

Global Standard of Composites

LARGE



LARGE
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Top leader of the advanced composites
materials market in the 21st century

Product descriptions

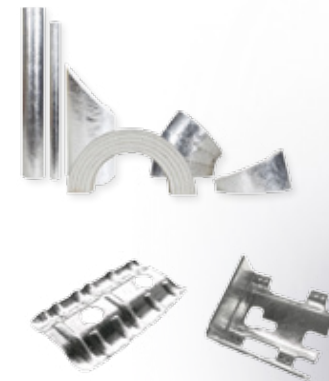
Noise Control Parts - 03

- Function- sound absorption
- Application -Dash, Hood



Heat Protector - 02

- Function- heat protection
- Application -Pipe



Heat Insulator - 02

- Function- heat insulation, noise absorption
- Application -APU, NHP



Thermoplastic Composites - 04

- Function-weight lightening
- Application -weight reduction of automotive body



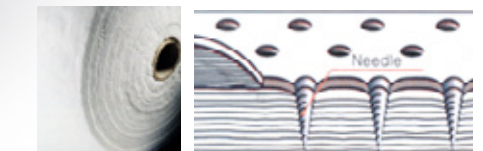
Muffler Insulator - 02

- Function- noise absorption, heat protection
- Application -Silica mat, Bulky wool



High Performance - 01

- Application -E-glass needle punching mat



High Temperature Textile - 01

- Function- heat protection
- Application -LGC, LGC Tape, Roving Cloth



Laminating - 01

- Function- heat protection
- Application - Ending, ALGC Tape, ALGCPE, ALGC



Tube & Hose Protector - 02

- Function- heat protection
- Application -Glass Tube, Flash



History & CEO Message

CEO Message

Hello, everyone! Thank you for visiting Large Co., Ltd.

Large Co., Ltd. was founded in March, 1998, starting to produce high thermal resistant fabrics via the glass fiber weaving technology. Since 1999, starting from Automotive Exhaust System development, our company has been developing new materials for sound absorption, insulation, durability reinforcement, etc. and playing a role in the automotive industry with our continuous product development as well as quality improvement.

Starting from 2007, we began to develop one of the new materials for future industry, thermoplastic composites, and completed our development of the world's first "thermoplastic composite with multi-layer structure and continuous fiber." Since then, we have been producing and supplying lightweight, durable, eco-friendly, recyclable new composites.

We will continue our R&D efforts for eco-friendly materials and parts and promise to be "a socially responsible company" so that our future generations can live in a better environment and pursue their happiness. Thank you so much for your continuous interest and support!

Large co., Ltd.
President / CEO
Park Cheol Hyun

**The Creative
company**
that leads
our current era

1999

Established Naji Industry (located in Chimsan-dong, Daegu) and produced glass fiber fabrics.

2002

Developed stiffener for Sun-Shade Board

2001

Developed the material for thermal barriers used in mufflers of vehicles for KIA Motors, Ssangyong Motors and Daewoo Motors.

2005

Certified Clean Workplace

Parts materials total technology support project

2007

Acquired TS16949 certification

2010

Large co., Ltd corporation establishment

2011

Signed a contract with Hanwha L&C for supplying goods, held a joint development initiative with fabric fashion stream. Held a new material development project for reinforced shockproof on R&D structures based on fusion technology. held a fabric material development project for productivity improvement on blade production

Developed molding products for sound-absorbing or sound-insulating materials

2012

Developed HYBRID MAT composite materials (long-fiber thermoplastic composites), received Daegu SMBA industry-university cooperative technology development award

2013

Moved to Technopolis Industrial Complex (142,333 square feet, Hyeonpung, Daegu), produced composite materials for bumper back beam (supplied to LG Hausys), held a development project for high-performance carbon fiber composite materials, held a development project for super-fiber convergence high tensility reel cable

2014

Obtained Innobiz certification

2015

Developed and produced Flexible Hose for automobiles

2016

Signed a joint technology development agreement with Fraunhofer ICT in Germany for composite materials

01 Textile

High Temperature Textile & High Performance

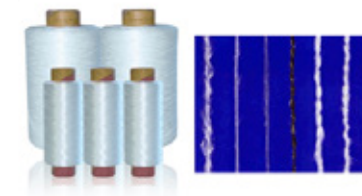
We produce high temperature textile using glass fiber/ glass wool which are optimized for high temperature. We choose the glass whose main element is silicate, and mold it until it is to become a fibrous form. The Manufacturing process is safe for human not containing any harm factors.

We use two kinds of glass fiber which are long fiber and continuous fiber. Each one is used depending on each purpose. Long fiber is mostly used for intrinsic glass fiber products, and continuous fiber is usually used for composites which are made of more than two materials such as glass fiber reinforced plastic (FRP).

High Temperature Textile

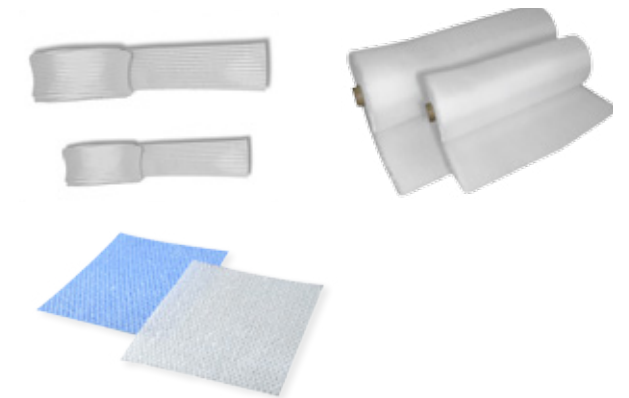
Glass bulky fiber

Glass bulky fiber is a swollen volume of glass roving manufactured by applying heat. Compared to original glass fiber roving, it has lower weight per unit of volume and greater heat insulating capacity.



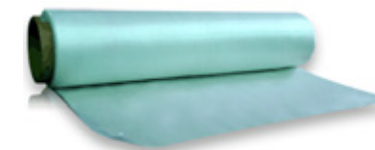
Glass Bulky cloth and Tape

Glass Bulky cloth and Tape are tailored form of Glass bulky. It endures over 550°C. Like other glass products, it is completely safe for human. This product is often used for pipe ending, expansion joint, protective suit, moving flange, valve cover, etc.



Glass Yarn Cloth

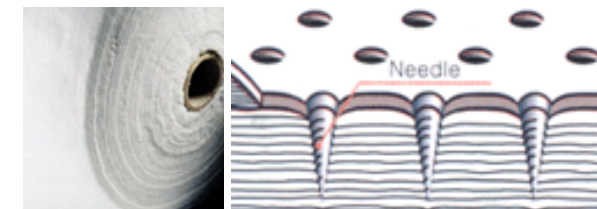
Glass Yarn Cloth is tailored form of Glass yarn. This form is useful to laminate with many other materials.



High Performance

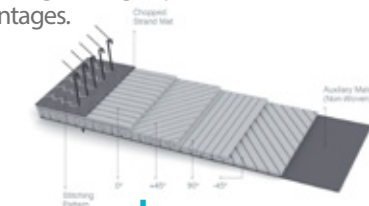
Glass needle mat

Glass needle mat is made by cutting and weaving E-glass without chemical adhesion with the physical consolidation method. With no chemical factors, it is safe for human. It is nonflammable, sound-absorbing, and heat-insulating.



NCF (Multiaxial Non-Crimp Fabric)

NCF (Multiaxial Non-Crimp Fabric) is our special processing technology developed for large composite particles. Our excellent surface treatment and high speed impregnation skills are parts of our special processing technology optimized for large particle composite. It has high tensile strength and light weight per unit volume due to its low resin percentages.

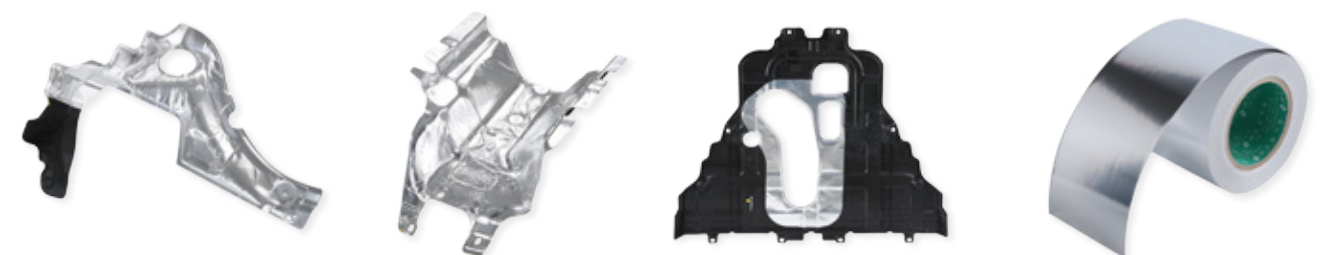


Laminating

ALGC & ALGCPE

ALGC & ALGCPE is aluminum foil laminating process with glass roving/yarn cloth. Laminating order can be customized depending on the customer's need and purposes which are heat insulation, heat resistance, or sound absorption.

It is used for various automobile parts such as cooling and heating device, and intake and exhaust systems, etc.



02 Exhaust System Parts

We produce exhaust system parts to absorb noise from inside of exhaust system. They show remarkable performance in high heat resistance and sound absorption.

Muffler Insulator

Muffler Molded Series

Molded Series are perfect-shaped version of inside cover of muffler. They are made of E-glass needle mat or silica mat, which works as heat insulator and sound absorber. Muffler molded series are lighter than original glass fiber roving muffler or yarn cloth muffler.



Muffler Unmolded Series

Unmolded Series are unmolded version of a part of muffler. It is made by combining SUS wool with E-glass needle mat. Among all kinds of sound absorptions, it is the most powerful one.



Muffler Bulky Series

Bulky Series are light and price-effective product. It can be used for many purposes.



Tube & Hose Protector

Tube & Hose Protector

Tube & Hose Protector is aluminum foil laminating process with glass fiber yarn cloth. It is excellent electric insulator, having dimensional stability and tensile strength. This product is mainly used for power cable, communication cable, air conditioning & heating, and intake & exhaust system, etc.



02 Exhaust System Parts

We produce exhaust system parts to absorb noise from inside of exhaust system. They show remarkable performance in high heat resistance and sound absorption.

| Heat Insulator

The molded series of Heat Insulator

The molded series of Heat Insulator are made of glass fiber mat with other resins to satisfy the needs for high heat resistance, noise reduction, and dimensional stability. It is flexible in shape.



Design Cut Series of Heat Insulator

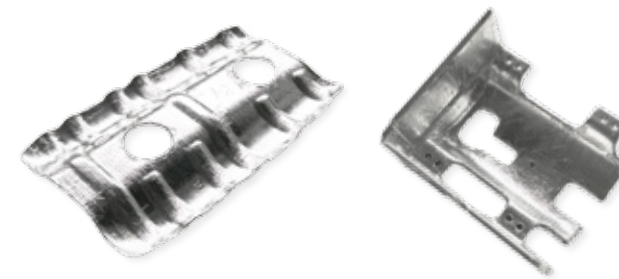
Design Cut Series of Heat Insulator are made of nonwoven glass fiber and other materials, to satisfy the needs of heat resistance and dimensional stability. It is flexible in shape.



| Heat Protector

Heat Protector

Heat Protector is created by E-glass needle mat, non-woven fabric, ALGC, etc. to satisfy the needs of heat protection, noise absorption, and dimensional stability.



Pipe Cover

Pipe Cover mainly contains E-glass needle mat and other extra materials. It is to satisfy the needs of heat protection and dimensional flexibility. It is used for general pipe insulation.



03 Noise Control Parts

We produce engine system parts to absorb noise and heat from inside of engine. The following products are to provide a quiet and comfortable inner space of a car.

Noise Control Parts

Hood

Hood is installed on upper side of engine room absorbing heat and noise.



Dash

Dash absorbs noise from inside of engine room, attaching on the dash panel.



Insulator Tunnel

Insulator Tunnel absorbs the noise from the driving train system under the driver's seat.



Wire mesh

Wire mesh is created by braid technology. Wire mesh absorbs impact and vibration in the car and prevent noise and deformation of the car.

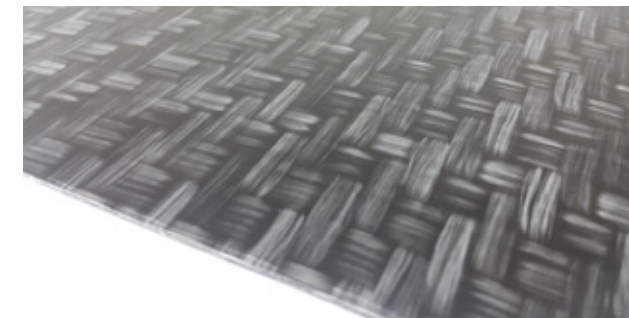


04 Composites

We further research and develop new composite by combining more than two physically and chemically different materials. The followings are now what we produced, and each product was greatly improved in properties.

CFT

CFT consists of continuous fiber (glass or carbon) and thermoplastic. It has more than 70% fiber content. Particularly, woven product has excellent impact properties. We produce it in unidirectional form or fabric form.



MLHM

MLHM is multilayered thermoplastic composite. The material consists of long fiber and thermoplastic. It has homogeneous isotropic properties which having a same direction in complete impregnated structure.



Thermoset Composites

Composite High Pressure Vessel

Composite High Pressure Vessel is 70% lighter than steel cylinders. It contains high pressure and high capacity. Because of its strong corrosion resistance, it has long fatigue life. There is no burst possibility in use (always leaking before burst) and it is flexible in shape.

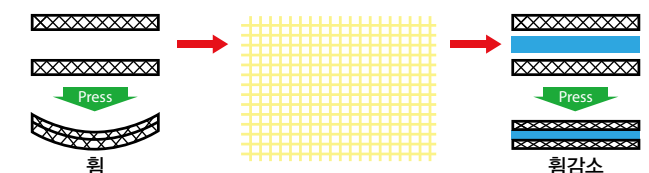
SCBA
(Self-Contained Breathing Apparatus)

CNG
(Compressed Natural Gas)



Prepreg

Prepreg we created is woven glass fiber with impregnated resin. It can be as stiffener as possible for the use of laminated plates and vehicle's sun-shade-plate





Present State Of Installation

Our top-class engineers produce high quality products in our best facilities, helping us lead the material and part production industry.



01. Oil-Hydraulic Press 02. Bundling Press 03. Press



04. Bulky Machine 05. Cutting Machine 06. Coating Machine

Machine List			
01 Oil-Hydraulic Press		02 Bundling Press	03 Press
Oil-Hydraulic Press(F-1) 1550*1420*2000	Oil-Hydraulic Press(F-8) 2200*2500*2600	Bundling Press 1 800*900*1400	200TON Press1
Oil-Hydraulic Press(F-2) 1150*1650*2300	Oil-Hydraulic Press(F-9) 2200*2500*2600	Bundling Press 2 800*900*1400	80TON Press1
Oil-Hydraulic Press(F-3) 2200*1700*2200	Oil-Hydraulic Press(T-1) 1600*1900*2300	Bundling Press 3 800*900*1400	200TON Press2
Oil-Hydraulic Press(F-4) 1900*2600*2800	Oil-Hydraulic Press(T-2) 1300*1550*2200	Bundling Press 4 800*900*1400	80TON Press2
Oil-Hydraulic Press(F-5) 1900*2600*2800	Oil-Hydraulic Press(T-3) 1450*1500*2200	Bundling Press 5 800*900*1400	
Oil-Hydraulic Press(F-6) 2200*2500*2600		Bundling Press 6 800*900*1400	
Oil-Hydraulic Press(F-7) 2200*2500*2600			
04 Bulky Machine		05 Cutting Machine	06 Other Equipment
Bulky Machine1	Verticality Cutting Machine	Cold-Formed JIG1	
Bulky Machine2	Horizontality Cutting Machine	Cold-Formed JIG3	
Bulky Machine3	Cutting Machine 25,00*2,000*2,000	Drying Oven	
Bulky Machine4	Auto Cutting Machine 1 1800*3400*1800	Piping Machine 1150*1650*2300	
Bulky Machine5	Auto Cutting Machine 2 1800*3300*1800	Rolling/Damping/Cutting Machine 1550*1420*2000	
Bulky Machine6	Auto Cutting Machine 4 AL embo cutting	Coating Machine 12,000*2,000*2,500	
		Auto Bending Machine	