



2022  
WELCRON PROFILE




pioneering healthy living cultures  
**Total Lifestyle Living Company**

## CEO MESSAGE

**Global Top-Tier Company** in the fields of water, energy, environment and health pioneering healthy living cultures.

With the world's best technology, Welcron, a small but powerful company will strive to generate new values.

Lee Young Kyu, Chairman of Welcron Group 



Since its establishment in 1992, Welcron has pioneered the field of industrial microfiber by applying microfiber which used to be utilized for clothes to cleaners and currently accounts for the largest market share in the field of microfiber cleaner in the world.

Welcron, which never ceases taking challenges towards the future has successfully developed the source technology for nano-fiber based on processing technology accumulated from microfiber and has succeeded in expanding the areas of business into industrial material businesses with high added value, such as high efficiency filters and bulletproof vests.

Now, Welcron is leading not only the industrial fiber but also the living & lifestyle market by expanding into various areas, from functional beddings that enhance the quality of life and household goods to high functional medical materials utilizing advanced fibers.

In particular, we're dedicated to securing global competitiveness through securing and fostering outstanding expert, continuous technology innovation and active expansion into overseas market and we're also contributing to generating new synergy effects with the family companies of Welcron Group through cooperation and convergence with cutting-edge technologies.

Welcron will continue to generate new values for customers through endless quality innovation and service improvement in the future while responding proactively to the needs of customers and not taking trust for granted. We will pave the way for transparent and sound corporate culture through precision management and coexistent cooperation.

Furthermore, we will do our best to become a company that provides a clean living foundation and an abundant, happy quality of life for the future generations through the corporate mindset that prioritizes 'water, environment, energy' and 'people'.

We seek for unstinted encouragement and support for the new future of Welcron and the new leap that lies ahead.

Thank you.



## About Welcron Group

### 01 Management Philosophy

We aspire to bring health and happiness to humanity (well-being), cleaner environment filled with vitality for nature and society (eco-friendly) and to create a better company for customers to fulfill our commitment to shareholders and stakeholders (the great work place) by achieving the mission.

### 02 Mission

Contribute to the health of mankind and preservation of the Earth's environment based on experts and technology convergence with challenging spirit and passion.

### 03 Vision & Core Values

Global Top-Tier Company in the fields of water, energy, environment and health.



## Subsidiary companies

### Welcron

Company pioneering the industrial fiber market

### Welcron Healthcare

Company specializing in high functional female sanitary products

### Welcron HANTEC

Company pioneering comprehensive plant construction

### Welcron Global VINA

Overseas production base and global foothold of Welcron Group



Welcron Eumseong Plant



Welcron HANTEC Hwaseong Plant



Welcron Gajwa Consumer Goods Intergration Center



Welcron Composite Material Center



Welcron Healthcare Bupyeong Plant



Welcron Global VINA



## CONTENTS

Living Business

High Functional Cleaner

Environment,  
Medical Materials Business

Defense Business

Development of  
nanofiber-applied products

## 01 VISION

Global company pioneering healthy living cultures

## 02 COMPANY HISTORY

### Beginning Stage

May 1992 Established Eunseong Corporation Co., Ltd.  
 Oct. 1997 Established Bucheon Plant  
 Mar. 2000 Established corporate affiliated research center  
 Jul. 2000 Selected as part material technology development company (wiper for semi-conductor)  
 Mar. 2001 Selected as world-class product (microfiber cleaner)  
 Apr. 2001 Launching of premium household goods brand, 'SESA'  
 Jul. 2003 Listed on the KOSDAQ market  
 Dec. 2003 Awarded with the Presidential Commendation for SMEs  
 Oct. 2004 Selected as secondary part material technology development company (ultra-high performance filter medium)  
 Dec. 2005 Completed the construction of 2nd plant in Eumseong, Chungbuk

### Growth Stage

Apr. 2007 Incorporated subsidiary YEJIMIN Co., Ltd.  
 Dec. 2007 Changed company name to Welcron Co., Ltd.  
 Jan. 2010 Incorporated subsidiary Hantec Engineering Co., Ltd.  
 Jun. 2010 Selected as Hidden Champion by the Export-Import Bank of Korea  
 Aug. 2010 Selected as WPM (World's Top 10 Premier Materials) development company by the Ministry of Knowledge Economy  
 Jan. 2011 Launching of functional bedding brand, 'SESA LIVING', advanced into dealership business  
 Nov. 2011 Welcron independently developed new body armor  
 Dec. 2011 CEO Lee Young Kyu received Iron Tower Order of Industrial Service Merit

### Leap Stage

Jan. 2012 Jan. 2012 Launched integrated system of Welcron Group  
 Jan. 2012 Selected as 'Company subject to fostering into global small giant' by the Small and Medium Business Administration  
 Sep. 2012 Established Welcron Global VINA  
 Dec. 2014 Acquired Consumer Centered Management (CCM) certification  
 Mar. 2015 Established corporate affiliated design research center  
 Apr. 2016 Officially opened Flagship Store SESA Edition (Guro)  
 May 2017 25th anniversary of Welcron Group  
 Jul. 2018 Acquired defense composite material company, 'Smart Composite'  
 Dec. 2019 Welcron selected as '100 Billion Venture Company'  
 Apr. 2020 Opened Gajwa Consumer Goods Integration Center  
 May 2021 Welcron elevated as blue chip company in the Korea Exchange  
 Nov. 2021 Welcron Microfiber Cleaner selected as 'Global Top Tier Product' for 20 consecutive years  
 Jun. 2022 Held 30th Anniversary Celebration  
 - Declare "Leaps to High-tech Material Company"

## 03 BUSINESS AREA

### Living Business

Development/production/distribution of premium brand centered on functional bedding  
 - SESA, SESA living, SESA Edition, etc.

### High Functional Cleaner Business

- Pioneering of functional household goods market using microfiber Cleaning goods, kitchen goods, sports towels, pet care goods, car cleaners, etc.  
 - Production of eco-friendly products applied with recyclable and biodegradable materials

### Environment, Medical Materials Business

R&D on air environment, water treatment filters and medical  
 - High efficiency filters: ULPA filter, HEPA filter, air filter, water treatment filter, industrial respirator, yellow dust protection and disease prevention mask  
 - Special filters: Fuel and oil filter, air filter, other special product items, etc.  
 - Medical supplies: TPU band, blood filter, artificial vessel

### Defense Business

Development and procurement of defense goods applied with advanced processing and patented protection fiber  
 - Body armor, stab proof armor, bulletproof and stab proof body armor, bulletproof plate, buoyant bulletproof armor, buoyant stab proof armor, EOD armor, bulletproof helmet  
 - Bulletproof plate for security service and military vehicles, engine grill louver, add-on armor plate for vessels, missile projectile nozzle



# 01 LIVING BUSINESS



01

## WELLOSH, competitive material for functional bedding

### WELLOSH, functional material for SESA Living

<WELLOSH>, as a fabric made in high density with ultrafine thread with thickness that is 1/100 of a hair using Welcron's exclusive technology, has sleek surface and doesn't create fiber fragments caused by friction so it can be used dust-free. The unique compact pores in high density fabric enable moisture and air to penetrate while perfectly preventing dust mites. It is a high functional material that allows the product to be used like new even if it is washed in cold water and even if it's used for a long period of time.

### Special characteristics of WELLOSH material

As a BAF-certified material recognized by the British royal family for 11 consecutive years.



Prevents dust mites



Silky texture



Hygienic due to less dust



Light weight



Permeable and pleasant



Quick drying and convenient cleaning

### Stability verified by certifications and tests by credible institutions

Welcron Co., Ltd., a company specializing in materials, owns over 30 patents at both home and abroad only in the field of microfiber and only products with safety verified through KC safety tests are launched.



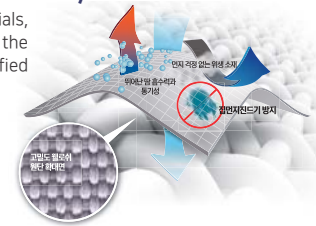
한국알러지협회 품질인증



대한아토피협회 우수등급



소비자중심경영 선영보편드



### FITI TEST anti-dust mite test completed

As a result of anti-dust mite test conducted by FITI Testing & Research Institute, not one American house dust mite passed through and safety has been verified through various hazardous substance tests.

3 tests conducted for more than 30,000 American house dust mites

Allergy UK certified(BAF)

Anti-dust mite test

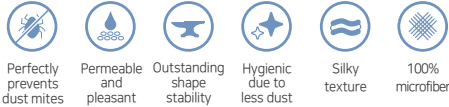
Fabric safety test





### S-702 Plain Soft, WELLOSH's representative material

Natural tactile comfort and cozy sensation offer less stimulation, making it effective for sensitive skin.



### S-730 Twill, silky texture and gloss

Compact twill organization offers silky texture and gloss which can be found in silk.



### S-773 Jade, vital energy of Chuncheon's true jade

Material with energy revitalizing feature made with true jade that emits qi or vital energy.

- Activates human energy comprehensively and prevents aging
- Helps promote blood circulation and metabolism
- Balanced restoration of extent of blood, alkalescency
- Helps relieve pain (headache, neuralgia) and reduce stress
- outstanding shape stability and semi-permanent effect

There is hardly any difference in the far infrared ray's radiation rate of jade powder and bed fabric so the far infrared ray's effect can be experienced as it is

Test Report <Korea Far Infrared Association>



<Jade powder>

<Bed fabric>



### S-731 Medi, antibacterial power with natural antibacterial ions

New material that exhibits outstanding antibacterial power with natural antibacterial ions produced from minerals.

- Outstanding antibacterial effect (99.9% antibacterial power) tested)
- Toxic-free, skin-friendly, allergy care bedding
- Care-free fiber despite frequent laundry Excellent
- odor eliminating and deodorizing features
- High durability, semi-permanent lasting effect

Exhibits 99.9% antibacterial power that defends bacteria harmful to the body, such as diplococcus pneumoniae, staphylococcus and trychophyton.



Test Report <Korea Medical Testing and Research Institute>



## SESA Living

Functional bedding brand offering diversity and comfort (dealership)

세사리빙  
SESA LIVING

SESAkids  
Children are the keys of paradise

### About SESA LIVING

SESA Living, a functional bedding brand that generates health future value, develops competitive products by securing source technology and by developing materials.

### BRAND INTRODUCTION

SESA Living is a premium bedding brand launched by Welcron Co., Ltd., the world's No. 1 company with the largest market share in the field of microfiber cleaner. Based on the source technology utilizing microfiber that has been accredited overseas, the best research team in Welcron's technology research center participates in the entire processes, from the research and development of fabric which becomes the raw material of bedding production to the manufacturing of bedding and performance test for stringent management.

Through not only the domestic production base but also the establishment of overseas company in Vietnam, Welcron's technology is applied to the product for better quality while offering reasonable provision so it is extremely competitive, even in terms of price.

As illnesses related to the environment, such as atopy and asthma are on the rise, the development of functional beddings which can fundamentally prevent the penetration of dust mites leads to enhanced quality of life in customers. As a brand that prioritizes health, it has gained the trust of customers and through endless research and development, it has positioned itself as a high functional premium bedding brand.

SESA Living is continuing its challenge to provide a healthy and comfortable sleeping environment to all the customers in the world including South Korea and by providing a healthy and beautiful bedroom environment, we will endeavor to enhance the quality of life in customers and furthermore to achieve customer satisfaction by your side, at all times so that everyone could dream of happy dreams.

### BRAND CONCEPT

Propose a special living space reflecting the transforming lifestyle

- Trendy, sophisticated and natural design
- Practical sensation for healthy and pleasant sleeping environment
- Enjoying quality time in my own, unique space

### BRAND SLOGAN

Encounter mornings with a whole new level of cleanliness

CHANGE YOUR MORNING, SESA Living



오늘부터 좋은꿈!♡  
정해진 아침, 세사리빙!





#### Anti-allergy functional bedding

As illnesses related to the environment, such as atopy and asthma are on the rise, the development of functional beddings which can fundamentally prevent the penetration of dust mites leads to enhanced quality of life in customers and as a brand that prioritizes health, it has gained the trust of customers.



#### Secured source technology and material development

SESA Living is a bedding brand launched by Welcron Co., Ltd., the world's No. 1 company with the largest market share in the field of microfiber cleaner. Based on the source technology utilizing microfiber that has been accredited overseas, the best research team in Welcron Co., Ltd.'s technology research center participates in the entire processes, from the research and development of fabric which becomes the raw material of bedding production to the manufacturing of bedding and performance test for stringent management



#### Differentiated support for dealership stores

Experts from the head office are directly dispatched to dealership stores for VMD(Visual Merchandising) direction support and service training in order to provide better satisfaction to customers and greater benefits to dealership stores.

Besides events for dowry, home-moving and seasonal events, various other events are planned to clear inventory, enhance sales during off season and to promote the brand and store awareness.



#### Marketing support

SESA Living, having positioned itself as a leader of functional bedding market by recording more than 30% growth rate in sales annually.

In 2020, actor, Jung Hae In, who made a big name as the blue chip in the world of advertisement was selected as the new brand muse and it is expanding as a young brand and a sensuous bedding brand.

세사 (SESA) [www.sesa.co.kr](http://www.sesa.co.kr)

Functional bedding brand of sophisticated sensibility (department store)



**Premium bedding with refined beauty and sensuous design**  
Modern Contemporary Technical Bedding

As Welcron's first bedding brand launched in 2000, lifestyle bedding that luxurious and natural aspects simultaneously is proposed.

- Entered approximately 50 famous department stores nationwide.
- SESA Edition(directly managed by head office)



## SESA EDITION

Premium Flagship Store, SESA Edition

As a conceptual premium flagship store of 'SESA', it is a space created under the themes of 'health', 'rest' and 'culture'. One-stop shopping for home interior products centered on modern & minimal concept pursued by SESA Edition, such as functional products for sleeping, anti-aging bedding, anti-allergy functional bedding as well as furniture, candles and tableware produced by Welcron are available.



Welcron Mall [mall.welcron.com](http://mall.welcron.com)

**WELCRON**mall

웰크론몰 

**Welcron's official online shopping mall**

Welcron Mall presents various privileges and the best shopping experience as various brand products can be seen at a glance.

\*Key brands: PURE SLEEP, SESA Online, CARE ON, Yejimiin, etc.

**SESA Factory**



**Directly managed warehouse type of bedding outlet**

SESA FACTORY, open 365 days throughout the year is a factory bedding outlet where up to 90% discounts are offered for end-of-season products and scratch products.

PURE SLEEP [www.pure-sleep.com](http://www.pure-sleep.com)

**PURE SLEEP**

**Purely, safely**

**Total home furnishing brand for rest above average**

as a brand that proposes cleaner and healthier lifestyle for customers, presents premium functional bedding at affordable prices.

- Entered TV home shopping and T-commerce, online shopping malls

**SERAPY**



**Modern, natural, healing bedding**

Presents simple style bedding based on modern and natural concept.

- Brand that has entered E-Mart

**Allertect BY SESA**

**Allertect**  
BY SESA

**Allergy-free, healthy bedding**

Functional bedding brand for value-based consumers who invest generously in health.

- Brand that has entered Costco

**WELCRON**

02

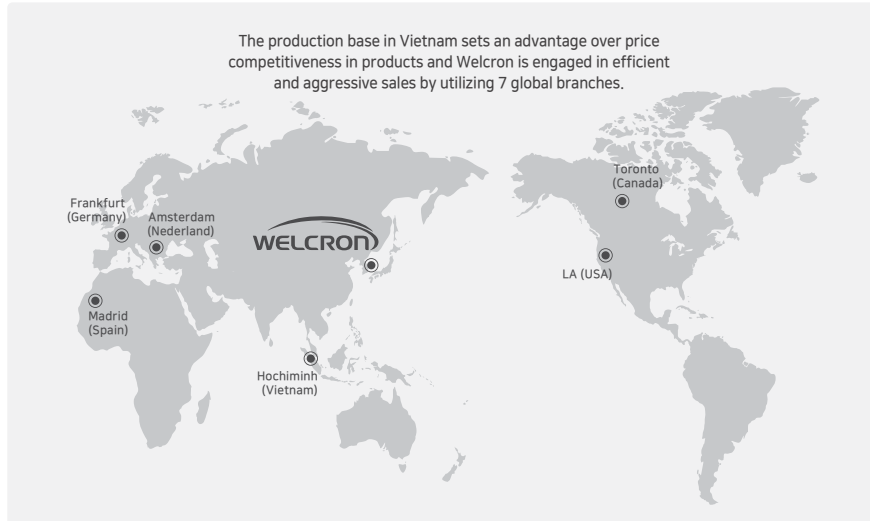
HIGH  
FUNCTIONAL  
CLEANER



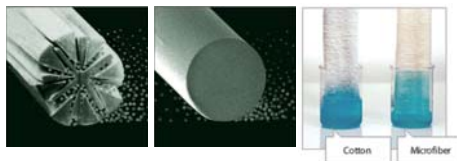
## 01 Highly functional cleaner

Welcron has created a new market called 'microfiber cleaner' by being the **first in the country** to apply microfiber to the field of cleaner and is currently supplying products to over **50 countries**, including America, Europe, South America and Asia.

### ■ Operation of strategic overseas branches and production base



### ■ Characteristics of Welcron microfiber cleaner



- **Outstanding absorption power:** Absorbs water 3 times more than general cotton products
- **Powerful detergency:** Excellent detergency due to the characteristics of microfiber
- **Quick drying time:** Easy to squeeze water using less force and quick drying time
- **Eco-friendly material:** Has outstanding cleaning power even without detergents so it is gaining attention as a material for substituting products centered on developed countries

### ■ Business areas of microfiber cleaner

- ▶ **HOUSE HOLD**  
- KITCHEN CARE, FLOOR CARE, GLASS CARE, OPTICAL CARE, PET CARE, OUT DOOR & SPORT.
- ▶ **AUTO CARE**  
- EXTERIOR : CAR WASHING, DRYING, DETAILING, DUSTING, WINDOW CARE.  
- INTERIOR : DUSTING(WET & DRYING), WINDOW & MIRROR.
- ▶ **PROFESSIONAL**  
- FLOOR CARE(MOP PAD, SPIN MOP PAD), WINDOW CARE, CLEANING CLOTH, NONWOVEN & PU CLOTH.
- ▶ **PET CARE / SPORTS TOWEL**

## 02 Development of products equipped with antibacterial features



**Welcron**  
Acquired GRS certification, a global recycled fiber standard



Welcron acquired the GRS (Global Recycled Standard) which certifies the eco-friendly fiber development system in place. GRS is a standard that not only tracks the content of recycled ingredients but also certifies the compliance regarding environmental, social and chemical responsibilities. GRS certification is a way of verifying to the world that recycled materials are being used for fiber materials and clothes and Welcron is striving to spread eco-friendly products for the consumer's needs and protection of environmental resources.

In particular, Welcron has already developed eco-friendly cleaners since 2018, securing production technology by recycling PET bottles after being dedicated to developing eco-friendly technologies with a thread provider. There is hardly any difference between the product that has been developed and the existing product in terms of performance and in line with the ESG era, it is all the more significant as the product has been made by recycling PET bottles.

Moreover, recently, 100% biodegradable product has also been developed, expanding the range of eco-friendly items. In the future, Welcron will take a lead in spreading products that take nature and environment into account and will realize eco-friendly values.

### Development of antibacterial products utilizing copper's antibacterial features

Test report showing 99.9% antibacterial effect in fabric (KATRI KS K 0693:2016, Intertek AATCC 100:2012)



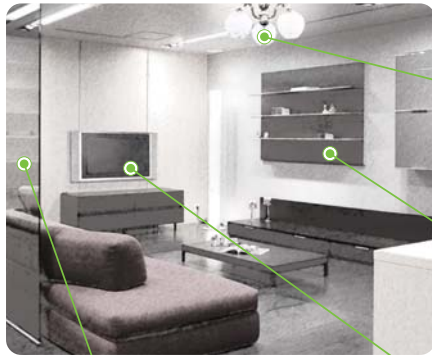
Copper ion deprives bacteria's moisture and nutrition and damages the DNA of the virus through respiration and metabolic activity of active oxygen. By leveraging such features, Welcron has applied copper ion to the thread, has developed fabric equipped with antiviral performance and has developed special antibacterial cleaner products through its application.

Unlike general antibacterial products, Welcron's special antibacterial cleaner doesn't use toxic substances such as 'antimicrobial' and the product is safer and more valuable from the fact that antibacterial feature had been achieved using special fabric made with copper which is not harmful to the human body. Recently, it has positioned itself as a product that is essential to modern people who are exposed to various viruses and pollutants.



### HOME CARE/GLASS CARE/OPTICAL CARE/KITCHEN CARE / FLOOR CARE

Easy and convenient cleaning by using water and microfiber cleaner without using detergents.



#### Crystal Care

The soft material wipes off dust without leaving scratches while adding gloss.



#### Hand Mitt

Convenient for dusting various places.



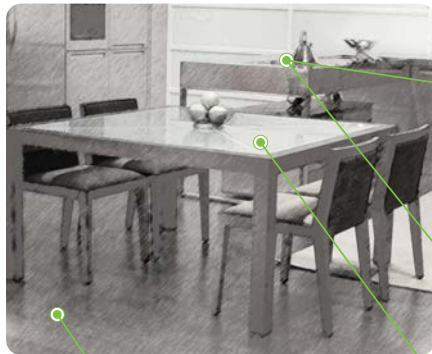
#### Window wipers

Perfect for cleaning mirrors or windows without leaving water marks or hand marks.



#### Optical cloth

Electronic products and lens can be cleaned effectively without leaving scratches.



#### Glass towel

Wine glasses or water glasses can be wiped without leaving hand marks or water marks.



#### Dish towel

With its high absorbing power, wet dishes and tableware can be dried quickly after washing.



#### Floor mop

Available in Dry & Wet type, dust and foreign substances on the floor can be removed using less force.

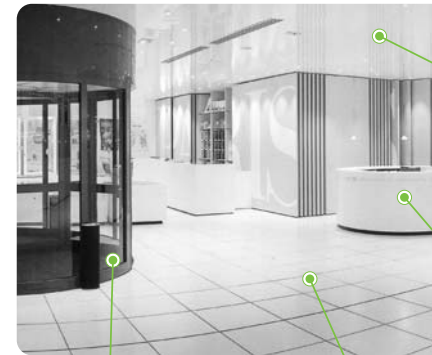


#### Kitchen cloth

Kitchen sinks and tables can be cleaned easily and neatly after use.

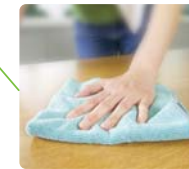
### MOP PAD / SPIN MOP PAD / WINDOW WIPER / SPONGE PAD & MITT / CLEANING CLOTH

Offers convenience for internal and external cleaning of buildings, hospitals, public places such as research facilities or special places.



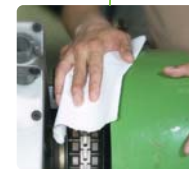
#### Elephant Mop

Structurally designed to conveniently wipe off dust in narrow gaps, microfiber cover can be attached to the stick to clean areas that can't be reached by the hand.



#### Cleaning Cloth

Both gentle and rough areas can be cleaned quickly and easily.



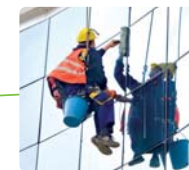
#### Industrial Wiper

As a disposable product, it is suitable for cleaning dust, foreign substance, grease or oil in machines.



#### Floor Care Mop

It can be applied to various tools, such as SPIN MOP, FTRIP MOP, VELCRO MOP and POKET MOP, enabling clean and convenient floor care by using products suitable to the characteristics of the floor.

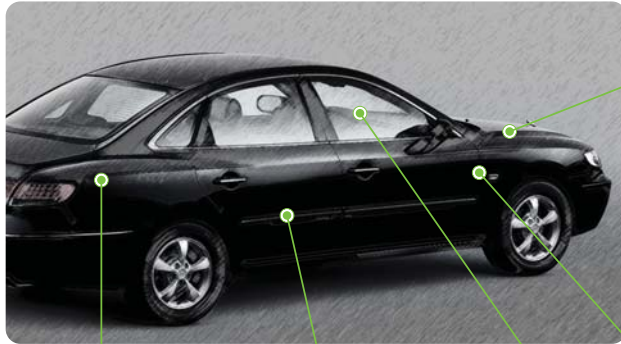


#### Window wipers

Windows can be cleaned thoroughly without leaving water marks, hand marks and dust on the glass surface.

EXTERIOR / INTERIOR

Pristine car care using various cleaners suitable for interior and exterior.



■ Polishing



■ Dust removal



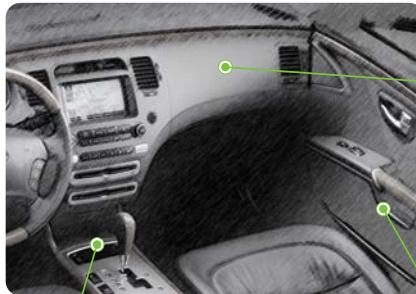
■ Foam wash



■ Glass cleaning

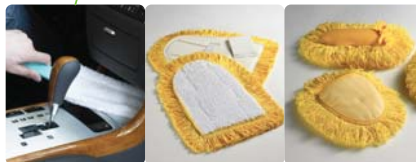


■ Drying



■ Cleaning cloths

Dust inside can be removed brilliantly without leaving scratches.



■ Dusting sleeve & Hand Mop

Convenient for cleaning hard-to-reach places.

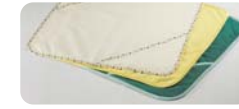


■ Hand Mitts

As a glove type, it makes cleaning fast and convenient



PET TOWEL / GOWN / CUSHION



■ Pet Mat

Its soft and cozy texture enables your pet to take a comfortable rest.



■ Pet Bathing Glove

Enhances convenience, enabling you to wash difficult-to-reach areas.



Useful for sports and outdoor activities.



■ SPORTS TOWEL

Easy to carry. Absorbs sweat quickly after activities. Dries fast.



■ GOLF CLUB CLEANER

Perfect for removing foreign substances, such as sand and moisture.



■ BOWLING BALL CLEANER

Superbly removes oil or foreign substances on bowling bowls. Easy to use.



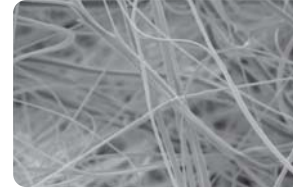


## 01

### High efficiency filter media

Welcron produces high efficiency filter media by using Melt Blown(MB) technique.

#### 멜트블로운(Melt blown) 공정



Ultra-fine fiber is produced in a spider web-like structure

- 01 After melting raw material at high temperature in an extruder, it passes through a fine nozzle and thread is discharged.
- 02 Thread is drawn with wind at high temperature and high pressure, producing extremely thin, ultra-fine fiber.
- 03 This fiber builds up uniformly and in the process, the surfaces stick to each other due to heat, forming non-woven fabric with dimensional stability.

\*Polypropylene is used as main material

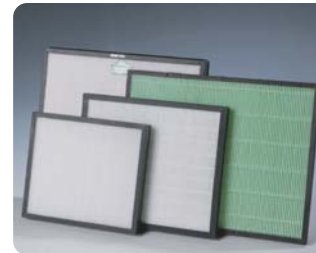
#### Characteristics of Welcron's Melt Blown

- Ultra-fine fiber with a diameter of less than 1 $\mu$ m can be manufactured.
- Porosity distribution is high compared to other Melt Blown technique and it has outstanding dust removal effect
- The differential pressure is lower than high efficiency products.
- MB fabric is available in various materials such as PP, hydrophilic PP, TPU, PBT and PA6.
- Equipped with a Pilot MB line (one and only in Korea), various MB fabrics can be developed
- Equipped with 2 units of TSI-8130, 2 units of PMI, air permeability measuring equipment, SEM and multiple units of analysis equipment.

#### Air Filter Media

Filter media in various grades is produced with Melt Blown process.

- Product grade: H-10 ~ H-14
- Realizes low differential pressure compared to high efficiency
- Not harmful to the human body with the use of eco-friendly material (PP)



Grade	Efficiency(%)	Pressure drop (mmAq)	Weight(g/m)
H-10	80	0.7	20
H-11	95	1.2	20
H-12	99.5	2.0	20
H-13	99.95	3.0	30
H-14	99.99	5.0	50

As a fabric for dustproof mask used in various fields, the dust filter efficiency is outstanding.

- KF80 / KF 94 (Korea's Ministry of Food and Drug Safety standard) respiratory mask certification and N95 performance equivalent
- KN95(China) certification

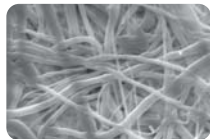


Grade	Efficiency(%)	Pressure (mmAq)	Pressure (mmAq)	Measurement condition
KF80	80 ↑	10.0	35	NaCl, 95l/min
KF94	94 ↑	12.0	50	Paraffin, NaCl, 95l/min
N95	95 ↑	8.0	30	NaCl, 85l/min
N99	99 ↑	10.0	40	NaCl, 85l/min
P1	80 ↑	8.0	30	Paraffin, 95l/min
P2	94 ↑	10.0	40	Paraffin, 95l/min

### Liquid Filter Media

Filter media in various grades is produced with Melt Blown process.

- A lot of pores compared to the pores size
- Equipped with in-house Calender Line so pore sizes can be controlled
- Used for industrial/household water purifier, membrane pretreatment filter

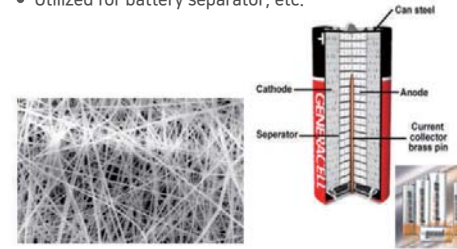


Pore Size(μm)	Weight(gsm)	Air permeability (cm3/cm2/sec)	Width (mm)	Remarks
1	120	0.1 ↑	Max. 1500	Calender
2	120	0.1 ↑		
3	60	0.7 ↑		
4	40	1.0 ↑	Un-calender	
6	30	5.0 ↑		
8	100	6.0 ↑		
10	55	10 ↑		
20	50	28 ↑		
35	75	40 ↑		
80	60	128 ↑		

### High efficiency Energy Separator

#### ■ Characteristics of ultra-fine non-woven separator

- Prevents short caused by contact between active materials of cathode and anode
- Outstanding electrolyte absorption and liquid retention due to fine porous structure of non-woven fabric material / Outstanding acid and chemical resistance, electric insulation and heat resistance
- High porosity for flawless electron movement
- Utilized for battery separator, etc.



Property	Required performance
Tensile strength(N/15mm)	Above 20
Elongation(%)	Below 10
Pore density(%)	Above 35
moisture absorption(sec/25mm)	Below 250 sec
electrolyte retention rate(g/g)	Above 5

※ Properties required by separator

TPU (Thermoplastic Polyurethane) non-woven fabric is produced with Melt Blown process.

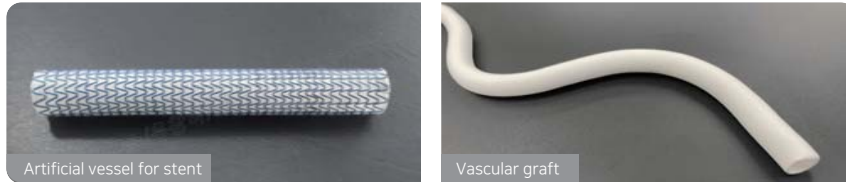
- Outstanding tensile strength, tearing strength, durability and elastic recovery so it can be used in curved body parts such as elbows
- Suitable for quasi drugs like disposable bands and hemostatic bands
- Made of ultra-fine fiber so the texture is soft and adhesion is excellent



Product name	Weight (m2)	Tensile strength (N/inch)	Tearing elongation (%)	Elastic recovery (%)
MF0075EU	75	15	250 ↑	80 ↑
MF0085EU	85	18	250 ↑	80 ↑
MF0095EU	95	22	250 ↑	85 ↑

Welcron was the first in Korea to develop an artificial vessel for stent and Vascular graft using porous PTFE and is supplying products customized to patients.

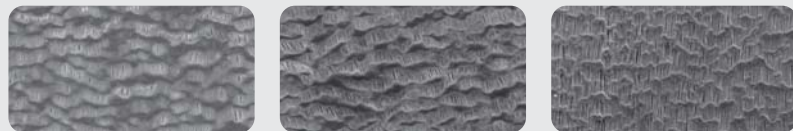
#### What is PTFE artificial vessel?



PTFE (Polytetrafluoroethylene) tube is used for artificial vessel which plays the role of connecting vessels when blood within an organ is not supplied smoothly due to damage, closure and fistula within a vessel. In addition, it is also used for artificial vessel for stent which is used by inserting into a narrowed vessel to widen it into its normal state.

#### Characteristics of PTFE tube

- As a chemical resistant material that is safe for health, it is soft and flexible, making it a suitable biocompatible material.
- Low friction coefficient relieves blood coagulation inside the vessel and helps blood flow.
- With diameter of 4~20mm and thickness of 50~1000 $\mu$ m, it can be manufactured diversely.
- It is characterized by uniform porous structure of 0.1~1 $\mu$ m.



<Low Porosity>

<Medium Porosity>

<High Porosity>

#### Patents and intellectual property rights

- Manufacturing method of Polytetrafluoroethylene tube for artificial blood vessel (Patent No. 10-1686437)
- Artificial vessel using thermal contraction tube and its manufacturing (Patent No. 10-2079493)

#### Welcron support

Biological stability test data by certified testing institution

Leakage ratio and bursting strength test

Porosity test

Technical support for binding artificial vessel for stent

Joint product development

SEM microscope analysis

WELCRON

04  
DEFENSE  
BUSINESS

Welcron Co., Ltd's exclusive **specialized manufacturing techniques** have made it possible to realize **lightweight and powerful protection** and **bulletproof and composite material products** that are **price competitive** are being manufactured and supplied. By **prioritizing absolute quality and customer satisfaction**, we satisfy both quality and performance by manufacturing and supply products optimized to personal and tactical equipment (vehicles, tanks and vessels) requested by customers.

### Body armor

Body armor, as equipment that protects the human body from bullets or fragments, is usually used by the army or police but recently, is also being used in civilian use, such as security service.



Multi-purpose body armor

Basic body armor

Body armor for female

Buoyant bulletproof armor

Non-exposed body armor

#### ■ SPECIFICATION of body armor

Standard	NIJ-STD-0101.06
Level	Level II ~ IIIA
Material	Aramid, UHMWPE
Features	<ul style="list-style-type: none"> <li>Molle System can be applied</li> <li>Accessory parts detachable (shoulders, neck, scrotum)</li> <li>Can be protected from rifle shots when bulletproof plate is inserted (Level III or IV)</li> </ul>

#### ■ SPECIFICATION of buoyant bulletproof armor

Standard	MIL STD 662F
Level	V50 470m/sec
Material	UHMWPE
Features	<ul style="list-style-type: none"> <li>For ROK Navy</li> <li>Can be protected from 9mm FMJ and 44 Magnum</li> <li>Equipped with buoyancy performance (100N)</li> <li>Buoyancy performance maintained more than 48 hrs</li> <li>Can be protected from rifle shots when bulletproof plate is inserted (Level III or IV)</li> </ul>

### Stab proof armor

By applying WIF (Welcron Inorganic Fabric), a material developed by our company, which involves applying special surface processing technology to the surface of Aramid, the stab proof armor of Welcron Co., Ltd. exhibits outstanding ability that reduces initial penetration risk. It is lightweight and extremely flexible, enabling agile movement.



Stab proof armor for police

Stab proof for civilian

Stab proof for hunting

Buoyant stab proof vest for coast guard

#### ■ SPECIFICATION of stab proof armor

Standard	NIJ-STD-0101.06
Level	Level 1 / E1, E2 (P1, S1, Spike) Level 2 / E1, E2 (P1, S1, Spike)
Material	Aramid, WIF (Welcron Inorganic Fabric)
Features	<ul style="list-style-type: none"> <li>Extremely lightweight and flexible due to composite design using our company's patented material (WIF)</li> <li>Can be removed from the front/back</li> </ul> Adjustable banding offers excellent wearability

#### ■ SPECIFICATION of buoyant stab proof armor

Standard	NIJ-STD-0115.00
Level	Level 1 / E1, E2 (P1, S1, Spike)
Material	m-Aramid, p-Aramid
Features	<ul style="list-style-type: none"> <li>For Korea Maritime Police</li> <li>Equipped with buoyancy performance (100N)</li> <li>Flame resistant</li> <li>Lightweight for excellent agility</li> </ul>

### Bulletproof and stab proof armor

As protection equipment **equipped with composite bulletproof and stab proof features**, NIJ STD 0115.00 Level 2 stab proof feature capable of offering protection against single-edged knife, double-edged knife, gimlet, etc. has been added to bulletproof armor. In addition, the front and rear protection area has been expanded and protection parts have been added at the neck, shoulders and scrotum. This product is being supplied to **National Policy Agency in South Korea**.

#### ■ SPECIFICATION of bulletproof and stab proof armor for counter-terrorism



Standard	NIJ STD 0101.06	NIJ STD 0115.00	MIL STD 662F
Level	Level IIIA	Level 2	V50 > 560m/s
Weight	Small : 5.1kg / Medium : 5.3kg / Large : 5.5kg		
Material	Welcron's Mat., UHMWPE, P-Aramid		
GSM	7,800 gsm		
Features	Application of MOLLE System / Protection against fragment		

#### ■ SPECIFICATION of bulletproof and stab proof armor for general police



Standard	NIJ STD 0101.06	NIJ STD 0115.00
Level	Level IIIA	Level 2
Weight	Small : 2.4kg / Medium : 2.7kg / Large : 2.9kg	
Material	Welcron's Mat., UHMWPE, P-Aramid	
GSM	7,300 gsm	
Features	Protection against shotgun, bulletproof and stab proof functions	

### Bulletproof plate

Bulletproof plate, as a product that enhances bulletproof performance by inserting it into bulletproof armor, is made using an advanced technique which involves bonding 'ultra-high molecular weight polyethylene (UHM-WPE)' and ceramic material. In recognition of its technology, Welcron Co., Ltd. has signed a contract for supply of bulletproof plate for personal protection with the Defense Acquisition Program Administration since 2018 and currently supplies to the ROK Army.

#### ■ ICW



#### ■ Stand Alone



#### SPECIFICATION

Standard	NIJ-STD-0101.06		
Level	Level III	Level III + α	Level IV
Weight	Under 1.1kg	Under 1.3kg	Under 2.7kg
Material	PE	PE + Ceramic	PE + Ceramic
Size	25x30cm	25x30cm	25x30cm

Standard	NIJ-STD-0101.06
Level	Level IV
Weight	(L) Under 3.2kg / (M) Under 2.7kg
Material	PE & Ceramic Composite hybrid
Size	(L) 28x32.5cm / Thickness less than 30mm (M) 25x30cm / Thickness less than 30mm

### Bulletproof and protection kit

#### Bulletproof plate for security service and military vehicles

As a bulletproof panel installed inside the car door, it is receiving excellent acclaim for its quality, by being installed in over 2,000 Rexton vehicles for patrol cars in Peru in 2016 and in Nexo cars of the Presidential Security Service of the Republic of Korea recently.

#### ■ Bulletproof panel for security service and patrol cars



#### SPECIFICATION

Standard	NIJ STD 0101.06 NIJ STD 0115.00
Level	Level V (bullet)
Material	UHMWPE & Glass prepreg hybrid
Area	Presidential Security Service(Nexo), patrol cars in Peru(Rexton), etc.

#### ■ Bulletproof panel for tactical and military trucks



#### SPECIFICATION

Standard	NIJ 0101.04 LEVEL II STANAG 4569 / AEP55 EN1522
Level	Level II, M193(SS92) 937m/s Level FB4, FB6
Material	UHMWPE & Glass prepreg hybrid
Applicable vehicle	Tactical Vehicle, KM450(Philippines), etc.

### Bulletproof and protection kit

#### Engine grill louver

As a protection kit that protects the engine from bullets and shell fragments, the mass production of the kits started since 2018 and they are being supplied.

#### ■ Engine grill for wheeled armored vehicles



#### SPECIFICATION

Standard	MIL-STD-662F
Level	Level V(bullet) (V50 Ballistic Test for Armor)
Material	AL & ARMOX 500T
Applicable vehicle	All vehicle types such as K808 (Hyundai Rotem), K21 (Hanwha Defense)

#### ■ Engine grill for tanks and self-propelled artillery



#### SPECIFICATION

Standard	MIL-STD-662F
Level	Level V(bullet) (V50 Ballistic Test for Armor)
Material	AL & ARMOX 500T
Applicable vehicle	K9 (Hanwha Defense), etc.

### Bulletproof and protection kit

#### Bulletproof plate for wheeled armored vehicles

After developing the manufacturing technique which bonds and encapsulates bulletproof material and glass composite material in 2018, it is being applied and supplied to wheeled armored vehicles for domestic and export use as the excellent quality as well as protection performance satisfy the customer's requirements.

#### ■ Landmine protection and add-on armor kit for wheeled armored vehicle



#### Landmine protection

Standard	STANAG 4569
Level	Level 2, 3, 4 (TNT 6, 8, 10Kg)
Material	UHMWPE
Applicable	K808 (Hyundai Rotem), TIGON (Hanwha Defense), etc.

#### Add-on armor (bullet and high explosion)

Standard	STANAG 4569 / MIL-STD-662
Level	Level 2, 3, 4 / Level 3, 4
Material	UHMWPE + Glass Plate
Applicable	K808 (Hyundai Rotem), TIGON (Hanwha Defense), etc.

### Bulletproof and protection kit

#### Bulletproof plate for vessel

As a bulletproof plate installed inside the vessel, the product which satisfies the environmental standards such as fatal combustion gas in case of fire and flame resistance, was developed in 2019 and it is being applied and supplied to the Navy's high-speed boats and Air-Cushioned Vehicles.

#### ■ Bulletproof plate for high-speed boats and Air-Cushioned Vehicles



#### SPECIFICATION

Standard	MIL-STD-662
Level	Level V 1 (bullet)
Material	UHMWPE & Glass prepreg, AL Sheet hybrid
Applicable	PKX-B / LSF-II (HJ Shipbuilding & Construction), maritime patrol boat (coast guard), etc.

## Composite material item

Ultra-light products with outstanding durability are being manufactured by applying bonding and forming technologies to carbon and glass composite materials and parts for tactical equipment such as vessels, armored vehicles, unmanned aerial vehicles and missile projectiles are being manufactured and supplied.

## ■ Air-Cushioned Vehicle's propeller duct, fan casing and impeller



## SPECIFICATION

Size	1500*Ø4000
Manufacturing method	Auto Clave, Dry-Oven
Material	Carbon & Glass fiber composite
Applicable model	LSF-II (HJ Shipbuilding & Construction)

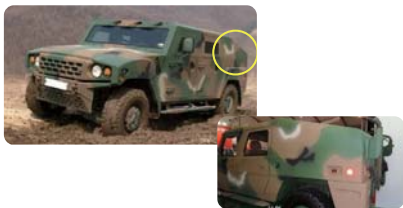
## ■ Mount cover



## SPECIFICATION

Size	1000 * 600 * 500
Manufacturing method	Dry-Oven
Material	Glass fiber composite
Applicable model	30mm anti-aircraft gun for K30 armored vehicle (Hanwha Defense), etc.

## ■ Cargo box for lightweight tactical vehicle



## SPECIFICATION

Size	2000 * 1200 * 600
Manufacturing method	Auto Clave & Press
Material	Glass fiber composite
Applicable model	Lightweight tactical vehicle, etc.

## ■ Missile projectile nozzle



## SPECIFICATION

Size	5000 * 100
Manufacturing method	Auto Clave
Material	Glass fiber composite & SMC
Applicable model	SAAM (Hanwha Defense)



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