Glossary

Absolute filtration rating

The diameter of the largest solid spherical particle that will pass through a filter under specified test conditions. This is an indication of the largest opening in the filter cloth.

Absorption

Retention of liquids in the bulk of the fabric where the liquid is retained by filling up void spaces, i.e. pores of the fiber, between fibers in a yarn and between yarns in the fabric.

Adhesive

Glue for affixing the mesh to the screen printing frame. Mostly used are two component adhesives, but there are also rapid- and UV-glues available

Air flow/air permeability

Measure of the amount of air that flows through a filter – a variable of the degree of contamination, differential pressure, total porosity, and filter area. Expressed in ft3/min/ft2 or l/min/cm2 at a given pressure.

Antistatic (mesh)

Material that minimizes static charge generation, provides 'controlled' static charge dissipation, or both.

Aperture size

See Mesh Opening

Attenuation

Reduction of the signal power or field strength as a function of distance through a material. Also refers to shielding effectiveness.

Autoclave

Vessel for high steam pressure heating of materials. Used for sterilization and other applications.

Bolting cloth (silk)

Woven twisted multifilament natural silk screens.

Bolting grade (wire cloth)

Uniformly woven stainless steel screens to provide high strength and the largest possible openings.

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Bubble point test

A test to determine the maximum pore size of a filter.

Bulked yarn

A yarn that has been geometrically changed to give it the appearance of having greater volume than a conventional yarn of the same linear density.

Calendered screen printing mesh

One or double sided flattened screen printing mesh in order to reduce the ink volume.It is especially used for UV inks. SEFAR PET 1500 OSC are one side calendered.

Calendering

A process by which fabric or wire is passed through a pair of heavy rollers to reduce thickness, to flatten the intersections of the threads/wires and to control air permeability. Rollers are heated when calendering synthetic materials.

Capillary film

Backing film coated with emulsion

Closed weave

Fabrics constructed such that, when viewed at right-angles to their surface, the spaces between the interwoven fibers are not visible. Closed weave fabrics tend to be thicker and stiffer than open weaves.

Copy

Exposing the photosensitive layer (emulsion) to UV light. The uncovered areas will harden and become water insoluble.
The unexposed areas remain water soluble and can be washed out with water.

Copying unit

For exposure of the stencil. UV light sources should have an emission spectrum peak in the range of 350 to 420 nm.

Decibel (dB)

A unit that expresses the relative difference in power, usually between acoustic or electromagnetic signals. One dB equals ten times the common logarithm of the ratio of incident and transmitted power; or twenty times the common logarithm of the ratio of incident and transmitted field strength.

Decitex (dtex)

The mass in grams of 10'000 m of fiber or yarn.
A direct yarn numbering system used to define the size of fiber or yarn. The higher the number, the coarser (larger) the yarn.

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Degreasing

Before making a stencil, the mesh should be degreased with a suitable degreasing agent, unless it has a special surface treatment like e.g. SEFAR PET 1500.
Please do not use household detergents!

Deionized water

Water that goes through an ion exchange process in which all positive and negative ions are removed.

Denier

The mass in grams of 9000 m of fiber or yarn.
A direct yarn numbering system to define size of fiber or yarn. The higher the number, the coarser (larger) the yarn.

Depth filter

A filter medium consisting of randomly distributed particles or fibers resulting in openings having a non-uniform and tortuous path.

Differential pressure

The difference in pressure between two points of a system, such as between two sides of an orifice.

Direct emulsion

UV - sensitive Emulsion layer for screen printing stencils

Double layer fabric

By combining a fine filter layer and an open, coarser mesh layer, these fabrics combine high flow capacity and fine particle capture efficiency with the extremely durable construction needed for large-scale process filtration.

Downstream side

The side of a product stream that has already passed through a given filter system; portion located after the filtration unit.

Dual chamber test method

Measures near-field shielding
effectiveness by indicating the signal attenuation caused by passage through a test material.

Dutch weave

Warp and weft wire diameters are different in size: the weft wires are closer together, thus providing excellent strength and high density.

Dyeing

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The process of adding color to textiles in fiber, yarn or fabric form.

Effective area

The total area of the porous medium exposed to flow in a filter element.

Efficiency

The ability, expressed as a percentage, of a filter to remove a specified artificial contaminant at a given contaminant concentration under specified test conditions.

Endotoxin

A toxin produced by bacteria. The toxin is present in the environment only after the death of the bacteria.

Endotoxine

A toxin produced by bacteria. The toxin is present in the environment only after the death of the bacteria.

Exposing

Exposing the photosensitive layer (emulsion) to UV light. The uncovered areas will harden and become water insoluble. The unexposed areas remain water soluble and can be washed out with water.

Exposure time

Time, the stencil is exposed to UV emission.

Extractables

Substances that can be leached from a filter during the filtration process or under other specified conditions.

Fabric geometry

See mesh geometry

Farady cage

A cage made of conductive material. Static fields and discharges do not pass through it. Electromagnetic energy passing through the skin or shield is attenuated to varying degrees.

Feed

The material entering a filter processing unit for treatment.

Filter cake

The solids discharged from a dewatering apparatus.

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Filter life

Measure of the duration of a filter's useful service. This is based on the amount of standard contaminant required to cause differential pressure to increase to an unacceptable level – typically 2 – 4 times the initial differential pressure, a 50 – 80% drop in initial flow, or an unacceptable downstream amount of particulate matter.

Filter media

A porous material for separating suspended particulate matter from fluid.

Filter medium

The permeable portion of a filtration system that provides liquid/solid separation, such as screens, papers, non-wovens, granular beds and other porous media.

Filtrate

The discharge liquor in filtration.

Filtration

A process of separating particulate matter from a fluid by passing it through a permeable material.

Flow rate

Measure of the amount of fluid passing through the filter. This is always a variable depending on filter area, porosity, contamination and differential pressure.

Frame

The purpose of the frame is to hold the tensioned screen printing mesh. It has to be stable enough not to be deformed by the big forces of the highly stretched mesh and the printing process.

Frame section

Beside the material (steel, aluminium), the profile and the cross section are crucial for the dimensional stability of screen printing frames. We distinguish between square- rectangular - and special sections.

Frazier test

Measures the amount of air transmitted through a filter under selected differential pressures. Historically used for textile products. See Air flow.

Frequency

Number of cycles of current per second, expressed in Hertz (Hz).

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G.M.P.

Good Manufacturing Practices. Food and Drug Administration regulations governing the manufacture of drugs and medical devices (Ref. Code of Federal Regulations 21CFR).

Half-tone

There are two different types of half-tone:
Amplitude modulated rastering (AM): Resolution in a constant number of dots per area, the dot sizes are variable.
Frequency modulated rastering (FM): The dots are as small as possible but the size is constant. The number of dots per area is variable.

Half-tone printing

Printing of in halftone dots converted continuous-tone images, consisting of individual raster dots.

Hydrophilic

Having an affinity for water and aqueous solutions.

Hydrophobic

Cannot be wetted by aqueous and other high surface tension fluids.

Ink release

Release of the ink from the stencil

Ink volume, ink deposit dry

Ink deposit after drying respectively hardening of the ink in mm

Knit fabric

A fabric structure made by interlooping yarns, a type of knitted fabric

Loaded (plugged)

A filter element that has collected a sufficient quantity of insoluble contaminants such that it can no longer pass its normal-rated flow without excessive differential pressure.

Mean filtration rating

Derived from Bubble Point test method. Data should be used as a guide only to compare overall retention capabilities between fabrics and should not be considered a guarantee of the particle size that the fabric will retain.

Membrane

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A thin polymeric film having pores.

Mesh count

The number of threads in a linear centimeter or inch of fabric/wire cloth.

Mesh geomety

The mesh geometry describes all two- and three-dimensional aspects of the mesh structure. The basic factors in fabric geometry are mesh count and thread diameter.

Mesh number

Indication of number of threads per cm or inch and thread diameter

Mesh opening

Mesh opening is the open area between wires/yarns in the warp and weft direction in the projected plane of the wire mesh.

Mesh tension gauge

Measuring and checking instrument to control the mesh tension. Modern Instruments operate electronically with digital display.

Mesh thickness

The mesh thickness is measured on the unstretched mesh in mm

Monofilament

Single extruded filament

Multifilament

Several monofilaments are bundled together to form a single textile yarn.

Non-woven

A porous web or sheet produced by mechanical, chemical or thermal bonding polymers, fibers or filaments.

Off-contact

The off-contact is the distance between the screen and the substrate before printing, i. e. before the squeegee is pressing down the screen to the substrate.

One circuit stretching system

The one circuit stretching system works pneumatically and is equipped with one control circuit only for all clamps. It is used for screen printing frames with shanks up to approx. 150 cm (also see 'two circuit stretching system').

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Open area

The proportion of total screen area that is open space, expressed as a percentage.

Open weave

These fabrics are constructed such that, when viewed at right-angles to their surface, the spaces between the interwoven fibers are visible.

Particle

A relatively small subdivision of matter ranging in diameter from a few angstroms (as with gas molecules) to a few millimeters (as with large raindrops). A particle can have various shapes and dimensions.

Permeability

Ability of a membrane or other material to permit substances to pass through it.

pH value

Used to describe the hydrogen ion concentration of a solution. A pH of 7 is neutral.
Below 7, acidity increases – above 7 alkalinity increases.
The pH value is a non-dimensional figure. It is the negative logarithm of the hydrogen ion activity.

Plain Reverse Dutch weave (PRD)

It has a high thread count in the warp direction and a low thread count in the weft direction.

Plain weave (PLN)

Most basic weave – over and under pattern.

Pneumatic stretching system

Pneumatic stretching systems are consisting of individual clamps and a central control unit. Depending on the system, they are operated with air pressure and one or two air control circuits. The number of clamps is depending on the frame size.

Pore size

Filters are rated according to the size of particles they can remove. Particles that are bigger than the indicated pore size are removed. Smaller particles pass through the fabric. The size of particles is measured in micro-meters or 'microns', one micron being equal to one-millionth of a meter, the typical size of coal dust or flour. The smallest bacteria are about 0.5 µm.

Raster

See 'Half-tone'

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Raster ruling L/cm or L/pi

The raster ruling is indicated in lines resp. dots per cm or inch. In screen printing, rasters between 5 L/cm till max. 48 L/cm can be printed, depending on the mesh used.
Guideline: the smallest dot must have a minimal diameter of two threads and one mesh opening.

Register

1: Exact congruence between original (e.g. diapositive) and the printed image
2: Multi colour printing: exact congruence between originals of the various colors and their printed images (color register)
3: Exact congruence of images at the beginning and the end of a print run, or between intermediate printings.

Residual shrinkage

The amount of shrinkage remaining in a fabric after it has undergone all fabric weaving, washing and heat setting steps.

Retentate

Substance retained in the upstream side of a filter.

RF (radio frequency) welding

Utilizes specific bands of radio frequency waves which are directed through specially constructed tooling to form localized melting/ joining of certain dielectric thermoplastic materials. Can be used to form hermetic seals. Also known as high frequency or dielectric welding.

Satin weave

For satin/atlas weave, the weft passes under one warp thread and then over the next two or more. The adjacent weft thread follows the same pattern but staggered by at least two warp threads. In this way a fabric is made in which parallel weft threads predominate on the top surface and warp threads are thus mostly exposed on the bottom surface.
This results in a particularly smooth surface.

Sawtoothing

The edges of printed lines and areas are spiky. Main reason: coating thickness too small, and/or RZ value too high

Screen printing frame

Aluminium and steel are the mostly used materials for screen printing frames. Aluminium frames are less heavy and easier to handle but to give a comparable strength to steel , the cross sectional area must be enlarged. See also 'frame'

Screen printing moiré

Interference between mesh and halftone dia positive

SEFAR CARBOTEX

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Precision woven screens made from carbonized threads.

SEFAR FLUORTEX

Fluorocarbon precision woven screens.

SEFAR MEDIFAB

Precision woven fabrics intended for medical applications, fabrication in clean room class 7.

SEFAR NITEX

Nylon precision woven screens

SEFAR NYTAL

Sieving fabrics for milling applications

SEFAR PASTAFAB

Dryer belts for the pasta industry

SEFAR PETEX

Polyester precision woven screens

SEFAR PROPYLTEX

Polypropylene precision woven screens

SEFAR SHRINKTEX

Shrinkable fabrics

SEFAR TETEX DLW

Double-layer woven fabrics for industrial solid / liquid separation

SEFAR TETEX MONO

Monofilament filter fabrics for industrial solid / liquid separation

SEFAR TETEX MULTI

Multifilament and staple fiber fabrics

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SEFAR TUBETEX

Precision woven tubular fabrics

Selvage

The finished edge of a loom that prevents cloth unraveling.

Separation

This process divides or separates a mixture of particles or liquids into separate components.

Shielding effectiveness (SE)

Measure of a given material's ability to block interference. Expressed in dB. See Decibel.

Sieve

A screen with apertures of uniform size used for sizing granular materials.

Solution dyeing

Method of adding color to the polymer melt or spinning solution before the fiber is extruded. Also known as spun dyeing or dope dyeing.

Spinning

The process of extruding polymers to form fibers

Spun yarn

A yarn produced from short fibers

Square weave

See Plain Weave

Squeegee

The squeegee fills the mesh openings with ink and is pressing the stencil onto the substrate.
The edge of the squeegee blade, the squeegee pressure, the angle as well as the material and hardness have an important influence on the printing result.

Squeegee angle

Angle from the screen, in which the squeegee is fixed. The common angle is 75°.

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Squeegee pressure

The squeege is pressing the stencil onto the substrate. The pressure should be as low as possible.

Squeegee side

The side of the mesh resp. stencil directed toward the squeegee.

Step exposure

The step exposure is a methode of determining the optimum exposure time. It depends on the characteristics of the photo emulsion, the mesh, the overall thickness, the light source and the distance between the lamp and the screen.

Stretching system

Stretching systems are used for stretching the screen printing mesh before glueing it onto a frame.
We distinguish between:
- mechanical stretching systems
- pneumatic stretching systems

Surface media

Captures particles on the upstream surface with greater efficiency than depth media, sometimes close to 100% and with minimal or no off-loading. Commonly rated according to the smallest particle the media can repeatedly capture. Examples of surface media include ceramic media, microporous membranes, synthetic woven screening media and, in certain cases, wire cloth. The media characteristically has a narrow pore size distribution.

Surface resistivity (Ω/n)

Expressed in ohms/square. It is numerically equal to the resistance between two electrodes forming opposite sides of a square on the surface of a material. The size of the square is irrelevant. For conductive materials, surface resistivity is the ratio of the volume resistivity to the fabric thickness (r/t).

Taffeta weave

Plain weave

Tangential cross-flow filtration

Process where the feed stream 'sweeps' the membrane surface and the particulate debris is expelled, thus extending filter life. The filtrate flows through the membrane. Most commonly used in the separation of high and low molecular weight matter in such applications as ultrapure reverse osmosis, ultra-filtration, and submicron microfiltration processes.

Tensocheck 200

Digital tension measuring instrument by Sefar

Textured yarn

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A yarn that has been geometrically altered to increase bulk or moisture absorption, add resiliency, etc.

Theoretical ink volume Vth

Calculated Value of the ink volume 'Vth' from open area ('ao') in % and the mesh thickness 'D' in mm:
Vth = ao x D/100

Thread count

See 'Mesh count'

Thread diameter

The thread diameter respectively thread thickness is specified as nominal value, referring to the diameter of the raw and unwoven thread in mm.

Throughput

The amount of solution that will pass through a filter prior to it becoming clogged.

Twill weave

Formed by passing the warp or weft fiber over two or more fibers.

Twist

Turns imparted to a length of yarn. Usually expressed in tpi
(turns per inch).

Two circuit stretching system

A two circuit stretching system works pneumatically and is equipped with two independent air circuit controls, one each for the parallel frame shanks. It is used for frames with shanks exceeding 150 cm (see also 'one circuit stretching system')

Ultrasonic (processes)

Process that utilizes specially-designed tooling usually vibrating at 15 – 80 kHz. Processes are designed to cause localized heating of thermoplastic materials that will cause some type of welded or fused joint to form. Benefits are the elimination of fillers and minimized heat stress on surrounding materials.

Undercutting

Light rays striking the white fibers of the mesh are reflected and scatter under the edges of the film.
Light is also conducted through the fibers leading to yet more undercutting. Result: blurred edges, colour shifts. Sefar yellow dyed mesh prevents undercutting.

Upstream side

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The feed side of a filter.

Volume resistivity

Or specific resistivity of a material, expressed in W.cm. Resistance to electrical current flow through the bulk of an object.

Warp

Fibers or wires running the length of the cloth as woven.

Weft

Fibers or wires running across the width of the cloth as woven.

Wicking

The rapid movement of moisture along the fiber surface, usually by capillary action.

Wire diameter

See Thread diameter

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