

# TAM International, Inc.

## QI-8.2.4-21 Specifications for Wet Fluorescent Magnetic Particle Inspection

Approved by Department Manager

Signature/Date: *Greg Fletcher, Quality Assurance Manager*

Reviewed by ISO Management Representative

Signature/Date: *Thomas Young, Sr. Quality Analyst 01/28/2013*

Revision Level: B

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### 1.0 Scope

- 1.1 This specification defines the requirements for surface and near surface inspection of ferromagnetic materials using the Wet Fluorescent Magnetic Particle Testing method (MPI).

### 2.0 Status and Records

- 2.1 Changes in these instructions shall be documented in accordance with QP-4.2.3 Document Control Procedure.

### 3.0 Method

- 3.1 The method of nondestructive inspection shall be the Wet Fluorescent Magnetic Particle method in accordance with ASTM E709 and ASTM E1444 procedures, latest revision.

### 4.0 Equipment

- 4.1 Particle type; Magnaflux 14A, Wet Fluorescent Particles or equivalent.
- 4.2 Particle concentration level settling volume; 0.1 to 0.4 ml / 100 ml bath sample.
- 4.3 Part condition; clean & demagnetized.
- 4.4 Magnetization Current, An Alternating Current (AC) or Half-Wave Alternating Current is the preferred method of application using central conductor and/or coils on a horizontal mag unit. As an alternative, adjustable yokes are acceptable. Prods are prohibited.
- 4.5 Light; minimum 1000 mw/cm<sup>2</sup> at the surface of the part examined.

### 5.0 Technique

- 5.1 The particles shall be suspended in a suitable liquid vehicle within concentration levels as noted in 4.2.
- 5.2 As an alternative to 4.2, a commercially manufactured spray may be used, provided adequate sensitivity levels can be proven to the satisfaction of the company Level III and documented.

**6.0 Equipment Calibration**

6.1 All equipment shall be maintained and calibrated in accordance with ASTM E709, paragraph 20, "Evaluation of System Performance and Sensitivity" (Reference Table 2).

**7.0 Certification Requirements**

7.1 Magnetic Particle testing shall be performed and interpreted with calibrated equipment by personnel qualified to a minimum Level II, per ASNT-TC-1A .

**8.0 Acceptance Criteria**

8.1 Defect indications detected by the Magnetic Particle inspection shall be considered cause for rejection of the part where:

8.1.1 Round indications are greater than .13".

8.1.2 Longitudinal indications are greater than .06".

8.1.3 Any longitudinal indications occurring on both the inside and outside diameters.

8.2 Removal of defect indications by grinding or any other means shall not be acceptable.

8.3 A certificate of compliance to the above specifications shall be required on all Magnetic Particle inspections.

Rev	Date	Description	Prepared By:	Reviewed By / Approved By	Date
A	1/28/13	Moved Document From Engineering to Quality; Update 2.1 & 4.4	T. Young	M. Wyatt ,T. Young	2/5/13
B	10/09/14	Annual Review, Remove Review Date, Add Revision Box	Greg Fletcher		