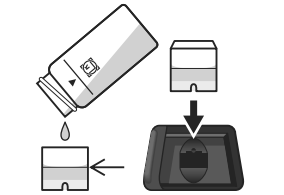
Fig.6

CAUTION

1. The optimum pH during color development is 12 or more. To an acid sample, add dilute sodium hydroxide solution or the like so as to adjust the pH of the sample to 6 or more.
2. Perform measurement with the sample temperature set to 15 to 25℃.
3. Before filling the Cell with the solution in the measurement procedure Steps 8, rinse the Cup with the solution 2 to 3 times.
4. It is not possible to measure seawater.

Positioning of this measurement method with respect to JIS method

In Japan, the potassium permanganate method (COD_{Mn}) at 100℃ for 30 minutes according to JIS K 0102 17 is commonly used for management of industrial wastewater, but the measurement method we offer applies the alkali method (COD_{OH}) according to JIS K 0102 19 and allows simple measurement in a short period of time.
In the JIS alkali method, the amount of potassium permanganate that has been consumed in a boiled water bath for 20 minutes is obtained through titration. On the other hand, the measurement method we offer obtains the amount of potassium permanganate that has been consumed at a room temperature for 10 minutes by converting the decrease of absorbance into a COD value.
Verification is conducted by using glucose reference solution, but the degree of oxidation of oxidized substance in the sample by potassium permanganate differs depending on the type and the amount of the substance.
In addition, as the reaction conditions and measurement conditions differ even between the alkali method and the acid method, the values obtained by this measurement method are only approximate values and therefore due attention needs to be paid when this method is used for measurement of industrial wastewater.
As the value obtained by this method and that obtained by JIS method may not coincide with each other, use this method after obtaining the relationship between those methods.

Information on reagent

Refer to the enclosed paper to the reagent.
The pH of the solution is 12 or higher and that of the neutralizer is 2 or lower.
The pH of the final wastewater as of after adding neutralizer is around 7. Be sure to dispose of wastewater after checking its pH.