14AM

Oil-Based Fluorescent Magnetic Particle Suspension



14AM is a ready-to-use magnetic particle suspension liquid for locating very fine discontinuities in critical parts and applications by providing clear, bright, fluorescent green indications for excellent inspection quality and accuracy.

This high-performance prepared particle bath combines Magnaflux's best-in-industry 14A magnetic particles with Carrier II NDT-approved suspension oil for quick, reliable mag particle testing with less maintenance.

14AM is an ideal choice for high performance inspections of precision safety-critical or high-stress components, and to extend the life of valuable mag particle equipment.

14AM meets all major industry and NDT specification requirements, including Aerospace, ASTM and ISO 9934. 14AM is listed on the QPL SAE AMS 3045-1S & AMS 3046-1S Qualified Product List and is approved for use by Pratt & Whitney.

BENEFITS

Increases indication detection with 14A particles

- Find smaller, finer indications in critical applications using the highly sensitive, strong ferromagnetic 14A particles
- Optimized particle size and shape help particles move freely to stick to a wide variety of discontinuities with less particle clumping

Improve inspection consistency and reliability

- Maintain magnetic particle system performance over greater periods of time thanks to the highly-durable, easily-dispersed 14A particles
- Reduced particle clumping helps maintain particle concentration in the suspension bath for dependable inspections

Minimizes inspection time

- Clear, bright fluorescent indications form quickly due to the highly fluorescent, highly mobile 14A particles
- Minimal background fluorescence help indications stand out more so inspectors need to spend less time examining each part
- Increases inspection speed and reliability by quickly wetting the entire test surface

Decreases maintenance

- Magnetic particle baths last longer due to slow evaporation, and is less susceptible to contamination from bacteria or fungus
- Protects magnetic particles like 14A from wear and tear and keeps them evenly dispersed throughout the bath
- Protects magnetic particle equipment from internal rust and corrosion to keep expensive machines running longer with less downtime

Convenient & versatile

- Reliable, ready-to-use particle bath with 14A magnetic particles and Carrier II petroleum distillate suspension oil
- Can be used for virtually all magnetic particle inspections with conformance to all major international magnetic particle testing specifications
- Prevents corrosion of most alloys and eliminates post-inspection processing for corrosion protection

APPLICATIONS

Defect location: Surface and slightly subsurface

Ideal for:

- Detecting very fine to fine discontinuities
- Critical applications
- After secondary processing
- In-service inspections
- High strength alloys

Defect examples:

- Inclusions
- Seams
- Shrink cracks
- Tears
- Laps
- Flakes
- Welding defects
- Grinding cracks
- Quenching cracks
- Fatigue cracks

FEATURES

- Ready-to-use
- Low maintenance, oil-based suspension
- High sensitivity
- Excellent fluorescent contrast
- Excellent particle mobility
- Optimized particle size and shape distribution
- Durable particles
- Good dispersion stability
- Available in a variety of different formats
- Protects parts and equipment against corrosion
- Provides superior wetting and surface coverage
- Low maintenance oil-based suspension
- Very low toxicity
- High flash point

SPECIFICATION COMPLIANCE

- AMS 2641
- ASTM E709
- ASTM E1444
- ASME
- ISO 9934
- MIL-STD-2132
- MIL-STD-271
- NAVSEA 250-1500-1
- NAVSEA T9074-AS-GIB-010/271
- QPL SAE AMS 3045-1S
- QPL SAE AMS 3046-1S

PRODUCT PROPERTIES

Appearance	Oily liquid and fine particle solution
Color in Visible Light	Brown
Color in UV Light	Fluorescent yellow-green
Odor	Minimal, negligible
Particle Size Range*	5-12 µm
SAE Sensitivity**	8-9
Flash Point	> 200°F / 93°C

* As determined by industry-typical method for measuring particle size

** Representative of the number of indications on a tool steel ring as defined in ASTM E1444.

USE RECOMMENDATIONS

NDT Method	Magnetic Particle Testing, Fluorescent, Wet Method
Suspension Vehicle	Carrier II (petroleum distillate)
Required Equipment	Magnetizing device, UV light source
Usage Temperature†	42 to 120°F / 6 to 48°C
Storage Temperature	50 to 86°F / 10 to 30°C
Settling Volume	0.10 - 0.40 mL

† Particle integrity and mobility may decline beyond these temperature limits. For use of an inspection vehicle conforming to AMS2641, minimum temperature is 6 °C.

INSTRUCTIONS FOR USE

Use 14AM with appropriate magnetization procedure and equipment. For best results, all components, parts, or areas to be tested should be clean and dry prior to testing to provide an optimal test surface and reduce particle suspension contamination. Particle suspension must be properly mixed and continuously agitated when in use to ensure uniformity and concentration.

14AM Aerosol: Shake the can well before use and occasionally during application to ensure proper particle suspension. Hold the can 7 to 9 inches (18 to 24 cm) from the area to be tested. Using the continuous or residual application method, spray particle suspension over the test area until it is completely covered. Inspect under ultra-violet black light. Use in a well-ventilated area. To verify particle concentration, perform a sensitivity check using a known test standard prior to inspection.

14AM Liquid: The suspension can be applied by gently spraying or flooding the area to be tested using the continuous or residual application method. Inspect under ultra-violet black light. Check particle concentration before use.

14AM Liquid Maintenance Recommendations

Magnetic particle suspensions need to be properly maintained to provide consistent results. Suspension concentration and contamination should be monitored at least once a day, or according to applicable specifications. Contaminated suspensions, or those in use for an extended length of time, should be replaced. Properly cleaning all components, parts, or inspection areas before testing helps to significantly reduce particle suspension contamination.

Particle concentration should be determined after initial bath preparation and at least once a day, or according to applicable specifications, to maintain the proper level of particles in the suspension. The most widely used method of control is by settling volume measurement in a graduated ASTM pear-shaped centrifuge tube. For testing 14AM, Magnaflux centrifuge tube 8493 is recommended: 100 ml capacity, stem graduated from 0 to 1 mL in 0.05 mL increments.

PREPARATION INSTRUCTIONS

14AM Aerosol: Use as supplied.

14AM Liquid: Use as supplied. Fill tank or container to proper level with 14AM liquid. Mix for a minimum of 15 minutes until the particles are completely and evenly dispersed in the suspension. Check particle concentration before use. Do not add additional Carrier II or mix 14AM with water.

REMOVAL

All components, parts, or inspection areas must be properly demagnetized before cleaning to ensure easy particle removal. Cleaned parts may be treated with a temporary film protective coating if longer corrosion protection is required.

PACKAGING

Aerosol can (case of 12)	01-0145-78
5 gal / 18.9 L pail	01-0145-40

STORAGE

Store in a well-ventilated area away from magnetizing equipment and heat sources. Product age, exposure to elevated temperatures, and/or exposure to a strong magnetic field may adversely affect particle redistribution. Refer to Safety Data Sheet for additional storage instructions.

HEALTH AND SAFETY

Review all relevant health and safety information before using this product. For complete health and safety information, refer to the product Safety Data Sheet, which is available at www.magnaflux.com.