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## **Technical Bulletin 266**

### **Mi-Glow® 783**

Mi-Glow® 800 fluorescent yellow-green particles premixed with liquid Wetting Agent 483 for use in water media. This advanced formulation allows for superior corrosion protection, wetting, particle mobility, and increased shelf life. It is designed to be used with UV-A light to detect very fine discontinuities in finished products. This material is used to find fine discontinuities such as tears, nonmetallic inclusions, shrinkage, laps, and seams located on the surface or near surface. One case of Mi-Glow® 783 is packaged with three quarts of concentrate and one quart of defoamer. Wetting Agent 483 is a borate-free concentrated liquid wetting agent with no water or defoamer added (see below for the addition of the defoamer).

#### **Properties**

Particle Color: Fluorescent Yellow-Green

Specific Gravity: 1.1 g/ml - for the concentrate

Particle Size: Not less than 98% passage through US Standard No. 325 (45 µm) sieve as defined in AMS 3044. The typical range of particle sizes is from 2 to 5 µm, with an average particle size of 3 µm.

Sensitivity: Mi-Glow® 783 shows a minimum of 8 lines on an AISI 01 Ketos tool steel ring (as defined in SAE AS5282), set on a 1-inch diameter copper bar, magnetized with 2500 A of direct current.

Particle Certification: Particles meet or exceed all relevant industry specifications, including but not limited to ASTM E 1444, AMS 3044, ASTM 3024, MIL-STD-271, NAVSEA 250-1500-1, NTR-1E. Certification is included with each shipment.

Temperature Limits: 32-120°F (0-49°C)

Shelf Life: Two (2) year, when sealed bottles are not subjected to extreme heat or cold. A Certificate of Shelf Life is available upon request.

#### **Directions for Use**

Preparation: The change-over from a manufacturer other than Circle Systems to a Mi-Glow® 783 system requires a thorough cleaning of the tank and piping. This can be accomplished in most cases by flushing the system twice, using about 1/2 gallon of Cleaner 500 and 10-15 gallons of water. Flushing should be followed by a water rinse.

Mi-Glow® 783 should be used at a dilution of 1 part concentrate with 74 parts of water (13.3 ml concentrate/liter). This will give a fluorescent particle concentration of 1.3 grams per liter. The recommended proportion may vary depending on specific applications. Each bottle should be

thoroughly mixed before using. If a bottle is emptied, it should be rinsed with water and the contents added to the system.

**Addition of Defoamer:** **Wetting Agent 483 contains no water or defoamer.** *Once the concentrate is thoroughly mixed into the water, the defoamer can be added. Be sure to shake the defoamer before every use.* For baths less than a full bottle of concentrate, use slightly less than half a capful of shaken defoamer per liter (approximately 1.2 to 2 g/L in diluted bath). If an entire bottle of concentrate is placed into a bath, use 90 to 150 grams (1 1/3 to 2 lines on the defoamer bottle) of shaken defoamer. If extra defoamer is needed, add the defoamer a capful at a time into a diluted bath. NEVER add the defoamer directly into the concentrate!

**Settling Test:** The settling test, to check particle concentration and contamination, shall be performed upon startup, at each shift thereafter and whenever the bath is changed or adjusted.

***Checking Bath Concentration*** - The settling test is essential to check the bath concentration and is accomplished by gravity settling in a graduated pear-shaped centrifuge tube as specified in Guide E709.

1. Run the pump for 30-60 minutes, to agitate the suspension thoroughly and to assure particle distribution.
2. Fill 100 ml sample from the delivery hose into the centrifuge tube.
3. Demagnetize the sample and stand, together.
4. Allow particles to settle for a minimum of 30 minutes or until completely settled.
5. The recommended volume is between 0.15 and 0.25 ml and will vary from one specification to another. (Read the settled particles that are fluorescent using a black light.)
6. Adjust bath, either by adding particles or vehicle, if necessary.

***Checking Bath Contamination*** - To determine bath contamination, use the same sample that was used for the concentration settling test, and examine the liquid above the settled particles with a black light. The liquid should be clear. If the bath is noticeably fluorescent, the bath must be changed. Next, examine the graduated portion of the tube where the particles have settled, with a black light and visible light for striations or bands of contamination that will be different in color and appearance than the settled particles. These striations or bands represent solid contamination, and if they exceed 30% of the settled particles, the bath should be changed.

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