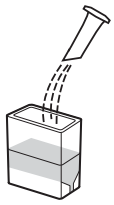
KYORITSU **PACK TEST** ION SELECTIVE **INSTRUCTIONS**

Cyanide (Free)

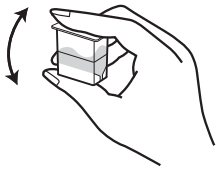
Model WAK- CN

By 4-Pyridinecarboxylic Acid color comparison Method
Main reagent: 4-Pyridinecarboxylic acid
Range: CN^- ≤0.02 - 2 mg/L (ppm)

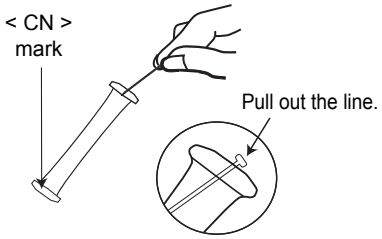
How to use



(1) Fill the Cell (PACKTEST Square Cup) up to the first line (1.5 mL) with sample. Add the reagent of 1 small pack.



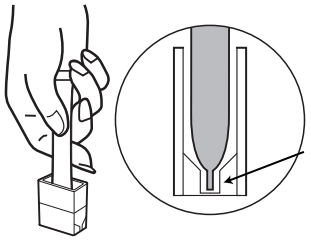
(2) Put on the cap and shake the Cell 5-6 times.



(3) Remove the line to clear the aperture from the top of the tube.

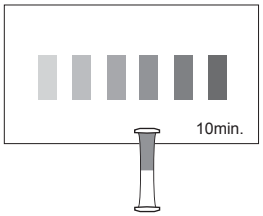
(4) Press the sides of the tube to expel approximately half of volume. Maintain pressed.

(5) Immerse the tube in the sample. Release the sides to fill the tube up to the half. Shake the tube lightly 10 times.
Leave for 10 minutes while waiting, shake 1-2 times.



insert the PACKTEST in the groove, as shown in this figure.

(6) After 10 minutes, put the tube on the color chart as shown and compare with the standard colors.



How to read the test

After the reaction time, compare the color of the tube with the standard colors. The nearest color indicates the measured value of the sample. A color between two standard colors indicates a value between the two standard values.

Care in handling of PACKTEST before and after use

Keep PACKTEST out of the reach of children.
Keep PACKTEST in a cool, dry and dark place.
PACKTEST should be thrown with burnable garbage. Conform to the legislation of waste management.
Use a package as soon as possible after opening.

First Aid Measures

Eye contact → Immediately rinse eyes with water for at least 15 minutes. Consult a physician.
Skin contact → Immediately flush skin with water.
Ingestion → Immediately rinse mouth. Consult a physician.
In case of doubt, consult a physician.

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PACKTEST Cyanide (Free)

Features

The Cyanide (free) PACKTEST is based on 4-pyridinecarboxylic acid color comparison method. This PACKTEST allows to measure free cyanide ion concentration in various samples like industrial wastewater or environmental water.

Cautions

1. The Cyanide PACKTEST allows to measure free cyanide ion (CN^-). Total cyanide should be measured using the Total Cyanide Set, ref: WA-CN^T.
2. If CN^- ion occurs in a sample, the reaction color starts to turn into a pink color before to turn into a color in the range of the standard colors.
3. The normal pH range is 5 - 9. If necessary, adjust the pH with diluted sulfuric acid or sodium hydroxide solution.
4. The reaction color becomes stronger than 2mg/L of standard color when the cyanide standard solution is 1000mg/L.
   A sample water which is expected high concentration, should be diluted in advance.
5. Ensure that PACKTEST tube is filled up to the half.
6. Partially undissolved reagent will not affect the measurement.
7 Keep sample temperature in the range 15°C - 40°C. Lower temperature necessitates longer reaction time.
8. Read the test under a daylight type lamp.
9. Put the line back into the aperture after use to prevent reagent spilt.

Interferences

Standard colors were determined from standard solutions. However, coexisting substances will cause inaccurate results. The list below reports ion concentrations under which ones interferences are insignificant:

≤ 1000 mg/L : Al^{3+}, As^{3+}, B^{3+}, Ba^{2+}, Ca^{2+}, Cd^{2+}, Cl^-, F^-, K^+, Mg^{2+}, Mn^{2+}, Na^+, NH_4^+, NO_3^-, Pb^{2+}, PO_4^{3-}, SO_4^{2-}, Zn^{2+}, Phenol
≤ 500 mg/L : Ni^{2+}
≤ 100 mg/L : Co^{2+}, Cr^{3+}, Fe^{2+}, Sn^{2+}
≤ 50 mg/L : Cu^{2+}, Fe^{3+}
≤ 10 mg/L : NO_2^-
≤ 5 mg/L : Cr^{6+}, V^{5+}, Residual chlorine
Sub-ppm level : Hg^{2+}, I^-, SO_3^{2-}, SCN^-, some kinds of ethylene amine

Almost all the coexistence substances may weaken the color development of CN^-. It is admitted that thiocyanide and some kinds of ethylene amin (tetraethylene-pentamine, pentaethylene-hexamine) may show stronger color development.
Oxidative and reductive substances may also influence to developed color.
The Cyanide (free) PACKTEST is not suitable for sea water samples.

For the industrial waste water samples in which interfering substances are expected, a pretreatment like distillation method or aeration method is required before the measurement.
Cyanide complex ions bonding with various metal ions can not be detected as free cyanide. These complex ions should be measured using the following apparatus.
Water Analysis Set: Total Cyanide (Model: WA-CN^T)
Water Analysis Set: Total Cyanide (Low Range) (Model: WA-CN^T(L))