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## Standard Terminology Relating to Forensic Science<sup>1</sup>

This standard is issued under the fixed designation E 1732; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This is a compilation of terms and corresponding definitions used in the forensic sciences. Legal or scientific terms that are generally understood or defined adequately in other readily available sources may not be included.

1.2 A definition is a single sentence with additional information included in notes. It is reviewed every five years, and the year of last review or revision is appended.

1.3 Definitions identical to those published by another standards organization or ASTM committee are identified with the abbreviation of the name of the organization or the identifying document and ASTM committee; for example, ASME is the American Society of Mechanical Engineering.<sup>2</sup>

1.4 Definitions of terms specific to a particular field are identified with an abbreviation.<sup>3</sup>

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>4</sup>

E 135 [Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials](#)

E 456 [Terminology Relating to Quality and Statistics](#)

E 1187 [Terminology Relating to Conformity Assessment](#)

E 1301 [Guide for Proficiency Testing by Interlaboratory Comparisons](#)

~~E 1387 Test Method for Flammable or Combustible Liquid Residues in Extracts from Samples of Fire Debris By Gas Chromatography~~ [Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography](#)

#### 2.2 ISO Standards:

ISO Guide 2, General Terms and Their Definitions Relating to Standardizing Activities

ISO Guide 30, Terms and Definitions Used in Connection with Reference Materials

~~ISO Guide 17025, General Requirements for the Competence of Calibration and Testing Laboratories~~ [General Requirements for the Competence of Calibration and Testing Laboratories](#)

ISO Standard 3534-1:1993 (E/F) Statistics – Vocabulary and Symbols – Part 1: Probability and General Statistical Terms

ISO Standard 3534-2:1993 (E/F) Statistics – Vocabulary and Symbols – Part 2: Statistical Quality Control

ISO 9000:2000 (E) Standard Quality management systems—Fundamentals and vocabulary International Vocabulary of Basic and General Terms in Metrology (VIM), ISO

#### 2.3 Other Sources:

[The Fitness for Purpose of Analytical Methods English Edition, EURACHEM Working Group. IUPAC Compendium of Chemical Terminology second edition \(1997\).](#), International Union of Pure and Applied Chemistry Glossary of Terms and Definitions, Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG); reviewed 2005

### 3. Significance and Use

3.1 These terms have particular application to the forensic sciences. In addition, a hierarchy of sources of definitions were used in the development of this terminology. The hierarchy is as follows: *Websters New Collegiate 7th Dictionary*; technical dictionaries; and the *Compilation of ASTM Standard Definitions*.<sup>5</sup> The subcommittee developed a suitable definition after all of the sources in the hierarchy were found wanting.

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee E30 on Forensic Sciences and is the direct responsibility of Subcommittee E30.92 on Terminology. Current edition approved April 1, 2005; July 15, 2009. Published June 2005; October 2009. Originally approved in 1995. Last previous edition approved in 1996 as E 1732 - 96 <sup>ε1</sup> (2005).

<sup>2</sup> Any definition that is unsourced has been developed by ASTM Subcommittee E30.92.

<sup>3</sup> Abbreviations are as follows: CRIM = criminalistics, QD = questioned documents, ENGR = engineering, TOX = toxicology, PB = pathology/biology, ANTH = anthropology, and ODEN = odontology.

<sup>4</sup> 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.

<sup>5</sup> *Compilation of ASTM Standard Definitions*, 7th Ed., ASTM, Philadelphia, PA, 1990.

## 4. Terminology

### 4.1 Definitions:

**accelerant**, *n*—any material used to initiate or promote the spread of a fire. The most common accelerants are flammable or combustible liquids. Whether a substance is an accelerant depends not on its chemical structure but on its use (source: IAAI Forensic Science Committee, *Glossary of Terms Related to Chemical and Instrumental Analysis of Fire Debris*<sup>6</sup>) (use: Test Method E 1387) CRIM.

**accreditation**, *n*—procedure by which an authoritative body gives formal recognition that a body or person is competent to carry out specific tasks. (ASTM E 1187, ISO guide 2)

**accrediting body**, *n*—governmental or non-governmental body that conducts and administers a laboratory accreditation system, and grants accreditation. (E 1187, ISO Guide 2)

**associative evidence**, *n*—that evidence which tends to link a person, place, or thing with another person, place, or thing.

**calibration**, *n*—the set of operations that establishes, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system or values represented by a material, and the corresponding known values of measurement. (E 1187, ISO 17025)

**certification body**, *n*—a body that conducts certifications of conformity. (E 1187, ISO Guide 2)

**certification of conformity**, *n*—document issued under the rules of a certification system indicating that adequate confidence is provided that a duly identified product, process or service is in conformity with a specific standard or other normative document. (E1187, ISO Guide2)

**certified reference material (CRM)**, *n*—a reference material, accompanied by a certificate, one or more of whose property values are certified by a procedure that establishes traceability to an accurate realization of the unit in which the property values are expressed, and for which each certified value is accompanied by an uncertainty at a stated level of confidence. (E1301, ISO Guide30 without notes)—a reference material, accompanied by a certificate, one or more of whose property values are certified by a procedure that establishes traceability to an accurate realization of the unit in which the property values are expressed, and for which each certified value is accompanied by an uncertainty at a stated level of confidence

DISCUSSION—(1) CRMs are generally prepared in batches for which the property values are determined within stated uncertainty limits by measurement on samples representative of the whole batch.

(2) The certified properties of reference materials are sometimes conveniently and reliably realized when the material is incorporated into a specially fabricated device, e.g. a substance of known triple-point into a triple-point cell; a glass of known optical density into a transmission filter; spheres of uniform particle size mounted on a microscope slide. Such devices may also be considered as CRMs.

(3) All CRMs lie within the definition of measurement standards or etalons given in the International vocabulary of basic and general terms in metrology (VIM).

(4) Some RMs and CRMs have properties which, because they cannot be correlated with an established chemical structure or for other reasons, cannot be determined by exactly defined physical and chemical measurement methods. Such materials include certain biological materials such as vaccines to which an International unit has been assigned by the World Health Organization (E 135, ISO GUIDE 30:1992 (E/F), VIM)

**chain of custody**, *n*—procedures and documents that account for the possession of a sample by tracking its handling and storage from its point of collection to its final disposition.

**class**, *n*—a group, set, or kind marked by common attributes or a common attribute (source: *Webster's Unabridged Dictionary*, 1967) (use: Test Method E 1387) CRIM.

**class characteristic(s)**, *n*—the attribute(s) that establish membership in a class.

**classification**, *n*—the systematic arrangement of persons or objects into categories (groups or classes) based on shared traits or characteristics (source: Osterburg and Ward, *Criminal Investigation*, 1992, p. 835) (use: Test Method E 1387).

**comparison sample**, *n*—(fire debris) 1) a sample of material collected from a fire scene which is, to the best of the investigator's knowledge, identical in every respect to a sample suspected of containing ignitable substance, but which does not contain ignitable substance. 2) a sample of suspected ignitable substance submitted for the purpose of comparing with any ignitable substance separated from a debris sample. (see **control sample**)

**control**, *n*—material of established origin that is used to evaluate the performance of a test or comparison.

**criminalistics**, *n*—a branch of forensic science concerned with the examination and interpretation of physical evidence, for the purpose of aiding forensic investigation.

**exemplar**, *n*—a specimen of physical evidence of known origin (source: Osterburg and Ward, *Criminal Investigation*, 1992, p. 837).

**false positive**, *n*—a test result that states that a drug is present when, in fact, such a drug is not present in an amount greater than a threshold or designated cut-off concentration.

**known**, *n*—of established origin associated with the matter under investigation.

**limit of detection**, *n*—the lowest content that can be measured with reasonable statistical certainty. (Eurachem-AOAC-PVMC)

<sup>6</sup> Available from International Association of Arson Investigators, 5428 Del Maria Way, 201, P. O. Box 91119, Louisville, KY 40291.