

WI-QA-028
STANDARD LABORATORY PROCEDURE
APHA COLOR COMPARISON TEST OF DMS/DMSO

1.0 PURPOSE

To determine an approximate APHA color of a sample of DMS or DMSO by comparison to a set of known APHA platinum cobalt color standards.

2.0 SAFETY/HEALTH

2.1 PPE

Standard safety glasses and laboratory gloves should be worn. This test poses a minimum threat of injury.

2.2 SAFETY SYSTEMS

N/A

2.3 HEALTH HAZARDS

Refer to the Material Safety Data Sheets located in the Catalog of Chemicals.

3.0 PROCESS DESCRIPTION

3.1 PROCESS OVERVIEW

NOTE: This is a standard shipping specification for both DMS and DMSO.

The apparatus for this measurement consists of a series of Nessler tubes, a color comparator, and a light source. These tubes must match each other with respect to the color of the glass and height of the graduation mark. They must be fitted with suitable closures to prevent loss of liquid by evaporation and contamination of the standards by dust or dirt. The type of Nessler tube used should be a 50 milliliter tall form tube.

The comparator should be constructed so that white light is reflected from a white glass plate with equal intensity through the longitudinal axes of the tubes being compared. The tubes are shielded so that no light enters the tubes from the side. In most cases, satisfactory estimates of the color can be obtained by holding the sample and standards close to each other over a white plate.

The best source of light is generally considered to be diffuse daylight. However, for general routine analyses, the use of a titrating lamp equipped with a "daylight" type fluorescent tube is satisfactory.

3.2 SCOPE/BOUNDARIES

APHA No. 500 color standard specifications:

The spectral absorbance of this APHA No. 500 standard must fall within the given limits below, when measured in a suitable spectrophotometer, using a 1-cm light path and reagent water as the reference liquid in a matched cell.

<u>Wavelength (nm)</u>	<u>Absorbance</u>
430	0.110 to 0.120
455	0.130 to 0.145
480	0.105 to 0.120
510	0.055 to 0.065

3.3 EQUIPMENT INVOLVED

- Nessler Tubes
- Color Comparator
- Light Source.

3.4 REAGENTS

APHA No. 500 color standard

4.0 PROCEDURE

4.1 PREPARATION OF APHA PLATINUM-COBALT STANDARDS

Prepare the required color standards by diluting the volume of APHA No. 500 platinum-cobalt standard listed in the following table with reagent water to a total volume of 100mL. The use of a pipet is recommended in measuring the No. 500 standard. This series of standards is usually sufficient to permit an experienced analyst to make color comparisons with the necessary precision and accuracy. If a more exact estimate of color is desired, additional standards may be prepared to supplement those given by using proportional amounts of the No. 500 platinum-cobalt standard.

4.2 ANALYTICAL METHOD

Transfer 50mL of the sample to a matched 50mL tall-form Nessler tube. (If the sample is turbid, filter or centrifuge before filling the tube to remove visible turbidity.) Compare the color of the sample with the colors of the series of platinum-cobalt standards in matching Nessler tubes. View vertically down through the tubes against a white background. Report as the color the number of the APHA standard that most nearly matches the sample. In the event that the color lies midway between two standards, report the darker of the two.

The color intensity of liquids may be estimated rapidly by using platinum-cobalt standards, as described in ASTM standard method D1209-84, Test Method for Color of Clear Liquids (Platinum-Cobalt Scale). This method is particularly applicable to those materials in which the color-producing bodies have light absorption characteristics nearly identical with those in the standards. Colors having hues other than light yellow or reddish yellow cannot be determined with these standards.

The platinum-cobalt color standards contain carefully controlled amounts of potassium chloroplatinate and cobaltous chloride. Each platinum-cobalt color unit is equivalent to 1 mg of platinum per liter of solution (1 ppm), and the standards are named accordingly. For example, the No. 20 platinum-cobalt standard contains 20 ppm platinum. These platinum-cobalt standards are also called APHA and Hazen standards.

5.0 DOCUMENTATION

Record in the appropriate location on the DMSO log sheets.

6.0 GLOSSARY

None associated with this procedure

7.0 REFERENCES

"Standard Methods for the Examination of Water and Wastewater," 16th ed., American Public Health Association et al., Washington, DC, 1985, p. 68.

8.0 TEST SPECIFICATIONS

APHA Pt-Co Color Standard Preparation

APHA No. 500 Pt-Co Standard
APHA Pt-Co Color Standard No. mL to dilute to 50mL

5	0.50
10	1.00
15	1.50
20	2.00

Test Specification is: 10

9.0 REVISION LOG

DATE	SECTION/PAR	CHANGE DESCRIPTION
10/23/2007	All	Last Revision Before In Web-based QMS
10/23/2010	5.0 Additional	Delete DMS Change Greg Ashe to Quality Manager
8/19/2013	None	
7/8/2016	None	Went thru review process and no changes were made.

Comments, questions or suggestions, please e-mail

Quality Manager