



# Standard Terminology for Waste and Waste Management<sup>1</sup>

This standard is issued under the fixed designation D 5681; 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 terminology contains standard definitions of terms used in the general area of waste and waste management. It is intended to promote understanding by providing precise technical definitions of terms used in the standards developed by Committee D-34 and its subcommittees.

1.2 Terms used only within an individual standard, and having a meaning unique to that standard, may be defined or explained in the terminology section of that individual standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods<sup>2</sup>

E 456 Terminology Relating to Quality and Statistics<sup>2</sup>

## 3. Terminology

**accepts, *n***—the output stream from a materials separation device that contains the highest concentration (purity) of the components that the device is designed to separate.

**adiabatic calorimeter, *n***—a calorimeter that has a jacket temperature adjusted to follow the calorimeter temperature as closely as possible so as to maintain zero thermal head.

**analysis sample, *n***—the final subsample prepared from the air-dried laboratory sample but reduced in particle size by passing through a mill with a 0.5 mm (0.02-in.) size or smaller final screen.

**as-determined basis, *n***—analytical data obtained from an analysis sample after conditioning and preparation which represent the numerical values obtained at the particular moisture and ash level in the sample at the time of analysis.

**as-received basis, *n***—test data calculated to the condition of the sample as it arrived in the laboratory and before any laboratory processing or conditioning.

**ash *n***—the residue remaining after ignition of a substance as determined by definite prescribed methods.

DISCUSSION—Ash may not be identical in composition or quantity

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D-34 on Waste Management and is the direct responsibility of Subcommittee D34.94 on Terminology.

Current edition approved June 10, 1998. Published December 1998. Originally published as D 5681-95. Last previous edition D 5681-98.

<sup>2</sup> Annual Book of ASTM Standards, Vol 14.02.

with the inorganic substances present in the analysis sample before ignition.

**calorimeter jacket, *n***—the insulating medium surrounding a calorimeter.

**calorific value, *n***—the heat produced by combustion of a unit quantity of a specimen under specified conditions.

**characteristic product size, *n***—the screen size corresponding to 63.2 % cumulative passing by mass.

**combustibles, *n***—the portion of a sample which is consumed by oxidation upon ignition and exclusive of the moisture present in the sample.

**corrected temperature rise, *n***—the increase in temperature of the calorimeter caused by the process that occurs inside the bomb; the observed temperature change corrected for various effects.

**dispose, *v***—to discard, abandon, or manage as waste.

**dry ash-free basis, *n***—test data calculated to a theoretical base of no moisture or ash associated with the sample.

**dry basis, *n***—test data calculated to a theoretical base of no moisture associated with the sample.

**duplicate analysis, *n***—paired determinations on the same sample performed by one analyst at essentially the same time.

**energy equivalent, *n***—the energy required to raise the temperature of a calorimeter system 1°C (or 1°F) per gram of sample.

**fill material, *n***—material used in the construction of a structural fill.

**fixed carbon, *n***—the ash-free carbonous material that remains after volatile matter is driven off during the proximate analysis of a dry sample.

**flint glass cullet, *n***—a particulate glass material that contains no more than 0.1 mass percent Fe<sub>2</sub>O<sub>3</sub>, or 0.0015 mass percent Cr<sub>2</sub>O<sub>3</sub>, as determined by chemical analysis.

**fluid temperature, FT, *n***—in ash fusion determinations, the temperature at which a fused mass has spread out in a nearly flat layer with maximum height of 1.6 mm (1/16 in.).

**gross calorific value, (gross heat of combustion), Q<sub>v</sub> (gross), *n***—the heat produced by combustion of unit quantity of a solid or liquid specimen when burned at constant volume in an oxygen bomb calorimeter under specified conditions with the resulting water condensed to a liquid.

**gross sample *n***—a sample representing one lot, normally composed of a number of increments, on which neither

reduction nor division has been preformed.

**heat capacity, *n***—the quantity of heat required to raise a system one degree in temperature either at constant volume or constant pressure.

**heat capacity (energy equivalent, or water equivalent), *n***—the energy required to raise the temperature of a calorimeter one arbitrary unit; the quantity that when multiplied by the corrected temperature rise, then adjusted for extraneous heat effects and divided by the mass of the sample, gives the gross calorific value.

**hemispherical temperature, HT, *n***—the temperature at which a pyrometric cone has fused down to a hemispherical lump where the height is one half the width of the base.

**higher heating value, HHV, *n***—a synonym for gross calorific value.

**incineration, *n***—controlled burning of waste products or other combustible material.

**incinerator, *n***—a device constructed for the purpose of containing a material for thermal oxidation.

**increment, *n***—a portion of a lot as collected by one individual manual or mechanical sampling operation and normally combined with other increments from the lot to make a gross sample.

**initial deformation temperature, IT, *n***—the temperature at which the first rounding of the apex of a pyrometric cone occurs; shrinking or warping of the cone is ignored if the tip remains sharp.

**isoperibol calorimeter, *n***—a calorimeter that has a jacket of uniform and constant temperature.

**laboratory sample, *n***—a representative portion of a gross sample received by a laboratory for analysis.

**lot, *n***—a large designated quantity of a material which can be represented by a properly selected gross sample.

**lower heating value, LHV, *n***—a synonym for net calorific value.

**metallic yield, *n***—the mass percentage of a ferrous waste stream that is generally recoverable as metal or alloy.

**microbiological aerosol, *n***—an airborne particle partially or exclusively composed of microorganisms including bacteria and fungi.

**milling, *n***—in waste derived fuels, reduction in particle size by shearing, cutting, grinding to a suitable particle size for analysis and characterization.

**municipal ferrous scrap, *n***—ferrous waste that is collected from industrial, commercial, or household sources and destined for disposal facilities.

**net calorific value (net heat of combustion at constant pressure),  $Q_p$ , *n***—the heat produced by combustion of unit quantity of a solid or liquid specimen when burned at a constant pressure of 0.1 MPa (1 atm), under conditions such that all the water in the products remains in the form of vapor.

**operating site, *n***—in waste management, a location or facility where waste is treated, stored, or disposed as part of an on-going operation.

**optimum concentration range, *n***—in analysis of trace metals, a range, defined by limits expressed in concentration, below which scale expansion must be used and above which curve

correction should be considered.

**polynary separator, *n***—a device that separates a single input feed stream into three or more output product streams.

**proximate analysis, *n***—the determination, by prescribed methods, of moisture, volatile matter, fixed carbon (by difference), and ash.

**DISCUSSION**—Unless otherwise specified, the term *proximate analysis* does not include determinations of chemical elements or any determinations other than those named.

**recovery, percent, *n***—the amount of a material actually recovered by an assay using a prescribed procedure, or obtained from a process, as a percentage of the as-received material.

**respiration rate, *n***—in an microbial aqueous system, the quantitative consumption of oxygen, generally expressed as mg O<sub>2</sub>/L/h.

**retainer basket, *n***—in sampling, a one-way gate on a sampling device that minimizes loss of sample when retrieving a sampler; also called a core catcher.

**significant loss, *n***—any loss that introduces a bias in final results and that is of appreciable importance to concerned parties.

**softening temperature, ST, *n***—the temperature at which a pyrometric cone has fused down to a spherical lump in which the height is equal to the width at the base.

**sorting sample, *n***—in waste management, a 100 to 150 kg (200 to 300 lb) portion of a vehicle load of municipal solid waste that is deemed to represent the characteristics of that load.

**source-separated steel cans, *n***—post-consumer products that are generated as separated can fractions by commercial or household sources.

(a) *all other steel cans, n*—steel containers for food products or liquids, with a maximum capacity of 5 gal, that are not included in one of the other definitions.

(b) *bi-metal beverage cans, n*—steel cans with nonferrous metal convenience ends (normally made of aluminum), originally containing beer or carbonated beverages, but not including other contaminants.

(c) *bi-metal food cans, n*—steel cans with nonferrous metal (usually aluminum) convenience ends, originally containing snack foods, but not including other contaminants.

**static calorimeter, *n***—a calorimeter without a thermostated jacket.

**subsample, *n***—a portion of a material that is collected by subdividing or trimming of a sample.

**total combustibles, *n***—combustible materials that include paints, lacquers, coatings, plastics, and so forth, associated with an original metal product, as well as combustible materials which become associated with the product after it is manufactured.

**ultimate analysis, *n***—in analysis of combustible materials, the determination of the percentages of carbon, hydrogen, sulfur, nitrogen, chlorine, ash, and oxygen in a moisture-free sample; the percentage of oxygen is usually determined by difference.

**unprocessed municipal solid waste, *n***—municipal solid

waste in its as-discarded form and that has not been size-reduced, separated, or otherwise processed.

**volatile matter, *n***—those products, exclusive of moisture, given off by a material as gas or vapor as determined by definite prescribed methods.

**waste, *n***—a material that is unwanted at its present location; that is no longer useful for its original purpose; that has been disposed, or any combination thereof.

**waste composition, *n***—of a solid waste, characterization of multi-constituent waste by a breakdown into specified waste components on the basis of mass or volume fraction or percentage. (*Syn.* **solid waste composition.**)

#### 4. Significance and Use

4.1 This terminology defines terms and specialized meanings of terms in the subject areas of waste and management of waste.

4.2 This terminology is not intended for subjects other than waste and waste management. For terms applicable to other subject areas, the appropriate terminology standard(s) should be consulted. See the current edition of the Compilation of ASTM Standard Definitions<sup>3</sup> and the list of terminology standards cited therein.

4.3 Standards relating to subcategories of waste or waste management may use terms defined more narrowly than those included here. The more specialized terminology standards relating to the applicable specific subcategory, or terms defined within individual standards, or both, should be consulted for the exact meaning intended within a given standard.

4.4 The Thesaurus on Resource Recovery Terminology (Special Technical Publication (STP) 832)<sup>4</sup> contains many terms and may be useful for those not listed in terminology standards. However, a definition in a standard terminology shall be considered governing when the term is used in the sense or meaning defined therein.

4.5 Statistical terms are not defined in this terminology to the extent that the terms, when used regarding waste and management of waste, have the same meanings as in Practice E 177 or Terminology E 456.

4.6 Regulatory terms are often developed by regulatory agencies for special regulatory purposes and may have technical content or meaning different from terms defined herein. When a regulatory term exists that differs in meaning from a term given here, the regulatory term should be considered to take precedence for regulatory matters.

---

<sup>3</sup> *Compilation of ASTM Standard Definitions*, ASTM, 8th edition, 1994.

---

<sup>4</sup> *Thesaurus on Resource Recovery Terminology*, ASTM STP 832, ASTM, 1983.

*The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 100 Barr Harbor Drive, West Conshohocken, PA 19428.*