

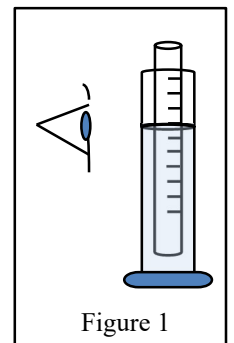
ANALYTICAL PROCEDURE FOR MONITORING AND MAINTAINING THE CONTENT OF HN505.1™ ACCELERATOR (POWDER) IN THE HN505™ ACCELERATOR BATH

For uniform results and long solution life, the HN505.1 Accelerator operating solution should be maintained based on regular analysis using the following analytical procedures. It is recommended that this analysis be performed daily in large volume facilities and weekly for medium or small volume facilities for optimum performance and adjustments made (if necessary) before beginning production.

NOTE: This analytic procedure applies only if the operation tank is filled to its capacity at the time the sample is taken.

Method 1: Content Determined by Solution Density as Measured in Baume' Units:

- I. **Reagents – None**
- II. **Apparatus – 100-ml graduated cylinder, Baume' hydrometer for liquids heavier than water**
- III. **Procedure**
 1. Pull at least 100 ml of operating bath from tank for analysis.
 2. Allow sample to come to room temperature.
 3. Pour about 90 ml of the sample into a 100-ml graduated cylinder.
 4. Place the hydrometer in the graduated cylinder. If the hydrometer is not floating, add more sample to the cylinder until the hydrometer is floating.
 5. Determine the Baume' of the sample by looking at eye level at the Baume' value at the meniscus of the sample. (See Figure 1)



IV. **Calculations**

$$\#/gallon\ HN505.1 = 0.12 \times Baume' - 0.97$$

$$Addition: LB\ HN505.1 = (2.5 - lb/gal) \times tank\ volume\ (gallons)$$

Method 2: Content Determined by Titration

Caution: The following procedures involve the use of potentially hazardous chemicals: manufacturer's operating instructions should be consulted and the appropriate safety precautions followed.

I. **Reagents Required**

1 N Sulfuric Acid
0.1% Methyl Orange indicator solution
Deionized water

II. Apparatus Required

5 ml volumetric pipette
250 ml erlenmyer flask
50 ml buret with stand

III. Procedure

1. Place a 5 ml sample of HN505™ bath into a 250 ml flask.
2. Add 45 ml deionized water and 3~4 drops methyl orange indicator solution.
3. Titrate with 1N sulfuric acid until the color changes from yellow through orange to red.

IV. Calculations

1. #/gallon HN505.1 = ml 1.0 N sulfuric acid x 0.093
2. Addition: LB HN505.1= (2.5 – lb/gal) x tank volume (gallons)

Making Additions of HN505.1™

Make additions to the operating bath while it is at operating temperature. Wait one hour before making any HN505.4 Kick Start II™ addition.

When used with HN505.4 Kick Start II™, add HN505.1™ to bring concentration to 1.50 – 3.00 pounds per gallon. (2.5 pounds per gallon is optimum.)

When used with HN505.2 Kick Start™ add HN505.1™ to bring concentration to 3.75 pounds per gallon (450g/l)

Additions should be made only when the bath is at its working temperature of 140~148°F.

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