

Color, electrometric, visual comparison

Parameter and Code:
Color, I-1250-85 (platinum-cobalt units):

1. Application

This method may be used to measure the color of water whose color reasonably matches from 1 to 70 units of the Hazen scale (Hazen, 1892) and that contains no excessive amount of sediment. Samples that have a color unit value greater than 70 must first be diluted.

2. Summary of method

The color of the water is compared to that of colored glass disks that have been calibrated to correspond to the platinum-cobalt scale of Hazen (1892). The unit of color is that produced by 1 mg/L of platinum. A small amount of cobalt may be added to aid in color matching. The Hazen scale (platinum-cobalt units) is usually satisfactory for most waters, but the hues and shades of some waters may not easily be compared with standards. If the hue of the water does not compare with that of the standard, very little can be done except to visually compare the absorbances of the sample and standard. Highly colored waters should not be diluted more than necessary because the color of the diluted sample often is not proportional to the dilution.

3. Interferences

Turbidity generally causes the observed color value to be greater than the true color value, but there is some disagreement as to the magnitude of the effect of turbidity. The removal of turbidity is a recurrent problem in the determination of color. Color is removed by absorption on suspended material. Filtration of samples to remove turbidity frequently removes some of the color-imparting solutes by

absorption on the sediments or on the filter medium. Centrifuging is preferable to filtration, but centrifuging may not be completely effective in removing very finely divided particles. Flocculation of the dispersed particles with a strong electrolyte has been proposed (Lamar, 1949) and is sometimes effective. The process of flocculation decolorizes some waters and is, therefore, not suitable in all cases.

4. Apparatus

Color comparator, with standard color disks, covering the range 0 to 70 color units.

5. Reagents

None required.

6. Procedure

6.1 Fill one instrument tube with the sample of water, level the tube, insert the glass plug, making sure that no air bubbles are trapped, and insert the tube into the comparator.

6.2 Use demineralized water as a blank in the second tube.

6.3 The color comparison is made by revolving the disk until the colors of the two tubes match. Samples having color values greater than 70 must first be diluted.

7. Calculations

Read the color directly from the matching color standard; apply the proper dilution if required.

8. Report

Report color (00080) (platinum-cobalt units) as follows:

<u>Color unit</u>	<u>Record units to nearest</u>
1-49	1
50-99	5
100-249	10
250-500	20

9. Precision

Precision data are not available for this method.

References

- Hazen, Allen, 1892, A new color standard for natural waters: American Chemical Society Journal, v. 12, p. 427.
- Lamar, W.L., 1949, Determination of color of turbid waters: Analytical Chemistry, v. 21, p. 726-27.