

DEHA (N, N-DIETHYLHYDROXYLAMINE)

INTRODUCTION

Substances such as N, N-diethylhydroxylamine (DEHA), Hydroquinone, and Erythorbic acid are finding use as replacements for Hydrazine and its derivatives as oxygen scavengers in steam generation systems. This test allows for quick and easy measurement of such substances over 2 common ranges. It is based on the standard iron reduction method using both a liquid and a tablet reagent.

PRINCIPLE OF THE METHOD

Oxygen scavengers of this type reduce iron (III) (ferric iron) in solution to iron (II) (ferrous iron). Addition of an indicator in tablet form specific for iron (II) allows for estimation of the amount of oxygen scavenger present by comparing the colour produced against permanent colour glass standards using a Lovibond Comparator and disc.

REAGENTS REQUIRED

1. **Lovibond DEHA Test Solution**
2. **Lovibond DEHA Test Tablets**

THE STANDARD LOVIBOND COMPARATOR DISC 3/150

Disc 3/150 covers the range 16 to 160µg. /l. DEHA in steps of 16 omitting 144 using a 40mm. cell. This range is equivalent to 0.016 to 0.160mg./l.

If the readings are made using a 13.5mm. cell, the range covered is 48 to 480µg. /l. in steps of 48 omitting 432. This range is equivalent to 0.048 to 0.480mg./l.

METHOD

1. Add sample to the 20ml. mark in each of two 40mm. cells (see note 1).
2. Add 0.5ml. DEHA test solution (Reagent 1) to one of the cells only. Mix well.
3. Add one DEHA test tablet (Reagent 2) to each cell. Crush and mix well.
4. Place the cell with added reagent 1 in the right-hand compartment of the Comparator and the other cell into the left-hand compartment.
5. Allow to stand for 10 minutes for the colour to develop. (See Note 3).
6. After the 10 minutes have elapsed, hold the Comparator facing a standard source of white light such as the Lovibond Daylight 2000 Unit or failing this North Daylight (not fluorescent lighting), and rotate the disc until a colour match is obtained. The disc reading x 2 represents the DEHA concentration present in the sample as micrograms per litre.
7. If the colour produced in the test is darker than the top step on the disc, decant both solutions into 13.5mm./10ml. cells and match against the disc as before. In this case multiply the reading obtained by 6.

NOTES

1. The exposure of the test solution to UV light (from the sun) will cause high blanks rendering the test result inaccurate. If it is not possible to protect the solutions from this exposure the test should be carried out in small amber glass bottles and the solutions transferred, after the 10 minutes waiting period, to the 40mm. cells for measurement.
2. For other oxygen scavengers listed below, multiply the disc reading by the relevant factor.

	<u>Factor</u>
Hydroquinone	5
Erythorbic Acid	7
Methylethylketoxime	7

REVISION HISTORY

Date	Change Note	Issue
09/04/02	36/460	2
14/03/05	CA243	3
21/09/06	JC 36	4