Cobalt Assay Kit (BA0213)

Product Datasheet | SKU BA0213

Description

Cobalt is an essential micronutrient for all multicellular organisms as the active centre of cobalamins, such as vitamin B-12, which is essential for plants and animals. Cobalt is also a micronutrient for bacteria, algae and fungi. Despite being an important micronutrient, excess cobalt in the environment can be deleterious to life, leading to cardiomyopathy in humans and necrosis in plants. Simple, direct and automation-ready procedures for measuring cobalt concentrations find wide applications in research and environmental monitoring. This cobalt assay kit is designed to measure total cobalt directly in aqueous samples without any pretreatment. The intensity of the colour, measured at 485 nm, is directly proportional to the cobalt concentration in the sample.

Specifications

Detection Method	Colorimetric (OD 485 nm)
Detection Range	1.4 - 200 uM cobalt
Sample Type	Aqueous samples
Species Reactivity	All
Assay Time	Within 10 minutes
Kit Size	100 Assays
Equipment Required	Microplate reader
Storage	Shipped at room temperature. Store Detection Reagent at -20 degrees C.
Shelf Life	6 months after receipt
Shipping	Room Temperature

Kit Components

Component	Quantity	Storage
Detection Reagent	1.0 mL	-20 degrees C
Cobalt Standard (200 uM Co2+)	0.8 mL	-20 degrees C

Ordering Information

Assay Genie Cat. No.	Pack Size
BA0213	100 Assays

Assay Procedure

Note: This is a sample protocol. Protocols are batch/lot specific - always follow the instructions supplied with your kit.

1. For the 96-well plate procedure, directly transfer the 200 uM Cobalt Standards into a clear flat-bottom 96-well plate to give 200, 120, 60 and 0 uM (90 uL total per well) as described in the standard table.
2. Transfer 90 uL of each sample into a clear flat-bottom 96-well plate.
3. Add 10 uL of Detection Reagent to each well and tap the plate to mix.
4. Read the optical density at 485 nm within 10 minutes at room temperature.
5. For the cuvette procedure, prepare standards with appropriate volumes for the cuvettes, set up labelled centrifuge tubes for standards and samples, add Detection Reagent to all tubes at a ratio of 1:10, mix by vortexing, transfer to cuvettes and read the OD at 485 nm within 10 minutes.

Standard Preparation

No	Standard	+ H2O	Vol (uL)	Co2+ (uM)
1	90 uL	0 uL	90	200
2	54 uL	36 uL	90	120
3	27 uL	63 uL	90	60
4	0 uL	90 uL	90	0

Calculation

Subtract the OD of the 0 uM cobalt standard from all other standard OD values and plot the OD against standard cobalt concentrations. Determine the slope using linear regression fitting. The cobalt concentration of the sample is calculated as: [Co2+] = (OD_SAMPLE - OD_BLANK) / Slope (uM), where OD_BLANK is the OD value of the water blank, or of the sample blank if a sample blank is used.

Notes

- Metal chelators (e.g. EDTA) interfere with this assay and should be avoided in sample preparation.
- Samples should be clear and free of precipitates or turbidity. If not, centrifuge or filter to clarify samples prior to assay.
- The metal ions Fe2+, Cu2+, Zn2+, Mn2+, Mg2+, Al3+, Mo2+, Pb2+ and W2+ exhibit less than 10% interference in this assay. Ni2+ concentrations greater than 10% of the Co2+ concentration should be avoided, and excess Ca2+ may cause precipitation.
- Reagents are for research use only. Refer to the MSDS for detailed safety information.