GLOSSARY

NONWOVENS TERMS

For further information please contact EDANA
Tel: +32 (0) 2 734 93 10 **Fax :** +32 (0) 2 733 35 18 **Email:** info@edana.org
www.edana.org

A

ABRASION RESISTANCE	The ability of a fibre or fabric to withstand surface wear and rubbing
ABSORPTION	The process by which a gas or liquid is taken up within a material.
ACTINIC DEGRADATION	Strength loss or weakening of fibres and fabrics due to exposure to sunlight.
ADDITIVES	Chemicals added or incorporated in materials to give them different functional or aesthetic properties, such as flame retardancy and/or softness.
ADHESION	The force that holds different materials together at their interface.
ADHESIVE	A material, flowable in solution or when heated, that is used to bond materials together.
ADHESIVE MIGRATION	The movement of adhesive together with its carrier solvent, in a fabric during drying, giving it a non-uniform distribution within the web; usually increasing towards the outer layers.
ADSORPTION	The process by which a gas or liquid is taken up by the surface of a material.
AESTHETICS	Properties perceived by touch and sight, such as the hand, colour, lustre, drape, and texture of fabrics.
AFTERGLOW	The flameless, ember-like burning of a fabric.

AFTER TREATMENT (FINISHING)	Process usually carried out after a web has been formed and bonded. Examples are embossing, creping, softening, printing and dyeing.
AGGLOMERATION	A cluster of particles or fibres.
AGEING	Processing in which products are exposed to environmental conditions that simulate real use or accelerated use, for the purpose of determining their effect on the functional and aesthetic properties of the products.
AIR FORMING	Utilising air to separate and transport fibres to form a web.
AIRLAYING	Forming a web by dispersing fibres in an air stream and condensing them from the air stream onto a moving screen by means of a pressure or vacuum.
AIRLAID	A web of fibres produced by airlaying.
AIRLAID NONWOVEN	An airlaid web bonded by one or more techniques to provide fabric integrity.
AIR PERMEABILITY	The porosity or the ease with which air passes through a fabric.
AMORPHOUS	Not crystalline. A random rather than a regular arrangement of chains of molecules within regions of a polymer or fibre.
ANIONIC COMPOUND	A chemical carrying a negative electrical charge.
ANISOTROPIC	Not having the same physical properties in every direction. In the plane of the fabric, it is related to a non-random distribution of fibres or filaments.
ANTIFOAMING AGENT	An additive that minimises the formation of bubbles within or on the surface of a liquid by reducing the

surface forces that support the bubble's structure (see SURFACE TENSION).

ANTIOXIDANT An additive that retards the deterioration of a material's functional and aesthetic properties by reaction with the oxygen in the air.

ANTISTAT An additive that reduces the accumulation or assists the dissipation of electrical charges that arise during the processing of fibres, fabrics and films and during the use of such materials.

ATTENUATION Drawing or pulling of molten polymer into a much reduced diameter filament or fibre.

B

BACKING

A web or other material that supports and reinforces the back of a product such as carpeting or wallpaper.

BALE

A compressed and bound package of fibres - a common shipping package for fibres.

BATCH

A number or an amount of items forming a group i.e. a batch (amount) of fibres.

BASIS WEIGHT
(MASS PER UNIT AREA)

The mass of a unit area of fabric.

Examples: grams per square meter - ounces per square yard.

BATTING

A soft bulky assembly of fibres, usually carded. A carded web is sometimes referred to as a batt.

BEATER

1) The machine that does most of the fibre separation and cleaning in the processes of picking and opening, that occur before the fibre is carded to form a web.

2) A piece of paper making fibre preparation equipment which permits the mechanical treatment of cellulose fibres in water to produce fibrillation.

BICOMPONENT FIBRES

Fibres consisting of two polymeric compounds arranged in a core-sheath (concentric or eccentric) or a side by side or a matrix or 'islands in the sea' configuration, chosen too ensure one component softens at a sufficiently lower temperature than the other in order to maintain the structural integrity or to create specific characteristics.

BINDER

An adhesive substance, generally a high polymer in a solid form (powder, film, fibre) or as a foam, or in a liquid form (emulsion, dispersion, solution) used

	for bonding the constituent elements of a web or enhancing their adhesion, in order to provide the nonwoven fabric cohesion, integrity and/or strength and additional properties.
BINDER CONTENT	The mass of adhesive used to bond the fibres of a web together - usually expressed as percent of the fabric weight.
BINDER FIBRE	Generally, thermoplastic fibres used as thermal bonding fibres in conjunction with other fibres with a higher softening point or non-melting fibres. Some binder fibres that may not be thermoplastic can be activated by solvent (e.g. water).
BIODEGRADABLE	The ability of a substance to be broken down by bacteria so that it can be consumed by the environment.
BIODEGRADATION	Conversion of organic compounds to inorganic constituents, naturally occurring gases and biomass, by the action of micro-organisms.
BLEND	A combination of two or more fibre types in making fabrics.
BONDING	Conversion of a fibrous web into a nonwoven by chemical (adhesive/solvent) means or by physical (mechanical or thermal) means. The bonding may be distributed all over (through or area bonding) or restricted to predetermined, discrete sites (point or print bonding).
BOND STRENGTH	Amount of force needed to delaminate a composite structure or to break the fibre-to-fibre bonds in a nonwoven.
BLEACHING	Chemical treatment with compounds that release chlorine or oxygen, to increase the whiteness of fibres and fabrics.

BREAKING LENGTH

The length of a strip of fabric or film whose weight is equal to the force needed to break it. It is calculated by dividing the force needed to break by the basis weight.

BUCKLING

To give way or deform under longitudinal pressure.

BULKING

Processes that develop greater fullness, volume and crimp in fabrics.

BURNING RATE

The speed at which a fabric burns. This can be expressed as the amount of fabric affected per unit time, or in terms of distance or area travelled by flame, afterglow or char.

BURSTING STRENGTH

The maximum pressure needed to rupture a material.

The pressure should be applied to a specified circular area of the test piece of material.

C

CALENDER

A machine used to bond fibres of a web or sheets of fabric or film to each other or to create surface features on these sheets. It consists of two or more heavy cylinders that impart heat and pressure to the sheets that are drawn between them. The rollers can be mirror smooth, embossed with a pattern, or porous.

CALENDER BONDING

A process for thermally bonding webs by passing them through the nip of a pair of rolls, one or both of which are heated. Plain or patterned rolls may be employed (see POINT BONDING). Alternatively, a blanket calendar may be used.

CALENDERING

A mechanical finishing process used to laminate or to produce special surface features such as high lustre, glazing and embossed patterns.

CARD

A machine designed to separate fibres and remove impurities; align and deliver them to be laid down as a web or to be further separated and fed to an airlaid process. The fibres in the web are aligned with each other predominantly in the same direction.

The machine consists of a series of rolls or a drum that are covered with many projecting wires or metal teeth. These wire-clothed rolls or drums are called cards.

CARDING

A process for making fibrous webs in which the fibres are aligned essentially parallel to each other in the direction in which the machine produces the web (machine direction).

CARDING WILLOW

A machine designed to give a gentle carding treatment to the fibre.

CARDED	A web of fibres produced by carding.
CARDED NONWOVEN	A carded web, bonded by one or more techniques to provide fabric integrity.
CARPET BACKING	Support sheet on the back of a carpet through which the tufts are inserted or adhered.
CATALYST	A chemical that changes the rate of a chemical reaction, usually to speed it up, and is not consumed to form the product.
CATIONIC	A chemical carrying a positive electrical charge.
CELLULOSIC FIBRES	Made from plants that produce fibrous products based on polymers of the cellulose molecule. Cotton plants produce separate cellulose fibres, whereas wood pulp is made by mechanically and/or chemically separating wood fibres. Other sources of cellulose are fibres such as flax manila, ramie and jute. Rayon is made by dissolving wood pulp in a solution and extruding that solution through spinnerets into a chemical bath that regenerates the fibres.
CHAR	The flame affected part of a fabric after it has been burned.
CHEMICAL BONDING	A method of bonding webs of fibres by chemical agents that may include adhesives and solvents. The process may entail one or more of the following methods: impregnation, spraying, printing and foam application. ***NOTE:*** chemical bonding using chemical agents occurs only in a reactive system, e.g. a cross-linkable dispersion. Normal polymer bonding as it happens with non-reactive polymer binders (e.g. fibres, adhesives or lattices) is a physical process.

CHEMICAL FINISHING

Processes that apply additives to change the aesthetic and functional properties of a material. Examples are the application of antioxidants, flame retardants, wetting agents and stain and water repellents.

CHIPS

Feed stock in the form of pellets or granules Examples are polymers used in fibre production and wood pulp used in rayon production.

CIVIL ENGINEERING FABRICS

See **GEOTEXTILES**.

CLEARER ROLL

In carding, keeps the bottom feed roll clean.

CLUMP

A knot of fibres in a web resulting from their improper separation.

COAGULATION

The agglomeration of suspended particles from a dispersed state.

COALESCENCE

To come to together - form a whole particle.

COANDA (EFFECT)

The phenomenon of a fluid stream following a curved surface placed in its path even if it is not in contact. From the persons name Coanda. Originally applied to airflow patterns over an aircraft wing.

COATING

Application of a liquid material to one or both surfaces of a fabric, followed by drying and/or curing.

COHESION

The resistance of similar materials to be separated from each other.

Examples are: the tendency of fibres to adhere to each other during processing, the resistance of a web to being pulled apart, and the resistance of a component of a laminate to being torn apart when the adhesive interface in the laminate is being stressed.

COLLOIDAL

Microscopic particles uniformly dispersed through out a second substance or phase.

COMBING

In carding, the part of the process that removes neps and straightens the fibres.

COMFORT

The sense of well-being in wearing clothing that comes from characteristics such as hand, breathability, softness, lightweight, and warmth.

COMPOSITE

1) A composite material can be defined as a macroscopic combination of two or more distinct materials, having a recognisable interface between them.

2) The term composite nonwoven is used when the essential part of the composite can be identified as a nonwoven. If the essential part cannot be identified, the term composite nonwoven is used when the mass of the nonwoven content is greater than the mass of any other component material. A composite nonwoven may be a nonwoven i.e. a prebonded fabric, to which filaments or spun yarns have been added.

3) If the composite nonwoven is a combination of different layers, according to the nature of these layers or to the bonding process it may be called:

COMPLEX - the use of the term 'complex' limited to the association of two or several webs or nonwoven fabrics by means of bonding, i.e. latex bonding, hydro-entangling, needle punching, thermo-bonding or stitch bonding.

LAMINATE - produced by laminating. The term laminating means the permanent joining of two or more prefabricated materials, at least one of which is nonwoven, using an additional medium (i.e. adhesive) if necessary to secure bonding.

4) Coated nonwovens are nonwovens, where a layer (or layers) of an adherent coating material has been uniformly applied either as a continuous layer or in a pattern on one or both surfaces.

COLOURFASTNESS

The ability of a material to retain its colour when exposed to conditions (such as washing, dry-cleaning, sunlight, etc.) that can remove or destroy colour.

CONDITIONING

A process of allowing materials to reach equilibrium with the moisture and temperature of the surrounding atmosphere. The atmosphere may be a standard 65 percent relative humidity and 20 degrees centigrade, for testing purposes, or other conditions that are optimum for manufacturing or processing.

CONTACT ANGLE

The angle between the face exposed to air of a drop of liquid and the material on which it is resting. Small angles, presented by flattened-out drops, indicate greater wettability of the material by the liquid. Large angles, represented by rounded drops, indicate repellency.

CONTINUOUS FILAMENT

A fibre of unending length, usually made by extruding a plastic or polymer solution through a hole in a die called a spinneret.

CONVERTER

An organisation that manufactures finished products from fabrics supplied in rolls; or provides intermediate processing steps such as slitting, dyeing and printing.

COPOLYMER

A polymer chain made up of monomeric units from more than one monomer, e.g. vinyl acetate / ethylene polymers.

COTTON FIBRE

A unicellular, natural fibre composed of an almost pure cellulose. As taken from plants, the fibre is found in lengths of 8 mm - 50 mm. For marketing, the fibres are graded and classified for length, strength and colour.

COVER

The degree to which a fabric hides an underlying structure.

COVERSTOCK A lightweight nonwoven material used to contain and conceal an underlying core material. Examples are the facing materials that cover the absorbent cores of diapers, sanitary napkins and adult incontinence products.

CREPE A quality in a fabric imparted by wrinkling or embossing to give a crimped surface and greater fabric bulk.

CRIMP The waviness of a fibre. Crimp amplitude is the height of the wave with reference to the straight uncrimped fibre.

CRIMP FREQUENCY OR LEVEL The number of crimps per unit of length.

CRIMP ENERGY The work needed to straighten out a fibre.

CRIMP PERCENT The length difference between the crimped and stretched out fibre expressed as a percentage.

CROSS DIRECTION The width direction, within the plane of the fabric, that is perpendicular to the direction in which the fabric is being produced by the machine.

CROSS LAYING Forming a multilayer web on to a conveyor belt by laying thereon a web to and fro at right angles to the direction in which the conveyor belt travels. The orientation of the fibres is dependent on the speed of the web delivery, the speed of the conveyor belt, and the width of the final web. In many cases a majority of the fibres will lie in the cross direction.

CROSS LAID A web of fibres, formed by crosslaying.

CROSSLAPPER A machine used to fold or layer fibre webs across their widths. The crosslapper provides webs with both machine direction and cross direction fibre orientation, can change web width, or web weight.

CROSS LINKING	A chemical reaction that creates bonds at several points between polymers. These cause the polymers to be less soluble and to undergo changes in elasticity and stiffness.
CROSS SECTION	The outline profile of a cut end of a fibre when it is cut perpendicular to its long axis. These profiles can be round, oval, irregular or complex shapes depending on the shape of the die used to extrude the synthetic fibre; or for a natural fibre, depending on its growth pattern.
CRYSTALLINE	Orderly arrangement of molecules and polymer chains in a fibre or plastic.
CRYSTAL	A three-dimensional atomic (or ionic or molecular) structure with periodically repeating identical cells.
CRYSTALLISE	To partially or completely convert to a crystal form from a liquid or glassy state.
CURING	A process by which resins, binders or plastics are set into or onto fabrics, usually by heating, to cause them to stay in place. The setting may occur by removing solvent or by crosslinking so as to make them insoluble.
CUTTER	A device that is used to reduce the length of fibres particularly man-made staple fibres.

D

DEFOAMING AGENTS See **ANTIFOAMING AGENTS**.

DEGRADATION Deterioration of the aesthetic and functional properties of a product - usually after being exposed for some time to heat, cold, light, or use.

DEGREE OF POLYMERISATION The average number of molecules in a polymer.

DEIONISED Normally applied to water from which all 'contaminating ions' have been removed. Ultra pure.

DELUSTRANT An additive that is used to dull the lustre and to increase the opacity of a fibre or a fabric. The pigment titanium dioxide is often used. The degree of delustering is termed; semi dull, dull, or extra dull, depending on the amount of pigment added.

DENIER The measure of a mass per unit length of a fibre. Denier is numerically equal to the mass in grams of 9000 meters of material. Low numbers indicate fine fibre sizes and high numbers indicate coarse fibres.

DENSITY Mass per unit volume, i.e. grams/cubic centimetre.

DIAPER Disposable version of a baby's nappy (see also NAPPY).

DIE A system to produce a thin filament of molten polymer in spunlaid and melt blown technology.
A small annular orifice for spinning man-made fibres.

DISCREET Unobtrusive.

DISPERSION

A distribution of small particles in a medium as in a colloidal suspension of a substance. It also is used to describe the uniform suspension of fibres in water for wet forming.

DISPOSABLE

Single or limited use product - becomes waste material after use, which in turn can be recycled, composted, incinerated or disposed of in a landfill.

DOFFER

The last cylinder of a card from which the sheet of fibres that has been formed is removed by a comb (doffer comb).

DRAPE

1) The ability of a fabric to fold on itself and to conform to the shape of the article it covers.

2) Covers used in an operating theatre for both patient and equipment.

DRAWING

A process of stretching a filament after it has been formed so as to reduce its diameter. At the same time, the molecules of the filament are oriented, thereby making it stronger. The ratio of the final length to the initial length is called the draw ratio.

DRESSING

1) Cover for a wound to prevent infection.

2) Treatment applied to nonwoven to impart specific characteristics (i.e. flame retardancy).

DRY FORMING (DRY LAYING)

A process for making a nonwoven web from dry fibre. These terms apply to the formation of carded webs, as well as to the air laying formation of random webs.

DRYLAID

A web of fibres produced by drylaying.

DRYLAID NONWOVEN

A drylaid web bonded by one or more techniques to provide fabric integrity.

DRYING CYLINDERS Heated revolving cylinders over which the fabric is passed to dry.

DUMBBELLS Defects found in wet formed nonwovens, in which a long fibre entangles clumps of regular fibres. Typically, clumps are formed at each end of the long fibre, giving it the appearance of a dumbbell.

DURABLE Multiple use product.

DURABILITY A relative term for the resistance of a material to loss of physical properties or appearance as a result of wear or dynamic operation.

E

ELASTICITY

The ability of a strained material to recover its original size and shape immediately after removal of the stress that causes deformation.

ELASTOMERS

Polymers having the rubbery qualities of stretch and recovery.

ELECTROSTATIC WEB

A web produced by an electrostatic process. Forming a web of fibres, especially BONDING microfibres, by means of an electrostatic field from a polymer solution or emulsion, or from a polymer melt.

EMBOSSING

A process whereby a pattern is pressed into a film or fabric, usually by passing the material between rolls with little clearance and where one or both rolls have a raised design. At least one of the rolls is usually heated.

EMULSION

A suspension of finely divided liquid droplets within another liquid (see DISPERSION).

ENTANGLEMENT

A method of forming a fabric by wrapping or knotting fibres in a web about each other by mechanical means, or by use of jets of pressurised air or water, so as to bond the fibres (see MECHANICAL BONDING).

EXTRUSION

A process by which a heated polymer is forced through an orifice to form a molten stream that is cooled to form a fibre. Examples of this process are Polypropylene and Polyester.

Alternatively, a solution of polymer can be forced through an orifice into a solvent that causes the fibre to solidify. Examples are Kevlar and rayon.

F

FABRIC A sheet structure made from fibres, filaments or yarns.

FACING An outer covering of a product that during use is exposed or is placed against the body.

FANCY In carding, prepares the fibres for transfer from the main cylinder to the doffer.

FANCY STRIPPER Cleans the fancy.

FEEDER FAN A fan system that is used to feed a mixture of air and fibre, often in controlled quantities, into the web forming process.

FEED LATTICE An open, slatted conveyor normally used in drylaid nonwovens to feed fibre into the process or to convey the fleece within the process.

FEED ROLLS Top and bottom rolls in carding that receive the fibres from the opening and blending stages of the plant.

FELT A sheet of matted fibres, most often wool or fur, bonded together by a chemical process, and the application of moisture, heat, and pressure (see also NEEDLEFELT).

FIBRE

The basic threadlike structure from which nonwovens, yarns and textiles are made.

It differs from a particle by having a length at least 100 times its width.

NATURAL FIBRES are either of animal (wool, silk), vegetable (cotton, flax, jute) or mineral (asbestos) origin.

MAN-MADE FIBRES may be either polymers synthesised from chemical compounds (polyester, polypropylene, nylon, acrylic etc.) modified natural polymers (rayon, acetate) or mineral (glass) (See also FILAMENT).

FIBRE DISTRIBUTION

In a web, the orientation (random or parallel) of fibres and the uniformity of their arrangement.

FIBREFILL

Low density fibre constructions, used as filling and cushioning, for products like pillows, bras and quilts.

FIBRID

A fibre having a lower melting point than the matrix fibre which can ultimately be melted to act as a local binder/enforcement system.

FIBRILLATE

To break up a plastic sheet into a fibrous web, or to break up fibres into smaller fibres.

FILAMENT

A fibre of indefinite length (see CONTINUOUS FILAMENT).

FILLER

A non-fibrous additive used in a fibre, binder or a film, to increase weight, replace more expensive polymer, or to change lustre, or opacity etc.

FILTER FABRIC

A material used to separate particles from their suspension in air or liquids.

FINISH

Substance added to fibres and webs in a post-treatment, to change their properties.

Examples are spin finishes (lubricants) and flame retardants.

FINISHING See **AFTER TREATMENT**.

FLAME RETARDENCY The ability of a material to resist ignition and the propagation of a flame. Flame resistance is the ability to burn slowly or to self-extinguish after the ignition source is removed.

FLAMMABILITY TESTS Procedures used to determine the flame resistance and flame retardancy of materials.

FLASHSPINNING Modified spinlaying method in which a solution of a polymer is extruded under conditions where, on emerging from the spinneret, solvent evaporation occurs so rapidly that the individual filaments are disrupted into a highly fibrillar form. These fibres are then deposited on a moving screen to form a web.

FLASHSPUN A web of fibres produced according to the flash spinning method.

FLASHSPUN NONWOVEN Web of fibres produced by the flash spinning method and bonded by one or more techniques to provide fabric integrity.

FLEXIBILITY ***1)*** The ability to be flexed or bowed repeatedly without rupturing.

2) A term relating to the hand of a fabric, referring to the ease of bending, and ranging from pliable (high) to stiff (low).

FLEXURAL RIGIDITY A measure of the resistance of materials to bending by external forces. It is related to stiffness.

FLOCKING

A method of applying a velvet-like surface to a material by dusting, or electrostatically attracting, short fibres onto an adhesively coated surface. The short fibres are made by special cutting or grinding techniques.

FLUFF PULP

Wood pulp specially prepared to be dry defibred.

FOAM

A bubbled structure made by dispersing a gas in a liquid or solid.

Mass of small bubbles formed in a liquid by agitation.

FOAM BONDING

Binding fibres in a web to form a fabric by applying adhesive in the form of a foam whose bubbles break quickly after being applied.

G

GARNETTING

A machine similar to a card is sometimes used to form a web from textile waste materials. The machine is known as a Garnet.

GEOTEXTILE

A permeable fabric used in civil engineering construction projects such as paving, dams, embankments and drains for the purpose of soil reinforcement and stabilisation, sedimentation control and erosion control, support and drainage.

GODET

Mechanical device, normally a small roll that provides mechanical as opposed to aerodynamic extension to spun filaments.

H

HAND — Qualities of a fabric perceived by touch, e.g. softness, firmness, stretch, resilience and drape.

HEAT RESISTANCE — The ability to resist degradation at high temperatures.

HEAT SETTING — Process by which fibres or fabrics are heated to a final crimp or molecular configuration so as to minimise changes in shape during use.

HEAT SINK — A means of dissipating heat generated in a reaction normally within the reaction system.

HEAT STABILISED — The ability of a fabric to resist shrinking or stretching under a mechanical or chemical stress. This property is obtained by prior heat treatment or with a chemical additive.

HEMICELLULOSE — Lower molecular weight cellulose material soluble in sodium hydroxide solution.

HEMMING — To sew the edge of a fabric.

HIGHLOFT — General term for low density, thick or bulky fabrics.

HOMOPOLYMER — A polymer chain made up of monomeric units from one monomer only e.g. polyethylene.

HOT-MELT ADHESIVE — A solid material that melts quickly upon heating, then sets to a firm bond upon cooling. Used for almost instantaneous bonding.

HOPPER — Structure used to contain material prior to being fed into the process i.e. polypropylene polymer chips prior to fibre spinning.

HYDRATION	The incorporation of molecular water into a complex molecule with the molecules or units of another species.
HYDROENTANGLING	Method of bonding a web of fibres or filaments by entangling them by using high-pressure water jets. A preformed web is entangled by means of high pressure, columnar water jets. As the jets penetrate the web, fibre segments are carried by the highly turbulent fluid and become entangled on a semi-micro scale. In addition to bonding the web, which needs little or no additional binder, the process can also be used to impart a pattern to the web.
HYDROENTANGLED	A web of fibres or filaments bonded by hydroentangling.
HYDROENTANGLED NONWOVEN	A web bonded by hydroentanglement. It may additionally be bonded by other techniques.
HYDROPHILIC	Having an affinity for being wetted by water or for absorbing water.
HYDROPHOBIC	Lacking the affinity for being wetted by water or for absorbing water.
HYDROPHOBES	Species in a system that exhibit hydrophobic characteristics.

I

IMBIBITION Liquid holding capacity of a fabric.

INDUSTRIAL FABRICS Materials for non-apparel and non-decorative uses. Examples are wipes, cable wrap and geotextiles.

INSTRON TENSILE TESTER High precision electronic test equipment that measures the elongation or shortening of materials while forces such as pulling or compression are applied.

INTER MOLECULAR Between molecules (normally refers to water).

INTERFACING (INTERLINING) A nonwoven used in garments to provide weight, support and stiffness.

INTRA MOLECULAR Held within the molecular structure.

ISOTROPIC Having the same physical properties in every direction in the plane of a fabric.

It is related to the random distribution of the fibres.

K

KNITTING Technique for interlocking loops of fibres with needles or similar devices.

L

LAMINATE (see COMPOSITE).

LAP A compressed sheet of fibres in a roll, weighing approximately 25 Kg. used to supply fibres to a card. Also called a picker lap.

LEAD TIME Time taken from initiation to actual start of event or process.

LICKERIN Art of the card that takes up tufts of fibres from the lap and feeds it to the main cylinder to be carded. It consists of a metal roll that has a spiral grooved surface covered with a sawtooth wire.

LIGNIN Phenolic type compound associated with cellulose in structures such as wood. Acts as the 'cement' to give the material strength.

LIMITING OXYGEN INDEX Measure of flammability that determines the minimum concentration of oxygen in a gas mixture that is required to sustain steady burning.

LINT Particles and short fibres that come off a fabric product during the stresses of use.

LINTERS Short cotton fibres not removed from the cotton seed on the first pass through the gin. Linters are cut from the seed and used to make cellulose based chemicals and rayon.

LOAD (TO -) To place in place for processing i.e. to load a roll of finished web into the slitter.

LUMPER ROLL In carding reduces the size of the fibre bundles that are transferred to the main cylinder.

M

MACHINE DIRECTION

The long direction within the plane of the fabric, that is the direction in which the fabric is being produced by the machine.

MAIN CYLINDER

In carding carries the fibres to the worker and stripper rolls.

MANMADE FIBRE

A class name for various types of fibres (and filaments) produced from fibre forming substances that may be:

1) Polymers synthesised from chemical compounds, e.g. acrylic, nylon, polyester, polyethylene, poly-urethane, and polyvinyl fibres.

2) Modified or transformed natural polymers, e.g. alginic, and cellulose based fibres such as acetates and rayons.

3) Minerals, e.g. glasses.

The term manmade usually refers to all chemically produced fibres to distinguish them from the truly natural fibres such as cotton, wool, silk, flax etc.

MASS

The quantity of matter a body or article contains.

MAT

An array of fibres.

A non-glossy finish to a web.

MECHANICAL BONDING

A method of bonding a web of fibres by entangling them. This can be achieved by needling, stitching with fibres or by the use of high-pressure air or water jets.

Stitchbonded fabrics are considered as felt or as knitted fabrics by the Customs Co-operation Council in the Harmonised Commodity Description and Coding System. Therefore stitchbonding is not included in the description of the mechanical bonding of nonwovens.

MECHANICAL FINISHING

Changing the appearance or physical characteristics of a fabric by a mechanical process such as calendaring, embossing, bulking, compacting and creping.

MELTBLOWING

A method in which a molten polymer is extruded into a high velocity hot gas stream that converts it into fibres. The molten plastic is blown with hot, high velocity gas through the extruder die lips. The filaments exiting from the extruder are attenuated during their formation until they break. The fibres break into short lengths rather than being continuous as those formed in spunlaid nonwovens. The short fibres thereby created are spread with cool quench air onto a moving belt called a forming fabric or onto a drum, where they bond to each other to form a white opaque, fine fibred web.

MELTBLOWN

A web produced by meltblowing.

MELTBLOWN NONWOVEN

A meltblown web bonded by one or more techniques to provide fabric integrity.

MELTSPINNING

Production of filaments by melting and extruding polymer.

MELDED FABRIC	A nonwoven formed of a base fibre and a thermoplastic fibre. The web is hot calendared or embossed at the softening point of the thermoplastic fibre to form the inter-fibre bonds.
METALLOCENE	Single site catalyst system used to produce polyolefins.
MICELLE	An aggregate of molecules in a colloidal solution.
MIL	One thousandth of an inch. Used to measure the diameter of fibres and the thickness of films.
MODULUS OF ELASTICITY	Young's modulus or the ratio of the stress on a material or a fibre to the strain produced by it. It is a measure of elasticity. An extensible material or fibre has a low modulus whereas stiff materials have a high modulus.
MONOMER	Small molecules that can be linked together to produce polymers.
MOISTURE REGAIN (OR REGAIN)	Percentage of moisture in a fibre or fabric after it is equilibrated in a standard humidity.
MORPHOLOGY	Study of the fine, microscopic structure of a fibre or other material. The crystalline or amorphous nature.
MOULD (TO -)	To form, often with vacuum assistance, into 3D and 2D shaped articles.
MOULD	Cylindrical design of wet forming device.

N

NAPPY Absorbent material worn as underpants by a baby not yet toilet trained.

NATURAL FIBRES Fibres made directly from animals, vegetables or minerals. Examples are silk, wool, cotton, flax, jute, ramie, and asbestos.

NECKING Narrowing in width of a fabric, fibre or film when it is stretched.

NEEDLEFELT A sheet of fibres (generally man-made) bonded by needling.

NEEDLEPUNCHING Mechanically binding a web to form a fabric by puncturing the web with an array of barbed needles that carry tufts of the web's own fibres in a vertical direction through the web.

NEEDLING Action of needles being inserted and withdrawn from a batt or web or article not necessarily to produce bonding.

NEPS Small knots of fibres that were not separated before forming the web.

NIP The line of close contact between two cylinders between which a fabric or web passes.

NONWOVEN

A nonwoven is an engineered fibrous assembly, primarily planar, which has been given a designed level of structural integrity by physical and/or chemical means, excluding weaving, knitting or paper making.

NYLON FIBRE

A manufactured fibre in which the fibre forming substance is any long chain synthetic polyamide having recurring amide groups (-NH-CO-) as an integral part of the polymer chain. The two principal nylons are NYLON 66, which is polyhexamethylene diamine adipamide, and NYLON 6, which is polycaprolactam.

O

OLEFIN FIBRE

A manufactured fibre in which the fibre forming substance is any long chain synthetic polymer composed of at least 85% by weight of ethylene, propylene, or other olefin units. Olefin fibres combine light weight with high strength and abrasion resistance (see also POLYETHYLENE and POLYPROPYLENE).

OPENING

A preliminary operation whereby staple fibre is separated sufficiently from its lap and tufted condition so that it can be fed to the web forming part of the process.

OPTICAL BRIGHTENER

A colourless compound that lends a whiteness to a fabric. It does this by absorbing the ultraviolet component of light and emitting it as visible light.

ORIENTATION

The lining up or parallelism of molecular chains in fibres and films.

P

PADDING Applying a liquid or paste to a web by passing it between squeeze rollers or by dipping it in a bath that carries the liquid or paste.

PARALLEL LAYING Forming a web in such a way that the fibres or filaments are laid in directions roughly parallel with the machine direction.

PARALLEL LAID A web where the fibres or filaments are laid roughly parallel to the machine direction.

PERMEABILITY The ability to be penetrated by liquids or gases.

PHYSICAL BONDING A method of bonding fibrous webs by physical means: mechanical and thermal treatments.

PICKER A machine that separates staple fibre and forms it into a lap so that it can be fed to a card.

PIGMENT A coloured or white substance that is insoluble and finely divided. Used to colour or to deluster a fibre, fabric or plastic.

PILLING The tendency of fibres to come loose from a fabric surface and form balled or matted particles of fibre.

PLASTIC A polymer with its additives. Also the ability to be deformed and moulded.

PLASTICISER Chemical that imparts flexibility, stretch and workability to a fabric or a plastic.

PLIES Layers of web, fabric or components of a laminate.

POINT BONDING Using heat and pressure in a discrete predetermined pattern to bind thermoplastic fibres to form a nonwoven fabric.

POLYESTER FIBRE A manufactured fibre in which the fibre forming substance is any long chain synthetic polymer composed of at least 85% by weight of an ester of dihydric alcohol and terephthalic acid. The polymer is produced by the reaction of ethylene glycol and terephthalic acid or its derivatives.

POLYETHYLENE FIBRE A manmade fibre made of polyethylene, usually in monofilament form although work has been done on continuous filament yarns and staple. Ethylene is polymerised at high pressures and the resulting polymer is melt spun and cold drawn. It may also be dry spun from xylene solution.

POLYPROPYLENE FIBRE An olefin fibre made from polymers or co-polymers of propylene. Polypropylene fibre is produced by melt spinning the molten polymer followed by stretching to orient the fibre molecules.

POLYMER A liquid or solid substance made by chemically linking macromolecules together in chains. High polymer denotes substances made from very long chains. Crosslinked polymer describes a substance in which there are molecular links between chains. Polymerisation is the process for making these polymers.

PLASMA A gas of positive ions and free electrons with approximately equal positive and negative charges.

PRECIPITATION The action of a solid or liquid separating from a solution because of a chemical or physical process or change that has rendered it insoluble.

PRINT BONDING A method of thermally or chemically bonding a web in discrete regions of the web according to a predetermined pattern.

PULP (CHEMICAL)

The end product of cooking wood chips, cotton or some source of cellulose, with water and appropriate chemicals.

Q

QUENCH Part of a spunbond system: here the extruded filaments are cooled either by ambient air flow or by cooled air streams.

R

RANDOM Without deliberate orientation.

RANDOM LAYING Forming a web in such a way that the fibres or filaments are laid in essentially random directions.

RANDOM LAID A web in which the fibres are laid in essentially random directions.

RANDOM LAID NONWOVEN A random laid web bonded by one or more techniques to provide fabric integrity.

RAYON FIBRE

1) A manufactured fibre composed of regenerated cellulose, as well as manufactured fibres composed of regenerated cellulose in which substituents have replaced not more than 15% of the hydrogen's of the hydroxyl groups.

2) Also any manufactured cellulose fibre including, in some cases, fibres composed of cellulose acetate (see also VISCOSE fibre).

Rayon fibres include yarns and fibres made by the viscose process, the cuprammonium process and the now obsolete nitrocellulose and saponified acetate processes. Generally in the manufacture of rayon, cellulose derived from wood pulp, cotton linters, or other vegetable matter is dissolved into a viscose spinning solution. The solution is extruded into an acid-salt coagulating bath and drawn into continuous filaments.

REPELLENCY The ability to resist wetting and staining by materials and soils.

RESILIENCY The ability of a fibre or fabric to spring back when crushed or wrinkled.

RESIN A solid or semisolid polymeric material.

ROLL GOODS Fabric rolled up on a core after it has been produced. It is described in terms of weight and width of the roll and the length of the material on the roll.

S

SATURATION BONDING Binding fibres to form a fabric by saturating a web with an adhesive followed by drying and curing.

SCRIM A very open fabric, such as a netting, used as a support or a backing, in a laminate or impregnated in a composite.

SHORT FIBRE Staple fibres less than 15mm long. Typically used in the wetlaid process to make a fabric or as fillers in the absorbent cores of disposable nappies.

SHOTS Small particles of unfiberised polymer.

SHRINKAGE A reduction in length or width due to the effect of heat, moisture or chemical action.

SLURRY A water or solvent suspension. Examples are titanium dioxide mixed with water for addition to polymers or fibres mixed with water for wet forming.

SLIT (TO -) To cut lengthwise.

SLIVER Strip of loosely formed textile fibres after carding.

SMOULDERING A slow flameless, smoking burning of a fabric.

SPIN FINISH A lubricant applied to fibres to reduce friction and static during processing into yarns and fabrics.

SPINNING A process by which filaments or fabrics made from filaments, are generated directly from the molten polymer (see MELT SPINNING).

	A process by which fibres or filaments are drawn out and twisted together to produce a thread. Intrinsic angular motion.
SPINNERET	A disc or screen containing many small holes through which molten polymer is extruded to form filaments.
SPIN DRAWING	Combined spinning and drawing in one operation in melt spun fibres.
SPIN LAYING	Method of forming a web in which a polymeric melt or solution is extruded through spinnerets to form filaments which are laid down on a moving screen.
SPIN LINE	The system in a spunbond operation between the spinneret and the laydown belt
SPLINTERS	Two or more staple fibres adhering together, forming a stiff cluster that resists pulling apart in the normal processing and reacting as a higher decitex fibre.
SPRAY BONDING	Binding fibres to form a fabric by spraying with an adhesive and then calendaring.
SPUNLAID	A web produced by the spin laying method.

SPUNLAID NONWOVEN

A spunlaid web bonded by one or more techniques to provide fabric integrity.

Note: The hot filaments are still sufficiently molten to adhere to themselves and form bonds at their crossover points. The desired orientation of the filaments in the web is achieved by rotating the spinneret, by the application of electrical charges, by controlled air streams and by the speed of the forming wire. Additional bonding can be achieved by compaction or hot roll calendaring.

SPUNLACED FABRIC

A term used by DuPont to denote a hydroentangled fabric.

STAPLE FIBRES

Natural fibres or cut lengths from manmade filaments.

STATIC (ELECTRICITY)

An accumulation of electrical charge on the surface of fibres or fabrics due to its inadequate dissipation during processing or during use.

STIFFNESS

The ability of a fabric to resist bending. It is related to flexural rigidity i.e. to modulus of elasticity and thickness.

STITCHBONDING

A technique in which fibres in a web are bonded together by needles acting with or without the use of threads, through the web to give a mechanically bonded fabric.

These materials are only classified as stitchbonded nonwovens when they are produced without the use of threads (the MALIVLIES process).

STRAIN

Elongation, deformation or change in the dimensions of a body as the result of applied stress, expressed either as a relative unit change, or as a percentage.

STRESS

An external force applied to a body or internal force per unit cross sectional area resulting from the external force.

STRESS-STRAIN CURVE Graph showing the amount of deformation obtained as a function of the force applied and the point at which rupture or breakage occurs.

STRETCH The ability of a fabric to grow in length when pulled.

STRIKE THROUGH TIME The time taken for a known volume of liquid (e.g. simulated urine) applied to the surface of a test piece of nonwoven coverstock, which is in contact with an underlying standard absorbent pad, to pass through the nonwoven. The 'strike through time' test is only designed to compare strike through times of nonwoven coverstocks. It is not intended to simulate in-use conditions of finished products.

STRIPPERS In carding clear the workers and return fibre to the main cylinder.

SUBSTRATE Fabric to which coatings or other fabrics are applied.

SUPERABSORBENT A material that can absorb many times the amount of liquid normally absorbed by cellulosic materials such as cellulose pulp cotton and rayon. Used mostly in granular form, but now available in fibrous form.

SURFACE CHARGE Electrical charge on a fibre or a fabric.

SURFACE ENERGY The work necessary to increase the surface area of a liquid. Normally expressed in dynes per square centimetre. Dynes are units of work.

SURFACE TENSION Forces acting between the molecules making up the surface of a liquid, causing the surface to contract to a minimum. Since it is a measure of the attraction of a liquid for itself, it can be related to its ability to mix with other liquids or to wet other surfaces.

SURFACTANT	A chemical additive that changes the surface attraction between two liquids, or between a liquid and a solid, by changing the surface energy of one or both components.
SYNTHETIC FIBRE	A man-made fibre, usually from a molten polymer or a polymer in solution.

T

TACKY Slightly sticky.

TEAR RESISTANCE The force required to begin or to continue a tear in a fabric under specific conditions.

(The tear resistance of a nonwoven fabric is usually measured by the Trapezoidal Tear Test).

TENACITY A measure of the strength of a fibre. The force exerted per unit linear density when tensile stress is applied. Expressed as Newton per tex. Newtons are units of force. Previously expressed as grams force per denier.

TENSILE STRENGTH

1) In general, the strength shown by a specimen subjected to tension as distinct from shearing stress, bending or twisting momentum.

2) Specifically the maximum tensile stress expressed in force per unit cross sectional area of the unstrained specimen e.g. Newtons per square millimetre.

TEX A metric measure of the mass per unit length of a fibre. It is numerically equal to the mass in grams of one kilometre of the material. It is also equal to the denier divided by 9.

TEXTURE A term describing the surface effect of a fabric such as dull, lustrous, woolly, stiff, soft, fine, coarse, open, or close; the structural quality of a fabric.

TEXTURING A process for imparting crimp, crepe and bulk to fibres yarns and fabrics.

THERMOBONDING A method of bonding a web of fibres in which a heat or ultrasonic treatment, with or without

pressure, is used to activate a heat-sensitive material, which may be in the form of homofil fibres, bicomponent fibres, or as all or part of the web.

The bonding may be applied all over (through or area bonding) or restricted to predetermined discrete sites (point bonding).

THERMOPLASTIC Polymeric materials that have a melting temperature and can flow or be formed into desired shapes on the application of heat at or below the melting point.

THERMOSET Polymeric materials that become intractably hardened by exposure to heat and/or catalyst action.

THICKNESS The dimension of a sheet or lamina measured perpendicular to the plane of the sheet under a specific pressure.

THREAD A spun-out filament. A thin structure of twisted yarns.

TORQUE The moment of a system of forces tending to cause rotation.

TOUGHNESS Ability to absorb work. Commonly measured as the area under the stress/strain curve. The opposite of brittleness.

TOW A bundle of continuous filaments. The form of most manmade filaments before being cut into staple.

TUFTING Make insertions of clumps of fibres into depressions in the base fabric to form a 3D structure with the tufts of fibres oriented in the vertical direction.

TURRET Cylindrical type of rewinder.

U

UNIDIRECTIONAL Performing best in only one direction; generally applied to nonwovens in which the fabric strength is highly oriented in the direction of web travel through the forming process.

ULTRASONIC BONDING The use of high frequency sound to generate localised heat through vibration and thereby cause thermoplastic fibres to bond to one another.

UV DEGRADABLE The ability of a substance to be broken down by the action of the ultraviolet part of the light spectrum so it can be consumed by the environment.

V

VISCOSE FIBRE

A manufactured fibre of cellulose obtained by the 'viscose' process using cellulose xanthate dissolved in a dilute solution of sodium hydroxide and extrusion of the viscose 'dope' into an acid precipitation bath.

W

WATER REPELLENCY — The ability to resist wetting by water.

WEB

1) The wide film of fibres that is delivered from a card.

2) A similar product of other web forming equipment such as that formed by air or water deposition and used to make nonwoven fabrics.

3) A term loosely applied to lightweight nonwoven fabrics.

WEAVING — The process of interlacing two or more sets of yarns at right angles to form a fabric.

WEB CONSOLIDATION — The process by which the fibres or fibrous materials are interlocked in order to provide the integrity or strength desired in the fabric structure.

WEB FORMATION — The process by which individual fibres or fibrous materials are arranged in order to bring about the physical properties desired in the fabric structure.

WEIGHT — The force experienced by a body as a result of the earth's gravitational force.

Any similar force with which a body tends to a centre of attraction.

The heaviness of a body regarded as a property of it.

WET BACK TEST

The purpose of the test is to examine the ability of a diaper coverstock to resist the transport back onto the skin of a liquid that had already penetrated the coverstock.

The test is designed for coverstock comparison purposes only and is not intended to simulate in-use conditions of finished products.

WET FORMING

Formation of a web by filtering an aqueous suspension of fibres onto a screen belt or on to a perforated drum.

WETLAYING

Forming a web from an aqueous dispersion of fibres by applying modified paper making techniques.

WETLAID

A fibre web produced by the wetlaying technique.

WETLAID NONWOVEN

Wetlaid web bonded by one or more techniques to provide fabric integrity.

WET MILLING

The grinding of a solid material in the presence of a liquid, normally water.

WET STRENGTH

The resistance of a fabric to being torn when it is wet. Usually compared to its strength when dry.

WICKING

Transport of liquid within an absorbent fabric, along the thickness of the fabric and within the plane of the fabric.

WOOD PULP

Cellulosic fibres used to make viscose rayon, paper and the absorbent cores of products such as diapers, sanitary towels and adult incontinence products.

WORKERS

Rolls in the carding process that comb out and disperse the fibre bundles.

Y

YARN A continuous strand of fibres or filaments that are twisted together, to enable its conversion into a woven, knitted or braided fabric.