

# ML-500WB

## Fluorescent Magnetic Particles Concentrate for Mixed Light use - Water Based

The ML-500WB is a highly sensitive suspension of magnetic particles in water, used for locating discontinuities under ultraviolet light or a combination of ultraviolet light and white light (Mixed Light).

The ML-500WB bath uses a specific concentration of MG-410 with water conditioning agents, anti-foaming agent and corrosion inhibitors. The ML-500WB is intended for use in the wet magnetic particle inspection method.

ML-500WB is diluted with water for use and then sprayed onto a magnetized part prior to inspection. It is used to detect cracks and folds, as well as inclusions, creases, tears and chips.

The ML-500WB can detect defects that are open to the surface of the part or subsurface. Examined parts can be: forgings, welds, castings and stampings or ferromagnetic materials, such as steel or other alloys of iron, nickel and cobalt.

The ML-500WB's fluorescent particles accumulate where the magnetic field has been disrupted and glow under ultraviolet (UV) light, and can also be seen in a combination of ultraviolet light and white light.

### BENEFITS

- Can be used in not completely dark environments
- Clear and crisp indications under UV light
- High sensitivity
- Easy post-test cleaning
- Excellent fluorescent contrast for quick identification
- Excellent particle mobility
- Good dispersion stability
- Great consistency of concentration
- Exceptional surface wetting
- Not foamy
- Uniform surface coverage and higher probability of detection
- Good corrosion protection



### SPECIFICATION COMPLIANCE

- AMS 3044
- ASTM E709
- ASTM E1444
- ASME
- MIL-STD-2132
- MIL-STD-271
- NAVSEA 250-1500-1
- NAVSEA T9074-AS-GIB-010/271
- NBR NM 342
- PETROBRAS N-1598

### APPLICATION

**Defect location:** Surface and subsurface

**Ideal for:**

- Fine discontinuities or rough parts
- Machine parts
- Smooth surface finish
- Critical applications
- High volume trials
- After secondary processing
- Mix with hard water

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## Defect examples:

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

## PRODUCT PROPERTIES

<b>Appearance</b>	Liquid and fine particle solution
<b>Color in Visible Light</b>	Green
<b>Color in UV Light</b>	Fluorescent green
<b>Odor</b>	Subtle amine
<b>Mean Particle Size*</b>	19 microns
<b>SAE Sensitivity**</b>	7

\* 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

<b>NDT Method</b>	Magnetic Particle Testing, Fluorescent, Wet Method
<b>Suspension Vehicle</b>	Water
<b>Required Equipment</b>	Magnetizing device, UV light source
<b>Temperature Range †</b>	0 a 49 °C
<b>Settling Volume</b>	0,02 – 0,07 mL

† Particle integrity and mobility may decline beyond these temperature limits.

## PREPARATION INSTRUCTIONS

Shake the bottle well to suspend particles.

The concentrate must be uniformly mixed before the bath is prepared.

Measure out the appropriate amount of ML-500WB and add to water. Mix for 15 minutes or until the particles are completely dispersed.

Check particle concentration before use. Expose the product to elevated temperatures and/or expose it to a high magnetic field may adversely affect redistribution of ML-500WB particles.

The ML-500WB should always be stored away from heat sources and magnetizing equipment.

ML-500WB must be mixed with water only, do not use it to prepare oil-based baths.

## RECOMMENDED CONCENTRATIONS

### ULTRAVIOLET LIGHT

Inspection using only Ultraviolet Light

Water	ML-500WB
1 liter	30 – 100 mL

### MIXED LIGHT\*\*\*

Inspection using combination of ultraviolet light and white light

Water	ML-500WB
1 liter	50 – 150 mL

### VISIBLE LIGHT

It is not recommended to use ML-500WB to perform inspection using only visible light.

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### INSPECTION PARAMETERS

Use the following recommended parameters when using the ML-500WB:

#### ULTRAVIOLET LIGHT

Inspection using only Ultraviolet Light

Ultraviolet Light Intensity	$\geq 1000 \mu\text{W}/\text{cm}^2$
Visible Light Intensity	$\leq 21,5 \text{ Lux}$

#### MIXED LIGHT\*\*\*

Before using the ML-500WB for a Mixed Light inspection it is recommended that a preliminary test be performed to verify the environmental conditions of the site. As a general principle, visible light should be as low as possible and ultraviolet light as high as possible.

When an inspection is performed in mixed light conditions, the angle of application of the visible light, relative to the surface and the inspector, is critical to the Probability of Detection (PD) level. If the visible light source or angle creates a reflection or glare on the test surface, indications may be completely masked (covered) or difficult to see. It is recommended that the visible light source be positioned behind the operator/inspector in order to minimize the level of glare and reflection.

Note: An inspection under Mixed Light conditions will not have the same level of sensitivity as an inspection under UV light only. Therefore, extra care is needed when an inspection under Mixed Light conditions is performed to ensure compliance with all applicable inspection procedures and standards.

Ultraviolet Light Intensity	$\geq 2000 \mu\text{W}/\text{cm}^2$
Visible Light Intensity	$\leq 600 \text{ Lux}^*$

\* Inspections with more than 600 lux of visible light must be tested and approved by a level III inspector.

#### VISIBLE LIGHT

It is not recommended to use ML-500WB to perform inspection using only visible light.

### INSTRUCTIONS FOR USE

Use o ML-500WB 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.

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.

#### Bath Control and Maintenance Recommendations

Magnetic particle suspensions need to be properly maintained to provide consistent results.

Suspension concentration and contamination should be monitored 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.

To test the decanting volume of the ML-500WB suspension, Magnaflux recommends the 100 mL capacity decanting tube, 0.2 mL stem and 0.01 mL subdivisions.

Suspension contamination should be monitored at least once a day, or as specified in the procedure. Contaminated suspensions, or those in use for an extended period of time, should be replaced.

### 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.

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### STORAGE

Store in a well-ventilated area away from magnetizing equipment and heat sources. Protect from sunlight. 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.

### PACKAGING

Jug of 5 L (Case of 4 unities)

### 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.br](http://www.magnaflux.com.br).

\*\*\*Recommendations made for inspection conditions under a combination of ultraviolet light and visible light ("Mixed Light") are based on studies performed under controlled laboratory conditions. As such, the results and conclusions may not apply to other applications. It is the user's responsibility to determine acceptable inspection conditions for their application.