



Standard Practice for Acoustic Emission Examination of Cast Iron Yankee and Steam Heated Paper Dryers¹

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1. Scope*

1.1 This practice provides guidelines for carrying out acoustic emission (AE) examinations of Yankee and Steam Heated Paper Dryers (SHPD) of the type to make tissue, paper, and paperboard products.

1.2 This practice requires pressurization to levels used during normal operation. The pressurization medium may be high temperature steam, air, or gas. The dryer is also subjected to significant stresses during the heating up and cooling down periods of operation. Acoustic Emission data may be collected during these time periods but this testing is beyond the scope of this document.

1.3 The AE measurements are used to detect, as well as, localize emission sources. Other methods of nondestructive testing (NDT) may be used to further evaluate the significance of acoustic emission sources.

1.4 *Units*—The values stated in either SI units or inch-pound units are to be regarded as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standards.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

A278/A278M Specification for Gray Iron Castings for

Pressure-Containing Parts for Temperatures Up to 650°F (350°C)

E543 Specification for Agencies Performing Nondestructive Testing

E569 Practice for Acoustic Emission Monitoring of Structures During Controlled Stimulation

E650 Guide for Mounting Piezoelectric Acoustic Emission Sensors

E976 Guide for Determining the Reproducibility of Acoustic Emission Sensor Response

E1316 Terminology for Nondestructive Examinations

E2374 Guide for Acoustic Emission System Performance Verification

2.2 ASNT Standards:³

SNT-TC-1A Recommended Practice for Nondestructive Testing Personnel

ANSI/ASNT CP-189 Standard for Qualification and Certification of Nondestructive Testing Personnel

3. Terminology

3.1 *Definitions*—See Terminology **E1316** for general terminology applicable to this practice.

4. Summary of Practice

4.1 Each mounted sensor, on the cast iron vessel, monitors while the vessel is stationary and pressurized to normal operating pressure. The vessel may be at ambient, or operating 120°C-230°C [250°F-450°F] temperature.

4.2 Each mounted AE sensor is connected to an acoustic emission signal processor. After a monitoring period (up to 10 minutes) and pre-examination sensor sensitivity checks, pressurization can begin.

4.3 Location

4.3.1 *Zone Location*—Each channel shall have the same system examination threshold. A simulated AE source generated anywhere on the vessel shall be detected by at least one sensor.

¹ This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.04 on Acoustic Emission Method.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlingate Ln., Columbus, OH 43228-0518, http://www.asnt.org.

*A Summary of Changes section appears at the end of this standard