

MG-450A

FLUORESCENT MAGNETIC PARTICLE PREMIX

预混合荧光磁粉

MG-450A is a borax-free ultra-high fluorescence magnetic particle premix for locating small, medium, and gross discontinuities in high-volume applications using fluorescent wet method magnetic particle testing under ultra-violet light or a combination of ultra-violet and visible light (mixed light).

MG-450A 是一款无硼砂, 高荧光亮度复合湿法磁粉, 适合批量生产中检测各种大小的缺陷。使用MG-450A检测可以在紫外光灯下或者紫外光和可见光混合光源下进行。

Designed to mix with water, MG-450A improves indication visibility with less background fluorescence because of the high-strength, high-fluorescent MG-410 particles. These high-performance particles combine with patent-pending water conditioner and corrosion inhibitor package to create a water bath that requires less maintenance, keeps performing longer and protects parts and equipment from rust.

MG-450A与水混合可以在产生较少荧光背景的条件下清晰的显示缺陷。其优异的性能来自于高强度高亮度的MG-410荧光磁粉。MG-450A含有水质调节剂和缓蚀剂, 其制备的磁浴仅需要较少的维护即可长时间保持高性能表现并且为检测的零部件和设备提供防腐保护。

MG-450A is a great option for high-speed, high volume applications on raw products/materials, after secondary processing, on textured/rough surface finishes or on unmachined parts where indication visibility and through-put are important.

对于快速大批量检验毛坯件或粗加工零部件的粗糙表面来说, MG-450A是非常好的选择, 其能提供的缺陷显示明显, 可以加速检测效率。

MG-450A is used in conjunction with suitable magnetizing equipment for fluorescent wet method magnetic particle testing under ultra-violet light or a combination of ultra-violet and visible light (mixed light).

MG-450A 需要适合的磁化设备进行荧光湿法磁粉检测, 并且配合紫外光灯或者紫外光和可见光混合光源使用。

In conditions with a combination of ultra-violet and visible light (mixed light) the user should read the Recommended Concentrations, Inspection Parameters, and Disclaimers sections of this Product Data Sheet before using MG-450A. MG-450A is not recommended by the manufacturer for inspections under visible light only.

在使用紫外光和可见光混合光源下进行检测前, 用户应仔细阅读本文中的浓度推荐, 检测参数和免责声明部分内容。MG-450A不建议在只有可见光源条件下使用。

FEATURES 特性

- Clear, ultra-bright indications under UV light
紫外光灯下缺陷显示明亮清晰
- Patent-pending water conditioner and corrosion inhibitor package
预混合了水质调节剂和缓蚀剂
- Ultra-high fluorescence particles
磁粉荧光亮度高
- Very low background for easy indication detection
极少的荧光背景提供明显的缺陷显示
- Good surface wetting
优秀的表面润湿性能
- High indication contrast
高缺陷显示对比度
- Strong corrosion protection
良好的防腐性能

- Low foam
低泡沫
- Safer, borax-free formula
无硼砂配方更安全

SPECIFICATIONS 符合规范

- AMS 3044
- ASTM E709
- ASTM E1444
- ASME
- MIL-STD-2132
- NAVSEA 250-1500-1
- NAVSEA T9074-AS-GIB-010/271

APPLICATIONS 应用
Defect location: surface and slightly subsurface

缺陷位置: 表面及近表面缺陷

Ideal for 适用于

- Detecting small, medium, and gross discontinuities
检测多种大小裂纹
- High volume inspection 大批量检测
- Raw products/materials 毛坯件产品
- After secondary processing 粗加工产品
- Textured/rough surface finishes 粗糙表面
- Unmachined parts 未处理工件
- Semi-dark environments 低亮度环境下检测

Defect examples 缺陷类型

- Inclusions 夹杂
- Seams 裂缝
- Shrink cracks 收缩裂纹
- Tears 撕裂
- Laps 折叠
- Flakes 白点
- Welding defects 焊接缺陷
- Grinding cracks 磨削裂纹
- Quenching cracks 淬火裂纹
- Fatigue cracks 疲劳裂纹

PROPERTIES 属性

Appearance 外观	Dry powder 干粉末
Color in UV Light 黑光下颜色	Fluorescent yellow-green 黄绿色荧光
Color in Visible Light 可见光下颜色	Forest green 绿色
Odor 气味	Odorless 无味
Mean Particle Size 平均粒径*	19 microns 19 微米
SAE Sensitivity SAE 灵敏度**	7

* As determined by industry-typical method for measuring particle size.
用工业上通用的方法测试颗粒度。

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

ASTM E1444中定义的工具钢环形试块上能显示的孔数。

USE RECOMMENDATIONS 使用推荐

NDT Method 无损检测方法	Magnetic Particle Testing, Fluorescent or Mixed Light, Wet Method 荧光或混合光磁粉检测, 湿法
Suspension Vehicle 载液	Water 水
Required Equipment 设备要求	Magnetizing device, UV light source 磁化装置和紫外光源
Temperature range 温度范围†	0 - 49°C
Settling Volume 沉淀量	0.03 – 0.1 mL

† Particle integrity and mobility may decline beyond these temperature limits.
超出此温度范围, 磁粉的完整性和流动性可能下降。

PREPARATION INSTRUCTIONS 配制指南

Mix MG-450A with water for use. Fill tank or container with water. Measure or weigh out MG-450A and add to the water. Add directly over the pump for more rapid dispersion. Mix for a minimum of 15 minutes, until the particles are completely and evenly dispersed in the suspension. Check concentration before use. Using warm water (100°F / 38°C) to prepare the suspension will help the MG-450A mix faster.

使用时将MG-450A和水混合。将浴槽或者容器加入水, 称量MG-450A直接添加到水中, 用泵快速分散, 混合搅拌至少15分钟, 直到磁粉充分均匀分散于磁悬液中。使用前检测浓度, 使用温水(38°C)配制磁悬液可以使MG-450A混合更加快速。

NOTE: Make sure to add MG-450A to water instead of adding water to MG-450A. If water is added directly to MG-450A an exothermic (heat generating) reaction may occur, although this reaction is mild and not expected to pose a hazard, adding water directly to MG-450A is not recommended.

注意: 请将MG-450A向水中添加而不是将水添加到MG-450A中, 如果将水加入到MG-450A中会发生发热反应, 该发热反应虽然温和却也会构成危害, 因此不推荐将水直接加入到MG-450A中。

Do not mix MG-450A with oil.

注意不要将MG-450A与油混合。

1. Ultra-Violet Light Inspection 紫外光灯下检测

Settlement volume 沉淀量 = 0.03 – 0.1 mL

Water 水	MG-450A
1 L	10.75 g

2. Combination Ultra-Violet and Visible Light (Mixed Light Inspection***)

紫外光与可见光(混合光源)检测***

Settlement volume 沉淀量 = 0.05 – 0.15 mL

Water 水	MG-450A
1 L	11 -33 g

3. Visible Light Inspection 可见光源下检测

Not recommended with MG-450A 不推荐

INSTRUCTIONS FOR USE 使用指南

Use MG-450A 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. Particles will settle out of suspension very quickly on standing.

请配合适当的磁化设备和检测工艺来使用MG-450A。为了得到最佳效果，检测前需要对待测零部件或区域进行清洁干燥以保证测试表面的最佳状态，减少磁悬液的污染，在使用时磁悬液必需持续以适当的方式搅拌混合以保证磁粉浓度均匀性。磁粉颗粒如果不加搅拌会很快沉淀。

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.

可以用连续激磁或剩磁检测的方法将磁悬液轻轻喷涂或倾倒测试表面。在黑光灯的照射下检测，在使用前确认磁粉浓度。

Inspection Parameters 检测参数

Use the following recommended parameters when using MG-450A:

使用MG-450A时请使用以下推荐参数：

1. Ultra-Violet Light Inspection 紫外光灯下检测

Ultra-violet intensity 紫外光强度	≥ 1000 uW/cm ²
Visible light intensity 可见光强度	≤ 2 foot-candles / 21.5 Lux

2. Combination Ultra-Violet and Visible Light (Mixed Light Inspection***)

紫外光与可见光(混合光源)检测***

Before using MG-450A for a mixed light inspection, it is recommended that a preliminary test be performed to verify the conditions in the local environment. As a general principle, visible light should be at a minimum and ultra-violet light should be as high as reasonably possible.

在使用MG-450A进行混合光检测前推荐进行预检测以确认检测条件。

总体原则是可见光需要尽可能最小，紫外光在可能的条件下合理的调到最高。

When carrying out an inspection in mixed light conditions, the angle of visible light, relative to the surface and the inspector, is critical to Probability of Detection (POD) levels. If the visible light source or angle creates a significant amount of glare/reflection on a test surface, indications can be completely obscured. It is recommended that the visible light source be positioned behind the operator to minimize the level of glare/reflection.

当进行混合光条件下检测时，可见光相对于观测者和测试表面的角度是非常关键的。如果可见光在测试表面产生反射光或眩光会完全遮盖缺陷显示。建议将可见光源放置在观测者身后以尽可能减少反射光影响。

Note: An inspection in mixed light conditions will not give the same level of sensitivity as an inspection in ultra-violet light only conditions. Therefore, extra care is required when inspecting in mixed light conditions to ensure compliance with the all applicable inspection procedures and specifications.

注意：在混合光条件下检测达不到只在紫外光灯下检测同样的灵敏度。因此需要额外注意以确保符合适用的检测工艺和规范。

Ultra-violet intensity 紫外光强度	≥ 2000 uW/cm ²
Visible light intensity 可见光强度	≤ 55.7 foot-candles / 600 Lux [†]

[†] Inspections with more than 55.7 foot candles / 600 Lux of visible light must be approved by a qualified Level III.

在 600 Lux 可见光条件下进行检测必须经过认证三级人员的批准。

3. Visible Light Inspection 可见光源下检测

Not recommended with MG-450A 不推荐

Maintenance Recommendations 维护建议

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.

为了获得一致的检测结果，应采用正确的方法维护磁悬液。每天至少监测一次磁悬液的浓度和被污染程度，或根据合适的规范进行维护。被污染的磁悬液，或者超出了使用期限的磁悬液，应及时更换。检测前对工件进行预清洗能有效减少磁悬液的污染。

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 MG-450A,

Magnaflux centrifuge tube 507923 is recommended: 100 ml capacity, stem graduated from 0 to 0.2 mL in 0.01 mL increments.

测试磁悬液的初始浓度, 然后每天至少再检测一次, 或根据合适的规范, 以保持磁悬液中磁粉处于合适的水平。用的最广泛的控制方法是: 用ASTM中带刻度的梨形沉淀管测试磁粉沉淀量。推荐使用美国磁通离心管(件号: 507923)检测MG-450A, 其规格为100毫升, 测定管分级由0到0.2ml, 最小刻度为0.01ml。

REMOVAL 清除

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.

检测结束后, 为保证磁粉容易被去除, 应该先对组件、工件或者被检区域进行退磁。如果有较长的防腐的要求, 清洗后需要对工件进行防腐处理。

STORAGE 储存

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.

通风良好处储存, 远离磁化设备和热源。产品老化, 暴露在高温下和/或暴露在强磁场下可能会不利于磁粉的再分散。

Protect from sunlight. Storage containers should be tightly sealed when not in use. Cool, dry storage location is preferred. Refer to Safety Data Sheet for additional storage instructions.

防止日光照射, 在不使用时储存容器必需密封, 适合阴凉干燥的储存环境。其他储存说明请参考安全技术表。

PACKAGING 包装形式

01-0196-73 2 lb / 907 g jar (case of 6)
 2 lb / 907 g 罐装 (6罐/箱)

HEALTH AND SAFETY 健康与安全

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.cn.

产品使用前请阅读相关的健康和安全管理信息。完整的健康和安全管理信息参考www.magnaflux.cn上的SDS(安全数据表)。

DISCLAIMERS 免责声明

*** The recommendations given for inspection under a combination of ultra-violet and visible light (mixed light) conditions are based on studies carried out under controlled laboratory conditions. As such, the results and conclusions may not apply to other applications. It is the responsibility of the user to determine the acceptable inspection conditions for their application.

*** 本文所给出的关于在紫外光和可见光混合光源下进行检测的建议是基于在实验室可控条件下进行研究得出的结果。因此这些结论和结果可能不适用于其他应用条件, 用户需要自行决定检测条件和结果是否可接受并对其进行负责。