



PRODUCT DATA SHEET

MPI-1400



Met-L-Chek manufactures a complete line of Nondestructive Testing Materials. Met-L-Chek supplies fluorescent and visible dye penetrants wet and dry magnetic particles and a variety of specialty testing materials. All Met-L-Chek products are designed to yield maximum value through quality, cost, and usability. Met-L-Chek products are sold under the Met-L-Chek® and Pen-Chek® trademarks. MPI-1400 is a fluorescent magnetic particle powder designed for high sensitivity fluorescent wet method inspection. It is mixed with MPI-Fluid C2 at the rate of 1.7 g/L or 0.22 oz/gallon to form a 0.35 concentration in 100mL. It meets the requirements of AMS-3044 and ASTM E-1444 for fluorescent wet method magnetic particle inspection. MPI-1400 is available in pre-measured bath shots for easy concentration control; 1 bath shot per 5 gallons (18.9 L) of bath.

General Magnetic Particle Inspection

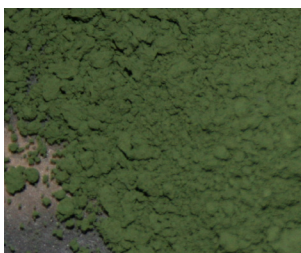
Magnetic particle inspection is used to locate discontinuities on or near the surface of ferromagnetic materials. A magnetic field is induced in the part to be examined. Discontinuities at or near the surface will cause the magnetic field to concentrate at any discontinuity. Fine magnetic particles are 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.

Particles

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 best achieved with 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 that 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.

Magnetic Particle Bath

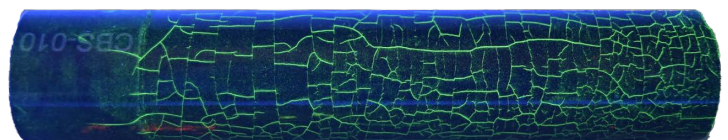
Special petroleum based carrier fluids or water, which has been treated with conditioning agents, may be used as the wet method particle bath media. The bath must be continuously agitated during use as the dense particles will settle out of solution upon standing. Materials intended for water bath use should not be placed in equipment that has been used for oil bath applications until the tank and all plumbing have been thoroughly cleaned. Similarly water or wet parts should not be introduced to baths with oil carriers, as this will cause the particles to cling to the tank and agglomerate. The particle concentration must be maintained for maximum performance. The settling volume per ASTM E-1444 should be between 0.1 and 0.4-ml/100 ml. for fluorescent particles after 60 minutes in oil and 30 minutes in water and between 1.2 and 2.4-ml/100 ml for visible particles.



1400 powder under white light



1400 powder under UV-A (black light)



1400 indications



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Typical Physical Properties

Form: dark coffee colored powder
 Density: 400 g/L
 Flash Point: none
 Particle size: 1-12 μ
 Fluorescence: yellow green
 SAE Relative Sensitivity: 7-8
 Corrosion of steel: none
 Mercury: none
 VOC's: 0 g/L
 Ozone layer depleting substances: none
 PCB's: none

Product Availability

500g (1.1 lb) - Plastic jar
 1Kg (2.2 lb) - Plastic jar
 5.4Kg (12 lbs) - Plastic pail

Specifications

NTR-1 E **ISO 9934**
AMS 3044 **API RP 5A5**
ASTM E 709 **ASTM E 1444**
MIL-STD-1949
Boeing PS 21201
SAFRAN IN 5300
MIL-STD-2132 (SH)
NAVSEA 250-1500-1
PRATT & WHITNEY MP
T9074-AS-GIB-010/271 (IL-STD-271 SH)
ASME SE-709, B&PVC, Section V, Article 7 & 25

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