

## Ethanolamines/Glycol Ethers Tier 3 Procedure

**Section Number:** 637  
**Issue Number:** 1.4  
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**Title:** Calcium Test Procedure  
**References:** Glossary Of Equipment Identification (Text # 114)

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### 637. Calcium Test Procedure

#### 1.0 Objective:

- 1.1 To run this analysis accurately, in a safe and efficient manner without damage to equipment or injury to personnel.

#### 2.0 Responsibility:

- 2.1 It is the responsibility of the operations supervisor and the senior operations specialist to ensure that this procedure is fully complied with.
- 2.2 It is the responsibility of the senior operations specialist and the operations specialist to ensure that this procedure is executed in a safe and efficient manner.

#### 3.0 Safety Notations:

- 3.1 Safety glasses are required in the lab.

#### 4.0 Procedure:

- 4.1 Measure 50 milliliters (ml) of the sample and transfer to a 250 ml flask.
- 4.2 Add two ml of 1.0 n sodium hydroxide to the sample and stir well.
- 4.3 With the brass measuring cup provided, add one level measure (0.2 grams) of calcium indicator and stir well.
- 4.4 If calcium is present the sample will turn salmon pink. Then dilute to about 150 ml with deionized water.
- 4.5 Slowly add the hardness titration solution while continuing to stir the sample. When approaching the end point, the sample begins to show a purple tinge.
- 4.6 The endpoint is a final change to orchid-purple.

- 4.7 Once the endpoint is reached, further addition of hardness titrating solution will not produce any further color change. Always check endpoint by adding one additional drop of hardness titrating solution and observe whether any further color change occurs.

#### 4.0 Procedure: Cont'd.

4.8 Record ml hardness titrating solution, to be used in the calculation of parts per million (ppm) calcium.

#### 5.0 Calculation:

5.1 Carbonate ( $\text{CaCO}_3$ ) is equal to the ml of titrating solution employed multiplied by 20

5.2 Magnesium can be determined by subtracting the calcium hardness from the total hardness.

#### 6.0 Revisions:

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|----------------|----------|-----------------------|
| Revision No. 1 | 07-20-93 | Yearly Review         |
| Revision No. 2 | 12-21-94 | Yearly Review         |
| Revision No. 3 | 02-24-95 | January/Yearly review |
| Revision No. 4 | 12-29-95 | Yearly Review         |