



# CGM CIGIEMME S.p.A.

Controlli Non Distruttivi - Non Destructive Testing



**Product Code**  
01036116

**Ref. no.**  
PAD3176/500

**Product Data  
Sheet**

## MAGNETIC POWDER PAD 31-76/500

### PRODUCT DESCRIPTION

PAD 31-76/500 is a fluid fluorescent magnetic powder concentrate to be diluted in water for wet magnetic particle testing.

The concentrate already contains additive with rust inhibitor, surfactant, anti-foaming agent and is totally nitrite-free.

PAD 31-76/500 is a low-sulphur and halogen product according to standards.

### COMPOSITION

Iron powders and oxides with high magnetic permeability and small-grained fluorescent pigments.

**N.B.:** As with all CGM products, the PAD 31-76/500 magnetic powder is tightly tested to ensure batch uniformity, optimal process verification and control reliability.

### SPECIFICATIONS

- Excellent sensitivity.
- Excellent fluorescent contrast.
- Excellent particle mobility.
- Long-lasting particles.

### PACKAGING TYPE

- 5 L containers

### APPLICABILITY

Ideal for the detection of surface and sub-surface discontinuities such as:

- Inclusions.

- Straw.
- Withdrawal cracks.
- Tears.
- Recalcifications – Folding.
- Flakes.
- Welding discontinuity.
- Grinding cracks.
- Hardening cracks.
- Fatigue cracks.

In:

- Melting.
- Forging.
- Welding.
- Machined parts.

### INSTRUCTIONS FOR USE

**TIP:** always operate according to a procedure authorised by a 3<sup>rd</sup> level in Magnetic Particle Inspection.

- Dilute the magnetic suspension in the proportion of 5 L in 500 L of water and check, with the sedimentation glass tube, that it has the recommended concentration value.
- Ensure that the part to be inspected is clean to avoid false indications and contamination of the magnetic suspension.
- During use, keep the magnetic suspension stirring to ensure bath uniformity.
- Apply the magnetic suspension as required depending on the method chosen.



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Via Adda, 21 - 20073 Opera (MI) Italy - Tel.: +39 02 57.600.400 - Fax: +39 02 57.603.618

Web: [www.cgm-cigiemme.com](http://www.cgm-cigiemme.com) - Mail: [cgm@cgm-cigiemme.it](mailto:cgm@cgm-cigiemme.it)

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## Continuous wet method

This is the method normally required by standards.

- Apply the magnetic suspension by spraying, dipping or dropping, as required by the inspection procedure, on all surfaces of the part under inspection and simultaneously apply the magnetising current.
- Stop the application of the magnetic suspension before interrupting the current flow, so as not to wash away the indications.
- Leave to drain.

## Residual magnetism wet method

This method is only allowed in certain cases. Refer to the standard to be applied.

- Apply the magnetising current to the part to be inspected.
- Then apply the magnetic suspension by spraying, dipping or dropping.

- Leave to drain.

Inspect the part under ultra-violet light and in a darkened environment, respecting the parameters of luminous intensity and white light leakage required by the applicable standards.

With use, the powder content of the magnetic suspension tends to decrease and it is therefore necessary to check the strength of the bath daily using the sedimentation glass tube or the reference block, as stipulated in the control procedure.

The bath must be replaced when it appears contaminated.

After the inspection and before final cleaning, it is advisable to demagnetise the inspected part to the residual magnetisation value specified in the inspection procedure. This also ensures easier removal of residual magnetic powder particles.

## PROPERTIES AND PRODUCT COMPARISON

|                                                     | PAD 35/50         | PAD 31-73/50        | PAD 150/50          | PAD 755/50          | PAD 31-74/50        | PAD 31-75/100       | PAD 31-76/500       |
|-----------------------------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Colour<br>ASTM E709<br>EN ISO 9934-2                | Black             | Dark Green          | Dark green          | Dark green          | Red                 | Red                 | Red                 |
| Average particle size<br>EN ISO 9934-2              | 1 µm              | 3 µm                | 12 µm               | 8 µm                | 3 µm                | 3 µm                | 3 µm                |
| Sedimentation<br>ASTM E1444                         | 1.2-2.4 ml        | 0.10-0.20 ml        | 0.10-0.15 ml        | 0.10-0.20 ml        | 0.15-0.30 ml        | 0.10-0.30 ml        | 0.10-0.20 ml        |
| pH<br>EN ISO 4316                                   | 7 – 9             | 8 – 10              | 8 – 10              | 8 – 10              | 8 – 9               | 8 – 9               | 8 – 9               |
| Solubility                                          | 1 L in 50 L water | 1 L in 50 L water   | 1 L in 50 L water   | 1 L in 50 L water   | 1 L in 50 L water   | 5 L in 100 L water  | 5 L in 500 L water  |
| Colour under UV light<br>ASTM E709<br>EN ISO 9934-2 | NA                | Bright yellow-green | Bright yellow-green | Bright yellow-green | Bright yellow-green | Bright yellow-green | Bright yellow-green |

Typical values.



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## RECOMMENDATIONS FOR THE USER

| NDT method                                                                                   | Fluorescent Magnetic Particle Inspection, wet method                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shelf life                                                                                   | 3 years at a temperature between 5°C and 45°C, in a dry place out of direct sunlight                                                                                                                             |
| Usage temperature                                                                            | < 48°C                                                                                                                                                                                                           |
| Suspension vehicle                                                                           | Water                                                                                                                                                                                                            |
| Preliminary cleaning                                                                         | Velnet/Solnet                                                                                                                                                                                                    |
| UV lamp                                                                                      | Labino                                                                                                                                                                                                           |
| Recommended accessories according to regulations<br>ASTM E1444<br>ASTM E709<br>EN ISO 9934-2 | Sedimentation glass tube – Magnetic stripe card type 2000 – Reference block type 1 (MTU) – Reference block type 2 – Flexible laminated strips – Tool Steel Ring type AS 5282 and type Ketos 01 – Octagonal plate |

## COMPLIANCE WITH STANDARDS

- EN ISO 9934-2
- ASME V Art. 7
- ASTM E709
- ASTM E1444
- AMS 3044
- AS 4792
- PMUC (certificate of conformity on request)

## BENEFITS

- It forms clear indications with minimal background fluorescence.
- It maintains the performance of the magnetic suspension over long periods of time due to good quality pigments with good particle adhesion.

## HEALTH AND SAFETY

Read all health and safety information before using this product. This information can be found in the Safety Data Sheet, available on request.

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