

# SAATIcare

Precision Fabrics  
& Components for  
Medical & Diagnostic  
Applications

— SAATI



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## Engage with SAATI



Perfecting the  
Art of Precision  
Woven Mesh



## Company Information

### Over Eighty Years of Innovative Action

SAATI is a multinational group with corporate headquarters that have been situated in northern Italy since 1935.

Today we are a leader in the development, manufacturing and commercialization of advanced technical textiles & chemicals.

SAATI's passion and creativity are the foundation for an unsurpassed tradition of continuous innovation in the filtration markets. This endless pursuit is what drives SAATI's dedicated customer-centric R&D to functionalize products beyond simple filtration.

SAATI's wide range of synthetic textiles and fabricated parts in Polyamide, Polyester, Polypropylene, PEEK and PPS are the ideal engineered solution for demanding healthcare applications.

Through specialized medical processing and rigorous inspection, SAATI ensures consistent lot quality across tolerances, uniformity, strength, stability, and cleanliness for applications from 7 to 3,000  $\mu\text{m}$ .

### Perfecting the Art of Precision Woven Fabrics with Innovation Driven R&D and Strict Quality Controls

SAATI Medical Grade fabrics are tested and certified in accordance with USP CLASS VI/ISO 10993 Regulations and they are manufactured in class 10,000/ISO 7 Clean Rooms in accordance with UNI ISO 9001 regulations. Additional certification of non-pyrogenic mesh is performed through the LAL test.

To guarantee the reliability of our products we constantly run tests and have all the most updated and strict certifications that validate the consistency, performance, quality and characteristics of each item.

With about 1,000 employees worldwide, facilities and a strong, established track record in innovation and manufacturing excellence, our mission is to improve the life of every person every day, through working with customers and partners to create a safer, healthier and cleaner world.



# Customer Focus

## Customer Driven Innovation

Thanks to our direct presence in many countries, it is easy for customers to reach us, wherever they are located, and our response is always prompt. Our staff has a high level of technical expertise and dedication, and are always aiming to find the best solution for the customer's requirements.

SAATI sales representatives and engineers understand customers' applications, and work closely with staff in the production and R&D departments to offer a customized solution in a form that best meets their needs.

The quality of SAATI's medical products is backed by the dedication and expertise of SAATI's customer service. Thanks to offices, warehouses, storage and fabrication facilities throughout the world, SAATI provides strong local support, expert responses to customer inquiries, strong engineering capability, technical support and fast delivery around the world.



# SAATicare Manufacturing

## Medical and Diagnostic Devices

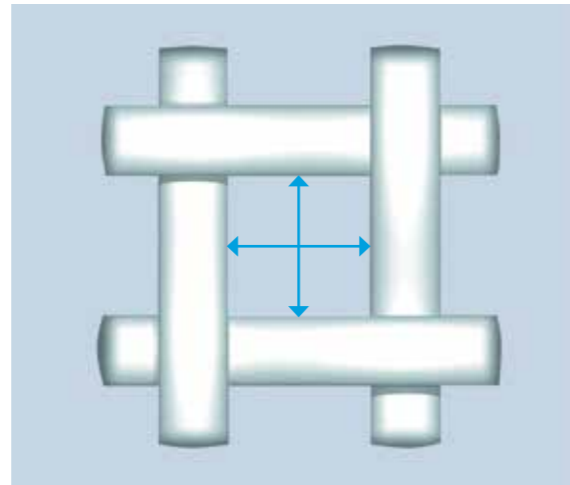
Medical and diagnostic devices are among the most demanding fabric applications. SAATicare healthcare fabrics are more than up to the task; they are the preferred choice for medical devices such as infusion and transfusion filter, arterial filter, oxygenators, micro-aggregate filters, blood bags and diagnostic applications such as test strips, spirometers, biopsy bags and molecular sieves. The precise aperture size, uniform high flow rates, and lot-to-lot consistency make SAATicare fabrics the ideal solution for demanding healthcare applications.

## Manufactured To The Most Exacting Standards

SAATicare fabrics are woven with monofilament polyester or polyamide fibers with smooth and uniform surfaces that are particularly suitable for medical applications. The monofilament fibers are non-shedding to reduce the risk of particulate contamination. The fibers are woven to exceptionally tight tolerances, creating uniform pore sizes, excellent strength, and good dimensional stability.

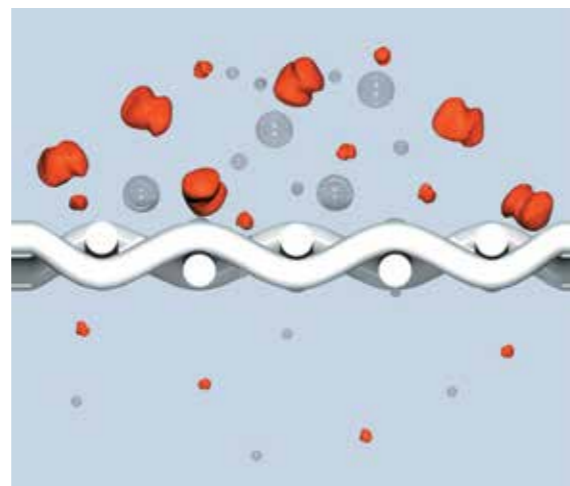
## Customized to Meet Specific Customer Needs

Typical surface modifications requested include plasma treatment, adding hydrophilic or hydrophobic characteristics, and dyeing in virtually any color. SAATI Engineers can also evaluate developing a fully customized solution using your specific chemistry applied to the mesh surface to functionalize the surface beyond simple filtration action.



Precise Mesh Opening

The Mesh Opening is the square space between two warp and weft yarns



High flow rates with low pressure loss



*SAATI Engineers can also evaluate developing a fully customized solution using your specific chemistry applied to the mesh surface to functionalize the surface beyond simple filtration action.*

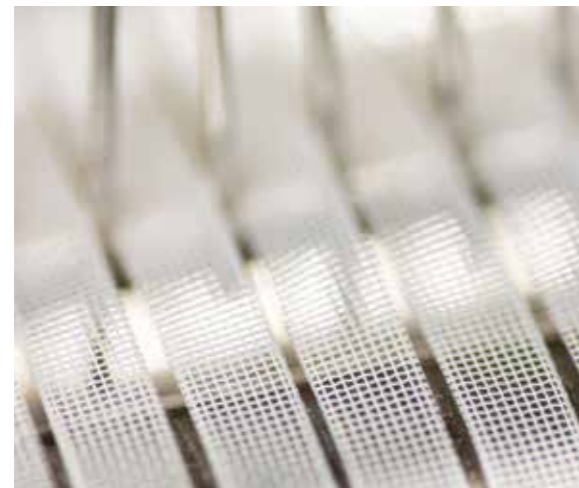
# SAATicare

Fabrication Capabilities

## High-Quality, Cost-Effective Custom Fabrication from SAATI

SAATicare fabrics can be provided in a wide variety of finished or partly finished products. Specially designed processing equipment can create quality custom-fabricated parts in the most cost-effective way. SAATicare fabrics can be cut into ribbons, pleated, or formed into tubes, or made into any required shape. Critical fabricated parts are processed in Class 10,000 clean rooms (ISO 7).

When SAATI engineers design a part for custom fabrication, their primary consideration is to produce a high-quality precision product that will remain consistent from order to order, year after year.



### Ribbons

SAATicare fabrics can be heat-slit economically, or ultrasonic slit for the closest tolerances and highest quality as needed.

Production Technology involved: Heat, Ultrasonics.



### Pleated Components

Mono or multi-layer pleated components such as pack, ribbon, and cartridges can be manufactured for all applications requiring high filtration capacity in a narrow space.

Production technology involved: Heat, Ultrasonics.

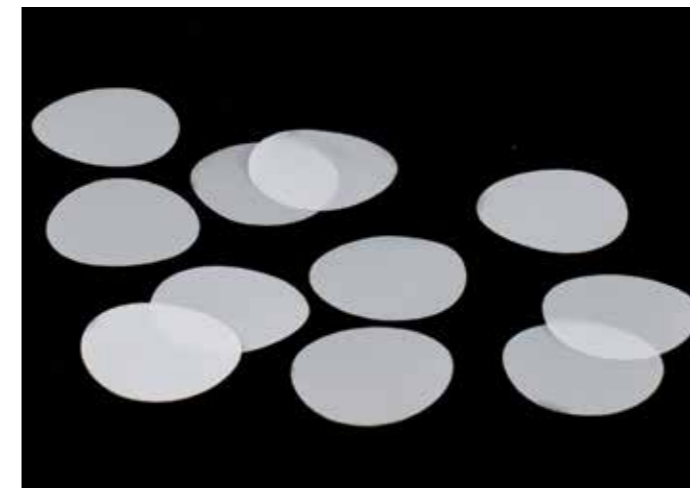


### Continuous Tube / Multi-Layer Products

Two layers of filter media (identical or different) are simultaneously slit with heated blades to form a continuous double-seamed tube.

Ultrasonic-welded tubular ribbons, although similar in construction to heat slit items, can be produced in a wide range of sizes, including very small ones. Two or more narrow layers can be attached using ultrasonic slitting. A fine filtration media can be supported or protected with a coarser one.

Production Technology involved: Heat, Ultrasonics.



### Shapes

Die-cut or laser cut parts can be produced in almost any shape or size. One or more layers of fabric can be ultrasonic cut or sealed into virtually any shape using a PC controlled plotter, assuring a faithful reproduction of design.

Production Technology involved: Die-Cut, Ultrasonics, Laser.



# SAATicare

For Medical Applications

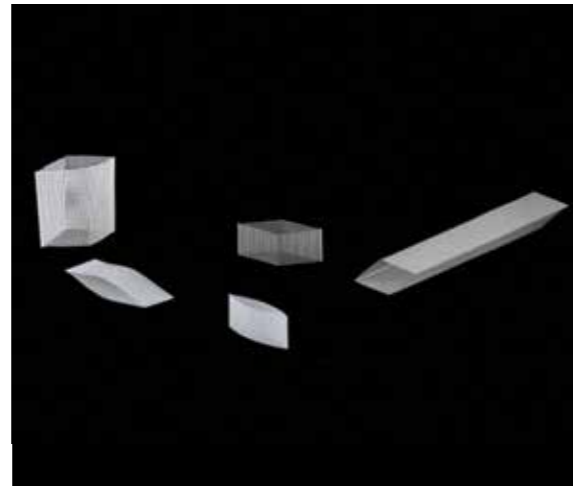
## Tubes - Rectangles

For all applications requiring molded cylindrical filters, SAATI offers fabric tubes and rectangles with two open ends, die-cut or laser cut to length.

Many applications can accept the quality of a cold cut tube in view of its economic advantages. When a component must have one end sealed and one end open, SAATI is able to combine technologies in the same process and supply tubes with one end die-cut or laser cut and the other end ultrasonic sealed.

Ultrasonic technology is also applied for the fabrication of rectangular filters.

Production Technology Involved:  
Die-Cut, Heat and Ultrasonic.



## Double Packaging

For all fabricated parts destined for use in medical applications, SAATI provides double packaging in order to ensure protection.



## High-Performance Features For Medical Applications

Precise pore sizes provide exceptionally selective filtration. Particulates and air bubbles of a specific size can be removed without affecting red blood cells.

Materials with high open area provide high flow rates with minimal pressure loss.

The uniform pressure drop provides consistent air pressure monitoring in spirometers.

Smooth monofilament fibers and straight-through flow paths reduce the risk of hemolysis.

Fabrics for medical applications can be specially finished to reduce pyrogens and contaminants.

- SAATicare fabrics conform to USP Class VI
- Fabrics are safe for gamma sterilization and autoclaving

All SAATI products designed for medical applications are medical grade.

## Hemofiltration

Hemoperfusion, Hemodialysis, and Hemofiltration are methods of filtering the blood extra-corporeally to remove toxins or for blood purification in general. SAATicare woven meshes are used as protector filters in order to impede purifying elements (i.e. activated charcoal, resins, bicarbonate etc.) from flowing out of blood purifying cartridges.

## Cardiosystem

During open heart surgery, heart and lung functions are temporarily replaced by medical devices (heart-lung machine) to guarantee the survival of the patient. Filters play an extremely important role in the heart-lung machine.



# SAATicare

For Blood Filtration



## Infusion Filters

Possible contaminants originating from infusion bags may complicate the recovery of patients. SAATicare monofilament woven meshes are designed to prevent possible blood poisoning caused by contaminants such as extraneous salts, microorganisms (protozoa, bacteria), dissolved impurities and other micro-particles.



## Transfusion Filters (Transfusion IV Sets)

SAATicare products capture clots, micro and macro aggregates which could be present in the blood of the patient and reduce the risk of embolism.



## Cardiotomy Reservoirs Filters

Possible foreign and undesirable particles such as thrombus, bone debris or air bubbles are harmful for the patient during surgery. This is the reason why a fine filtration is necessary. Furthermore, thanks to smooth monofilament yarn and straight-through flow paths SAATicare products reduce the risk of blood cell damage.



## Microaggregate Filters

The storage of whole blood is associated with formation of a considerable quantity of microaggregates between 25  $\mu\text{m}$  and 40  $\mu\text{m}$ . These microaggregates are mainly composed by degenerated leukocyte and thrombocyte fragments of red blood cells and other cells, lipids, lipoproteins and precipitated denatured albumin. These microaggregates can damage pulmonary micro-circulation and for this reason SAATicare meshes are used as filter media.



## Arterial Filters

The aim of SAATicare mesh is to remove blockages in the perfusion circuit such as gas emboli, fat emboli, aggregates of platelets or red blood cells, air bubbles and other debris during the last filtration stage before the re-injection of the blood to the patient.



## Blood Bags

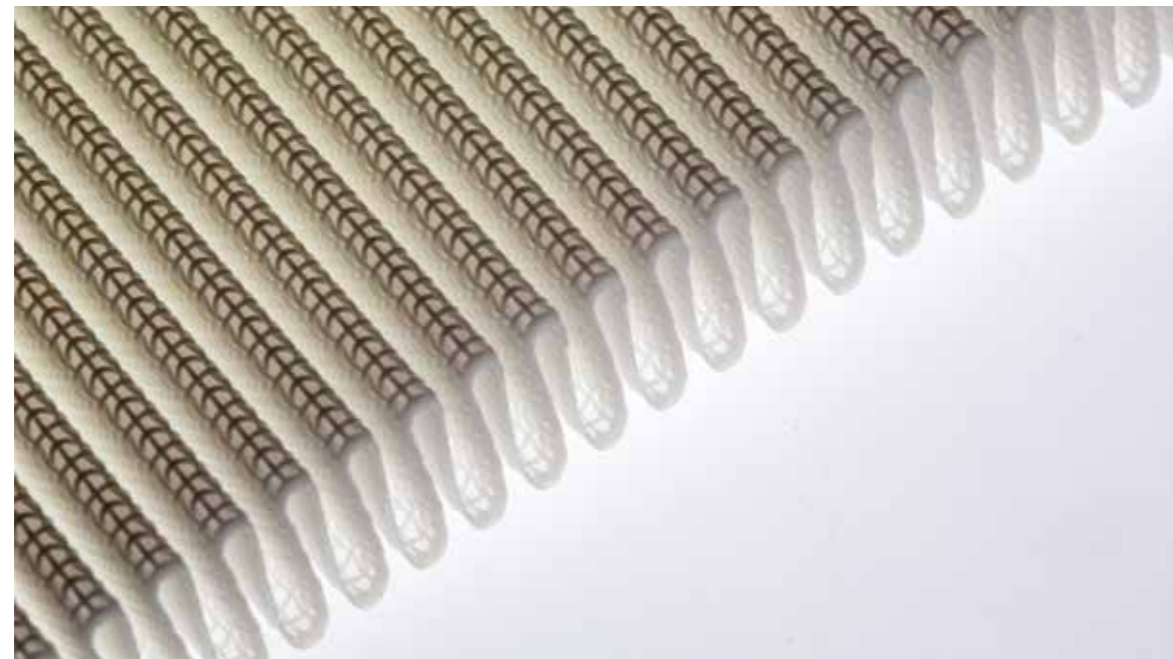
The flow of blood must be filtered during transfusion to remove clots and small clumps of platelets and white blood cells that form during collection and storage.







# High Flow Fabrics



## SAATlcare High Flow Fabrics for Arterial line Blood Filters

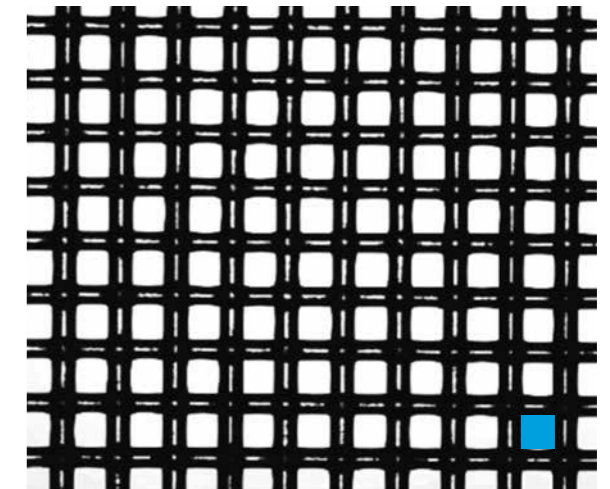
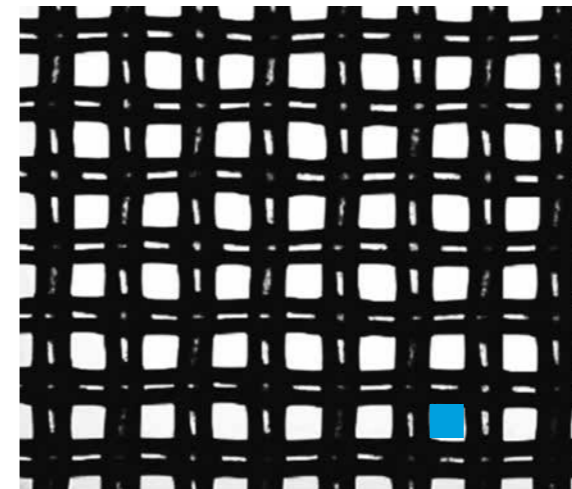
SAATI has developed High Flow fabrics that achieve a superb higher open area compared to standard materials while maintaining the same mesh openings.

For example, by using our SAATlcare High Flow fabric, the performance of arterial filter and other blood filters is increased up to 60% compared to standard fabrics.

By guaranteeing a mesh opening even narrower 40  $\mu\text{m}$ , such a high open area rate can dramatically improve the behaviour of the final filter, not just by minimizing pressure drop and priming volume, but even allowing a possible reduction in the filter's dimensions, with a considerable reduction of final cost.

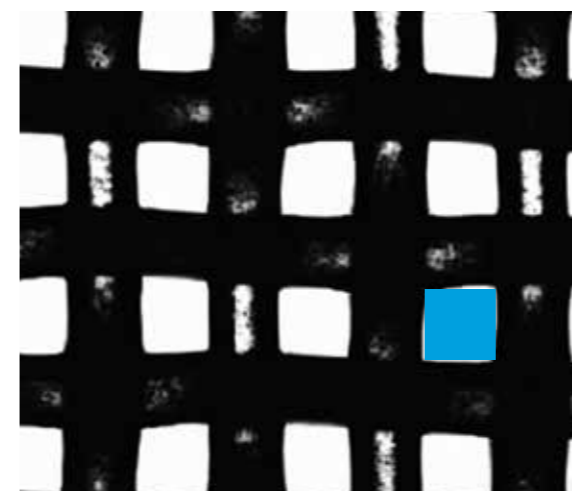
Standard Fabric

SAATlcare High Flow Fabric



10x Magnification

10x Magnification



20x Magnification

20x Magnification



# SAATicare Hyphyl™

## A Surfactant Coating With Superb Hydrophilic Properties

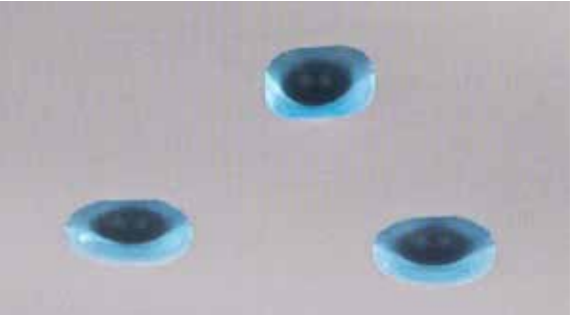
SAATicare Hyphyl is a unique hydrophilic surfactant coating (an FDA-approved organic salt) that dramatically increases the amount of liquid transferred to lower layers of a test strip, as well as increasing the spreading area of a drop of liquid.



SAATI Hyphyl-treated Mesh makes it possible to perform testing with smaller samples, including blood samples

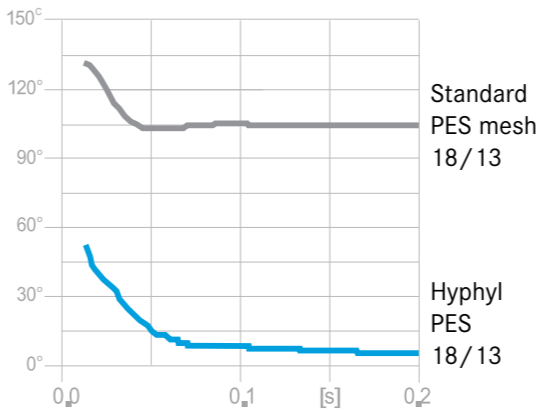


Low wicking observed in standard meshes



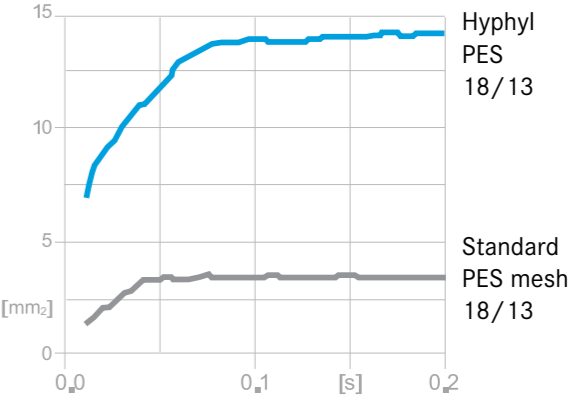
Excellent wicking observed in SAATicare Hyphyl-treated Meshes

## Dynamic Contact Angle: Hyphyl-Treated vs Standard Fabric



The lower contact angle of SAATicare Hyphyl indicates that it is more hydrophilic than standard mesh

## Wet Area: Hyphyl-Treated vs Standard Fabric

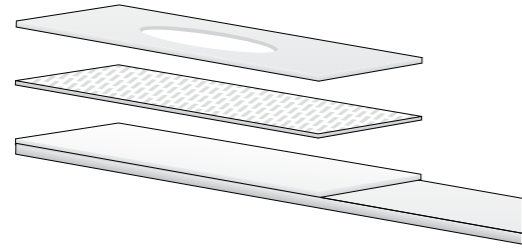


A 4-microliter drop of de-ionized water can wet an area almost five times greater using Hyphyl-treated fabrics

# SAATicare

For Diagnostic Applications

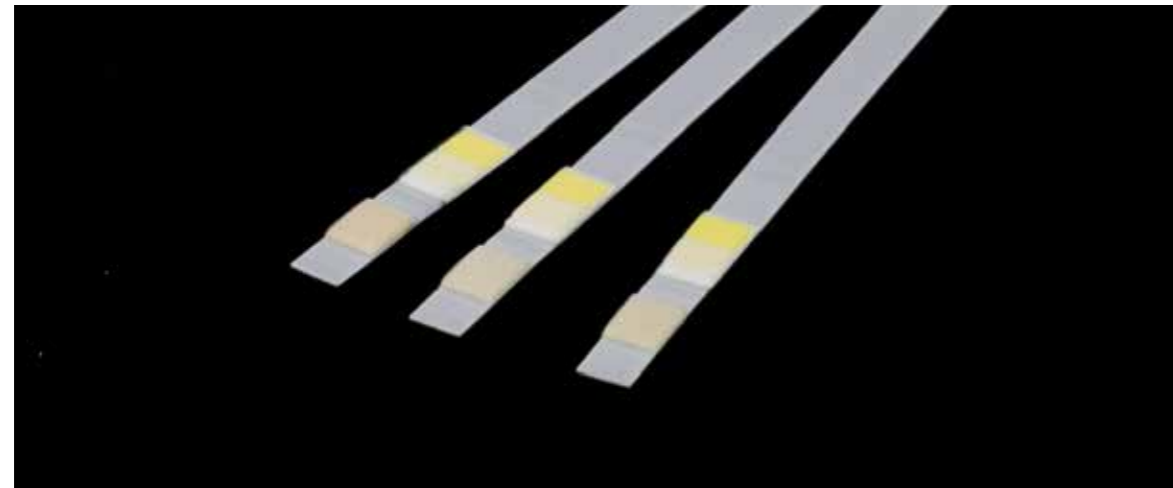
## High-Performance Screen Membranes For Critical Diagnostic Tests



SAATicare fabrics enable diagnostic tests to be executed at their maximum performance level.

SAATicare products are a complete solution for diagnostic test strips. They can be used as:

- Pre-Filter: Protective covering of the strip
- Support: Improving the reinforcement of the membrane and increasing its mechanical resistance thanks to the high tensile strength of the fabric. Use of fabric instead of non-woven material avoids the migration of the latter into the former as accurately as possible.
- Sample Pad: Thanks to SAATI fabrics treated with Hyphyl®, a special hydrophilic surfactant coating, the amount of liquid transferred to lower layers of test strip is dramatically increased. The precise pore size and weave provide high wicking rates for faster assay performance.



## Spirometers

A spirometer is an apparatus for measuring the volume of air inhaled and exhaled by the lungs. The mesh is used as pressure transducer to measure pressure drop across the filter thanks to the consistency of air permeability.



## Biopsy Bags

Biopsy bags are made of solvent-resistant material and are designed to process small biological specimens. Moreover they also maximize liquid exchange.

SAATicare® biopsy bags can be produced with or without flaps.



## Molecular Sieves

Molded cups which use mesh with a specific pore size. It rapidly isolates primary cells in order to obtain a uniform single-cell suspension from tissues.

SAATicare mesh makes the process faster and easier compared to gauze filtration. The SAATicare range of products is characterized by a wide range of pore sizes.

This makes a perfect media for sieves used during preparation of flow cytometry samples, specimens for primary cell cultures/immunogens and freezing stocks. SAATicare products filter also agglutinative proteins produced in inactivation serum.



## Other Applications

SAATicare products are also used for fluid handling, sample preparation, reagent delivery, and as a carrier for membranes.



# Testing Compliance

SAATI medical grade fabrics can be tested and certified according to the following regulations:



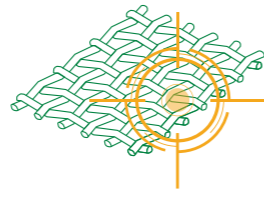
## USP Class VI Test USP 24/NF 19, 2000

Biocompatibility of plastics. Including Systemic Toxicity, Intracutaneous Toxicity and Implantation Tests.



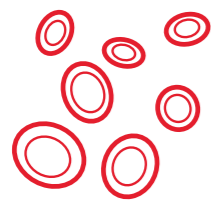
## LAL Test

USP 24/NF. 19, 2000  
Limit: 0.125 EU/ml  
Pyrogen Endotoxin Test.  
Detects endotoxins released after the death of bacteria.



## Extractables

21CFR177.1630  
21CFR177.1500  
Amount of extractables from a filter during its intended use.



## Hemolysis Test

DIN 58970  
Detecting compounds which may damage red blood cells.



## Cytotoxicity Test

ISO 10993 Part 5  
Investigates whether the leachables from the material may cause cytotoxicity (death of cell) or not.



## Additional Tests

Additional tests are available on request.

# Sustainable Future

## We Work To Improve Everyday Life

We understand the importance of operating a sustainable business. First of all, in terms of the products we manufacture. At SAATI, we develop and make available technological products that feature in people's everyday routines, all over the world, helping to make their lives healthier, safer, or simply easier.



## Life Is Precious. We Work To Protect It

All of our products, from fabrics, through components to chemicals, recognize that life is precious. At SAATI, we manufacture technologies for life: filter fabrics for blood transfusion sets; aramid fabrics in bullet proof jackets; functional fabrics and chemicals to manufacture solar cells, mobile phones and tablets that improve our lives.





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## **Connect with SAATI**

