



Designation: D4439 – 11

Standard Terminology for Geosynthetics¹

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- absorption**, *n*—the process by which a liquid is drawn into and tends to fill permeable pores in a porous solid body, also, the increase in mass of a porous solid body resulting from penetration of a liquid into its permeable pores. **C125**
- aerobic**, *n*—a condition in which a measurable volume of air is present in the incubation chamber or system. **D1987**
- anaerobic**, *n*—a condition in which no measurable volume of air is present in the incubation chamber or system. **D1987**
- apparent opening size (AOS)**, O_{95} , *n*—for a geotextile, a property which indicates the approximate largest particle that would effectively pass through the geotextile. **D4751**
- atmosphere for testing geosynthetics**, *n*—air maintained at a relative humidity between 50 to 70 % and a temperature of $21 \pm 2^\circ\text{C}$ ($70^\circ \pm 4^\circ\text{F}$). **D4439, D4751, D5494**
- back flushing**, *n*—a process by which liquid is forced in the reverse direction to the flow direction. **D1987**
- basis weight**—deprecated term (do not use in the sense of mass per unit area). **D4439**
- bend**, *vt*—in *mechanics*, to force an object from its natural or manufactured shape into a curve or into increased curvature. **D4439**
- blinding**, *n*—for *geotextiles*, the condition where soil particles block the surface openings of the fabric, thereby reducing the hydraulic conductivity of the system. **D4439**
- biocide**, *n*—a chemical used to kill bacteria and other microorganisms. **D1987**
- breaking force**, (F), J , *n*—the force at failure. **D4885**
- breaking load**, *n*—the maximum force applied to a specimen in a tensile test carried to rupture. **D4632**
- breaking toughness**, T , (FL^{-1}), Jm^{-2} , *n*—for *geotextiles*, the actual work-to-break per unit surface area of material. **D4595, D4885**
- chemical resistance**, *n*—the ability to resist chemical attack. **D5322**
- clogging**, *n*—for *geotextiles*, the condition where soil particles move into and are retained in the openings of the fabric, thereby reducing the hydraulic conductivity. **D4439**
- clogging potential**, *n*—in *geotextiles*, the tendency for a given geotextile to decrease permeability due to soil particles that have either lodged in the geotextile openings or have built up a restrictive layer on the surface of the geotextile. **D5101**
- compressed thickness** (t , (L), mm), *n*—thickness under a specified stress applied normal to the material. **D4439**
- constant-rate-of-load tensile testing machine (CRL)**, *n*—a testing machine in which the rate of increase of the load being applied to the specimen is uniform with time after the first 3 s. **D4439**
- corresponding force**, *n*—synonym for force at specified elongation. **D4885**
- coupon**, *n*—a portion of a material or laboratory sample from which multiple specimens can be taken for testing. **D5747**
- creep**, *n*—the time-dependent increase in accumulative strain in a material resulting from an applied constant force. **D5262**
- critical height** (ch), *n*—the maximum exposed height of a cone or pyramid that will not cause a puncture failure of a geosynthetic at a specified hydrostatic pressure for a given period of time. **D5514**
- cross-machine direction**, *n*—the direction in the plane of the fabric perpendicular to the direction of manufacture. **D4632**
- density** (ρ , (ML^{-3}), kg/m^3), *n*—mass per unit volume. **D4439**
- design load**—the load at which the geosynthetic is required to operate in order to perform its intended function. **D5262**
- elastic limit**, *n*—in *mechanics*, the stress intensity at which stress and deformation of a material subjected to an increasing force cease to be proportional; the limit of stress within which a material will return to its original size and shape when the force is removed, and hence, not a permanent set. **D4885**
- elongation at break**, *n*—the elongation corresponding to the breaking load, that is, the maximum load. **D4632**

¹ This terminology is under the jurisdiction of D35 on Geosynthetics and is the direct responsibility of D35.93 on Editorial and Terminology.

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failure, *n*—an arbitrary point beyond which a material ceases to be functionally capable of its intended use. **D4885, D5262**

failure, *n*—*in testing geosynthetics*, water or air pressure in the test vessel at failure of the geosynthetic. **D5514**

flexible polypropylene, *n*—a material having a 2 % secant modulus of less than 300 MPa (40,000 psi) as determined by Test Method D5323 produced by polymerization of propylene with or without other alpha olefin monomers.

field testing, *n*—testing performed in the field under actual conditions of temperature and exposure to the fluids for which the immersion testing is being performed. **D5496**

fill—deprecated term, see **filling**.

filling, *n*—yarn running from selvage to selvage at right angles to the warp in a woven fabric. **D4439**

force at specific elongation, FASE, *n*—the force associated with a specific elongation on the force-elongation curve. **D4439**

force-elongation curve, *n*—*in a tensile test*, a graphical representation of the relationship between the magnitude of an externally applied force and the change in length of the specimen in the direction of the applied force. (*Synonym* for stress-strain curve.) **D4885**

geocomposite, *n*—a product composed of two or more materials, at least one of which is a geosynthetic.

geofoam, *n*—block or planar rigid cellular foamed polymeric material used in geotechnical engineering applications.

geogrid, *n*—a geosynthetic formed by a regular network of integrally connected elements with apertures greater than 6.35 mm (1/4 in.) to allow interlocking with surrounding soil, rock, earth, and other surrounding materials to function primarily as reinforcement. **D5262**

geonet, *n*—a geosynthetic consisting of integrally connected parallel sets of ribs overlying similar sets at various angles for planar drainage of liquids or gases. **D4439**

geomembrane, *n*—an essentially impermeable geosynthetic composed of one or more synthetic sheets. **D4439, D4873, D4885, D5994, D5820**

geosynthetic, *n*—a planar product manufactured from polymeric material used with soil, rock, earth, or other geotechnical engineering related material as an integral part of a man-made project, structure, or system. **D4354, D4759, D4873, D5617, D5818**

geosynthetic clay liner, *n*—a manufactured hydraulic barrier consisting of clay bonded to a layer or layers of geosynthetic materials.

geotechnical engineering, *n*—the engineering application of geotechnics. **D4439, D4595**

geotechnics, *n*—the application of scientific methods and engineering principles to the acquisition, interpretation, and

use of knowledge of materials of the earth's crust to the solution of engineering problems. **D4439, D4491, D4595, D4716, D4751**

geotextile, *n*—a permeable geosynthetic comprised solely of textiles.

DISCUSSION—Geotextiles perform several functions in geotechnical engineering applications, including: separation; filtration; drainage; reinforcement; and protection. **D1987, D4439, D5594**

grab test, *n*—*in fabric testing*, a tension test in which only a part of the width of the specimen is gripped in the clamps. **D4632**

gradient ratio, *n*—*in geotextiles*, the ratio of the hydraulic gradient through a soil-geotextile system to the hydraulic gradient through the soil alone. **D5101**

gravity flow, *n*—flow in a direction parallel to the plane of a geotextile or related product driven predominately by a difference in elevation between the inlet and outflow points of a specimen. **D4716**

head, *n*—pressure at a point in a liquid, expressed in terms of the vertical distance of the point below the surface of the liquid. **D4716**

hydraulic conductivity (*k*), *n*—the rate of discharge of water under laminar flow conditions through a unit cross-sectional area of a porous medium under a unit hydraulic gradient and standard temperature conditions (20°C). **D5567**

hydraulic conductivity ratio (HCR), *n*—the ratio of the hydraulic conductivity of the soil/geotextile system, k_{sg} , at any time during the test, to the initial hydraulic conductivity, k_{sg0} , measured at the beginning of the test (new).

hydraulic gradient, *i, s (D)*—the loss of hydraulic head per unit distance of flow, dH/dL . **D5101**

hydraulic transmissivity, $\theta (L^2 T^{-1})$, *n*—*for a geotextile or related product*, the volumetric flow rate of water per unit width of specimen per unit gradient in a direction parallel to the plane of the specimen. **D4716**

hydrostatic pressure, *n*—a state of stress in which all the principal stresses are equal (and there is no shear stress), as in a liquid at rest; induced artificially by means of a gaged pressure system; the product of the unit weight of the liquid and the difference in elevation between the given point and the free water elevation. **D5514**

index test, *n*—a test procedure which may contain a known bias but which may be used to establish an order for a set of specimens with respect to the property of interest. **D4833, D4885**

inflection point, *n*—the first point of the force-elongation curve at which the second derivative equals zero. **D4885**

initial tensile modulus, $J_p (FL^{-1}), Nm^{-1}$, *n*—*for geosynthetics*, the ratio of the change in force per unit width to the change in elongation of the initial portion of a force-elongation curve. **D4885**