



Designation: D6161 – 19

Standard Terminology Used for Microfiltration, Ultrafiltration, Nanofiltration, and Reverse Osmosis Membrane Processes¹

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1. Scope

1.1 This terminology covers the use of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis for membrane separation processes.

1.2 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D1129 Terminology Relating to Water](#)

[D2035 Practice for Coagulation-Flocculation Jar Test of Water](#)

[D3739 Practice for Calculation and Adjustment of the Langelier Saturation Index for Reverse Osmosis](#)

[D4582 Practice for Calculation and Adjustment of the Stiff and Davis Stability Index for Reverse Osmosis \(Withdrawn 2019\)](#)³

3. Summary

3.1 This terminology is common to membrane separation processes but independent of the source of manufacture.

4. Significance and Use

4.1 The need to understand the relationships found in membrane unit processes for water treatment increases with the continuing demand for these separation systems. Defining the terms common to microfiltration, ultrafiltration, nanofiltration,

and reverse osmosis processes assist the manufacturer, consultant, and end-user in eliminating inter-process terminology confusion. This standard expands the definitions found in Terminology [D1129](#).

5. Terminology

5.1 Definitions:

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

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

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

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

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

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.

adsorption, *n*—the holding of a substance onto the surface of a solid by chemical surface forces, without forming new chemical bonds.

aerobic bacteria, *n*—bacteria that require oxygen for growth. See **bacteria**, **aerobes**.

aggregate, *n*—granular material such as sand, gravel, crushed stone.

aggressive water, *n*—water having a high tendency to corrode pipes and other equipment. Usually seen as having a negative Langelier Index value.

¹ This terminology is under the jurisdiction of ASTM Committee [D19](#) on Water and is the direct responsibility of Subcommittee [D19.08](#) on Membranes and Ion Exchange Materials.

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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 The last approved version of this historical standard is referenced on www.astm.org.