

170 CN CYANIDE

0.02 - 0.4 ppm \ 150 Tests

Polymethine dye with Pyridine and 1,3-Dimethylbarbituric acid

- Place 1 spoon of **CN-1** into a dry 16mmØ tube
- Carefully dissolve in a fully extended syringe (3.2ml) of sample
- Add 4 drops of **CN-2** and mix
- Add 4 drops of **CN-3** and mix
- Set aside for 3'
- Switch on the Photometer 660
- Enter and press for 170 CN
- Set filter as indicated to 578nm and press
- Insert tube with plain water and press
- Insert tube with sample and press
- Record as ppm (mg/l) Cyanide CN⁻

Cyanide is the most powerful of all complexants and not only able to drive other ligands from their positions in metal complexes, but also to solvate some metals directly. The extreme toxicity of cyanide rests on its capacity to remove the iron from complexes like Haemoglobin that are essential for internal oxygen transport, leading to a process of "inner suffocation". A controversial practice is the cyanide-leaching of ores for extracting gold, which in its most basic form is performed by simply spraying a heap of ground-up ore on plastic foil with a solution of sodium cyanide to wash out the metal as NaAu(CN)₂. The possibility of holding metals in concentrated solutions as cyanides is used in plating baths for copper (partly), silver and gold (always) These operate in an alkaline state to prevent the emission of hydrogen cyanide. Reagent **CN-1** with a regulated chlorination capacity converts cyanide to chlorcyan. This reactive gas causes a rupture of the aromatic pyridine (reagent **CN-3**) ring to form glutacondialdehyde, OCH-CH=CH-CH₂-CHO. One of the two terminal -CHO groups then reacts with the added 1,3-dimethyl barbituric acid (reagent **CN-2**) to give a pink polymethine dye. This is followed by reaction of the second -CHO to give a more intense dichroitic dye which is blue-violet in transmitted and red-violet in reflected light. This reaction, named after *König* (1904) works in a similar way with thiocyanate. A differentiation is possible. A commonly cited limit for drinking water is 0,05ppm cyanide.

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