



Quality Assurance Procurement Requirements – QAPR’s  
Revision: M, Dated: 11/01/2021  
**QAPRs to be used in conjunction with 100-QC-008.0**

**QAPR #001 - Shelf life and temperature sensitive materials:**

Seller shall identify all materials and articles that have definite characteristics of quality degradation with age or environment. Such items will be individually labeled with the expiration date. If environment is a factor, environmental limitations shall be so noted on the product. Items received by MISTRAS must indicate a minimum of 70 % of the rated shelf life remaining, or the product will be returned to the seller.

**QAPR #002 - Certificate of Conformance:**

Each shipment of materials, or parts so designated, shall be accompanied by a legible Certificate of Conformance bearing the signature of the responsible representative stating that the product meets the requirements of specifications noted on the purchase order.

**QAPR #003 - Material Test Reports:**

Material test reports shall contain the specification(s), heat, batch, or lot numbers. The report shall contain actual numerical values for the characteristic(s) tested.

**QAPR #004 - All materials and services received under this purchase order are subject upon arrival to MISTRAS Receiving Inspection with certification of conformance required.**

**QAPR #005 - MSDS Sheets:**

Materials noted on this purchase order must be supplied with OSHA’s Hazard Communication Standard 29CFR1910-1200. Materials not compliant will be returned.

**QAPR #006 - Report of discrepancy:**

Any deviation from drawing or specification will be documented by the supplier and reported to MISTRAS.

**QAPR #007 - Acceptance of this Purchase Order authorizes MISTRAS Inspection full right of entry. Such right of entry shall extend to our customers or their representatives and regulatory Agencies to any place necessary to determine and verify the quality of contracted work, records and material, and further, to verify the contracted product conforms to the specified requirements. Sub-contracting cannot be done without prior written approval of MISTRAS Quality Assurance.**

**QAPR#008 - Supplier shall have on file for 11 years after final delivery of a Mistras Services.**

At the conclusion of this time period, the Supplier shall make a written request to Mistras for permission to destroy the records, package and ship the records to Mistras Services, maintain the records or any combination of the above. Copies of retained records shall be furnished to Mistras upon request.

**QAPR #009 - Three-point calibration requirement. All equipment that requires calibration, shall have at least 3 reference points that are above, below and ‘in the middle’ of Instruments operating range depending on the instrument in use. The calibration data issued shall clearly contain as received or as found data as well as calibrated data.**

QAPR #010 - Equipment requiring calibration shall comply with Procurement of Equipment and Services procedure(s) 100-QC-008.

QAPR #011 - Certificate of Calibration:

The requirements of 100-QC-008.0, Supplier Quality Requirements apply. Required specification(s), services, tolerances, and frequencies are listed in this document.

The certificate of calibration, in accordance with ANSI /NCSL Z540-1 shall include the following:

- The name and address of the organization performing the calibration.
- The part name, manufacturer, model number and serial number
- Condition of item “as received”
- Date of Calibration
- Date current calibration expires
- Specification(s) or procedure(s) calibrated in accordance with.
- Any standards used and a statement describing standard traceability.
- Any adjustments or repairs required.
- The name and signature of the person performing the calibration.
- Actual numerical values and deviations for all tests performed.

QAPR # 012 - All Penetrant materials will be certified to AMS 2644 and/or MIL-I-25135.

QAPR #013 - Ultrasonic Transducers require the following:

- Shall be serialize and identified with frequency and Part Number
- Certification shall be per ASTM E1065, data on Center Frequency response, Bandwidth, Focal length, and Beam Profile (note: Beam Profile is applicable to Focused beam search units).
- Paint Brush or Array Transducer shall have a beam uniformity of 10%
- Addition requirements will be noted on the purchase order as required.

Note: Failure to satisfy these requirements will result in return of transducers and non-payment of all charges including freight both ways.

QAPR #014 - All eddy current reference standard certifications must reflect the following information:

- Reference standard part and serial number
- Material alloy and/or temper
- The surface finish
- Dimensional data
- Traceability to NIST
- The signature of the individual certifying the data.
- The date of the certification.

QAPR #015 - Magnetic Particle Yokes must meet the requirements of ASTM E1444 and T9074-AS-GIB-010/271.

QAPR #016 - Magnetic Particle media requirements listed below:

- Dry Visible Magnetic Particles will be certified to AMS 3040
- Magnetic Particle inspection vehicle certified to AMS 2641
- Wet Visible Magnetic particles will be certified to AMS 3042
- Wet Fluorescent Magnetic Particles will be certified to AMS 3044
- Wet Fluorescent Magnetic Particles, Aerosol packaged, Oil based particles will be certified to AMS 3046
- Wet Visible Magnetic Particles, Aerosol packaged, Oil based particles will be certified to AMS 3043

QAPR #017 - Radiographic film will be classified in accordance with ASTM E1815.

QAPR #018 - Radiographic Penetrators (IQIs/Image Quality Indicators) will be certified to one of the following specifications:

- T9074-AS-GIB-010/271
- ASTM E1742 (*Previously MIL-STD-453*) or ASTM E1025 for hole type IQIs
- ASTM E747 for wire type IQIs

QAPR #019 - Radiographic survey instruments must be in compliance with 10CFR part 34, paragraph 34.25. The “as received” value shall be in the calibration data.

QAPR #020 - Film badges must be processed by a member of the National Voluntary Laboratory Accreditation program.

QAPR #021 - Pocket dosimeters must comply with 10CFR part 34. Paragraph 34.47.

QAPR #022 - Calibration of Radiographic densitometers, at a minimum, shall be per ASTM E1079.

QAPR #023 - Boeing approval or certification required.

QAPR # 024 - Subcontracting: Use of subcontractors is not allowed without prior, written approval from MISTRAS.

Mistras Group, Inc. | Services Division

## Supplier Quality Requirements

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**Supplier Quality Requirements**

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**Table of Contents**

1.0	Scope .....	2
2.0	Requirements for Suppliers .....	3
3.0	Requirements for Materials .....	4
4.0	Requirements for Calibration.....	5
5.0	Requirements for Reference Standards .....	7
6.0	Requirements for NDT Equipment.....	7

NOTE: Due to a relatively short period of time between revisions 4 and 5, the vertical revision bars were retained from both revisions.

**Supplier Quality Requirements****1.0 Scope**

- 1.1 This document establishes Mistras Services' quality requirements for suppliers. These requirements apply to Manufacturers, Distributors, and Special Processors providing items or services for Mistras Services when this document is specified by inclusion on a purchase order or contract issued by Mistras Services.
- 1.2 In the event that the PO or contract conflicts with the requirements of this document, the purchase order or contract shall take precedence.
- 1.3 Requirements identified herein are applied only as relevant to the items/services procured.

**NOTE TO SUPPLIERS**

Mistras Services provides asset protection and related industrial services. These services are often performed to ensure protection of life and property. As an approved supplier, it is important that the products and/or services that you provide, conform to specified requirements, as they are likely to directly or indirectly contribute to safety. The ethical behavior of the individuals in your organization is critical to maintaining a mutually beneficial relationship.

**2.0 Requirements for Suppliers**

- 2.1 "Pass-thru" Distributor
  - 2.1.1 A pass-thru distributor refers to a supplier who procures parts and materials and resells these products to customers or other distributors.
  - 2.1.2 A pass-through distributor shall:
    - a. not affect the specification conformance of the product as imparted by the original manufacturer;
    - b. maintain and be able to provide the purchaser with unaltered copies of the original manufacturers' certifications and/or test reports that establish the traceability of specification conformance;
    - c. assure the product conformance has not been compromised;
    - d. be allowed to change quantities from the original shipment by sub-dividing into smaller quantities without affecting the product's specification conformance, environmental protection, shelf life or age control, traceability or original manufacturers' warranty.
- 2.2 General Requirements (does not apply to pass-thru distributors)
  - 2.2.1 The Supplier agrees to allow access to the supplier's plant facilities and records for inspection or audit by Mistras Services, its designated representative, and/or other parties authorized by Mistras Services.
  - 2.2.2 Mistras Services or Mistras Services' customer representative shall be afforded the right to verify, at the supplier's facility, that the supplier's products/services conform to specified requirements.
  - 2.2.3 The supplier must reference the applicable purchase order number on all certification and shipping documents.
  - 2.2.4 All materials and services subject to receipt inspection upon arrival to the applicable Mistras Services location.
  - 2.2.5 Records

The supplier is required to retain records that support the compliance certification for a minimum of 3 years or as identified on the purchase order.

**Supplier Quality Requirements**

## 2.2.6 Subcontracting

The use of subcontractors requires prior written approval from Mistras Services.

## 2.2.7 Reporting of Nonconformance

Any deviation or nonconformance experienced by the supplier affecting products or services provided shall be promptly reported to Mistras Services. Mistras Services must be notified of any condition that adversely impacts the laboratory's ability to maintain their scope of accreditation or basis for approval.

## 2.2.8 Change Notification

Mistras Services shall be notified of any changes in product/service, process, supplier or manufacturing location and, where this change creates a deviation in the product or service, obtain Mistras Services approval.

## 2.2.9 The supplier shall flow down specified requirements, regarding product or services ordered, through the supply chain, as applicable. This includes the applicable Mistras Services requirements defined on the purchase order or identified herein.

**3.0 Requirements for Materials**

## 3.1 Magnetic Particle Materials

Magnetic particle materials shall, as a minimum, meet the requirements of (as applicable):

- a. ASME B & PV Code, Sec. V;
- b. ASTM E 709 (E-138);
- c. ASTM E 1444;
- d. MIL-STD-271;
- e. MIL-STD-2132;
- f. NAVSEA 250-1500-1;
- g. SAE Aerospace Material Specifications:
  - i. AMS 3040 - Dry Visible Magnetic Particles
  - ii. AMS 2641 - Magnetic Particle Vehicle
  - iii. AMS 3042 - Wet Visible Magnetic Particles
  - iv. AMS 3044 - Wet Fluorescent Magnetic Particles
  - v. AMS 3046 - Wet Fluorescent Magnetic Particles, Aerosol packaged, Oil-based Particles
  - vi. AMS 3043 - Wet Visible Magnetic Particles, Aerosol packaged, Oil-based Particles

## 3.2 Liquid Penetrant Materials

Liquid penetrant materials shall, as a minimum, meet the requirements of (as applicable):

- a. ASME B & PV Code Sec V;
- b. AMS-2644;
- c. ASTM E1417;

**Supplier Quality Requirements**

- d. MIL-STD 2132;
- e. ASTM E165;
- f. MIL-STD-271

**3.3 Radiographic Film**

Radiographic Film shall be classified in accordance with ASTM E1815

**3.4 Material Test Reports**

3.4.1 Material test reports shall contain the specification(s), heat, lot and batch numbers. The report shall contain actual numerical values for the characteristic(s) tested.

3.4.2 Material test reports shall contain a statement attesting that product has no mercury contamination.

**3.5 Shelf Life and Temperature Sensitive Materials**

Seller shall identify all materials and articles that have definite characteristics of quality degradation with age or environment. Such items will be individually labeled with the expiration date. If environment is a factor, environmental limitations shall be so noted on the product. Items received by Mistras Services must indicate a minimum of 70% of the rated shelf life remaining, or the product will be returned to the seller.

**3.6 Material Safety Data Sheets (MSDS)**

Materials noted on this purchase order must be supplied with OSHA's hazard communication standard 29CFR1910-1200. Materials not compliant will be returned.

**4.0 Requirements for Calibration****4.1 Three Point Calibration**

All equipment that require calibration, shall have at least 3 reference points that are above, below and 'in the middle' of Instruments operating range depending on the instrument in use. The calibration data issued shall clearly contain as received or as found data as well as calibrated data.

**4.2 Calibration Interval**

Unless otherwise stated on the purchase order, drawing or reference document, the calibration interval shall be identified as no more than 1 year.

**4.3 Calibration Standards**

When tolerances are not otherwise defined; reference standards shall have a minimum accuracy 4 times greater than that of the measuring and test equipment being calibrated to ensure that the reference standards contribute no more than one-fourth of the allowable calibration tolerance. Where this 4:1 ratio cannot be maintained, the basis for selection of the standard in question shall be technically justified.

**4.4 Calibration Status**

The supplier shall identify the calibration status by affixing a label and/or tag directly to the measuring and test equipment, or companion case, or by some other means clearly evident to the user. The calibration status shall include the following information:

- a. supplier name;
- b. date of calibration;



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**Supplier Quality Requirements**

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- c. date due for next calibration;
  - d. limitations of use (if applicable).
- 4.5 Those instruments used to verify the performance of the magnetizing equipment shall meet the requirements of ASTM E1444.
- 4.6 Certificate of Calibration
- 4.6.1 Certificates of calibration for suppliers accredited to ISO 17025 by an ILAC/MRA Signatory, shall include the following:
- a. the name and address of the organization performing the calibration;
  - b. the part name, manufacturer, model number and serial number;
  - c. a statement on the certification indicating the calibration service was provided in accordance with suppliers ILAC/MRA accredited ISO/IEC 17025:2017 quality program;
  - d. as-found and as-left data as well as out-of-tolerance and repair notification;
  - e. date of calibration and expiration date;
  - f. specification(s) or procedure(s) calibrated in accordance with;
  - g. standards used and a statement describing their traceability to NIST or a recognized national standard);
  - h. any adjustments or repairs required;
  - i. the name and signature of the person responsible for the calibration;
  - j. actual numerical values and deviations for all tests performed;
  - k. the Mistras Services PO number.
- 4.6.2 The certificate of calibration, in accordance with ISO 17025 and/or ANSI/NCSL Z540-1 and/or MIL-STD-45662A shall include the following:
- a. the name and address of the organization performing the calibration;
  - b. the part name, manufacturer, model number and serial number;
  - c. condition of item “as received”;
  - d. date of calibration;
  - e. date current calibration expires;
  - f. specification(s) or procedure(s) calibrated in accordance with;
  - g. standards used and a statement describing their traceability;
  - h. any adjustments or repairs required;
  - i. the name and signature of the person responsible for the calibration;
  - j. actual numerical values and deviations for all tests performed;
  - k. the Mistras Services PO number.

**Supplier Quality Requirements****5.0 Requirements for Reference Standards**

- 5.1 Reference standards shall be manufactured in accordance with the drawings or other documents as referenced on the Mistras Services purchase order.
- 5.2 AWS IIW Ultrasonic Reference Blocks
- All Reference blocks manufactured to AWS standards shall meet the following requirements:
- the dimensional tolerance between all surfaces involved in referencing or calibrating shall be within  $\pm 0.005$  inch [0.13 mm] of detailed dimension;
  - the surface finish of all surfaces to which sound is applied or reflected from shall have a maximum of  $125\mu\text{in}$  [3.17  $\mu\text{m}$ ] rms;
  - all material shall be ASTM A36 or acoustically equivalent (or as stated on the purchase order);
  - all holes shall have a smooth internal finish and shall be drilled  $90^\circ$  to the material surface;
  - degree lines and identification markings shall be indented into the material surface so that permanent orientation can be maintained.
- 5.3 Step Wedge
- Unless otherwise identified on the purchase order, all step wedges intended for the purpose of ultrasonic thickness measurements shall be manufactured to a tolerance of  $\pm 0.002$  inch.
- 5.4 Certificate of Conformity
- All reference standard certifications must reflect the following information:
- reference standard part and serial number;
  - material alloy and/or temper (where applicable);
  - surface finish (when requested);
  - dimensional data (Actual and Nominal);
  - traceability to NIST;
  - signature of the individual certifying the data;
  - date of the certification.
- 5.5 Image Quality Indicators (IQI)
- Image Quality Indicators (also identified as penetrameters) shall be produced and certified to:
- T9074-AS-GIB-010/271
  - ASTM E1742 (Previously MIL-STD-453)
  - ASTM E1025

**6.0 Requirements for NDT Equipment**

- 6.1 MT Magnetizing Equipment (Yokes, Prods and Stationary Equipment)
- MT Magnetizing Equipment shall be capable of meeting the performance requirements of:
- ASME Section V, Article 7

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**Supplier Quality Requirements**

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- b. ASTM E1444
- c. NAVSEA T9074-AS-GIB-010/271

**6.2 Ultrasonic Testing Instruments**

Ultrasonic instruments' calibration verification shall be performed in accordance with the specifications identified on the purchase order. Where no specifications are identified, the supplier shall, as a minimum, meet the requirements of ASME Section V and ASTM E317 with an annual calibration interval.

**6.3 Electromagnetic Testing Instruments**

Electromagnetic instruments' calibration verification shall be performed in accordance with the specifications identified on the purchase order. Where no specifications are identified, the supplier shall, as a minimum, meet the requirements of ASME Sections V and XI with an annual calibration interval.

**6.4 Other Measuring and Test Equipment Requirements**

Equipment shall be capable of meeting the performance as defined on the purchase order documentation.