



Penetrant Profesor Approved

Guide to Magnetic Particle Inspection Materials

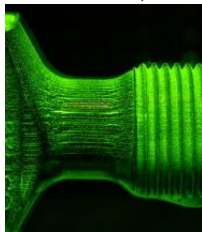


Magnetic particle inspection is used to locate discontinuities on or near the surface of ferromagnetic materials. A magnetic field is induced in the part to be examined. Discontinuities at or near the surface will cause the magnetic field to concentrate at any discontinuity. Fine magnetic particles are attracted to the magnetic field leakage over the discontinuities forming indications or mapping the discontinuities. Considerable theory, technical training, specialized equipment and trial and error is involved for effective magnetic particle inspection.

There are two types of materials generally used for magnetic particle inspection, wet method and dry method. Dry method materials are primarily used in weld inspection. Production and overhaul situations require high sensitivity, broad area detection capability exhibited by the wet method. Wet method particles are generally smaller than dry method particles and are more easily attracted to weaker leakage fields. The particles are suspended in a liquid carrier fluid which facilitates the mobility of the particles on the part surface. The particles may be visibly colored relying on contrast with the base material or contrast coating for detectability or they may be fluorescent and produce brilliant indications under UV-A illumination. Fluorescent inspection requires the inspection area be darkened to ensure detection of the fluorescent indications.

Fluorescent Wet Method Materials

Met-L-Glo 1400 is a fluorescent magnetic particle powder designed for high sensitivity fluorescent wet method inspection. It is mixed with *Met-L-Glo Carrier # 2*. It meets the requirements of **AMS-3044** and **ASTM E-1444** for fluorescent wet method magnetic particle inspection. *Met-L-Glo 1400* is available in pre measured bath shots for easy concentration control; 1 bath shot per 5 gallon (18.9L) of bath.



Met-L-Glo 1400B is a premixed, ready-to-use, fluorescent magnetic particle bath available in aerosols or 5 gal. (18.9L) containers. It is a mixture of *Met-L-Glo Carrier #2* and *Met-L-Glo 1400* fluorescent particles. It meets the requirements of **AMS-3045** and **ASTM E-1444** for fluorescent wet method magnetic particle inspection. Aerosols are pressurized with nonflammable, environmentally friendly CO₂.



Met-L-Glo 1400W is a special blend of *Met-L-Glo 1400* fluorescent magnetic particles and water conditioning agents. The powder is designed for high sensitivity fluorescent wet method inspection using water as the carrier vehicle. It meets the requirements of **ASTME-1444** for fluorescent wet method magnetic particle inspection. *Met-L-Glo 1400W* comes in 35 lb pails or pre measured bath shots for easy concentration control, 1 bath shot per 5 gallons (18.9L) of water.

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Met-L-Glo Carrier #2 is a specialty petroleum based magnetic particle bath vehicle. It is designed for high sensitivity fluorescent magnetic particle suspension. **Carrier #2** is free of natural fluorescence, reducing inspection background noise. It is a high flash point vehicle, reducing potential fire hazards. **Carrier #2** is a low viscosity material, which improves magnetic particle mobility. **Carrier #2** is a low odor material reducing operator discomfort. It meets the requirements of **AMS-2641** and **ASTM E-1444** for wet method magnetic particle inspection

Visible Wet Method Materials

MPI-80P is a black magnetic particle powder designed for white light visible wet method inspection. It is mixed with **Met-L-Glo Carrier #2** to form a working MPI bath. It meets the requirements of **AMS-3042** and **ASTM E-1444** for visible wet method magnetic particle inspection.

MPI-80 is a premixed, ready-to-use, visible black magnetic particle bath designed for high sensitivity visible magnetic particle inspection. **MPI-80** is **MPI-80P** mixed in **Met-L-Glo Carrier #2** and particle flow stabilizers. **MPI-80** is often used with **WCP-81** white contrast paint to increase contrast for fine flaw detection. It meets the requirements of **AMS-3042** and **ASTM E-1444** for visible wet method magnetic particle inspection. Aerosols are pressurized with nonflammable, environmentally friendly CO₂.



WCP-81 is a special white contrast coating used to create a uniform inspection background for visible magnetic particle inspection. It is sprayed onto the inspection area and allowed to dry. The coating is not effected by the wet method bath fluids, but is easily removed with **Met-L-Chek® R-503** or **R-504** cleaner.

Dry Method Particles

MPI-86B is a blue magnetic particle powder. **MPI-86G** is a grey magnetic particle powder. **MPI-86R** is a red magnetic particle powder. **MPI-86Y** is a yellow magnetic particle powder. They are designed for white light visible dry method inspection. They meet the requirements of **AMS-3040** and **ASTM E-1444** for visible dry method magnetic particle inspection. **MPI-86G**, **MPI-86B**, and **MPI-86Y** may be used on hot surfaces up to 426°C (800°F). **MPI-86R** is limited to 121°C (250°F) maximum.

MPI-86R

MPI-86B



MPI-86G

MPI-86Y