

# ENVIONEER PRODUCT CATALOGUE

A Nonwoven Specialist in

AIR FILTRATION  
LIQUID FILTRATION  
FOOD & BEVERAGE  
AUTOMOTIVE  
BUILDING MATERIALS

ENVIONEER



ENVIONEER

# ENVIRONMENT + PIONEER = ENVIONEER

Envioneer will continue to make endless efforts to develop as a corporation that satisfies the pioneering role in the prevention of environmental contamination.

## Envioneer Co., Ltd.

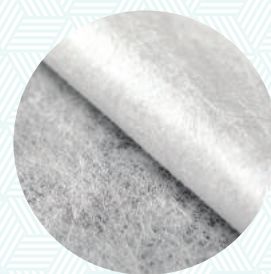
is leading global engineered materials company, thoroughly focused in the development and production of wet-laid nonwovens to satisfy the diverse needs and requirements from the customers.

We are fully committed ourselves to operating the company with an integrated management system in accordance with the strict quality control and environmental management standards of ISO 9001 and 14001.

Using applicable wet-laid technology with selective raw materials (micro-glass fibers, nano-cellulose fibers, activated carbon and synthetic fibers), Envioneer continuously develops and produces various types of nonwoven media.

Our best-in-class, wet-laid nonwoven media is designed for optimal efficiency in the filtration of liquid & gas, building materials, automotive, industrial purposes, as well as in the household sector, to provide customized solutions to our individual customer based on the specialized technology and skills we have accumulated.

- ▶ AIR FILTRATION
- ▶ LIQUID FILTRATION
- ▶ FOOD & BEVERAGE
- ▶ AUTOMOTIVE
- ▶ BUILDING MATERIALS



YOUR PARTNER FOR CLEAN AND GREEN LIFE!



# ENVIONEER

**NANOPURE-Plus® 2.0**

## WATER PURIFIER FILTRATION MEDIA



Electropositive Charged Filter media with Cellulose Nanofiber offers superior performance and filtration efficiency for water purification.

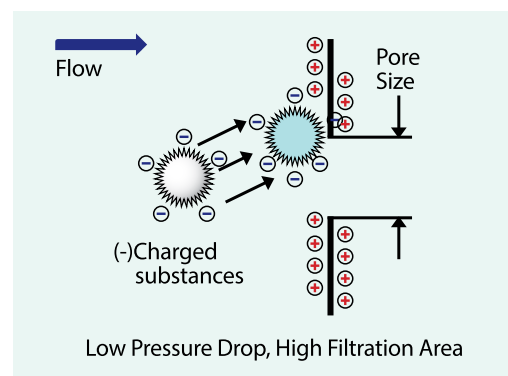
*NANOPURE-Plus® 2.0* are manufactured from the natural substances which qualifies the products with innovative filtration technology and strict standards to guarantee the quality of the media, health safety and conservation of the environment.

### Features & Benefits

- High filtration efficiency and low pressure drop at increased water flow rate
- Non-woven type filter media, based on cellulose nanofiber with electro positive charge on the surface & inside its pore
- Removal of microorganism such as virus, bacteria and cyst
- Providing healthy water with essential minerals that are crucial for human health
- Various types of filter assembly available

### Applications

- Counter top & Under sink
- Faucet type water purifier
- Pre filtration of RO membrane filter
- Food & Beverage



[Charge modified media]



## NANOPURE-Plus® 2.0

# WATER PURIFIER FILTRATION MEDIA

| Product  | Basis Weight (g/m <sup>2</sup> ) | Thickness | Mean Pore Size (μm) | Characteristics             | Materials                                 |
|----------|----------------------------------|-----------|---------------------|-----------------------------|-------------------------------------------|
| MWN 010  | 300                              | 0.7       | 0.4                 | Virus Free<br>Passed by FDA | Cellulose Nanofiber                       |
| MWN 020  | 170                              | 0.5       | 0.7                 | Anti -Microbial             | Cellulose Nanofiber                       |
| MWNC 010 | 300                              | 1         | 0.6                 | Virus Free                  | Cellulose Nanofiber<br>+ Activated Carbon |
| MWNC 020 | 180                              | 0.8       | 0.8                 | Anti -Microbial             | Cellulose Nanofiber<br>+ Activated Carbon |

The above mentioned are average values taken from our production facility. Individual values can vary within the common industrial range.

## Properties

### Electropositive Filter Media

Attracting electronegatively charged microbes to the positively charged surface where the microbes will irreversibly stick

### Cellulose Nanofiber

Concerning both human health and conservation of the environment by applying eco-friendly cellulose nanofiber

### Effective in Microbiological Filtration

Four log reduction(99.99%) observed in both bacteria and virus

### Safety

Achieving all satisfactory results by Korea water purifier standard requirements tests & complies with FDA 21 CFR approvals



[Water purifier filter]

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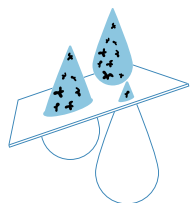




# ENVIONEER

**ENPURE-Plus®**

## LIQUID FILTRATION MEDIA



Unique electropositive addition technology offers high performance filtration.

ENPURE-Plus® offers a wide selection of electro positively charged filter media in industrial markets where filtration accuracy is crucial. We manufacture media designed to capture and adsorb particles well under natural water pressure condition, thereby providing clean and healthy water.

### Features & Benefits

- Low overall pressure drop and increased dirt capacity
- Requiring only natural water pressure but pressure pump for filtration
- Various types of filter assembly available
- Different grades of pore size available

### Applications

- Pharmaceutical & biomedical
- Micro-electronics
- Pitchers, dispensers and bottled type water purifier



[MF pleated filter cartridge]



**ENPURE-Plus®**

# LIQUID FILTRATION MEDIA

| Product | Basis Weight (g/m <sup>2</sup> ) | Thickness | Mean Pore Size (μm) | Characteristics                    | Materials                             |
|---------|----------------------------------|-----------|---------------------|------------------------------------|---------------------------------------|
| MWS 200 | 75                               | 0.5       | 3.0                 |                                    | Microglassfiber                       |
| MWS 100 | 70                               | 0.5       | 1.5                 |                                    | Microglassfiber                       |
| MWS 050 | 75                               | 0.5       | 1.3                 |                                    | Microglassfiber                       |
| MWS 080 | 75                               | 0.5       | 1.2                 |                                    | Microglassfiber                       |
| MWS 045 | 95                               | 0.6       | 1.0                 |                                    | Microglassfiber                       |
| MWS 020 | 95                               | 0.6       | 0.85                | Bacteria Free<br>NSF Certification | Microglassfiber                       |
| MWS 010 | 190                              | 1.2       | 0.5                 | Virus Free                         | Microglassfiber                       |
| MWC 250 | 250                              | 0.9       | 0.7                 | Bacteria Free<br>WQA Certification | Microglassfiber +<br>Activated Carbon |

The above mentioned are average values taken from our production facility. Individual values can vary within the common industrial range.

## Properties

### Electropositive Filter Media

Removing particles that are smaller than the pore size via electropositive charge on the surface of media and inside its pore

### Low Pressure Drop

Highly adaptable to gravity-driven type water purification devices such as water bottles and pitchers

### Safety

Acquired NSF and WQA certification

Certified NSF/ANSI 42 (material safety) only for products

Tested FDA 21 CFR approvals for MWS 020 & MWC 250



Filter cartridge has been Tested and Certified by NSF International against NSF/ANSI 42 for material requirements only.

**COMPONENT**



**C**

The MWC250 and MWC150 models have been tested and certified by Water Quality Association to NSF/ANSI 42 for material safety only

**COMPONENT**

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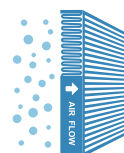
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# ENVIONEER

## FILTRATION SUPPORT MEDIA



Wet-laid bi-component polyester nonwovens are specified for wide range of filter media.

A thin filter supporter produced from wet-laid bi-component polyester fibers offers high air permeability, superior dust-holding capacity and low tolerances. All products have high stiffness and stability under both dry and wet conditions.

### Features & Benefits

- Suitable for use in both direct filtration or as a reinforcement material for main filter media
- Uniform pore sizes and constant basis weight across filter media
- Assuring the quality improvement by sandwiched filter media with filtration support media
- Designed to create sharp and stable pleats with standard pleating equipment for an increased filter performance
- Two classifications available, binder free media & binder additive media
- Binder free media for general filter & binder additive media for filter requiring high stiffness

### Applications

- Air/Cabin/HAVC filter
- Liquid filter



[HEPA filter]



# FILTRATION SUPPORT MEDIA

| Test Standard | TAPPI T410                       | TAPPI T411     | ASTM D737              | ASTM D737         | TAPPI T543     |                |
|---------------|----------------------------------|----------------|------------------------|-------------------|----------------|----------------|
| Item Grade    | Basis Weight (g/m <sup>2</sup> ) | Thickness (mm) | Air Permeability (cfm) | Resistance (mmAq) | Stiffness (mg) | Remark         |
| MAS 1150      | 50                               | 0.23           | 618                    | 0.1               | 310            | Without Binder |
| MAS 1160      | 60                               | 0.25           | 425                    | 0.2               | 345            |                |
| MAS 1170      | 70                               | 0.27           | 384                    | 0.2               | 666            |                |
| MAS 1180      | 80                               | 0.29           | 270                    | 0.4               | 710            |                |
| MAS 1250      | 50                               | 0.32           | 705                    | 0.1               | 355            | With Binder    |
| MAS 1260      | 60                               | 0.34           | 444                    | 0.2               | 610            |                |
| MAS 1270      | 70                               | 0.42           | 432                    | 0.2               | 1010           |                |

The above mentioned are average values taken from our production facility. Individual values can vary within the common industrial range.

## Properties

### Uniform opened structure

Lowering the pressure drop by increased air permeability

### High stiffness and stability

Improving pleating performance by high stiffness and stability of filter media

### Create sharp and stable pleats

Allowing various pleat sizes and shapes to be formed by excellent pleatability

### Tunable bi-component filament composition

Ensuring the best properties for specific filter media and/or filter applications

### Safety

Complying with RoHS and 19 species of hazardous matter test approvals

The logo consists of a dark blue circle with the word "ENVIIONEER" in white, sans-serif, uppercase letters. The "V" and "I" are slightly larger and more prominent. The background of the slide features a red sports car, likely a Lamborghini, shown from a side-rear perspective, with its distinctive scissor doors and aerodynamic lines. The car is set against a dark background, and the overall design includes teal and white geometric shapes in the top left corner.

# ENVIIONEER

## LIGHT-WEIGHT NONWOVENS



Light-weight nonwovens offer equalized porosity performance and uniformity.

Wet-laid nonwovens are a media of choice for critical applications in markets where light-weight is most important. Superior light-weight and high performance nonwovens developed to reduce the weight and improve the safety and comfort significantly in automotive, building and electronic fields.

### Features & Benefits

- Excellent in shock, noise absorption and corrosion resistance, as well as high tensile strength
- Ability to increase energy savings and emission reduction by lowering the weight
- Use of wet-laid technology to ensure uniform pore sizes and constant basis weight across the filter media
- Improved material performance, cost savings and weight reductions

### Applications

- |                         |                       |
|-------------------------|-----------------------|
| · Automotive materials  | · Building materials  |
| - Underbody cover       | - Sandwich panel      |
| - Headliner             | - Building wall panel |
| - Package tray          | - Facade              |
| · Electronics materials |                       |
| - TV back cover         |                       |



[Automotive underbody cover]



# LIGHT-WEIGHT NONWOVENS

| Product  | Basis Weight (g/m <sup>2</sup> ) | Materials | Colours       |
|----------|----------------------------------|-----------|---------------|
| MCS 1150 | 150                              | PET       | Black / White |
| MCS 1240 | 240                              | PET       |               |
| MCS 1300 | 300                              | PET       |               |
| MCS 2150 | 150                              | GF + PET  |               |
| MCS 2240 | 240                              | GF + PET  |               |
| MCS 2300 | 300                              | GF + PET  |               |
| MCS 2400 | 400                              | GF + PET  |               |
| MCS 2600 | 600                              | GF + PET  |               |

Test Standard

<sup>1)</sup> TAPPI T410

## Properties

### Excellent in moldability, durability and high stiffness

Available to fit in the process of manufacturing products that can be thermoformed at low pressure, while ensuring excellent durability and rigidity

### Cost savings for energy

Significant improvements in fuel economy by reducing the weight

### Ability to provide various functionality

Available with flame retardant and water repellent functions to fit in any products

### Safety

Improved odor and VOCs by reducing use of adhesive

The logo for EN VIONEER, featuring the word 'ENVIONEER' in white capital letters. The 'V' is stylized and partially enclosed by a dark blue circle. The background of the logo is a teal triangle pointing towards the top left.

# FLAME RETARDANT NONWOVENS



Flame retardant nonwovens are expert in delaying the speed of heat and fire.

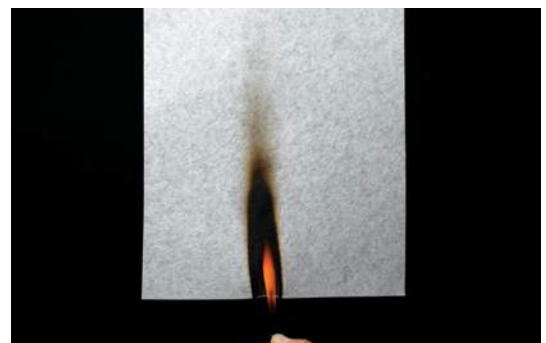
Flame retardant nonwovens are specialized at limiting the spread of fire, or even extinguishing the fire. The manufacturing process of flame retardant nonwovens by the wet-laid technology offers precise uniformity and superior quality amongst others.

## Features & Benefits

- Coated with flame retardant chemistry on the surface of the media
- Achieved all satisfactory results by Korea flame retardancy, smoke density and the semi-fireproof (grade 2 of flame retardant) tests
- Wide range of basis weights from 30gsm to 250gsm
- Available in white and black colours
- Suitable for use in wet conditions by preventing intense colour loss
- No hazardous substances

## Applications

- Furniture
- Construction region
- Building materials
  - Sandwich panel
  - Heading material



[Flame retardant nonwovens delay the spread of fire]



# FLAME RETARDANT NONWOVENS

| Classification                      |                      | ENV-White               | ENV-Black | Method                                       |
|-------------------------------------|----------------------|-------------------------|-----------|----------------------------------------------|
| Main Material                       |                      | Cellulose + Glass Fiber |           |                                              |
| Basis Weight                        | gsm                  | 62                      | 53        | KS K ISO 9864                                |
| Thickness                           | mm                   | 0.22                    | 0.19      | KS K ISO 9863-1                              |
| Tensile Strength                    | N/25mm               | 15                      | 40        | KS K 0743                                    |
| Air Permeability                    | CFM                  | 135                     | 107       | ASTM D 737                                   |
| Flame Retardant                     | Performance          | PASS                    | PASS      | National Fire Agency Notification No. 2017-1 |
|                                     | Smoke Density        | PASS                    | PASS      | ASTM E662-17                                 |
|                                     | Semi-non-combustible | PASS                    | PASS      | KS F ISO 5660-1<br>KS F 2271                 |
| Surface Colour                      |                      | White                   | Black     |                                              |
| Colour fall out (in wet conditions) |                      | X                       | X         |                                              |

All test methods are performed with reference to the KS standards.  
Their detailed procedure are regulated with internal inspection instructions.

## Properties

### Stability against heat and fire

Suitable for delaying the spread of fire by coating the surface of the product with flame retardant agents

### Various weight available

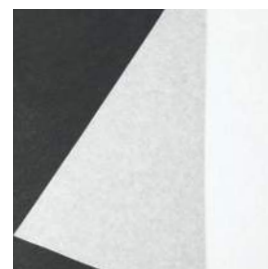
Available in weight ranges from 30gsm to 250gsm

### Colour fall out

Suitable for use in wet conditions by preventing intense colour loss

### Free of harmful chemicals

Free of hlogens and antimony



[Black & White colour available]



# ENVIONEER

## SOUND ABSORPTION NONWOVENS



Sound absorption nonwovens improve the working environment significantly by unique sound absorption properties.

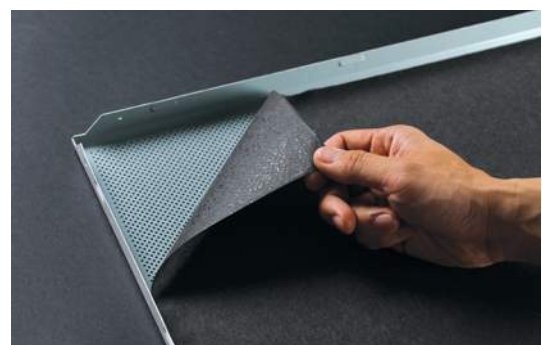
Sound absorption nonwovens are effective in reducing noises which can be applied in a wide range of applications such as wall panels, suspended ceilings and hard floor underlay. Our sound absorption nonwovens are coated with adhesive in order to attached easily on the various surfaces.

### Features & Benefits

- Non-woven fabric with thin thickness and light weight
- Achieved high sound absorption rate of NRC standard, 0.72 (ASTM C423-17 )
- Ability to attach easily on various products by applying adhesive (ceiling, steel, wood, panel and walls)
- Suitable for use in wet conditions by preventing intense colour loss
- Achieved all satisfactory results by Korea flame retardancy, smoke density and the semi-fireproof (grade 2 of flame retardant) tests

### Applications

- Subway & Airport
- Sound box & Karaoke
- Building materials
  - Ceilings/Walls/Partitions
- Steel & Wood panel



[Sound absorption nonwovens with ceiling board]



# SOUND ABSORPTION NONWOVENS

| Classification                      |                      | ENV-Sound Free          | Method                                       |
|-------------------------------------|----------------------|-------------------------|----------------------------------------------|
| Main Materials                      |                      | Cellulose + Glass Fiber |                                              |
| Basis Weight                        | gsm                  | 65                      | KS K ISO 9864                                |
| Thickness                           | mm                   | 0.23                    | KS K ISO 9863-1                              |
| Tensile Strength                    | N/25mm               | 35                      | KS K 0743                                    |
| Air Permeability                    | CFM                  | 80                      | ASTM D 737                                   |
| NRC (attached with panel)           |                      | 0.72                    | ASTM C423-17                                 |
| Flame Retardant                     | Performance          | PASS                    | National Fire Agency Notification No. 2017-1 |
|                                     | Smoke Density        | PASS                    | ASTM E662-17                                 |
|                                     | Semi-non-combustible | PASS                    | KS F ISO 5660-1<br>KS F 2271                 |
| Surface                             | Adhesive             | 0                       |                                              |
|                                     | Colour               | Black                   |                                              |
| Colour fall out (in wet conditions) |                      | X                       |                                              |

All test methods are performed with reference to the KS standards.  
Their detailed procedure are regulated with internal inspection instructions.

## Properties

### Thin & light nonwoven

Thin thickness and light weight nonwoven

### Easy-to-attach anywhere

Ability to attach easily on various products

### High sound absorption

Noise reduction effect by sound absorption

### Colour fall out

Suitable for use in wet conditions by preventing intense colour loss

### Strong stability against heat and fire

Specialized at limiting the spread or even extinguishing the fire

### Sound Free (NRC)





## HEADQUARTERS

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