



The intent for this glossary is to provide descriptions of terms used in Mechanically Stabilized Earth (MSE) and Reinforced Soil Slopes (RSS) for Engineers, Students or novice Users who are not familiar with this technology. The accompanying explanations are intended to provide in simple words information about the meaning of these terms. The terms listed in this glossary were chosen to cover a wide variety of common words from the application field of reinforced soils. The descriptions have been formulated on the basis of definitions from various International and National Codes. The glossary must be considered as 'for information only' and the included descriptions shall not be referenced in legal documents.

There may be missing terms, so the ISSMGE TC218 Committee encourages the readers to notify if there are terms that should be included. Similarly, if there are any descriptions which do not properly illustrate the terms, please share your comments with the Committee, so that the document can be enhanced.

TC218 is fully aware that even the most sophisticated glossary is never complete therefore this should be considered a *living document*. TC218 is open to improve this document with your suggestions and help.

TERMS	DESCRIPTIONS (Intended to provide information about the meaning of the given Terms)	
Action	A cause of stress, dimensional change, or displacement in a structure or component of a structure.	
Abrasion	a wearing, grinding, or rubbing away by friction	
Absorption	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.	
Abutment	a structure or wall which extends beyond the bridge to retain the earth and support the ends of the bridge.	
Accelerated Degradation	an increase in the natural degregation/breakdown by an intentional variation of the action causing the degregation	
Actinic Degradation	chemical degregation/breakdown due to oxidation by exposure to ultra violet radiation	
Action Effect	The internal force, moment, deformation, crack, or the like effect caused by one or more actions.	
Aerobic	a condition in which a measurable volume of air is present in the incubation chamber or system.	
Amplification Factor	the ratio of the action to the applied action	
Anaerobic	a condition in which no measurable volume of air is present in the incubation chamber or system	
Anisotropic	having directionally variable properties.	
Apparent Opening Size (AOS)	for a geotextile, a property which indicates the approximate largest particle that would effectively pass through the geotextile.	
Atmosphere for Testing Geosynthetics	air maintained at a relative humidity between 50 to 70 % and a temperature of 21.6 ± 2 °C (70.6 ± 4 °F).	
Back Flushing	process by which liquid is forced in the reverse direction to the flow direction.	
Barrier	use of a material to prevent or limit the migration of fluids	
Base Cloth	Basic fabric/material	
Basis Weight	deprecated term (do not use in the sense of mass per unit area).	
Batch	a defined quantity of a row material or geosynthetic manufactured, produced, or stored under conditions presumed to be uniform	
Batter	a slope of a cut or fill.	
Batt	single or multiple sheets of fibre used in non-woven fabric production	
Bend	in mechanics, to force an object from its natural or manufactured shape into a curve or into increased curvature.	
Biaxial	behaviour testing or performance that takes place in two orthogonal directions	
Binder Content	the mass of binder added as a percentage of the total mass of the geotextile	
Binder Fiber	a fibre that has a relatively low softening point compared with other fibres in the web, and which, on the application of heat or pressure, acts as an adhesive	
Binder	an additive used to bind fibres together. A binder may be of a chemical, adhesive, resinous, or fibrous nature	
Biocide	a chemical used to kill bacteria and other microorganisms.	
Bituminous Geosynthetic Barrier (GBR-B)	factory-assembled structure of geosynthetic materials in the form of a sheet in which the barrier function is essentially fulfilled by bitumen	
Blinding	for geotextiles, the condition where soil particles block the surface openings of the fabric, thereby reducing the hydraulic conductivity of the system.	
Bond	areal attachment of the elements of a geocomposite to each other	
Bonding	the process by means of which one or more sheets, webs, or batts of fibre are held together. Bonding may be accomplished by mechanical, chemical, thermal, or solvent means, or combinations thereof.	
Breaking Force	the force at failure	
Breaking Load	the maximum force applied to a specimen in a tensile test carried to rupture.	
Breaking Stress	the maximum stress applied to a specimen in a tensile test carried to rupture.	n—the maximum stress applied to a specimen in a tensile test carried to rupture.
Breaking Tensile Strength	the maximum tensile stress applied to a specimen in a tensile test carried to rupture.	n—the maximum stress applied to a specimen in a tensile test carried to rupture
Breaking Toughness	for geotextiles, the actual work-to-break per unit surface area of material.	
Bulk Density	the density of a given amount of particulate matter	Ratio of the particular material to the total volume
Bulk Sample	a large sample of material	
Bursting Strength	pressure at which a sheet will burst (is a function of multidirectional tensile strength and extensibility)	
Calender	to press a shet type of material between rollers or plates in order to smooth and glaze or to thin into sheets	
Calendering	process of pressing a shet type of material between rollers or plates in order to smooth and glaze or to thin into sheets	is a finishing process used to smooth or coat a textile
Capillary Barrier	a material or layer that restricts liquid flow under unsaturated conditions through a difference in pore size	
Capping	the element over the top course of facing elements to complete the RSW to specified finished levels.	
Characteristic Opening Size	size of opening which corresponds to the maximum particle size of 90 % by weight of the soil passing through the geotextile	
Characteristic Value	representative value of a soil, rock or a material property.	
Chemical Bonding	a process that uses suitable chemical products to achieve bonding.	bonding of fibers or various elements by chemical bonding
Chemical Resistance	the ability to resist chemical attack.	
Clogging Potential	the potential of geotextiles openings getting blocked by soil particles and thereby reducing the hydraulic conductivity.	



Clogging	for geotextiles, the condition where soil particles move into and are retained in the openings of the fabric, thereby reducing the hydraulic conductivity.
Coefficient of Permeability Normal to the Plane	ratio between flow velocity $v$ and hydraulic gradient $i$ normal to plane
Coefficient of Variation	Ratio of the standard deviation to the arithmetic mean of a set of measurements
Cohesive Fill	naturally occurring or processed materials with greater than 50 % passing the 75 $\mu\text{m}$ AS sieve and a plasticity index of less than 30% and liquid limit of less than 45%.
Composite Geotextile	multi-layered combinations of geosynthetic materials
Compressed Thickness	thickness under a specified stress applied normal to the material.
Compressive Creep Test	test to measure the long term material behaviour under a compressive load.
Compressive Creep	long term movement under a constant compressive load.
Conditioning	Providing Standard atmospheres for testing.
Conductivity	A measure of a material's ability to conduct.
Confinement	Average normal pressure acting on the sample.
Connection Strength	The tensile strength of the connection of facing element and reinforcement.
Connection	local or linear attachment of dissimilar geosynthetics or of a geosynthetic and another material
Constant-Rate-of-Load Tensile Testing Machine	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.
Continuous Filament Yarn	Long continuous length of interlocked fibres, suitable for use in the production of textiles from a continuous filament.
Continuous Filament	A thread-like structures produced continuously.
Controlled Fill-Class 1AS 4678	Soil rock or other inert material that has been placed at a site in a controlled fashion and under appropriate supervision to ensure the resultant material is consistent in character placed and compacted to an average density equivalent to 98% (and to test result below 95%) of the maximum dry density (standard compactive effort) for the material
Controlled Fill-Class 2-AS 4678	Soil rock or other inert material that has been placed at a site in specified layer in controlled fashion to ensure that the resultant material is consistent in character placed and compacted to an average density equivalent to 95% (and no test result below 92%) of the maximum dry density (standard compactive effort) for the material when tested
Corresponding Force	synonym for force at specified elongation.
Coupon	a portion of a material or laboratory sample from which multiple specimens can be taken for testing.
Creep Rupture	A rupture observed by allowing a certain load smaller than the tensile strength to act on the sample for a long time.
Creep Strain	strain occurring under constant load
Creep	the time-dependent increase in accumulative strain in a material resulting from an applied constant force.
Critical Height	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.
Cross-Machine Direction	the direction in the plane of the fabric perpendicular to the direction of manufacture (the weft direction for woven geotextiles)
Cusped	Three-dimensional networks of stiff polymer fibers.
Damage	Changes introduced to a product which adversely affect its current or future performance.
Dead Load	The load imposed by the components of the self-weight of the structure and retained soil or rock.
Degradation	Change in the properties—tensile strength, color, shape, etc. of a polymer or polymer-based product under the influence of one or more environmental factors.
Denier	a unit of fineness for yarn equal to the fineness of a yarn weighing one gram for each 9000 meters
Density	mass per unit volume.
Design Life	The intended period of time over which the structure is required to fulfil its function and remain in a serviceable state.
Design Life	period of time from the start of installation to the point where the material no longer fulfils its required design properties in order to perform its function within defined limits
Design Load	the load at which the geosynthetic is required to operate in order to perform its intended function.
Design Strength (Or Resistance or Capacity)	Strength (or resistance or capacity) calculated from design values of material parameters, incorporating the economic ramification factor as appropriate.
Diffusion	Movement of anything (for example, atom, ions, molecules) from a region of higher concentration to a region of lower concentration.
Dilatancy	Increase of volume of a granular soil due to differential movement of grains
Direct Shear	Deformation of a sample along a slip surface, either predefined or developing along the zone of minimum resistance, caused by external differential forces
Direct Shear Test	Test procedure, making use of a test device able to apply a predefined vertical stress and lateral movement between an upper and a bottom part of the apparatus, measuring the resulting shear stress as the sum of forces acting in the resulting shear plane; adopted for soil samples, geosynthetic interfaces and combinations thereof
Drainage Composite	manufactured, assembled material using at least one geo-synthetic product among the components used for drainage
Drainage	collecting and transporting of precipitation, ground water and/or other fluids in the plane of a geosynthetic material
Durability	ability to exist for a long time without significant deterioration in quality or value
Dynamic Loads	Loads where the magnitude changes with time.
Earth Pressure Coefficient	ratio of horizontal to vertical earth pressure
Elastic Limit	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.
Elastic	the condition where stress and deformation of a material are linearly related

is a standardized measure of dispersion of a probability distribution

manufactured, assembled material using at least one geosynthetic product among the components

Electrical Leakage Detection	A method based on electrical conductivity to detect holes in a geomembrane.	
Electrokinetic Geosynthetic	(EKG) are a platform technology, which combine a wide variety of materials and processes to perform such diverse functions as dewatering, strengthening and conditioning in materials such as soils, sludges, slurries, tailings and composts	
Elongation at Break	the elongation corresponding to the breaking load, that is, the maximum load.	
Elongation	amount of tensile strain experienced by the material.	
Energy Absorption	the surface below the load-displacement curve	
EPS Foam	expanded polystyrene, commonly known as EPS, is a lightweight foam used as afill material	
Equivalent Opening Size	nominal equivalent opening size (EOS) is generally defined as equivalent to the smallest spherical particles of which 5% by weight fails to pass through the geotextile after 20 min or other specified times of sieving	
Erosion Control Mat	a geosynthetic material used to prevent or limit soil or other particle movements at the surface of, for example , a slope	
Extensible Soil Reinforcement	a reinforcement material that deforms as much as the surrounding soil	
Extension	ratio between the final length and the initial length of a material	
Extrusion Welding	an established plastics-joining technique where the bonding is assured by extrusion of same polymer as the to be welded materials on the joint	
Fabric Blinding	particle deposition on the filter surface	
Fabric	synthetic or man-made materials that are strong, resistant to rot, and have varying degrees of permeability / arrangement of particles, particle group and pore spaces in a soil.	
Facing Connections	Any connections, whether mechanical, frictional or other type, between facing elements and the soil reinforcement, designed to transfer loads between the soil reinforcement and facing elements.	
Facing Elements	Elements retaining the reinforced fill material, with provision for connection to the soil reinforcement.	
Factor of Safety	a ratio of capacity to mobilized force or moment	
Failure	an arbitrary point beyond which a material ceases to be functionally capable of its intended use.	ratio between resisting and driving forces or moments
Fatigue	reduction of strength of a material under repeated loading when compared to the strength under a single load	
Fibre Reinforced Soil	soil and fibres mixed together randomly	
Fibre	natural or synthetic substance that is significantly longer than it is wide	
Field Testing	testing performed in the field under actual conditions of temperature and exposure to the fluids for which the immersion testing is being performed.	
Fifth Percentile	a measure used in statistics indicating the value below which 5% of observations in a group of observations falls.	
Filament	a slender threadlike object or fibre	
Fill	deprecated term, see filling.	
Filling	yarn running from selvage to selvage at right angles to the warp in a woven fabric.	
Film	a very thin polymer sheet	
Filter Cake	a granular filter formed with the help of a geotextile at its interface where fine particles close to the geotextile escape to build a filter to assure further particle loss into the draining media	
Filter	a media which separates solids from fluids	
Filtration	restraining of uncontrolled passage of soil or other particles subjected to hydrodynamic forces, while allowing the passage of fluids into or across a geosynthetic material	
Fines	particles finer than 0.074 mm	
Flexible Polypropylene	a material having a 2 % secant modulus of less than 300 MPa, produced by polymerization of propylene with or without other alpha olefin monomers.	
Flexural Modulus	measure of the stiffness during the first or initial step of the bending process.	
Flexural Strength	amount of moment an object can take without breaking or permanently deforming	
Flexural Stress	flexural or bending stress represents the action of a moment on an element and is calculated by dividing the bending moment by the moment of Inertia	
Flow Rate	also known as volumetric flow rate, is the volume of fluid passing by some location through an area during a period of time. Unit: m <sup>3</sup> /s	
Flux	volumetric flow rate per unit area normal to the plane of the product at a defined head Unit: l/(m <sup>2</sup> ·s).	
Force at Specific Elongation	the force associated with a specific elongation on the force-elongation curve.	
Force-Elongation Curve	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.	
Foundation	Portion of ground in contact with the RSW and supporting the loads from it.	
Friction Angle	angle, the tangent of which is equal to the ratio of the friction force per unit area to the normal stress along the interface between two parts of the same material or between two materials Note 1 to entry: Soil and GSY are examples of two materials.	
Friction Coefficient	ratio of the force of friction between two bodies and the force pressing them together	
Friction Interaction (Efficiency) Coefficient	ratio between the tangent of the friction angle between soil and GSY, and the tangent of the friction angle of the soil	
Frictional Connection	Connection between facing element sand reinforcement based on friction.	
Friction	the force that resists relative motion between two bodies in contact	
Gauge Length	the length of the part of a test specimen actually being measured for elongation during a tensile test	
Geocell	three-dimensional, permeable, polymeric (synthetic or natural) honeycomb, or similar cellular structure, made of linked strips of geosynthetics	
Geocomposite Drain	a drain manufactured, assembled using at least one geo-synthetic product among the components	
Geocomposite Reinforcement	a reinforcement material manufactured, assembled using at least one geo-synthetic product among the components	
Geocomposite	manufactured, assembled material using at least one geo-synthetic product among the components	
Geofoam	block or planar rigid cellular foamed polymeric material used in geotechnical engineering applications.	
Geogrid	planar, polymeric structure consisting of a regular open network of integrally connected, tensile elements, which may be linked by extrusion, bonding or interlooping or interlacing, whose openings are larger than the constituents	
Geogrid, Extruded	planar, polymeric structure consisting of a regular open network of integrally connected, tensile elements, linked by extrusion, whose openings are larger than the constituents	

Geogrid, Knitted	planar, polymeric structure consisting of a regular open network of integrally connected, tensile elements, where the yarns are knitted into a dimensionally stable network of apertures to form the geometric grid. The yarns may also be coated with a further protection layer using synthetic material.
Geogrid, Woven	planar, polymeric structure consisting of a regular open network of integrally connected, tensile elements, where the yarns are woven into a dimensionally stable network of apertures to form the geometric grid. The yarns may also be coated with a further protection layer using synthetic material.
Geomat	three-dimensional, permeable, polymeric (synthetic or natural) structure, thermally jointed with each other, mainly use for erosion control
Geomattress	permeable three-dimensional structure, consisting of filaments and/or other (synthetic or natural) polymer-based elements, mechanically and/or thermally and/or chemically and/or otherwise bonded.
Geomembrane, Bituminous	factory-assembled structure of geosynthetic materials in the form of a sheet in which the barrier function is essentially fulfilled by bitumen
Geomembrane, Plastomeric	factory-assembled structure of geosynthetic materials in the form of a sheet in which the barrier function is essentially fulfilled by plastomeric polymers
Geomembrane	factory-assembled structure of geosynthetic materials in the form of a sheet in which the barrier function is essentially fulfilled by polymers
Geonet	geosynthetic consisting of parallel sets of ribs overlying and integrally connected with similar sets at various angles
Geopipe	polymeric pipe placed beneath the ground surface
Geospacer	three-dimensional polymeric structure with an interconnected air space in between, used in contact with soil and/or other materials in geotechnical and civil engineering applications
Geostrip	polymeric material in the form of a strip of width not more than 200 mm, used in contact with soil and/or other materials in geo-technical and civil engineering applications
Geosynthetic Barrier Clay (GBR-C)	factory-produced structure of geosynthetic materials in the form of a sheet, in which the barrier function is fulfilled by clay.
Geosynthetic Barrier Polymeric (GBR-P)	factory-produced structure of geosynthetic materials in the form of a sheet, in which the barrier function is fulfilled by polymers.
Geosynthetic Barrier	low-permeability geosynthetic material, used in geotechnical and civil engineering applications with the purpose of reducing or preventing the flow of fluid through the construction.
Geosynthetic Cementitious Composite Mat (GCC)	a factory-assembled geosynthetic composite consisting of a cementitious material contained within layer or layers of geosynthetic materials that becomes hardened when hydrated.
Geosynthetic Clay Liner	geosynthetic barrier clay (GBR-C)
Geosynthetic Containers (Or Geocontainers)	large bags of geotextiles containing up to several hundreds cubic meters of sand or slurry
Geosynthetic	generic term describing a product, at least one of whose components is made from a synthetic or natural polymer, in the form of a sheet, a strip or a three-dimensional structure, used in contact with soil and/or other materials in geotechnical and civil engineering applications
Geosynthetic Reinforcement	Soil reinforcement made of polymeric materials used in geotechnical engineering
Geosynthetic Subsurface Drainage System	A pervious subsurface drainage system prefabricated from synthetic materials.
Geosynthetic Tubes (Or Geotubes)	tube made of permeable, soil-tight geotextile which is hydraulically filled
Geotechnical Engineering	the engineering application of geotechnics.
Geotechnical Engineer	Engineer(s) with qualifications and experience in geotechnical engineering.
Geotechnics	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.
Geotextile Bags	a bag made typically of a woven geotextile
Geotextile, Knitted	geotextile produced by interlooping one or more yarns, filaments, or other elements
Geotextile, Nonwoven	geotextile made of directionally or randomly orientated fibres, filaments, or other elements, mechanically and/or thermally and/or chemically bonded
Geotextile, Woven	geotextile produced by interlacing, usually at right angles, two or more sets of yarns, filaments, tapes, or other elements
Geotextile	planar, permeable, polymeric (synthetic or natural) textile material, which may be nonwoven, knitted or woven, used in contact with soil and/or other materials in geotechnical and civil engineering applications
Geotextile-Related Product	planar, permeable, polymeric (synthetic or natural) material used in contact with soil and or other materials in geotechnical and civil engineering applications, which does not comply with the definition of a geotextile
Grab Test	a tension test in which only a part of the width of the specimen is gripped in the clamps.
Gradient Ratio	the ratio of the hydraulic gradient through a soil-geotextile system to the hydraulic gradient through the soil alone.
Gravity Flow	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.
Ground Anchor	A tensile reinforcement, wire or bar, and its associated components that transmit force into soil or rock through bond over part of its length.
Head	pressure at a point in a liquid, expressed in terms of the vertical distance of the point below the surface of the liquid.
Heat Bonding/Thermal Bonding	is a process where the web, composed of continuous filaments or long staple fibers, is melted together to a filament or fiber crossover points. In this process, the web is passed through a source of heat, such as pressurized steam or hot air, which causes fusion at fibre crossover points.
Hydration	the process of causing a soil or material to absorb water
Hydraulic Conductivity	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).
Hydraulic Gradient	the loss of hydraulic head per unit distance of flow, dh/dL
Hydraulic Transmissivity	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.
Hydrolysis	a chemical process of decomposition involving the splitting of a bond and the addition of the hydrogen cation and the hydroxide anion of water
Hydrostatic Pressure	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.
In Situ Material	Natural soil, weathered rock and rock materials.



Inclined Plane Test	a test method commonly used when studying the stability of sloping geosynthetic liner systems under conditions of low normal stress
Inextensible Soil Reinforcement	Soil reinforcement which is strained to less than or equal to 1% under the serviceability tensile force.
Initial Tensile Modulus	the slope of the initial straight portion of the stress-strain curve.
In-Plane Flow Capacity	volumetric flow rate of water and/or other liquids per unit width of specimen, at defined gradients in the plane of a product Unit: l/(m·s).
Interface Adhesion	shear strength between two different materials under zero normal stress
Interface Friction Angle	friction angle between two different materials
Interface Peak Shear Strength	peak shear strength between two different materials
Interface Residual Shear Strength	residual shear strength between two different materials
Interface Shear Strength	shear strength between two different materials
Interlocking	firmly joined together, especially by one part fitting into another. The apertures in geogrids help in interlocking the aggregates or the soil that are placed over them.
Isotropic	exhibiting properties with the same values when measured along axes in all directions
Index Test	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.
Inflection Point	the first point of the force-elongation curve at which the second derivative equals zero.
Initial Tensile Modulus	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.
In-Plane Flow Capacity	volumetric flow rate of water and/or other liquids per unit width of specimen, at defined gradients in the plane of a product
Integral	in geosynthetics, forming a necessary part of the whole; constituent.
Joint	local or linear attachment of adjacent rolls of similar geosynthetic
Joint or Seam Efficiency	ratio of the joint or seam strength to the tensile strength of the material measured in the same direction
Knitted Geotextile	geotextile produced by interlooping one or more yarns, filaments or other elements
Laboratory Sample	a portion of material taken to represent the lot sample, or the original material, and used in the laboratory as a source of test specimens.
Laminar Flow	flow in which the head loss is proportional to the first power of the velocity.
Limit State	Any limiting condition for which structures are designed.
Linear Density	mass per unit length; the quotient obtained by dividing the mass of a fiber or yarn by its length.
Linear Density	A substantially linear polymer (polyethylene), with significant numbers of short branches
Liquid Tightness	ability of a geosynthetic to retain liquid
Live Loads	Thermal and transient effects acting on a structure but excluding earthquake effects.
Load Factor	A factor specified in this Standard for structural design to be used with the loads (or actions) in deriving design loads (or design actions).
Locknit	A textile knitted with an interlocking stitch that resists runs.
Lot Sample	one or more shipping units taken at random to represent an acceptance sampling lot and used as a source of laboratory samples.
Lot	a unit of production, or a group of other units or packages, taken for sampling or statistical examination, having one or more common properties and being readily separable from other similar units.
Machine Direction	the direction in the plane of the fabric parallel to the direction of manufacture (the warp direction for woven geotextiles)
Mass Per Unit Area	ratio of the mass of a specimen of specified dimensions to its area
Maximum Joint or Seam Strength	maximum tensile strength of the seam formed by joining two or more sheets
Maximum Tensile Strength	maximum tensile stress sustained by the test specimen during a tensile test
Mechanical Bonding	Connection between two rigid elements by mechanical means
Metallic Geosynthetic	A geosynthetic product that partially consists of metals.
Minimum Average Roll Value (MARV)	for geosynthetics, a manufacturing quality control tool used to allow manufacturers to establish published values such that the user/ purchaser will have a 97.7 % confidence that the property in question will meet published values. For normally distributed data, "MARV" is calculated as the typical value minus two (2) standard deviations from documented quality control test results for a defined population from one specific test method associated with one specific property.
Minimum Test Value	for geosynthetics, the lowest sample value from documented manufacturing quality control test results for a defined population from one test method associated with one specific property.
Modulus Of Elasticity	the ratio of stress (nominal) to corresponding strain below the proportional limit of a material, expressed in force per unit area, such as megapascals (pounds-force per square inch).
Monofilament	A monomolecular wire consisting of a single strand of strongly bonded atoms or molecules.
Multi-Axial Tension	stress in more than one direction.
Multifilament	A string, thread, etc. composed of multiple filaments that are usually bonded or twisted together
Multi-Linear Drainage Geocomposite	a manufactured product composed of a series of parallel single drainage conduits regularly spaced across its width sandwiched between two or more geosynthetics.
Nominal	representative value of a measurable property determined under a set of conditions, by which a product may be described.
Nonwoven Geotextile	geotextile made of directionally or randomly orientated fibres, filaments or other elements, mechanically and/or thermally and/or chemically bonded
Normal Direction	for geotextiles, the direction perpendicular to the plane of a geotextile.
Normal Load	the component of applied load that is perpendicular to the surface on which the force acts.
Normal Stress	the component of applied stress that is perpendicular to the surface on which the force acts.
Offset Modulus	for geosynthetics, the ratio of the change in force per unit width to the change in elongation below an arbitrary offset point at which there is a proportional relationship between force and elongation, and above the inflection point on the force-elongation curve.
Offset Tensile Modulus	Tensile modulus where the zero point has been offset to the extended linear part of the curve.
OIT Test	Oxidative Induction Time Test
Open Area	Percent of open area in a geogrid.
Opening Size	Size of opening dimensions.

Oriented Tape Slit Film	Also known as film bands, strips, slit film tapes, raffia tapes and tape yarns are defined as unidirectional oriented thermoplastic products with a high width-to-thickness ratio.
Other Fill Overlay	Materials that are chemically unstable or physically decomposable, which may include blast furnace slag, fly ash and topsoil. To lay or spread over or across : <u>superimpose</u> .
Oxidation	The loss of electrons or an increase in the oxidation state of an atom by another atom, an ion, or a molecule.
Peak Force	Maximum force.
Peak Tensile Strength	Maximum tensile strength.
Peel Test	tensile test of a bond, joint or connection in which two components are separately clamped and one component is peeled away from the other in order to determine peel strength
Performance Property	a result obtained by conducting a performance test.
Performance Test	a test which simulates in the laboratory as closely as practicable selected conditions experienced in the field and which can be used in design. (Synonym for design test.)
Permeability	the rate of flow of a liquid under a differential pressure through a material.
Permeation	the transmission of a fluid through a porous medium (NEW).
Permittivity	volumetric flow rate of water and/or other liquids per unit area per unit head loss, under laminar flow conditions, normal to the plane of a product
Piping	A system of impervious pipes designed to lead drainage away from the retaining structure.
Planar Direction	Specially in two dimensional materials the direction of the plane.
Plane Strain	The strain state of a material is such that the strains occur only in two directions and is zero in the third direction.
Plastic Behaviour	Where the stress-strain relation is non-reversible.
Polymer Density	Density of the polymer.
Polymer	a chemical compound or mixture of compounds formed by polymerization and consisting essentially of repeating structural units
Polymeric Geosynthetic Barrier	see geomembrane
Pore Volume of Flow	In permeability test the amount of flow that is equal to the voids of the sample.
Pores	the cumulative volume of voids
Porometry	A characterization technique based on the displacement of a wetting liquid from the sample pores.
Porosity	Ratio of volume of voids to the total volume.
Pre-Fabricated Vertical Drain (PVD)	a geocomposite consisting of geotextile cover and drainage core to be installed vertically into soil to provide drainage for accelerating consolidation of soils.
Preload	small load equal to 1 % of the expected maximum load, enabling initial gauge length and strain zero to be determined under re-producible conditions
Primary Sampling Unit	the sampling unit containing all the sources of variability which should be considered in acceptance testing; the sampling unit taken in first stage of selection in any procedure for sampling a lot or shipment.
Protection	preventing or limiting of local damage to a given element or material by the use of a geosynthetic material
Pull-Out Test	The resistance shown to the reinforcement to be pulled out.
Puncture Force	A force causing puncture in the geosynthetic.
Puncture Resistance	resistance against penetrating or puncturing objects
Puncture	the inherent resisting mechanism of the test specimen to the failure by a penetrating or puncturing object.
Quality Assurance	all those planned or systematic actions necessary to provide adequate confidence that a material, product, system, or service will satisfy given needs.
Quality Control	the operational techniques and the activities which sustain a quality of material, product, system, or service that will satisfy given needs; also the use of such techniques and activities.
Rate of Creep	the slope of the creep-time curve at a given time.
Reinforced Fill Material	Granular soil, decomposed rock or crushed rock fill material in the RSW in which the soil reinforcement is embedded.
Reinforced Soil Structure (RSS)	A structure formed by reinforced soil, facing materials, drainage and associated foundation systems.
Reinforced Soil Wall (RSW)	A retaining structure, with the face within 20° of vertical, which comprises soil reinforcement embedded in reinforced fill material, together with any facing elements, facing connections and footings.
Reinforced Soil	The material in a reinforced soil structure in which reinforcing elements are installed to act through interface friction, or other means, to improve the stability of the soil or rock materials.
Reinforcement	Use of the stress-strain behaviour of a material which possesses tensile strength to improve the mechanical properties of soil or other materials.
Representative Value	other construction materials
Residual Shear Strength	value of shear stress at sufficiently large displacement where the stress remains constant with continued shearing
Resilient Modulus	A measure of material stiffness and provides a mean to analyze stiffness of materials under cyclic loads.
Resin Bonding	A bond created by a resin.
Resistance Effect	The characteristic strength multiplied by the appropriate reduction factors for ultimate or serviceability limit state analysis.
Retained Backfill	The fill material located behind a retaining structure.
Rib	for geogrids, the continuous elements of a geogrid which are interconnected to a node or junction.
Rock Bolt	A tensile reinforcement, typically a bar of 15 to 50 mm in diameter, of steel or high strength polymer, which is inserted into a drill hole in rock and fixed in position by grout or mechanical anchorage.
Rock Dowel	As for rock bolt except that the applied tension is less than 5% of the ultimate tensile strength of the material used in the bar.
Sample	A representative part from a larger whole especially when presented for inspection or shown as evidence.
Sampling Unit	an identifiable, discrete unit or subunit of material that could be taken as part of a sample.



Seam Allowance	the width of fabric used in making a seam assembly, bounded by the edge of the fabric and the furthest stitch line.
Seam Assembly	the unit obtained by joining fabrics with a seam, including details such as fabric direction(s), seam allowance, sewing threads used, and number of stitches per unit length; and sometimes additional details of fabrication such as sewing-machine type and speed, needle type and size, etc.
Seam Design Engineering	the procedures used to select a specific thread, a specific stitch type, and a specific seam type to achieve the required seam strength.
Seam Efficiency, Sewn	in sewn fabrics, the ratio expressed as a percentage of seam strength to fabric strength.
Seam	a permanent joining of two or more materials.
Secant Modulus	the ratio of stress (nominal) to corresponding strain at any specified point on the stress-strain curve.
Secant Tensile Modulus	for geosynthetics, the ratio of change in force per unit width to the change in elongation between two points on a force-elongation curve.
Segmental	A reinforced soil wall construction system where the facing elements are modular.
Select Fill	A soil, rock or other inert material that is selected from various materials, that may be available on a site, and that has particular properties specified by a designer.
Selvage	the woven edge portion of a fabric parallel to the warp.
Separation	prevention from intermixing of adjacent dissimilar soils and/or fill materials by the use of a geosynthetic material
Service Life	The expected life of a structure.
Serviceability Limit State	A performance criterion which limits the deformations.
Sewing Thread	a flexible, small-diameter yarn or strand, usually treated with a surface coating, lubricant, or both, intended to be used to stitch one or more pieces of material or an object to a material.
Sewn Seam Strength	for geotextiles, the maximum resistance, measured in kilonewtons per metre, of the junction formed by stitching together two or more planar structures.
Sewn Seam	in sewn fabrics, a series of stitches joining two or more separate plies of a material or materials of planar structure such as textile fabric.
Sill Beam	A concrete abutment which bears without piled support on the reinforced soil wall.
Soil Dowel	A relatively stiff structure element used to take load in soils principally by shear action.
Soil Nail	A tensile reinforcement, typically a steel bar or high strength polymer bar, placed in the ground and bonded for all or a majority of its full embedded length.
Soil Reinforcement	Components which are embedded in the reinforced fill material and act through interface friction, bearing or other means to improve the stability and structural adequacy of the RSW.
Specific Gravity	the ratio of the density of the substance in question to the density of a reference substance at specified conditions of temperature and pressure.
Specification	a set of documented requirements to be satisfied by a material, design, product, or service
Specimen	a specific portion of a material or laboratory sample upon which a test is performed or which is taken for that purpose.
Spray Bonding	application of a binder by spraying onto a moving web in fine droplets through nozzles
Sprayed Concrete	A mixture of cement, aggregate and water (it may also include fibres and/or cement mixtures), conveyed through a hose, and projected at high velocity from a nozzle into place, to produce a dense homogeneous mass and may be applied by either a dry-mix, or a wet mix process.
Spun Bonding/Spun Laid	production process of nonwoven fabric made by spinning continuous filament fibers onto a moving belt
Stability Limit State	A limit state corresponding to the loss of static equilibrium of a structure or part of structure considered as a rigid body.
Standard Atmosphere for Testing	the atmosphere in which a sample or test piece is kept before being subjected to test, characterized by specified values of temperature, relative humidity and pressure
Standard Geosynthetic Laboratory Environment	a general purposes geosynthetic laboratory should control, monitor, and record the temperature range to 22.6 ± 3 °C and the relative humidity to 45 to 75 %. In cases of dispute, one should use the "atmosphere for testing" suggested in the appropriate standard test method.
Staple Fibre	fibre of discrete length, which may be of any composition, usually cut from that continuous filaments
Stepped Isothermal Method	a form of Time-Temperature Superpositioning that involves measuring the creep rate of a sample while it is subjected to a. series of isothermal temperature steps
Stiffness	resistance to bending.
Stitch Bonding	nonwoven construction by stitching or knitting fibers to form a fabric, usually by warp knitting of yarns through a fibrous mat
Stitch	the repeated unit formed by the sewing thread in the production of seams in a sewn fabric
Strain	the change in length per unit of length in a given direction.
Strength Limit State	A limit state of collapse or loss of structural integrity
Strength	ability of a material to withstand an applied load without failure or plastic deformation
Stress Crack	an external or internal crack in a plastic caused by tensile stresses less than its short-time mechanical strength.
Stress Relief (For Asphalt Overlay)	use of a geosynthetic to retard the development of cracks by absorbing the stresses that arise from the damaged pavement
Stressed Ground Anchor	A tensile reinforcement, typically high tensile steel strand or wire or bar, and its associated components that transmit force into soil or rock through bond over part of its length. An initial tension is applied and the minimum capacity is usually checked by proof loading.
Stress-Strain Curve	unique relationship between the stress and strain for a particular material
Subsoil Drain	A system of pervious subsurface pipes, which is used in soil materials to collect ground water.
Subsurface Drainage System	A system of drainage measures designed to remove water and seepage from the ground, which may include all, or a combination of, pervious granular materials, geocomposite, subsoil drains and piped drains.
Surface Erosion Control	use of a geosynthetic materials to prevent or limit soil or other particle movements at the surface of, for example, a slope
Synthetic Fibre	man-made textile fiber including usually those made from natural materials as well as fully synthetic fibers
Tangent Point	for geotextiles, the first point of the force-elongation curve at which a major decrease in slope occurs.
Tangent Tensile Modulus	the slope of a line tangent to the stress-strain curve at a point of interest. It is equal to the Young's Modulus when the point of tangency falls within the linear range of the stress-strain curve



Tape	a thin, long and narrow piece of material
Tearing Strength	the force required either (1) to start or (2) to continue or propagate a tear in a fabric under specified conditions.
Temperature Stability	for a geotextile, the percent change in tensile strength or in percent elongation as measured at a specified temperature and compared to values obtained at the standard conditions for testing geotextiles.
Tensile Creep Rupture Strength	for geosynthetics, the force per unit width that will produce failure by rupture in a creep test in a given time, at a specified constant environment
Tensile Creep Strain	the time-dependent viscoplastic strain of materials under long-term static tensile stress
Tensile Creep	time-dependent viscoplastic deformation of materials under long-term static tensile stress
Tensile Modulus	ratio of the change in tensile stress or strength of a geosynthetic to the corresponding change in elongation expressed in MPa or kN/m
Tensile Shear Test	tensile test of a bond, joint or connection in which two components are separately clamped and load is applied in the plane of the product in order to determine tensile shear strength
Tensile Strain	the relative length of deformation, in percent of the original length, exhibited by a specimen subjected to a tensile force
Tensile Strength (Related to Specimen Width) At	stress at which the test specimen ruptures
Tensile Stress at Failure	stress at which the test specimen ruptures
Tensile Stress at Yield Point	first stress at which an increase in strain occurs without an increase in stress Note 1 to entry: It may be less than the maximum attainable stress.
Tensile Test	in textiles, a test in which a textile material is stretched in one direction to determine the force-elongation characteristics, the breaking force, or the breaking elongation.
Test Result	a value obtained by applying a given test method, expressed either as a single observation or a specified combination of a number of observations.
Test Sample	a portion, part, or fraction containing the unbiased characteristics of a larger product population, used to test one or more properties of the product
Test Section	a representative structure made as part of a real structure; usually instrumented to understand the behavior of the structure
Test Specimen	a specific portion or quantity of material for use in testing, usually extracted or cut from a sample
Textile	flexible material consisting of a network of natural or artificial fibers (yarn or thread)
Texture	Smoothness or roughness of the surface.
Thermal Degradation	Molecular deterioration as a result of overheating.
Thermal Welding	A welding process where a thermal process is used.
Thickness	distance between the upper and lower surfaces of a geosynthetic, measured normal to the surfaces and under a specified pressure
Transmissivity	volumetric flow rate per unit width of specimen and per unit gradient in the plane of a product
Turbulent Flow	that type of flow in which any water particle may move in any direction with respect to any other particle, and in which the head loss is approximately proportional to the second power of the velocity.
Turf Reinforcement Mat	A geosynthetic erosion control mat.
Typical Value	for geosynthetics, the mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with on specific property.
Ultimate Limit State	A performance criterion which shows the failure condition.
Uncontrolled Fill	Soil, rock or other inert material that has been placed at a site and that does not fall under the definitions for Controlled fill- Class1 and Controlled fill- Class2.
Uniaxial	A reinforcement which is designed to resist tensile forces in only one direction.
Vacuum Chamber	a device that allows a vacuum to be applied to a surface.
Velocity Index	velocity corresponding to a head loss of 50 mm across a specimen, in a water permeability test
Vertical Strip Drain	a geomposite consisting of a geotextile cover and drainage core installed vertically into soil to provide drainage for accelerating consolidation of soils.
Vertical Structure Drain	A vertical drainage system located behind and adjacent to a retaining wall, reinforced soil structure or its facing, comprising a pervious medium for the dewatering of the retained soil mass.
Viscosity	the property of resistance to flow in any material with fluid properties
Void Ratio	the ratio of the volume of void space to the volume of solids.
Wale	A horizontal constructional member (as of timber or steel) used for bracing vertical members.
Warp	the yarn running lengthwise in a woven fabric.
Wefit	the filling thread or yarn in weaving
Welding	To unite parts by heating and allowing the materials to flow together.
Wide Strip Tensile Test	for geosynthetics, a tensile test in which the entire width of a 200 mm (8.0 in.) wide specimen is gripped in the clamps and the gage length is 100 mm (4.0 in.).
Work-To-Break	in tensile testing, the total energy required to rupture a specimen.
Woven Geotextile	geotextile produced by interlacing, usually at right angles, two or more sets of yarns, filaments, tapes or other elements
Wrap-Around	A geosynthetic reinforced soil system where the facing is made with the same material as the reinforcement.
Wrinkle	A small ridge or furrow especially when formed on a surface by the shrinking or contraction of a geosynthetic.
Yarn	A continuous strand composed of either natural or man-made fibers or filaments and used in weaving and knitting geosynthetic products.
Yield Point	in geosynthetics, the point on the force-elongation curve at which the first derivative equals zero (the first maximum).
Yield Point	point on the stress-strain curve, other than the failure point, at which an increase in strain occurs without an increase in stress