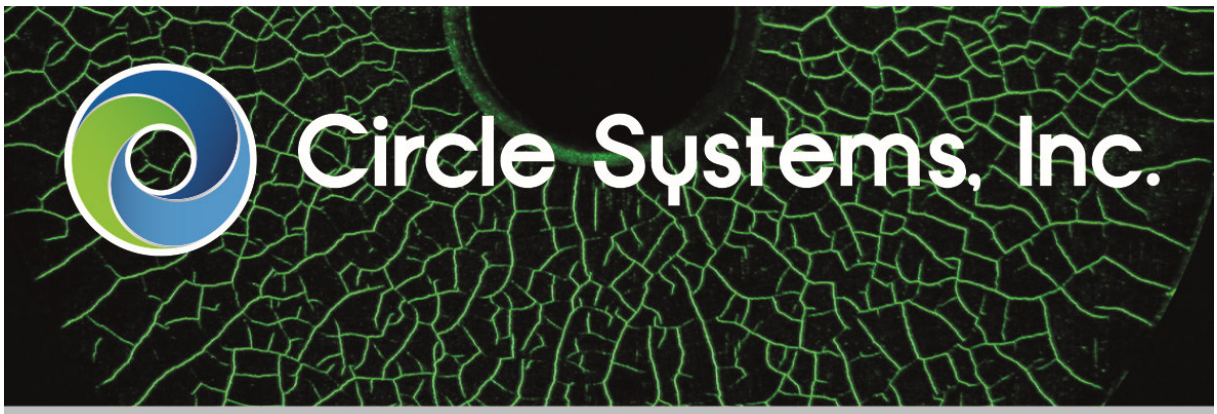


Representative for EUROPE: MR® CHEMIE NDT-materials

## PRODUCT LISTING

### *Sir-Chem® NONFLUOESCENT Dry Powder Method*

**Sirchem® Dry Powder 61** - A highly refined nonfluorescent gray magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 63** - A highly refined nonfluorescent red magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 66** - A highly refined nonfluorescent yellow magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 68** - A highly refined nonfluorescent blue magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 91** - A highly refined and bonded nonfluorescent gray magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light to reveal discontinuities on fabricated components or weldments such as bridges, drill pipes, large tanks and machinery. This specially bonded iron based powder is designed to minimize "dustiness" and provide clear, sharp discontinuities. The decrease in dusting allows for a safer inspection area. It meets or exceeds AMS 3040 and all applicable industry specifications.

09.09.2014/db

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**

# PRODUCT LISTING

## *Sir-Chem® NONFLUORESCENT & FLUORESCENT (Dual) Dry Powder Method*

**Sirchem® Dry Powder 73** - A highly refined red magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light and black light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 75** - A highly refined green magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light and black light to reveal minute discontinuities on fabricated components or weldments such as bridges, pipes, large tanks, machinery and equipment. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 93** - A highly refined and bonded orange/red magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light, black light and blue light to reveal discontinuities on fabricated components or weldments such as bridges, drill pipes, large tanks and machinery. Dry Powder 93 possesses a unique characteristic in that discontinuities in visible light are red and under black light or blue light the discontinuities fluoresce orange. This specially bonded iron based powder is designed to minimize "dustiness" and provide clear, sharp discontinuities. The decrease in dusting allows for a safer inspection area. It meets or exceeds AMS 3040 and all applicable industry specifications.

**Sirchem® Dry Powder 95** - A highly refined and bonded green magnetic powder used for dry method magnetic particle inspection. It is designed to be used in visible light, black light and blue light to reveal discontinuities on fabricated components or weldments such as bridges, drill pipes, large tanks and machinery. Dry Powder 95 possesses a unique characteristic in that discontinuities in visible light are a distinct green and under black light or blue light the discontinuities fluoresce a sharp green. This specially bonded iron based powder is designed to minimize "dustiness" and provide clear, sharp discontinuities. The decrease in dusting allows for a safer inspection area. It meets or exceeds AMS 3040 and all applicable industry specifications.

09.09.2014/db

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**

# Technical Bulletin 184
## Mi-Glow® 134 magpac™

Mi-Glow® 106 black particles premixed with powdered Wetting Agent 34 for use in water media, packaged in 95 gram dissolvable PVA bags. Higher particle concentration provides heavier indication buildup for easy detection. It is designed to be used with visible light for finding discontinuities in finished products.

**Properties**
Particle Color: Black

Specific Gravity: 1.0 g/ml

Particle Size: Not less than 98% passage through US Standard No. 325 (45 µm) sieve as defined in AMS 3042. The typical range of particle sizes is from 0.5 to 4.0 µm, with an average particle size of 1.5 µm.

Sensitivity: Mi-Glow® 134 magpac™ shows a minimum of 6 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 MIL-STD-1949, AMS 3042, MIL-STD-271, NAVSEA 250-1500-1, NTR-1E, ASTM E 1444. Certification is included with each shipment.

Temperature Limits: 32-120°F (0-49°C)

Shelf Life: Four (4) years, when closed containers are stored in a clean, dry environment away from excessive heat and cold. A Certificate of Shelf Life is available upon request.

**Directions for Use**
Preparation: The change-over from a solvent system to a Mi-Glow® 134 magpac™ 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® 134 magpac™ should be used at a concentration of one pac per 5 liters (1.32 gallons) of water. For best results, add a bag to a circulating bath and allow it to dissolve. If more than one bag is needed, add one bag at a time to the circulating bath.

Lighting: A minimum of 100 foot candles (1000 lux) of visible light at the part surface per ASTM E 709 and ASTM E 1444 is recommended.

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 1.2 and 2.4 ml.
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.

09.09.2014/db

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**

# Technical Bulletin 203
## Mi-Glow® 834 magpac™

Mi-Glow® 800 fluorescent yellow-green particles premixed with powdered Wetting Agent 34 for use in water media, packaged in 30 gram dissolvable PVA bags. Wetting Agent 34 is low foaming and has excellent wetting characteristics. It is designed to be used with black light to detect very fine discontinuities in finished products.

**Properties**

Particle Color: Fluorescent Yellow-Green

Specific Gravity: 0.6 g/ml

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 1 to 12 µm, with an average particle size of 5 µm.

Sensitivity: Mi-Glow® 834 magpac™ 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 MIL-STD-1949, AMS 3044, MIL-STD-271, NAVSEA 250-1500-1, NTR-1E, ASTM E 1444. Certification is included with each shipment.

Temperature Limits: 32-120°F (0-49°C)

Shelf Life: Four (4) years, when closed containers are stored in a clean, dry environment away from excessive heat and cold. A Certificate of Shelf Life is available upon request.

**Directions for Use**

Preparation: Mi-Glow® 834 magpac™ should be used at a concentration of 1 pac per 6 liters (1.6 gallons) of water. For best results, add a bag to a circulating bath and allow it to dissolve. If more than one bag is needed, add one bag at a time to the circulating bath.

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.

09.09.2014/db

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**

# Technical Bulletin 202
## Mi-Glow® Underwater 528

Mi-Glow® Underwater 528 is red particles which are used in visible light, black light and blue light, pre-mixed with a powdered Wetting Agent for use in underwater inspection. The particles are finer and lighter, allowing them to remain in suspension longer and enhance finer discontinuities. Designed for use in a variety of underwater inspections, including offshore structural welds, pipeline inspection, ship husbandry and to enhance underwater photography.

**Properties**

Particle Color: Fluorescent Orange/Red

Specific Gravity: 0.4 g/ml

Light Source: Daylight fluorescent under visible light sources (recommend ≥ 200 ft candles), fluoresces in black light and blue light.

Particle Size: Not less than 98% passage through US Standard No. 325 (45 µm) sieve.

Sensitivity: Mi-Glow® Underwater 528 offers the capability of enhancing finer defects with its sieve size. Eighty percent (80%) of Mi-Glow® Underwater 528 particles are less than 15 µm in diameter.

Temperature Limits: 32-120°F (0-49°C)

Shelf Life: Four (4) years, when closed containers are stored in a clean, dry environment away from excessive heat or cold. A Certificate of Shelf Life is available upon request.

**Directions for Use**

Preparation: It is suggested that Mi-Glow® Underwater 528 be added to water at a concentration of 2 oz. av. Weight to one US gallon of water (15 grams per liter of water). The preparation may vary due to customer practice and specific application. The storage reservoir should have mechanical or air agitation to help keep the particles in suspension.

Particle concentration adequacy is recommended to be checked by a magnetic field indicator or by observation of particles applied to a magnetization device (i.e., electromagnet yoke leg).

When these particles are used in a salt water environment, a fresh batch solution should be made daily to prevent corrosion of the particles.

**Further products on request!**

09.09.2014/db

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**

Circle Systems, Inc.

MR® CHEMIE NDT-materials TO SEE MORE!

# Dry Method Megnetic Inspection Particles

| | SirChem®DryPowder | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **SPECIFICATION COMPLIANCE** | **61 Gray** | **63 Red** | **66 Yellow** | **68 Blue/Black** | **73 Red** | **75 Yellow-Green** | **91 White/Gray** | **93 Red** | **95 Yellow-Green** |
| **AMS 3040** | x | x | x | x | x | x | x | x | x |
| **API RP 5A5** | x | x | x | x | x | x | x | x | x |
| **ASME B&PV** | x | x | x | x | x | x | x | x | x |
| **ASTM E709** | x | x | x | x | x | x | x | x | x |
| **ASTM E1444** | x | x | x | x | x | x | x | x | x |
| **MIL-STD-271** | x | x | x | x | x | x | x | x | x |
| **MIL-STD-1949** | x | x | x | x | x | x | x | x | x |
| **MIL-STD-2132** | x | x | x | x | x | x | x | x | x |
| **NAVSEA 250-1500-1** | x | x | x | x | x | x | x | x | x |
| **NTR-1E** | x | x | x | x | x | x | x | x | x |

# Dry Method Particles

| Product | Color | Particle Size | AMS Std* | SAE Sensitivity** | Technical Bulletin | Temperature Limit |
|---|---|---|---|---|---|---|
| **Dry Powder #61** | Nonfluorescent Gray | 75 µm | 3040 | 8 | 161 | 800 F/427 C |
| **Dry Powder #63** | Nonfluorescent Red | 75 µm | 3040 | 8 | 163 | 600 F/315 C |
| **Dry Powder #66** | Nonfluorescent Yellow | 75 µm | 3040 | 8 | 166 | 800 F/427 C |
| **Dry Powder #68** | Nonfluorescent Blue | 75 µm | 3040 | 8 | 168 | 800 F/427 C |
| **Dry Powder #73** | Nonfluorescent Red | 75 µm | 3040 | 8 | 173 | 250 F/120 C |
| **Dry Powder #75** | Nonfluorescent/Fluorescent Yellow-Green | 75 µm | 3040 | 8 | 175 | 250 F/120 C |
| **Dry Powder #91** | Nonfluorescent White/Gray | 75 µm | 3040 | 8 | 180 | 250 F/120 C |
| **Dry Powder #93** | Nonfluorescent/Fluorescent Red | 75 µm | 3040 | 8 | 181 | 250 F/120 C |
| **Dry Powder #95** | Nonfluorescent/Fluorescent Yellow-Green | 75 µm | 3040 | 8 | 182 | 250 F/120 C |

* Aerospace Material Specification Documents, as called out by ASTM R-709, ASTM E-1444, ASME Boiler/Pressure Vessel Code, and others.

** Representative of the number of lines shown on an AISI 01 Ketos tool steel ring as defined in SAE AS5282.

**MR® Chemie GmbH · Nordstr. 61-63, 59427 Unna (Germany) · www.mr-chemie.de**
**Tel.: +49 (0)2303 95151-0 · Fax: +49 (0)2303 95151-10 · e-mail: post@mr-chemie.de**