



## Designation: **D1129–13 (Reapproved 2020) D1129 – 13 (Reapproved 2020)<sup>ε1</sup>**

### Standard Terminology Relating to Water<sup>1</sup>

This standard is issued under the fixed designation D1129; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

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<sup>ε1</sup> NOTE—In accordance with D19 bylaws, approved items were added editorially in February 2023.

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**absolute filter rating**,  $n$ —particle size above which 100 % of particles that are trapped on or within the filter medium. **D6161**

**absorbance**,  $n$ —logarithm to the base 10 of the reciprocal of the transmittance ( $T$ ).  $A = \log_{10}(1/T) = -\log_{10} T$ . **D4691**

**absorption**,  $n$ —release for desorption holding of a substance within a solid by cohesive or capillary forces. **D6161**

**absorptivity**,  $n$ —absorbance ( $A$ ) divided by the product of the sample path length ( $b$ ) and the concentration ( $c$ ).  $a = A/bc$ . **D4691**

**accelerated erosion**,  $n$ —erosion at a rate greater than geologic or natural erosion. **D4410**

DISCUSSION—

Accelerated erosion is usually associated with anthropogenic activities and usually reduces plant cover and increases runoff.

**acceptable holding time**,  $n$ —any period of time less than or equal to the maximum holding time. **D4841**

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**acceptable verification ratio (AVR)**—ratio of the difference between measured value of the verification sample and the known value added to the verification sample to the square root of the sum of the squares of their associated combined standard uncertainties. See Eq. 8 in 16.2.13. **D7282**

**accretion**,  $n$ —process of sediment accumulation. **D4410**

**accumulator**,  $n$ —pulsation dampener installed on the suction and/or discharge lines of pumps, generally plunger type, to minimize pressure surges and provide uniformity of flow. **D6161**

**accuracy**,  $n$ —a measure of the degree of conformity of a value generated by a specific procedure to the assumed or accepted true value, and includes both precision and bias.

**accuracy**,  $n$ —closeness of agreement between an observed value and an accepted reference value. Where an accepted reference

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<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.02 on Quality Systems, Specification, and Statistics.

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value is not available, accuracy is a description of a measure of the degree of conformity of a value generated by a specific procedure to the assumed or accepted true value, including both precision and bias. **D6161**

**accuracy, *n***—measure of the degree of conformity of a single test result generated by a specific procedure to the assumed or accepted true value, and includes both precision and bias. **D2777**

**accuracy, *n***—proportion of the observed count to the true density of a sample. **D5392**

**accuracy, *n***—refers to how close a measurement is to the true or actual value. (See Terminology D1129.) **D5906**

**acid error, *n***—in very acid solutions, the activity of water is reduced (less than unity) causing a non-Nernstian response in glass electrodes. A positive error in the pH reading results. **D4127**

**acidity, *n***—the quantitative capacity of aqueous media to react with hydroxyl ions.

**acidity, *n***—quantitative capacity of aqueous media to react with hydroxyl ions. **D6161**

**acidity, free mineral, *n***—the quantitative capacity of aqueous media to react with hydroxyl ions to pH 4.3.

**acidity, theoretical free mineral, *n***—the free mineral acidity that would result from the conversion of the anions of strong acids in solution to their respective free acids.

**acoustic path, *n***—straight line between the centers of two acoustic transducers. **D5389**

**acoustic path length, *n***—face-to-face distance between transducers on an acoustic path. **D5389**

**acoustic transducer, *n***—device that is used to generate acoustic signals when driven by an electric voltage, and conversely, a device that is used to generate an electric voltage when excited by an acoustic signal. **D5389**

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**acoustic travel time, *n***—time required for an acoustic signal to propagate along an acoustic path, either upstream or downstream. **D5389**

**action level, *n***—concentration of the analyte of concern at which some further action is required or suggested. **D6850**

**activated carbon, *n***—granulated or powdered activated carbon used to remove tastes, odor, chlorine, chloramines, and some organics from water. A family of carbonaceous substances manufactured by processes that develop adsorptive properties. **D6161**

**activity, *n***—thermodynamically effective concentration of a free ion in solution. In dilute solutions, ionic activity and concentration are practically identical, but in solutions of high ionic strength, or in the presence of complexing agents, activity may differ significantly from concentration. Ionic activity, not concentration, determines both the rate and the extent of chemical reactions. **D4127**

**activity coefficient, *n***—factor,  $\gamma$ , that relates activity,  $A$ , to the concentration,  $C$  of a species in solution:

$$A = \gamma C$$

The activity coefficient is dependent on the ionic strength of the solution. Ions of similar size and charge have similar activity coefficients. **D4127**

**activity standard, *n***—standardizing solution whose value is reported in terms of ionic activity. If the electrode is calibrated using activity standards, the activity of the free, unbound ion in the sample is determined. **D4127**

- adenosine triphosphate**—see **ATP**. **D6161**
- adsorption**, *n*—holding of a substance onto the surface of a solid by chemical surface forces, without forming new chemical bonds. **D6161**
- aerobic bacteria**, *n*—bacteria that require oxygen for growth. See **bacteria, aerobes**. **D6161**
- aerosol**, *n*—any solid or liquid particles, with a nominal size range from 10 nm to 100 μm, suspended in a gas (usually air). **D5544**
- agglomeration or flocculation**, *n*—coalescence of dispersed suspended matter into large flocs or particles that settle rapidly. **D4410**
- aggradation**, *n*—geologic process by which stream beds, flood plains, and the bottoms of other water bodies are raised in elevation by the deposition of material eroded and transported by water from other areas. **D4410**
- aggregate**, *n*—granular material such as sand, gravel, or crushed stone. **D6161**
- air header**, *n*—pipe running within a cassette that distributes the air to the individual modules or aerators. **D6161**
- air scour**, *v*—distributing air over the entire area at the bottom of a filter media flowing upward or immersed membrane to improve the effectiveness of filtration or backwashing or to permit the use of lower backwash water flow rate, or both. **D6161**
- air stripping**, *v*—removal of volatile substances from a water solution by passing a gas through the solution. **D6161**
- algae**, *n*—major group of lower plants, generally aquatic, photosynthetic of extremely varied morphology and physiology, monocellular plants with chlorophyll often masked by a brown or red pigment. **D6161**
- <https://standards.iteh.ai/catalog/standards/astm/827526b5-e47b-42a6-a866-70eb40b15c46/astm-d1129-132020e1>
- alkaline error**, *n*—in alkaline solutions, where hydrogen ion activity becomes very small, some glass electrodes respond to other cations, such as sodium. A negative error in the pH reading results. By changing the composition of the glass, the affinity of the glass for sodium ion can be reduced. Such electrodes are known as lithium glass, high-pH, or full-range electrodes. **D4127**
- alkalinity**, *n*—the quantitative capacity of aqueous media to react with hydrogen ions.
- alkalinity**, *n*—quantitative capacity of aqueous media to react with hydrogen ions. “M” alkalinity is that which will react with acid as the pH of the sample is reduced to the methylorange endpoint of about 4.5. “P” alkalinity is that which reacts with acid as the pH of the sample is reduced to the phenolphthalein end point of 8.3. “M” is the total alkalinity which is the sum of hydroxide, carbonate, and bicarbonate contents, “P” includes all the hydroxyl and half the carbonate content. **D6161**
- alkyl benzene sulfonate (ABS)**—generic name applied to the neutralized product resulting from the sulfonation of a branched-chain alkylated benzene.<sup>2</sup> See also Terminology D459. **D2330**
- alluvial channel**—see **alluvial stream**. **D4410**
- alluvial deposit**—sediment deposited by the action of moving water. **D4410**

<sup>2</sup> For a more complete discussion of terms relating to synthetic detergents and their significance, refer to McKinney, R. E., “Syndets and Waste Disposal,” *Sewage and Industrial Wastes*, Vol 29, Part 6, June 1957, pp. 654–666.

**alluvial fans**—sediment deposited in the shape of a segment of a cone formed because of a sudden flattening of a stream gradient especially at debouchures of tributaries on main stream flood plains. **D4410**

**alluvial stream, n**—stream whose boundary is composed of appreciable quantities of the sediments transported by the flow and which generally changes its bed forms as the rate of flow changes. **D4410**

**alleviation, n**—process of accumulating sediment deposits at places where the flow is retarded. **D4410**

**alluvium, n**—general term for all fluvial deposits resulting directly or indirectly from the sediment transport of (modern) streams, thus including the sediments laid down in riverbeds, flood plains, lakes, fans, and estuaries. **D4410**

**alpha (α), n**—velocity-head coefficient that adjusts the velocity head computed on basis of the mean velocity to the true velocity head. **D5129**

**alpha (α), n**—velocity-head coefficient that adjusts the velocity head computed on basis of the mean velocity to the true velocity head. It is assumed equal to 1.0 if the cross section is not subdivided. **D5243**

**alpha (α), n**—velocity-head coefficient that represents the ratio of the true velocity head to the velocity head computed on the basis of the mean velocity. It is assumed equal to 1.0 if the cross section is not subdivided. For subdivided sections, α is computed as follows: **D5130**

$$\alpha = \frac{\sum \left( \frac{k_i^3}{A_i^2} \right)}{\frac{K_T^3}{A_T^2}}$$

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where:

$K$  and  $A$  = the conveyance and area of the subsection indicated by the subscript  $i$ , and  
 $K_T$  and  $A_T$  = the conveyance and area of the entire cross section.

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**alpha (α), n**—dimensionless velocity-head coefficient that represents the ratio of the true velocity head to the velocity head computed on the basis of the mean velocity. It is assumed equal to unity if the cross section is not subdivided. For subdivided sections, α is computed as follows: **D5388**

$$\alpha = \frac{\sum \left( \frac{k_i^3}{a_i^2} \right)}{\frac{K_T^3}{A_T^2}}$$

where:

$k$  and  $a$  = the conveyance and area of the subsection indicated by the subscript  $i$ , and  
 $K_T$  and  $A_T$  = the conveyance and area of the total cross section indicated by the subscript  $T$ .

**alpha particle (α), n**—particle consisting of two protons and two neutrons emitted from the nucleus of an atom during radioactive decay. **D7316**

**alpha particle detection efficiency, n**—in the measurement of radioactivity, that fraction of alpha particles emitted by a source which are identified as alpha particles by the counter. **D7283**

**alpha-to-beta spillover, n**—in the measurement of radioactivity, that fraction of alpha particles emitted by a source which are misclassified as beta particles. **D7283**

<b>alum</b> , <i>n</i> —aluminum sulfate, $AL_2(SO_4)_3XH_2O$ ( $X = 14-18$ ), a coagulant.	<b>D6161</b>
<b>ambient temperature</b> , <i>n</i> —temperature of the surroundings, generally assumed to be 20–25°C.	<b>D6161</b>
<b>American Water Works Association</b> —see AWWA.	<b>D6161</b>
<b>American Water Works Association Research Foundation</b> —see AWWARF.	<b>D6161</b>
<b>amorphous</b> , <i>adj</i> —noncrystalline, devoid of regular cohesive structure.	<b>D6161</b>
<b>amperometric systems</b> , <i>n</i> —those instrumental probes that involve the generation of an electrical current from which the final measurement is derived.	<b>D888</b>
<b>amphoteric</b> , <i>adv</i> —capable of acting as an acid or a base.	<b>D6161</b>
<b>anaerobic bacteria</b> , <i>n</i> —bacteria that do not use oxygen. Oxygen is toxic to them. See <b>bacteria</b> , <b>anaerobes</b> .	<b>D6161</b>
<b>analate addition</b> , <i>n</i> —variation of the known addition measurement technique in which the sample (analate) is added to a reagent containing the ion being measured. The electrode is placed in the reagent, and the sample concentration is calculated from the change in electrode potential after the addition of the sample.	<b>D4127</b>
<b>analate subtraction</b> , <i>n</i> —variation of the known subtraction measurement technique in which the sample (analate) is added to a reagent containing an ion that reacts with the species being determined. The electrode is placed in the reagent, the change in electrode potential is observed when the sample is added, and the sample concentration calculated.	<b>D4127</b>
<b>analyte</b> , <i>n</i> —a possible sample component whose presence and concentration is of interest.	
<a href="https://standards.iteh.ai/catalog/standards/astm/827526b5-e47b-42a6-a866-70eb40b15c46/astm-d1129-132020e1">https://standards.iteh.ai/catalog/standards/astm/827526b5-e47b-42a6-a866-70eb40b15c46/astm-d1129-132020e1</a> <b>analyte</b> , <i>n</i> —chemical or constituent being determined.	<b>D5463</b>
<b>analytical column</b> , <i>n</i> —chromatography column that contains the stationary phase for separation by ion exchange. The column is packed with anion exchange resin that separates the analytes of interest based on their retention characteristics before detection.	<b>D6994</b>
<b>analytical column</b> , <i>n</i> —column used to separate the anions of interest.	<b>D5996</b>
<b>analytical column</b> , <i>n</i> —ion exchange column used to separate the ions of interest according to their retention characteristics prior to detection.	<b>D6581</b>
<b>analytical column set</b> , <i>n</i> —combination of one or more guard columns, followed by one or more analytical columns used to separate the ions of interest. All of the columns in series then contribute to the overall capacity and resolution of the analytical column set.	<b>D6581</b>
<b>analytical column set</b> , <i>n</i> —combination of one or more guard columns followed by one or more analytical columns.	<b>D5996</b>
<b>analytical columns</b> , <i>n</i> —combination of one or more guard columns followed by one or more separator columns used to separate the ions of interest. It should be remembered that all of the columns in series contribute to the overall capacity of the analytical column set.	<b>D4327</b>

**analytical columns**, *n*—combination of one or more guard columns followed by one or more separator columns used to separate the ions of interest. It should be remembered that all of the columns in series contribute to the overall capacity of the analytical column set. **D5542**

**analyze**, *v*—to determine the relationship of parts or the value of a particular parameter. **D5851**

**analyzer**—see **monitoring system**. **D3864**

**angstrom (Å)**, *n*—unit of length equaling  $10^{-10}$  metres,  $10^{-4}$  umetres,  $10^{-8}$  centimetres, and  $3.937 \times 10^{-9}$  in. The symbol is Å, A, or A.U. **D6161**

**animal/vegetable-derived oils**, *n*—mixture made of mono-, di-, and triglyceride esters of fatty acids and other substances of animal or vegetable origin, or both. **D3326**

**anion**, *n*—negatively charged ion. **D6161**

**anion exchange chromatography**, *n*—type of liquid chromatography in which anionic analytes are separated by differential retention on an anion exchange resin and detected by an appropriate detection mechanism. **D6994**

**anion-exchange material**, *n*—a material capable of the reversible exchange of negatively charged ions.

**anion-exchange material**, *n*—ion-exchange material capable of the reversible exchange of negatively charged ions. **D2187**

**anion-exchange material**, *n*—ion-exchange material capable of the reversible exchange of negatively charged ions. **D4548**

**anion exchange material**, *n*—material capable of the reversible exchange of negatively charged ions. **D6161**

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**anion exchange membrane**, *n*—membrane containing fixed cationic charges and mobile anions that can be exchanged with other anions present in an external fluid in contact with the membrane. **D6161**

**anion suppressor device**, *n*—device that is placed between the analytical columns and the detector. Its purpose is to inhibit detector response to the ionic constituents in the eluant so as to lower the detector background and at the same time enhance detector response to the ions of interest. **D5996**

**anion trap column**, *n*—high-capacity, low-pressure anion exchange column used to remove reagent impurities from the eluent stream. The anion trap column is placed between the eluent reservoir and the gradient pump. **D6994**

**anionic polyelectrolyte**, *n*—usually acrylamide or acrylamide and acrylic copolymers, negatively charged, used for coagulation/flocculation. See **polyelectrolyte**. **D6161**

**anisotropic**, *adv*—having different optical properties in different optical planes. These planes are referred to as the alpha, beta, and omega axes. **D1245**

**anisotropic membrane**, *n*—nonuniform structure in cross section; typically the support substructure has pores much larger than the barrier layer. See **asymmetric membranes**. **D6161**

**anode**, *n*—positive electrode. **D6161**

- anthracite**, *n*—granular hard coal used as a filtration media, commonly used as the coarser layer in dual and multimedia filters. **D6161**
- antidunes**, *n*—bed forms that occur at a velocity higher than that velocity that forms dunes and plane beds. Antidunes commonly move upstream, and are accompanied by, and in phase with, waves on the water surface. **D4410**
- antifoulant**, *n*—see **antiscalant**. **D6161**
- antiscalant**, *n*—compound added to a water that inhibits the precipitation of sparingly soluble inorganic salts. **D6161**
- anti-telescoping device**, *n*—plastic or metal device attached to the ends of a spiral wound cartridge to prevent movement of the cartridge leaves in the feed flow direction as a result of high feed flows. **D6161**
- approach angle**, *n*—angle between the velocity vector of the approaching flow and the centerline of the nozzle. **D6326**
- approaching flow**, *n*—flow immediately upstream of a nozzle's entrance. **D6326**
- aquatic free cyanide**, *n*—sum of the free cyanide (HCN and CN<sup>-</sup>) and cyanide bound in the metal-cyanide complexes that are easily dissociated into free cyanide under the test conditions described in this method. **D7237**
- aquifer**, *n*—geologic formation containing water, usually able to yield appreciable water. **D6146**
- aquifer**, *n*—water-bearing geological formation that provides a ground water reservoir. **D6161**
- aramid**, *n*—fully aromatic polyamide. **D6161**
- area (A)**, *n*—area of a cross section, parts of a cross section, or parts of bridges below the water surface. Subscripts indicate specific areas as follows: **D5129**
- $A_i$  = area of subsection *I*,  
 $A_j$  = area of piers or piles that is submerged,  
 $A_T$  = area of total cross-section 1 (see Fig. 1 of D5129), and  
 $A_3$  = gross area of Section 3 of D5129.
- armor**, *v*—formation of a resistant layer of relatively large particles by erosion of the finer particles. **D4410**
- array**, *n*—arrangement of devices connected to common feed, product, and reject headers; that is, a 2:1 array. **D6161**
- assess**, *v*—to determine importance of data. **D5851**
- assess**, *v*—to determine the significance, value, and importance of the data collected and recorded. **D6145**
- assimilable organic carbon**, *n*—see **AOC**. **D6161**
- asymmetric membrane**, *n*—membrane that has a change in pore structure. See **anisotropic membranes**. **D6161**
- asymmetry potential**, *n*—potential across a glass pH electrode membrane when the inside and outside of the membrane are in

contact with solutions of identical pH. This term has also been used to define the observed potential differences between identical electrode pairs placed in identical solutions. **D4127**

**Atmospheric Pressure Chemical Ionization (APCI)**, *n*—an ionization method used in mass spectrometry which uses a gas-phase ion-molecule reaction at atmospheric pressure coupled with high-performance liquid chromatography (HPLC).

DISCUSSION—

APCI is a soft ionization method similar to chemical ionization where primary ions are produced on a solvent spray. The main usage of APCI is for mid-polar and relatively less polar thermally stable compounds with molecular weight less than 1500 Da. **D8456**

**atomic absorption**, *n*—absorption of electromagnetic radiation by an atom resulting in the elevation of electrons from their ground states to excited states. Atomic absorption spectrophotometry involves the measurement of light absorbed by atoms of interest as a function of the concentration of those atoms in a particular solution. **D4691**

**automatic programmable sampler**, *n*—portable device designed to collect sequential, discrete water samples representative of the water mixture moving in the river in the vicinity of the sampler at a single point in a cross section. Depending on the make and model of the device, water samples can be collected at equal or variable time intervals. **D5613**

**autopsy**, *n*—dissection of a membrane module or element to investigate causes of unsatisfactory performance. **D6161**

**available cyanide**—inorganic cyanides that are free (HCN and CN<sup>-</sup>) and metal-cyanide complexes that are easily dissociated into free cyanide ions. Available cyanide does not include the less toxic strong metal-cyanide complexes, cyanides that are not “amenable to chlorination.” **D6888**

**availability**, *n*—on-stream time or rated operating capacity of a water treatment system. **D6161**

**a-value**, *n*—membrane water permeability coefficient. The coefficient is defined as the amount of water produced per unit area of membrane per unit of net driving pressure (NDP); units of measurement are m<sup>3</sup>/h/m<sup>2</sup>/kPa. **D6161**

**avulsion**, *n*—sudden, natural change of a stream channel, so that the water flows elsewhere than in its previous course. **D4410**

**B-value—salt diffusion coefficient**, *n*—defined as the amount of salt transferred per unit area of membrane per unit of concentration difference across the membrane. A unit of measurement is m/h or more specifically, m<sup>3</sup>/m<sup>2</sup>/h. **D6161**

**back pressure regulator**—a device designed to maintain a constant pressure upstream of itself (variable or fixed back pressure regulators are available) to maintain constant flow in analyzers in continual sampling. **D3370**

**back titration**, *n*—see **titration**. **D4127**

**backflush**, *n*—temporary reversal of the permeate or retentate flow. **D6161**

**background sample**, *n*—sample taken from a location on or proximate to the site of interest. This sample is taken to document baseline or historical information. **D5612**

**background subtraction count (BSC)**—a source count used to determine the background to be subtracted from the sample test source count. **D7282**

**backpulse**, *n*—pumping treated water with or without added chemicals in the reversed direction from the lumen to the feed side of the membrane (inside out). **D6161**



**backwash**, *n*—reversing the flow of water with/without air either across or through a medium or membrane. Designed to remove the collected foreign material from the bed or membranes. **D6161**

**bacteria**, *n*—any of a class of microscopic single-celled organisms reproducing by fission or by spores. Characterized by round, rod-like, spiral, or filamentous bodies, often aggregated into colonies or mobile by means of flagella. Widely dispersed in soil, water, organic matter, and the bodies of plants and animals. Either autotrophic (self-sustaining, self-generative), saprophytic (derives nutrition from nonliving organic material already present in the environment), or parasitic (deriving nutrition from another living organism). Often symbiotic (advantageous) in man, but sometimes pathogenic. **D6161**

**bacterial lawn**, *n*—confluent growth of bacteria cultured on an agar plate. **D6734**

**bactericide**, *n*—agent capable of killing bacteria. **D6161**

**bacteriostat**, *n*—substance that prevents bacterial growth and metabolism but does not necessarily kill them. **D6161**

**baffle**, *n*—deflector plate in a vessel that disperses the inlet fluid. **D6161**

**bag sampler**—a sampler that uses a collapsible bag as the sample collection container. **D4410**

**bank**, *n*—grouping of devices. See **array**, **block**, **train**. **D6161**

**bar**, *n*—section of metallic channel, I-beam, T-beam, pipe, plate, or ball that will reflect sound waves produced by a fathometer. **D6318**

**bar**, *n*—unit of pressure; 14.50 lbs/in.<sup>2</sup>, 1.020 kg/cm<sup>2</sup>, 0.987 atm, 0.1 MPa. **D6161**

**bar-check**, *n*—method for calibrating a fathometer by setting a sound or acoustic reflector (bar) below a survey vessel to a known depth below a sounding transducer. **D6318**

**bar-check**, *n*—method for determining depth below a survey vessel by means of a long, narrow metal bar or beam suspended on a marked line beneath a sounding transducer. **D5073**

**bar sweep**, *n*—bar or pipes, suspended by wire or cable beneath a floating vessel, used to search for submerged snags or obstructions hazardous to navigation. **D5073**

**base flow**, *n*—stream flow that is sustained by ground water and other delayed sources. **D4410**

**batch**, *n*—in the analysis of water, a group of samples to be analyzed, assembled in such a way that all the variables affecting the batch will affect all the samples and standards in the batch in a statistically equivalent manner.

**DISCUSSION—**

Batching is a fundamental quality-control component. With properly constructed batches, the results of quality control elements can be used reliably to identify out-of-control situations in the analytical system and to assign uncertainty to individual results from the batch.

**batch**, *adj*—in the analysis of water, characterizing standards that are carried through all of the analytical steps attached to the analytical method being employed.

**batch**, *n*—set (group) of samples analyzed such that results of analysis of the QC samples (laboratory control sample, method blank, matrix spike, and duplicate or matrix spike duplicate) analyzed with the batch are indicative of the quality of the results

of analysis of samples in the batch. The number of samples in the batch is defined by the task group responsible for the method. See 6.4 and Explanation 2 in Appendix X1 of Practice D5847. **D5847**

**DISCUSSION—**

When results from tests of any of the QC samples associated with the batch fail to meet the performance criteria, the test method should define the appropriate corrective action. To make such a response valid, the batch shall be constructed in such a way as to assure that all variables affecting the batch will affect all samples in the batch in a statistically equivalent manner.

**batch, n**—set (group) of samples analyzed such that results of analysis of the QC samples analyzed with the batch are indicative of the quality of the results of analysis of samples in the batch. The number of samples in the batch is defined by the task group responsible for the method. **D6850**

**DISCUSSION—**

See Practice D5847 for definition and discussion of batch and batch size.

**baseline, n**—primary reference line for use in measuring azimuth angles and positioning distances. **D5906**

**baume scale, Be, n**—measure of the density of a solution relative to water. **D6161**

$$BE = 145 - \frac{145}{\text{specific gravity}^*}$$

United States for densities greater than unity.

$$BE = \frac{140}{\text{specific gravity}^*} - 130$$

For densities less than unity.

\*at 60°F

**beam width, n**—angle in degrees made by the main lobe of acoustical energy emitted from the radiating face of a transducer. **D5073**

**Becke line, n**—faint, halo-like line that surrounds a crystal when the crystal is mounted in an oil of different refractive index. It increases in intensity as the difference in the refractive index between the crystal and the oil increases. **D1245**

**Becquerel, n**—unit of radioactivity equivalent to one nuclear transformation per second. **D1890**

**bed depth, n**—depth of the filter medium or ion exchange resin in a vessel. **D6161**

**bed expansion, n**—depth increase of filter medium or ion exchange resin that occurs during backwashing. **D6161**

**bed-load, n**—material moving on or near the stream bed by rolling, sliding, and skipping. **D4410**

**bed-load discharge, n**—quantity of bed-load passing a cross section of a stream in a unit of time. **D4410**

**bed-load sampler, n**—device for sampling the bed-load. **D4410**

**bed material, n**—sediment mixture of which the stream bed is composed. **D4410**

**bed-material discharge, n**—that part of the total sediment discharge composed of grain sizes occurring in appreciable quantities in the bed material. **D4410**

**bed-material load, n**—that part of the total load which is composed of particle sizes present in appreciable quantities in the shifting portions of the stream bed. **D4410**

- best available technology**—see **BAT**. **D6161**
- best management practice (BMP)**, *n*—practice or combination of practices that are determined by state or area-wide planning agencies to be the most effective and practical means of controlling point and nonpoint pollution. **D6145**
- beta energy, maximum**, *n*—maximum energy of the beta-particle energy spectrum produced during beta decay of a given radioactive species. **D1890**  
DISCUSSION—  
 Since a given beta-particle emitter may decay to several different quantum states of the product nucleus, more than one maximum energy may be listed for a given radioactive species.
- beta energy, maximum**, *n*—the maximum energy of the beta particle energy spectrum produced during beta decay of a given radionuclide. **D7283**  
DISCUSSION—  
 Since a given beta emitter may decay to several different nuclear energy levels of the progeny, more than one maximum energy may be listed for a given radionuclide.
- beta particle ( $\beta$ )**, *n*—electron or positron emitted from the nucleus of an atom during radioactive decay. **D7316**
- beta particle detection efficiency**, *n*—*in the measurement of radioactivity*, that fraction of beta particles emitted by a source which are identified as beta particles by the counter. **D7283**
- beta-to-alpha spillover**, *n*—*in the measurement of radioactivity*, that fraction of beta particles emitted by a source which are misclassified as alpha particles. **D7283**
- bias**, *n*—the persistent positive or negative deviation of the method average value from the assumed or accepted true value.
- bias**, *n*—persistent positive or negative deviation of the average value of a test method from the assumed or accepted true value. **D2777**  
ASTM D1129-13(2020)e1  
<https://standards.iteh.ai/catalog/standards/astm/827526b5-e47b-42a6-a866-70eb40b15c46/astm-d1129-132020e1>
- bias**, *n*—persistent positive or negative deviation of the average value of the test method from the assumed or accepted true value. **D5392**
- binders**, *n*—in reference to cartridge filters, chemicals used to hold, or “bind,” short fibers together in a filter. **D6161**
- binding**, *n*—in surface filtration, a buildup of particulates on the filter, restricting fluid flow through the filter at normal pressures. **D6161**
- biochemical oxygen demand (BOD)**, *n*—the quantity of oxygen consumed in the biological and chemical oxidation of water-borne substances under conditions of test.
- biocide**, *n*—substance that kills all living organisms. **D6161**
- biodegradable plastic**, *n*—degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi, and algae. **D6888**
- biological deposits**, *n*—deposits of organisms or the products of their life processes.
- biological deposits**, *n*—debris left by organisms as a result of their life processes. **D6161**

- biological deposits**—water-formed deposits of organisms or the products of their life processes. **D887**
- biomass, *n***—any material that is or was a living organism or excreted from a microorganism. **D6161**
- bioremediation, *n***—biological degradation treatment of waste sludge and soils to breakdown organic and hydrocarbons. **D6161**
- biostat, *n***—substance that inhibits biological growth. **D6161**
- bipolar membrane, *n***—synthetic membrane containing two oppositely charged ion-exchange layers that are in contact with each other. **D6161**
- blackwater, *n***—increase in the depth of flow upstream of a channel obstruction, in this case, a weir or flume. **D5640**
- blank, *n***—matrix carried through all or part of the analytical process, where the analyte is not present, or where the analyte response is suppressed.
- NOTE 1—A blank must be appropriate to the analytical process it is being used with.
- NOTE 2—A blank is typically used to monitor contamination or to establish a baseline for quantitation.
- block, *n***—grouping of devices in a single unit having common control. See **array, bank, train**. **D6161**
- BOD, *n***—biochemical oxygen demand.
- body feed, *v***—continuous addition of filter medium (for example, diatomaceous earth) to sustain the efficacy of the filter. **D6161**
- bottom profile, *n***—line trace of the bottom surface beneath a water body. **D5073**
- bottomset bed, *n***—fine-grained material (usually silts and clays) slowly deposited on the bed of a quiescent body of water which may in time be buried by foreset beds and topset beds. **D4410**
- boulder size (fluvial sediment), *n***—larger than 256 mm in diameter. **D4410**
- boundary layer, *n***—relatively thin layer of viscous influence adjacent to the probe (or any solid) surface caused by the requirement that the water velocity must be zero at the wall. **D5089**
- boundary layer, *n***—thin layer at the membrane surface where water velocities are significantly less than those in the bulk flow. **D6161**
- boundary layer displacement thickness, *n***—boundary layer is a layer of fluid flow adjacent to a solid surface (in this case, the flume throat) in which, owing to viscous friction, the velocity increases from zero at the stationary surface to an essentially frictionless-flow value at the edge of the layer. The displacement thickness is a distance normal to the solid surface that the surface and flow streamlines can be considered to have been displaced by virtue of the boundary-layer formation. **D5390**
- boundary layer displacement thickness, *n***—boundary layer is a layer of fluid flow adjacent to a solid surface (in this case, the weir crest and sidewalls) in which, because of viscous friction, the velocity increases from zero at the stationary surface to an essentially frictionless-flow value at the edge of the layer. The displacement thickness is a distance normal to the solid surface that the flow streamlines can be considered to have been displaced by virtue of the boundary-layer information. **D5614**

- brackish water**, *n*—water that contains dissolved matter at an approximate concentration range from 1000 to 30 000 mg/L. **D6161**
- brackish water**, *n*—water with an approximate concentration of total dissolved solids ranging from 500 to 10 000 mg/L. See **high brackish water**, **potable water**, **sea water**. **D6161**
- braided river**, *n*—wide- and shallow-river where the flow passes through a number of small interlaced channels separated by bars or shoals. **D4410**
- brackish water reverse osmosis**, *n*—see **BWRO**. **D6161**
- breakpoint chlorination**, *n*—point at which the water chlorine demand is satisfied and any further chlorine is the chlorine residual, the “free” chlorine species. **D6161**
- break tank**, *n*—storage device used for hydraulic isolation and surge protection. **D6161**
- breakthrough volume**, *n*—maximum sample volume that can be passed through a concentrator column before the least tightly bound ion of interest is eluted. **D5542**
- breakthrough volume**, *n*—maximum sample volume that can be passed through a concentrator column before the least tightly bound ion of interest is eluted. All of the columns in series contribute to the overall capacity of the analytical column set. **D5996**
- brine**, *n*—water that contains dissolved matter at an approximate concentration of more than 30 000 mg/L. **D6161**
- brine**, *n*—concentrate (reject) stream from a crossflow membrane device performing desalination. Portion of the feed stream that does not pass through the membrane. **D6161**
- brine**, *n*—water that contains dissolved matter at an approximate concentration of more than 30 000 mg/L. **D1429**
- brine (concentrate) seal**, *n*—rubber lip seal on the outside of a spiral wound cartridge that prevents feed by-pass between the cartridge and the inside pressure vessel wall. **D6161**
- brine seal carrier**, *n*—see **ATD**. **D6161**
- brine system staging**, *n*—process in which the concentrate, under pressure, of a group of membrane devices is fed directly to another set of membrane devices to improve the efficiency of the water separation. **D6161**
- bubble point**, *n*—pressure differential at which bubbles first appear on one surface of an immersed porous membrane as gas pressure is applied to the other side. **D6161**
- bubble point**, *n*—when the pores of a membrane are filled with liquid and air pressure is applied to one side of the membrane, surface tension prevents the liquid in the pores from being blown out by air pressure below a minimum pressure known as the bubble point. **D6908**
- bubble point pressure**, *n*—pressure differential necessary to displace a liquid held by surface tension forces from the largest equivalent capillaries in a membrane filter. **D6161**
- bubble point test**, *n*—nondestructive membrane filter test used to assess filter integrity and proper installation. **D6161**

- buffer**, *n*—substance in solution that accepts hydrogen or hydroxyl ions added to the solution minimizing a change in pH. **D6161**
- build, own, operate**—see **BOO**. **D6161**
- build, own, operate and transfer**—see **BOOT**. **D6161**
- bundle**, *n*—general term for a collection of parallel filaments or fibers. **D6161**
- cage**, *n*—structural fabrication fitted around the perimeter of the cassette with one or more lifting eye suitable for installing or removing the cassette. The four bottom corners of the cage rest within the frame in the tank. **D6161**
- cake layer**, *n*—layer comprised of particulate materials residing on the upstream face of a membrane. **D6161**
- calcium carbonate equivalents (mg/L as CaCO<sub>3</sub>)**, *n*—method for expressing mg/L as ion in terms of calcium carbonate. Concentration in calcium carbonate equivalents is calculated by multiplying concentration in mg/L of the ion by the equivalent weight of calcium carbonate (50) and dividing by the equivalent weight of the ion. (See Table 1 of Terminology D6161). **D6161**
- calcium hypochlorite**, *n*—Ca (HClO)<sub>2</sub>, a disinfection agent. **D6161**
- calibration**, *n*—in the analysis of water, the analysis of standards to develop a relationship between raw output of an analytical system and analyte concentration.
- DISCUSSION—  
 Calibration can be done with traceable or non-traceable standards. Calibration can be done with standards that are processed identically to samples to produce “true” results, unbiased by recovery (of the standard), or calibration can be done with unprocessed standards, typically in situations where recovery is not considered a significant issue.
- calibration**, *n*—certified evaluation of the accuracy of a measuring instrument as performed by its manufacturer or an independent licensed or accredited third party. **D6104**
- calibration**, *n*—certified evaluation of the accuracy of a measuring instrument as performed by its manufacturer or an independent licensed or accredited third party. **D6157**
- calibration**—determining the instrument response to a known amount of radioactive material. **D7282**
- calibration blank**, *n*—volume of water containing the same acid matrix as the calibration standards. **D1976**
- calibration blank**, *n*—volume of water containing the same acid matrix as the calibration standards. **D5673**
- calibration curve**, *n*—plot of the potential (emf) of a given ion-selective electrode cell assembly (ion-selective electrode combined with an identified reference electrode) versus the logarithm of the ionic activity (concentration) of a given species. For uniformity, it is recommended that the potential be plotted on the ordinate (vertical axis) with the more positive potentials at the top of the graph and that  $p a_A$  (-log activity of the species measured, *A*) or  $p c_A$  (-log concentration of species measured, *A*) be plotted on the abscissa (horizontal axis) with increasing activity to the right. **IUPAC, D4127**
- calibration source (CS)**—a known quantity of radioactive material, traceable to a national standards body, prepared for the purpose of calibrating nuclear instruments. **D7282**
- calibration standard**, *n*—solution prepared from the primary dilution standard solution and stock standard solutions of the