

ADVANCED MANUFACTURING



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DOC No: AM-18704-TDS-0011 Rev. No. 1.0 Page 1 of 4

TITLE: TECHNICAL DATA SHEET

Description: Date: 2026/01/28

Technical Data Sheet for the supply of: NDE (PT)

	Name	Signature	Date
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REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

1. SCOPE

1.1 This specification defines the requirements for performing Liquid Penetrant Testing (PT) on welds and surfaces of Class 3 components, ensuring compliance with ASME Section III, Division 1, Subsection ND and ASME Section V, Article 6

2. APPLICABLE CODES AND STANDARDS

- 2.1 All PT examinations shall be conducted in accordance with the following standards:
- 2.2 ASME Section III, ND-5300 – Non-Destructive Examination (NDE) requirements for Class 3 components.
- 2.3 ASME Section V, Article 6 – Liquid Penetrant Examination (PT) requirements.
- 2.4 ASTM E165/E165M – Standard Practice for Liquid Penetrant Testing.
- 2.5 ASNT SNT-TC-1A or ANSI/ASNT CP-189 – Personnel Qualification and Certification.

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DOC No:	AM-18704-TDS-0011	Rev. No. 1.0	Page	2	of	4
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TITLE:	TECHNICAL DATA SHEET
--------	-----------------------------

2.6 Doc No: AM-QAP4-QAR-0009 Rev 10.0 – Quality Assurance Requirements for NDE Services

2.7 And this TDS

3. EXAMINATION REQUIREMENTS

3.1 **Surface Preparation as per 2.3** (ASME Section V, Article 6 T-642)

3.2 Surfaces to be examined must be clean, dry, and free of contaminants such as oil, grease, dirt, paint, scale, or corrosion.

3.3 Cleaning methods such as solvent cleaning and wire brushing are allowed.

3.4 Any surface irregularities that may interfere with accurate testing shall be removed prior to examination.

4. PENETRANT MATERIALS

4.1 Type: Fluorescent (Type 1) or Visible (Type 2) penetrant as per ASME V, T-652.

4.2 Method: Solvent Removable (Method C), Water Washable (Method A), or Post-Emulsifiable (Method B/D), selected based on material compatibility and environmental conditions.

4.3 Sensitivity Level: Level 2 or higher for fluorescent penetrants, ensuring optimal defect detection.

4.4 Developer Type: Non-aqueous (for visible PT) or dry powder (for fluorescent PT) as per ASME Section V, Article 6 T-675.

5. APPLICATION PROCESS

5.1 Pre-cleaning: Ensure the surface is free from contaminants.

5.2 Application of Penetrant: Apply penetrant uniformly and allow for dwell time per procedure

5.3 Excess Penetrant Removal: Use an approved removal technique to avoid excessive wash-off.

5.4 Developer Application: Apply developer evenly and allow proper dwell as per approved procedure

5.5 Inspection: Conduct visual examination under appropriate lighting conditions:

ADVANCED MANUFACTURING



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DOC No:	AM-18704-TDS-0011	Rev. No. 1.0	Page	3	of	4
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TITLE:	TECHNICAL DATA SHEET
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5.6 Visible PT: 1076 lux white light. Fluorescent PT: UV-A light at 1000 $\mu\text{W}/\text{cm}^2$ with ambient light < 20 lux.

5.7 Post-Cleaning: Remove developer residues after evaluation to prevent contamination.

6. EXAMINATION COVERAGE

6.1 100% PT examination of full penetration welds in pressure-retaining components.

6.2 Additional PT for defect verification following repairs.

7. ACCEPTANCE CRITERIA

7.1 Evaluations shall be conducted per ASME Section III, NCD-5350

8. PERSONNEL QUALIFICATION

8.1 PT Technicians must be certified to ASNT SNT-TC-1A or ANSI/ASNT CP-189, Level II or III.

8.2 Level III personnel shall approve PT procedures

9. REPORTING AND DOCUMENTATION

9.1 PT Examination Report, including:

9.2 Component and weld identification.

9.3 PT method and materials used.

9.4 Penetrant dwell time and developer type.

9.5 Defect evaluation per ASME ND-5350.

9.6 Personnel Certification Records (ASNT Level II/III).

9.7 Calibration Records for PT equipment and lighting sources.

9.8 Corrective Action Reports for rejected components requiring rework.

10. SAFETY AND COMPLIANCE

10.1 All PT operations shall comply with relevant safety regulations, ensuring proper ventilation, handling, and disposal of penetrant chemicals.

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DOC No:	AM-18704-TDS-0011	Rev. No. 1.0	Page	4	of	4
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TITLE:	TECHNICAL DATA SHEET
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10.2 Environmental protection measures shall be followed, including disposal of penetrant materials per regulatory requirements.

11. DELIVERABLES

11.1 The PT provider shall submit:

11.2 Certified PT Examination Report detailing findings.

11.3 Indication records and defect evaluations for review.

11.4 ASNT Level II/III certification records of testing personnel.

11.5 Calibration certificates for PT equipment and measurement tools

12. QUALITY ASSURANCE REQUIREMENTS

12.1 All general and specific Quality Assurance requirements stated in the Purchase Order.

13 Handling of Components

All products and chemicals in contact with the material must meet the following requirements:

13.1. Total halogens (chlorine + fluorine + bromine) < 200 ppm

13.2 Total sulphur < 200 ppm

13.3. Other prohibited materials not allowed as a known constituent of the product: lead, zinc, copper, aluminium, cadmium, tin, mercury, antimony, bismuth, silver, cobalt, arsenic, rare earths, gallium, indium, ferric iron salts, low melting point alloys in general and their compounds.