

# Standard Test Methods for Accumulated Deposition in a Steam Generator Tube<sup>1</sup>

This standard is issued under the fixed designation D 3483; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 These test methods cover determination of the weight per unit area of waterside deposits on heat-transfer surfaces of steam generator tubes. Two test methods are given as follows:

|                                  |                     |
|----------------------------------|---------------------|
| Test Method A—Mechanical Removal | Sections<br>6 to 11 |
| Test Method B—Solvent Removal    | 12 to 18            |

1.2 Neither test method is normally applicable to fire-tube boilers.

1.3 A comparison of the results obtainable with the two test methods is shown in Fig. 1.

1.4 A scope section is provided in each test method. It is the responsibility of the analyst to determine the acceptability of these test methods for each situation.

1.5 *This standard does not purport to address 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

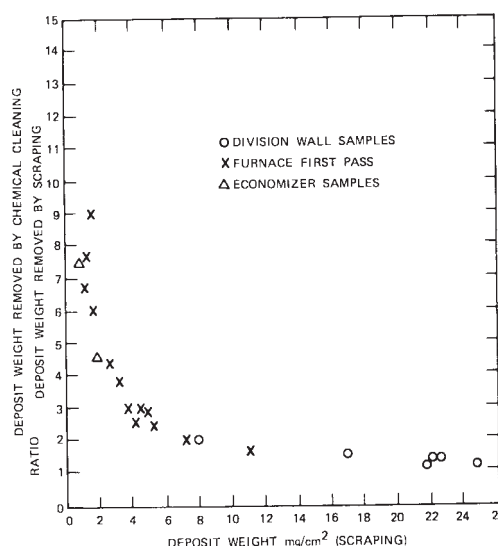
- 2.1 *ASTM Standards*:
  - D 887 Practices for Sampling Water-Formed Deposits<sup>2</sup>
  - D 1129 Terminology Relating to Water<sup>3</sup>
  - D 1193 Specification for Reagent Water<sup>3</sup>

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, refer to Terminology D 1129.

## 4. Significance and Use

4.1 The weight per unit area measurement is an indication of the relative cleanliness or dirtiness of the boiler; therefore, it is important that a tube sample be selected that represents near maximum deposition.



NOTE 1—Data for graph were received from Babcock-Hitachi. Methods used were not identical to those described herein.

FIG. 1 Comparison Deposit Weights Determined by Scraping and Acid Cleaning

## 5. Sampling

5.1 Select a tube section likely to have the heaviest deposit. Experience has shown that deposit accumulation is usually heaviest on tube surfaces that receive the highest heat transfer. Representative areas of especially high absorption are:

5.1.1 The center of the division wall at the top burner elevation in a boiler with a division panel wall where firing occurs on opposite sides.

5.1.2 The side wall near the top burner elevation, at about 1/3 furnace depth from the burner wall, in a boiler without a division wall.

5.1.3 Other high heat absorption areas in a more complex boiler design as delineated by the boiler manufacture.

5.2 Areas in the boiler where impaired circulation is suspected may also be sampled.

5.3 After selecting the boiler tube to be sampled, provide suitable identification, showing location in the boiler, the direction of flow, and the hot and shielded sides in accordance with Practices D 887.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee D-19 on Water and are the direct responsibility of Subcommittee D19.03 on Sampling of Water and Water-Formed Deposits, Surveillance of Water, and Flow Measurement of Water.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 11.01.