KOLON SPACEWORKS PRODUCT CATALOGUE

Composite Intermediates

2025

KOLON SPACEWORKS

KOLON Group

Vision

LifeStyle Innovator

We innovate our customers' LIFE STYLE by providing them with products and services that improve their quality of life.

Core Value

One&Only

Targeting Kolon, which is most loved by customers, all executives and employees will cultivate differentiated capabilities and the best competitiveness.

The Way to Go

One&Only Way

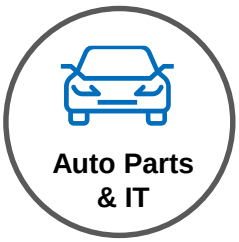
Kolon, which is most loved by customers.
us who are unique and differentiated.
I have the best competitive edge..

KOLON Group

Business Portfolio

> ***KOLON is dedicated to creating values to our society and clients by providing various products and services to enhance the quality of life of all we touch***

KOLON INDUSTRIES
(Manufacturing Division)
KOLON GLOTECH
KOLON PLASTICS
KOLON SPACEWORKS



KOLON INDUSTRIES
(Manufacturing Division)
KOLON GLOTECH
KOLON PLASTICS
KOLON BENIT
KOLON MOBILITY GROUP

KOLON LIFESCIENCE
KOLON PHARMA

KOLON INDUSTRIES
(Manufacturing Division)
KOLON GLOBAL
KOLON LIFESCIENCE

KOLON INDUSTRIES
(Fashion Division)

KOLON GLOBAL
KOLON MOBILITY GROUP
GREEN NARAE (Golf)
KOLON MOD/LSI
SWEETMEAL

KOLON SPACEWORKS Profile

Business Overview

Kolon Spaceworks is a solution company that provides durability/strength/eco-friendliness of products applied to various spaces ranging from sea, land, sky and space. In order to overcome the physical limitations that are impossible with a single material, we are increasing the possibility of future residence and movement by creating a technological advantage with a combination of various materials.

With a long-term vision in the areas of energy, mobility, communication, and security, we are making investments that enable us to expand human capacity and competitive advantage in R&D to enable various forms of future that humans dream of. We are also reaching out to customers who want to solve problems based on our global perspective. Finally, we are providing the best quality through production management that meets the global level.

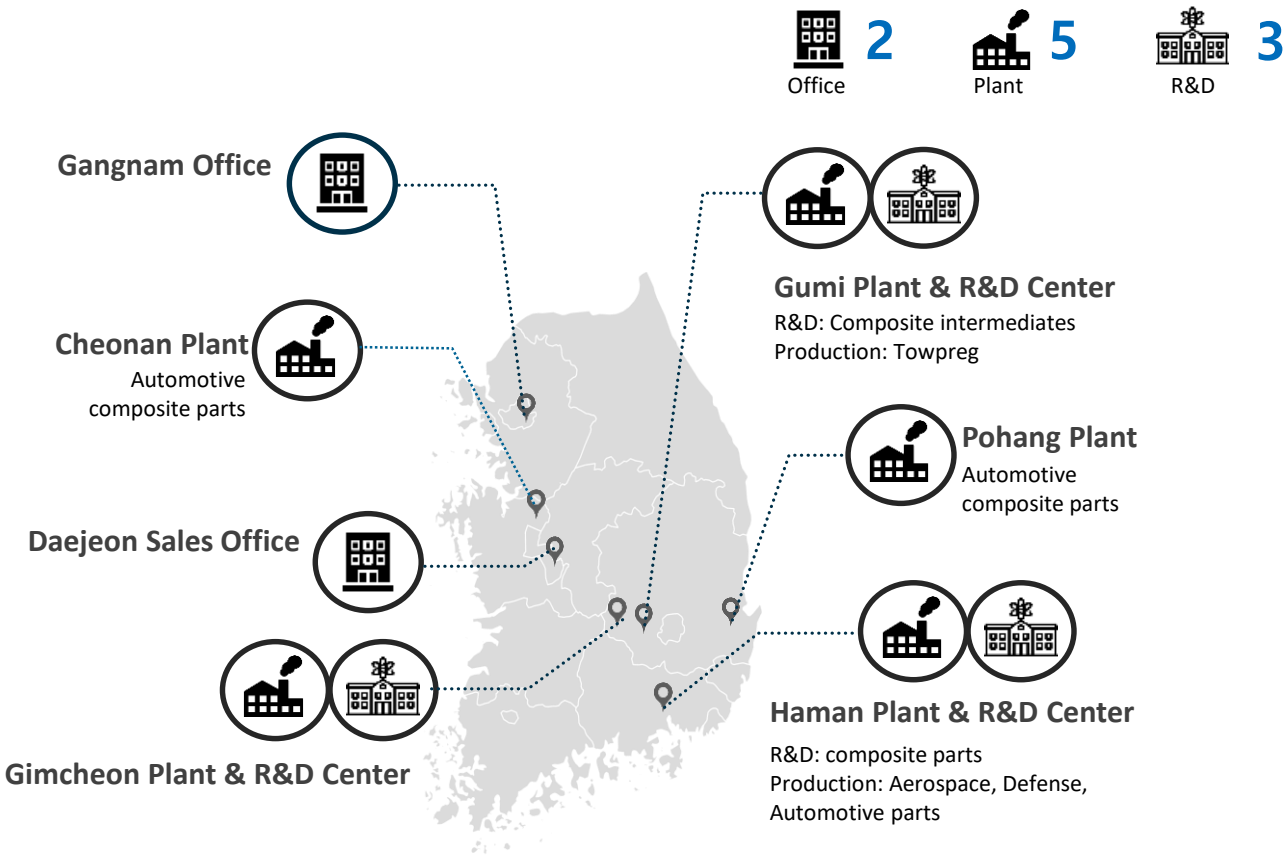
In the future, we promise to become a technology leadership company that provides the necessary solutions to everywhere humans step forward, and we will strive to become a global No. 1 material company that works with various market participants.

KOLON SPACEWORKS Profile

Overview

Established Date	July 2024
CEO	Sang Hyun, Ahn
Number of Employees	342 people
Business Field	Mobility, Aerospace, and Defense
Head Office	10th floor of Landmark Tower, 308, Gangnam-daero, Seoul

Network



KOLON SPACEWORKS Profile

Core Competency

Materials

Glass Fiber | Carbon Fiber

KOLON Composite Business Area

Thermoplastic	Thermoset	Aramid Fiber
• POM (Resin) • PA/PBT/PEL,PPS (Compound)	• Epoxy resin • Phenol • Acryl	
KOLON ENP	KOLON INDUSTRIES	KOLON INDUSTRIES

Intermediates

Thermoplastic	Thermoset
UD-Tape	Tow Prepreg

Components/ Modules

Mobility	Aerospace & Defense
Structural components	Defense/Ballistics
Energy	Aircraft structural components
	Launch vehicle/Payload Structural components

KOLON SPACEWORKS Business Area

Application

Mobility	Defense	Space	Aviation	Future Mobility
• BEV • PBV • FCEV	• Ground • Marine • Air	• Launch Vehicle • Payload	• Civil • Military	• AAM • UMV

Composite Products and Applications

Mobility

Structural

Body Parts/Panel/Chassis

Energy

Energy Storage/Battery Cover

Exterior

Exterior Parts

Defense

Air

Storage Tank/Wing Box

Marine

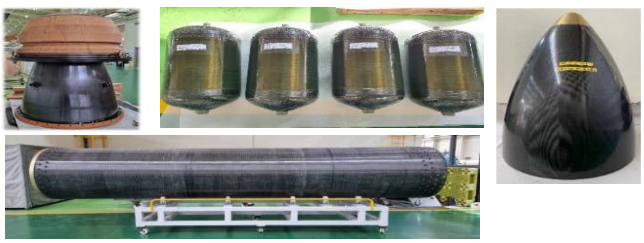
Non-pressure Vessel/
Sonar Dome

Land

Ballistic
Protection/Missile

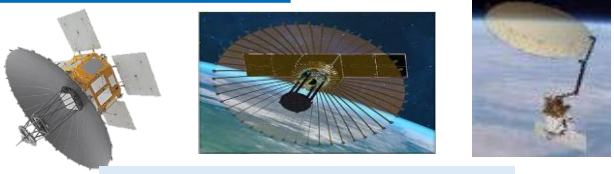
Space

Launch Vehicle



Nozzle/Combustion Chamber/
Pressure Vessel/Nosecone

Payload



Antenna Structural Parts

Aviation

Structural

Wing/Engine Parts

Interior

Panel/Cabin Structural Parts/Sockets

Intermediate Products

Thermoset Towpreg

- KSW‘s Towpreg is a high-performance carbon fiber composite intermediate product designed specifically for dry filament winding or automatic stacking arrangement processes, and in addition to typical hydrogen storage tanks that require extreme pressure, it is an ideal intermediate product for demanding applications such as space projectiles and structures for aircraft.

- Standard: Grade and above
- High Strength: Grade and above

Thermoplastic UD Tape

- KSW’s UD Tape is a material manufactured through Kolon's optimized impregnation technology. It can implement flame-retardant performance, has higher specific stiffness and specific strength than traditional metal materials and plastic materials, and has higher impact strength than thermosetting composite materials. As such, composite materials that are reinforced with continuous fibers and exhibit excellent mechanical properties are applied as metal alternatives.

- PP Series
- PA6 Series
- PA66 Series
- PC Series
- PESU Series
- PPS Series
- PEKK Series
- PEEK Series

Bulletproof Materials

- KSW's bulletproof materials are based on Kolon Industries' p-Aramid fibers and partner's UHMWPE fibers, and have various solutions for personal protective equipment such as bulletproof vests, bulletproof plates, and protective helmets, as well as system bulletproof parts such as ships and armored vehicles, making efforts to create mutual profits by supplying solutions with raw materials to customers

- Heracron Fabric
- Heracron Prepreg
- Heracron UD
- UHMWPE UD

Table of Contents

Towpreg Introduction

Standard Series

Standard Series Tow Prepreg is a solvent-free, controlled flow epoxy based resin. This prepreg system has excellent mechanical properties, and shelf life of 6-months at room temperature. With a 180°C glass transition temperature, Suitable for use in Out-Of-Autoclave (OOA) processing of higher temperature applications.

Typical Applications

- Pressure Vessel (Type 3, 4 Hydrogen/CNG Tank)
- Mobility Motor Parts (Rotor Sleeve)
- Braiding (Car Wheel, Nose Cone, …)
- Aerospace Structure using AFP/ATP

High Strength Series

Advanced Series is a solvent-free, controlled flow epoxy based resin. This prepreg system has excellent mechanical properties, long shelf life, and is well known as a qualified resin for rocket motor case applications.

Typical Applications

- Mobility Motor Parts (Advanced Rotor Sleeve)
- Aerospace Structure using AFP/ATP (Large Surface Structure, Fuselage, Fairing…..)
- Launch Vehicle (Combustion Chamber, Pressure Vessel)

Towpreg Product List

Standard Series

CF Series	Code	CF contents	Matrix	Matrix Prop.	Applications
T700	TCT70E	69~73%	Epoxy	Normal	Pressure Vessel
	TCT70E_HR	69~73%	Epoxy	Heat Resistant	Mobility Motor Parts
	TCT70E_FR	69~73%	Epoxy	Flame Resistant	Pressure Vessel
	TCT70E_BR	69~73%	Epoxy	2stage, no tacky	Braiding
	TCT70E_NT	69~73%	Epoxy	Structural toughness	Aerospace Structure/Parts
H2550	TCH25E	69~73%	Epoxy	Normal	Launch Vehicle
	TCH25E_PV4	69~73%	Epoxy	Normal	Pressure Vessel
ZA50XC	TCC50E_PV4	69~73%	Epoxy	Normal	Pressure Vessel
	TCC50E_MC4	69~73%	Epoxy	Mid-T Curing	Pressure Vessel (PE)
TC780	TCF78E_PV4	69~73%	Epoxy	Normal	Pressure Vessel

High Strength Series

CF Series	Code	CF contents	Matrix	Matrix Prop.	Applications
T800	TCT80E_HR	69~73%	Epoxy	Heat Resistant	Mobility Motor Parts
	TCT80E_NT	69~73%	Epoxy	Structural toughness	Aerospace Structure/Parts
H3060	TCH36E_LV	69~73%	Epoxy	Normal	Launch Vehicle
	TCH36E_HR	69~73%	Epoxy	Heat Resistant	Mobility Motor Parts
H3065	TCH37E_NT	69~73%	Epoxy	structural toughness	Aerospace Structure/Parts

Towpreg Technical Data Sheet

TCT70E

Description

It is a hot melt-type towpreg using epoxy resin, and has excellent unwinding properties, which is advantageous for high-speed production.

Benefit / Feature

It represents uniform Resin Contents and Bend Width, has stable unwinding properties, and efficiently expresses excellent mechanical properties.

Variants TCH25E, TCH25E_PV4, TCC50E_PV4, TCF78V_PV4

Applications Pressure Vessel (Type4 Hydrogen)

Resin Properties

Resin Type	Epoxy	
Tg (Tan δ, DMA)	137 ℃	ASTM D3418
Tensile Strength	84 MPa (@ RT)	ASTM D638
Elongation at break	4.1%	ASTM D638

Towpreg Properties

Reinforced Fiber	T700-24K	
Resin Contents	27 ~ 31 % (CV 5% ↓)	
Band Width	6.0 ± 0.3 mm (Controllable, CV 5% ↓)	
Curing Condition	120 ℃, Hold Time 3 hrs	
Tensile Strength Trans.	4,800 MPa ↑	ASTM D4018 *
ILSS	49.5 MPa	ASTM D2344
Un-winding (@200mpm)	Excellent	

*ASTM D4018 Method : Speed 2㎜/s, Distance between grips 150㎜
- Resin-impregnated specimens made from continuous filament carbon to determine their tensile properties.

Others

Storage (Conditions)	3±2℃
Shelf Life	20±2℃ 3months / 3±2℃ 6months
Precautions for use	No prolonged exposure to high temperatures
Shipping	Transport at room temperature (no direct sunlight exposure)

Towpreg Technical Data Sheet

TCT70E_HR

Description

It is a hot melt-type towpreg using epoxy resin, and has excellent unwinding properties, which is advantageous for high-speed production.

Benefit / Feature

It represents uniform Resin Contents and Bend Width, has stable unwinding properties, and efficiently expresses excellent mechanical properties. It demonstrates outstanding thermal endurance in high-temperature environments.

Variants

Applications

Mobility Motor Parts (Rotor Sleeve)

Resin Properties

Resin Type	Epoxy	
Tg (Tan δ, DMA)	150 ℃	ASTM D3418
Tensile Strength	80MPa (@ RT)	ASTM D638
Elongation at break	3.0%	ASTM D638

Towpreg Properties

Reinforced Fiber	T700-24K	
Resin Contents	27 ~ 31 % (CV 5% ↓)	
Band Width	6.0 ± 0.3 mm (Controllable, CV 5% ↓)	
Curing Condition	150 ℃, Hold Time 2 hrs	
Tensile Strength Trans.	4,800 MPa (Avg)	ASTM D4018 *
ILSS	60 MPa	ASTM D2344
Un-winding (@200mpm)	Excellent	

*ASTM D4018 Method : Speed 2㎜/s, Distance between grips 150㎜
- Resin-impregnated specimens made from continuous filament carbon to determine their tensile properties.

Others

Storage (Conditions)	3±2℃
Shelf Life	20±2℃ 3months / 3±2℃ 6months
Precautions for use	No prolonged exposure to high temperatures
Shipping	Transport at room temperature (no direct sunlight exposure)

Towpreg Technical Data Sheet

TCC50E_PV4

Description

It is a hot melt-type towpreg using epoxy resin, and has excellent unwinding properties, which is advantageous for high-speed production.

Benefit / Feature

It represents uniform Resin Contents and Bend Width, has stable unwinding properties, and efficiently expresses excellent mechanical properties. Suitable for applications requiring mid-temperature processing, as it cures effectively in the range of 80°C to 100°C.

Variants

Applications

Pressure Vessel (Type4 Hydrogen / CNG Tank)

Resin Properties

Resin Type	Epoxy	
Tg (Tan δ, DMA)	130 ℃	ASTM D3418
Tensile Strength	60MPa (@ RT)	ASTM D638
Elongation at break	3.0%	ASTM D638

Towpreg Properties

Reinforced Fiber	ZA50XC	
Resin Contents	27 ~ 31 % (CV 5% ↓)	
Band Width	6.0 ± 0.3 mm (Controllable, CV 5% ↓)	
Curing Condition	90 ℃, Hold Time 3 hrs	
Tensile Strength Trans.	4,800 MPa ↑	ASTM D4018 *
ILSS	45 MPa	ASTM D2344
Un-winding (@200mpm)	Excellent	

*ASTM D4018 Method : Speed 2㎜/s, Distance between grips 150㎜
- Resin-impregnated specimens made from continuous filament carbon to determine their tensile properties.

Others

Storage (Conditions)	3±2℃
Shelf Life	20±2℃ 0.5months / 3±2℃ 1months
Precautions for use	No prolonged exposure to high temperatures
Shipping	Transport at room temperature (no direct sunlight exposure)

Towpreg Technical Data Sheet

TCT80E_HR

Description

It is a hot melt-type towpreg using epoxy resin, and has excellent unwinding properties, which is advantageous for high-speed production.

Benefit / Feature

It represents uniform Resin Contents and Bend Width, has stable unwinding properties, and efficiently expresses excellent mechanical properties. It demonstrates outstanding thermal endurance in high-temperature environments.

Variants TCH36E_HR

Applications Mobility Motor Parts (Rotor Sleeve)

Resin Properties

Resin Type	Epoxy	
Tg (Tan δ, DMA)	150 ℃	ASTM D3418
Tensile Strength	80MPa (@ RT)	ASTM D638
Elongation at break	3.0%	ASTM D638

Towpreg Properties

Reinforced Fiber	T800-24K	
Resin Contents	27 ~ 31 % (CV 5% ↓)	
Band Width	4.5 ± 0.3 mm (Controllable, CV 5% ↓)	
Curing Condition	150 ℃, Hold Time 2 hrs	
Tensile Strength Trans.	5,600 MPa (Avg) ↑	ASTM D4018 *
ILSS	60 MPa	ASTM D2344
Un-winding (@200mpm)	Excellent	

*ASTM D4018 Method : Speed 2㎜/s, Distance between grips 150㎜
- Resin-impregnated specimens made from continuous filament carbon to determine their tensile properties.

Others

Storage (Conditions)	3±2℃
Shelf Life	20±2℃ 3months / 3±2℃ 6months
Precautions for use	No prolonged exposure to high temperatures
Shipping	Transport at room temperature (no direct sunlight exposure)

Towpreg Technical Data Sheet

TCT80E_NT

Description

It is a hot melt-type towpreg using epoxy resin, and has excellent unwinding properties, which is advantageous for high-speed production.

Benefit / Feature

It represents uniform Resin Contents and Bend Width, has stable unwinding properties, and efficiently expresses excellent mechanical properties. Offers long-term storage stability with a shelf life of over 6 months at room temperature.

Variants TCH37E_LV

Applications Aerospace Structure (AFP/ATP)

Resin Properties

Resin Type	Epoxy	
Tg (Tan δ, DMA)	145 ℃	ASTM D3418
Tensile Strength	82 MPa (@ RT)	ASTM D638
Elongation at break	4.6%	ASTM D638

Towpreg Properties

Reinforced Fiber	T800-24K	
Resin Contents	27 ~ 31 % (CV 5% ↓)	
Band Width	4.5 ± 0.3 mm (Controllable, CV 5% ↓)	
Curing Condition	120 ℃, Hold Time 3 hrs	
Tensile Strength Trans.	5,600 MPa ↑	ASTM D4018 *
ILSS	60.5 MPa	ASTM D2344
Un-winding (@200mpm)	Excellent	

*ASTM D4018 Method : Speed 2㎜/s, Distance between grips 150㎜
- Resin-impregnated specimens made from continuous filament carbon to determine their tensile properties.

Others

Storage (Conditions)	3±2℃
Shelf Life	20±2℃ 6months
Precautions for use	No prolonged exposure to high temperatures
Shipping	Transport at room temperature (no direct sunlight exposure)

UD Tape Introduction

GF/PP Series

GF/PP UD Tape is an unidirectional fiber-reinforced tape made from Polypropylene. This UD Tape has normal strength, dimensional stability and light weight. With the addition of flame retardants, the product exhibits excellent flame resistance.

Typical Applications

Mobility Chassis Parts : Rear Back Beam, Bottom Cover, FEM Carrier
Mobility Interior Parts : Seat Back/Panel, Door Module, Pedal Arm

GF/PA6 Series

GF/PA6 UD Tape is an unidirectional fiber-reinforced tape made from Nylno6. This UD Tape has excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers. With the addition of flame retardants, the product exhibits excellent flame resistance.

Typical Applications

Mobility Interior Parts : Door Module
Mobility Battery Case : Upper/Bottom Cover

GF/PA66 Series

GF/PA66 UD Tape is an unidirectional fiber-reinforced tape made from Nylon66. This UD Tape has excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers.

Typical Applications

Mobility Interior Parts : Air Bag Housing
Mobility Powertrain System : Thermal Management System parts

GF/PC Series

GF/PC UD Tape is an unidirectional fiber-reinforced tape made from Polycarbonate. This UD Tape has excellent mechanical properties, high impact and light weight with strong interfacial adhesion between the resin and fibers.

Typical Applications

Mobility Powertrain Parts : Filter Housing / Cap.

UD Tape Introduction

CF/PPS Series

CF/PPS UD Tape is an unidirectional fiber-reinforced tape made from Polyphenylene Sulfide. This UD Tape has excellent mechanical properties, high stiffness and dimensional stability. With excellent chemical resistance and low moisture absorption ensuring long-term durability.

Typical Applications

Aero Interior Parts : Door Stiffener, BRKT, Nose landing gear door

UD Tape Product List

Glass Fiber reinforced UD Tape

Class	Code	GF / Ratio	Matrix / Ratio	Matrix Prop.	Applications
GF/PP	UEGPP50	E-glass / 50	PP / 50	Normal Strength	Mobility Interior Parts
	UEGPP42_FR	E-glass / 58	PP / 42	Flame Resistant	Mobility Battery Case
	UEGPP40	E-glass / 60	PP / 40	High Strength	Mobility Chassis Parts
	UEGPP28	E-glass / 72	PP / 28	High Strength	Mobility Chassis Parts
GF/PA6	UEGPA50	E-glass / 50	PA6 / 50	Normal Strength	Mobility Interior Parts
	UEGPA45_FR	E-glass / 55	PA6 / 45	Flame Resistant	Mobility Battery Case
	UEGPA40	E-glass / 60	PA6 / 40	High Strength	Mobility Chassis Parts
	UEGPA33	E-glass / 67	PA6 / 33	High Strength	Mobility Chassis Parts
GF/PA66	UEGPD50	E-glass / 50	PA66 / 50	Normal Strength	Mobility Chassis Parts
	UEGPD40	E-glass / 60	PA66 / 40	High Strength	Mobility Powertrain System
GF/PC	UEGPC40	E-glass / 60	PC / 40	High Strength	Mobility Powertrain Parts
	UEGPC55_FST	E-glass / 45	PC / 55	High Strength	Mobility Powertrain Parts

Carbon Fiber reinforced UD Tape

Class	Code	GF / Ratio	Matrix / Ratio	Matrix Prop.	Applications
CF/PPS	UCFPS50	T700 / 50	PPS / 50	Ultra High Strength	Aero Interior Parts
CF/PEKK	UCFPKK60	T700 / 60	PEKK / 40	Ultra High Strength	'Aero Interior Parts
CF/PEEK	UCFPEK60	T700 / 60	PEEK / 40	Ultra High Strength	'Aero Primary Structure

UD Tape Technical Data Sheet

UEGPP50

Description

UEGPP50 is an unidirectional fiber-reinforced tape made from Polypropylene

Benefit / Feature

It represents normal strength, dimensional stability and light weight.

Applications

Mobility Chassis Parts (Rear Back Beam, FEM Carrier)
Mobility Interior Parts Seat Back/Panel, Door Module, Pedal Arm)

Physical Properties

Resin Type	Polypropylene	
Fiber	E-glass	
Fiber contents	50 wt%	
Density	1.33 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	20 Gpa	ISO 527-4/5
Tensile Strength	536 Mpa	ISO 527-4/5
Flexural Modulus	20 Gpa	ISO 14129
Flexural Strength	539 Mpa	ISO 14129

UD Tape Technical Data Sheet

UEGPP42_FR

Description

UEGPP42_FR is an unidirectional fiber-reinforced tape made from Polypropylene.

Benefit / Feature

It represents normal strength, dimensional stability and light weight.
With the addition of flame retardants, the product exhibits excellent flame resistance..

Applications Mobility Battery Case (Bottom Cover)

Physical Properties

Resin Type	Polypropylene	
Fiber	E-glass	
Fiber contents	58 wt%	
Density	1.52 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	26 Gpa	ISO 527-4/5
Tensile Strength	540 Mpa	ISO 527-4/5
Flexural Modulus	22 Gpa	ISO 14129
Flexural Strength	380 Mpa	ISO 14129
Drop weight impact	52 J	ISO 6603

Thermal Property

Flammability	V1	UL94

UD Tape Technical Data Sheet

UEGPP40

Description

UEGPP40 is an unidirectional fiber-reinforced tape made from Polypropylene

Benefit / Feature

It represents normal strength, dimensional stability and light weight.

Applications

Mobility Chassis Parts (Rear Back Beam, FEM Carrier)
Mobility Interior Parts (Door Module)

Physical Properties

Resin Type	Polypropylene	
Fiber	E-glass	
Fiber contents	60 wt%	
Density	1.46 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	29 Gpa	ISO 527-4/5
Tensile Strength	800 Mpa	ISO 527-4/5
Flexural Modulus	24 Gpa	ISO 14129
Flexural Strength	540 Mpa	ISO 14129
Drop weight impact	80 J	ISO 6603

UD Tape Technical Data Sheet

UEGPP28

Description

UEGPP28 is an unidirectional fiber-reinforced tape made from Polypropylene.

Benefit / Feature

It represents high strength, dimensional stability and light weight

Applications

Mobility Chassis Parts (Rear Back Beam)
Mobility Interior Parts (Door Module, Pedal Arm)

Physical Properties

Resin Type	Polypropylene	
Fiber	E-glass	
Fiber contents	72 wt%	
Density	1.68 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	38 Gpa	ISO 527-4/5
Tensile Strength	920 Mpa	ISO 527-4/5
Flexural Modulus	26 Gpa	ISO 14129
Flexural Strength	600 Mpa	ISO 14129
Drop weight impact	120 J	ISO 6603

UD Tape Technical Data Sheet

UEGPA50

Description

UEGPA50 is an unidirectional fiber-reinforced tape made from Nylon 6.

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers.

Applications Mobility Interior Parts (Door Module)

Physical Properties

Resin Type	Polyamide 6 (Nylon 6)	
Fiber	E-glass	
Fiber contents	50 wt%	
Density	1.58 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	24 Gpa	ISO 527-4/5
Tensile Strength	644 Mpa	ISO 527-4/5
Flexural Modulus	23 Gpa	ISO 14129
Flexural Strength	653 Mpa	ISO 14129

UD Tape Technical Data Sheet

UEGPA45_FR

Description

UEGPA45_FR is an unidirectional fiber-reinforced tape made from Nylon 6

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers. With the addition of flame retardants, the product exhibits excellent flame resistance.

Applications Mobility Battery Case (Upper/Bottom Cover)

Physical Properties

Resin Type	Polyamide 6 (Nylon 6)	
Fiber	E-glass	
Fiber contents	55 wt%	
Density	1.64 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	27 Gpa	ISO 527-4/5
Tensile Strength	731 Mpa	ISO 527-4/5
Flexural Modulus	27 Gpa	ISO 14129
Flexural Strength	740 Mpa	ISO 14129

Thermal Property

Flammability	V0	UL94

UD Tape Technical Data Sheet

UEGPA40

Description

UEGPA40 is an unidirectional fiber-reinforced tape made from Nylon 6

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers

Applications Mobility Interior Parts (Door Module)

Physical Properties

Resin Type	Polyamide 6 (Nylon 6)	
Fiber	E-glass	
Fiber contents	60 wt%	
Density	1.72 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	37 Gpa	ISO 527-4/5
Tensile Strength	810 Mpa	ISO 527-4/5
Flexural Modulus	35 Gpa	ISO 14129
Flexural Strength	1000 Mpa	ISO 14129
Drop weight impact	50 J	ISO 6603

UD Tape Technical Data Sheet

UEGPA33

Description

UEGPA33 is an unidirectional fiber-reinforced tape made from Nylon 6

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers

Applications Mobility Interior Parts (Door Module)

Physical Properties

Resin Type	Polyamide 6 (Nylon 6)	
Fiber	E-glass	
Fiber contents	67 wt%	
Density	1.87 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	42 Gpa	ISO 527-4/5
Tensile Strength	1000 Mpa	ISO 527-4/5
Flexural Modulus	38 Gpa	ISO 14129
Flexural Strength	1100 Mpa	ISO 14129
Drop weight impact	58 J	ISO 6603

UD Tape Technical Data Sheet

UEGPD50

Description

UEGPD50 is an unidirectional fiber-reinforced tape made from Nylon 66

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers.

Applications Mobility Interior Parts (Air Bag Housing)

Physical Properties

Resin Type	Polyamide 66 (Nylon 66)	
Fiber	E-glass	
Fiber contents	50 wt%	
Density	1.61 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	25 Gpa	ISO 527-4/5
Tensile Strength	661 Mpa	ISO 527-4/5
Flexural Modulus	25 Gpa	ISO 14129
Flexural Strength	669 Mpa	ISO 14129

UD Tape Technical Data Sheet

UEGPD40

Description

UEGPD40 is an unidirectional fiber-reinforced tape made from Nylon 66

Benefit / Feature

It represents excellent thermal resistance, high stiffness and light weight with strong interfacial adhesion between the resin and fibers.

Applications Mobility Interior Parts (Air Bag Housing)
Mobility Powertrain System (Thermal Management System parts)

Physical Properties

Resin Type	Polyamide 66 (Nylon 66)	
Fiber	E-glass	
Fiber contents	60 wt%	
Density	1.74 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	28 Gpa	ISO 527-4/5
Tensile Strength	748 Mpa	ISO 527-4/5
Flexural Modulus	28 Gpa	ISO 14129
Flexural Strength	756 Mpa	ISO 14129

UD Tape Technical Data Sheet

UEGPC40

Description

UEGPC40 is an unidirectional fiber-reinforced tape made from Polycarbonate

Benefit / Feature

It represents excellent mechanical properties, high impact and light weight with strong interfacial adhesion between the resin and fibers.

Applications Mobility Powertrain Parts (Filter Housing / Cap)

Physical Properties

Resin Type	Polycarbonate	
Fiber	E-glass	
Fiber contents	60 wt%	
Density	1.73 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	36 Gpa	ISO 527-4/5
Tensile Strength	730 Mpa	ISO 527-4/5
Flexural Modulus	33.5 Gpa	ISO 14129
Flexural Strength	900 Mpa	ISO 14129

UD Tape Technical Data Sheet

UEGPC45_FST

Description

UEGPC45_FST is an unidirectional fiber-reinforced tape made from Polycarbonate

Benefit / Feature

It represents excellent mechanical properties, high impact and light weight with strong interfacial adhesion between the resin and fibers.

Applications Mobility Powertrain Parts (Filter Housing / Cap)

Physical Properties

Resin Type	Polycarbonate	
Fiber	E-glass	
Fiber contents	55 wt%	
Density	1.77 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	37 Gpa	ISO 527-4/5
Tensile Strength	700 Mpa	ISO 527-4/5
Flexural Modulus	31 Gpa	ISO 14129
Flexural Strength	850 Mpa	ISO 14129

Thermal Properties (FST Test)

Flame test	Pass	Vertical/ Horizontal test
Smoke density	Pass	ASTM E662-21
Toxicity	Pass	BS 6853

UD Tape Technical Data Sheet

UCFPS50

Description

UCFPS50 is an unidirectional fiber-reinforced tape made from Polyphenylene sulfide.

Benefit / Feature

It represents excellent mechanical properties, high stiffness and dimensional stability. With excellent chemical resistance and low moisture absorption ensuring long-term durability.

Applications Aero Interior Parts (Door Stiffener, BRKT, Nose landing gear door)

Physical Properties

Resin Type	Polyphenylene Sulfide	
Fiber	T700	
Fiber contents	50 wt%	
Density	1.52 g/㎤	ISO 1183

Mechanical Properties

Tensile Modulus	105 Gpa	ISO 527-4/5
Tensile Strength	1900 Mpa	ISO 527-4/5
Flexural Modulus	90 Gpa	ISO 14129
Flexural Strength	1000 Mpa	ISO 14129

Intermediates for Ballistic Protection

HF100 Series

The HF100 series uses the highest strength yarn to exhibit optimal bulletproof performance. By using Heracron yarn from various deniers, it has a variety of fabrics of various weaves and weights, can provide a water-repellent fabric as needed, and can also be provided in the form of prepreg for molded products.

Typical Applications

- Bulletproof Vest / Protective Helmet
- Vehicle Armor / Spall Liner

HF200 Series

The HF200 series is a fabric specially designed for the anti-stab function. It is designed to be difficult for knives or awls to penetrate because it is composed of a dense weave using relatively few denier yarns, and provides ceramic powder coated products for higher protection performance.

Typical Applications

- Anti-stab Vest

HF210 Series

The HF210 series provides an economical solution while showing adequate bulletproof performance. It uses Heracron yarn produced by an economical spinning process but manufactured to implement bulletproof performance, and it is suitable as a large protective material such as vehicle protection because it is mainly composed of large denier yarn.

Typical Applications

- Bulletproof Vest / Protective Helmet
- Vehicle Armor / Spall Liner

Ballistic Protection Fabric Product List

Heracron Fabric

Series	Code	Denier	Fiber Class	Weight(g/sqm).	Applications
HF100	HT840G	840	High Tenacity	200	bulletproof vests
	HT840S	840	High Tenacity	200	bulletproof vests
	HT840W	840	High Tenacity	200	bulletproof vests
	HT845G	840	High Tenacity	250	Ballistic helmets
	HT843G	840	High Tenacity	300	Ballistic helmets
	HT100G	1000	High Tenacity	190	bulletproof vests
	HT101G	1000	High Tenacity	280	bulletproof vests
	HT152G	1500	High Tenacity	410	Ballistic helmets, vehicle armor
	HT152S	1500	High Tenacity	410	Ballistic helmets, vehicle armor
HF200	607G	600	Standard Tenacity	220	-
	607SIC	600	Standard Tenacity (SiC Powder Coated)	450	Anti-stab Vests
HF210	ST152G	1500	Standard Tenacity	410	Ballistic helmets, vehicle armor
	ST153G	1500	Standard Tenacity	430	Ballistic helmets, vehicle armor
	ST158G	1500	Standard Tenacity	270	bulletproof vests
	ST158W	1500	Standard Tenacity	270	bulletproof vests
	ST300G	3000	Standard Tenacity	460	Ballistic helmets, vehicle armor
	ST306G	3000	Standard Tenacity	460	Ballistic helmets, vehicle armor

Ballistic Protection Fiber Product List

HF100 (High Tenacity)

Linear Density		Filament Count	Tenacity			Breaking Force		Elongation at Break	Young's Modulus	
[denier]	[dtex]	[ea]	[g/d]	[MPa]	[cN/tex]	[kgf]	[N]	[%]	[g/d]	[GPa]
600	670	400	27.2	3,460	240	16.3	160	3.3	850	108
840	930	665	27.0	3,430	238	22.7	223	3.4	850	108
1,000	1,110	665	27.0	3,430	238	27.0	265	3.4	820	104
1,500	1,670	1,000	26.7	3,390	236	40.1	393	3.5	780	99
2,820	3,130	2,000	26.0	3,300	229	73.3	719	3.9	700	89
ASTM D1907 Option 3			ASTM D885							

* Measured at twist level : 1.1TM **Tube Size : 94mm x 216mm

HF200 (Standard Tenacity)

Linear Density		Filament Count	Tenacity			Breaking Force		Elongation at Break	Young's Modulus	
[denier]	[dtex]	[ea]	[g/d]	[MPa]	[cN/tex]	[kgf]	[N]	[%]	[g/d]	[GPa]
400	440	267	23.5	2,990	207	9.4	92	3.0	810	103
600	670	400	23.5	2,990	207	14.1	138	3.0	820	104
840	930	560	23.5	2,990	207	19.7	193	3.1	800	102
1,000	1,110	665	23.5	2,990	207	23.5	230	3.2	770	98
1,500	1,670	1,000	23.5	2,990	207	35.3	346	3.3	740	94
2,000	2,220	1,330	23.5	2,990	207	47.0	461	3.4	740	94
2,250	2,500	1,000	23.5	2,990	207	52.9	519	3.6	690	88
ASTM D1907 Option 3			ASTM D885							

* Measured at twist level : 1.1TM **Tube Size : 94mm x 216mm

HF210 (Standard Tenacity for Ballistic)

Linear Density		Filament Count	Tenacity			Breaking Force		Elongation at Break	Young's Modulus	
[denier]	[dtex]	[ea]	[g/d]	[MPa]	[cN/tex]	[kgf]	[N]	[%]	[g/d]	[GPa]
1,000	1,110	665	24.5	3,110	216	24.5	240	3.2	800	102
1,500	1,670	1,000	24.5	3,110	216	36.8	361	3.3	760	97
3,000	3,330	2,000	24.0	3,050	212	72.0	706	3.6	710	90
ASTM D1907 Option 3			ASTM D885							

* Measured at twist level : 1.1TM **Tube Size : 94mm x 216mm

Ballistic Protection Fabric Technical Data Sheet

HT840

Description

This product is primarily used for bulletproof vests and is made from high-tenacity 840 denier yarn in a plain weave structure

Benefit / Feature

This aramid fabric provides enhanced resistance to ballistic threats such as shrapnel and bullets

Variants HT840G(greige), HT840S(scoured), HT840W(water-repellent)

Applications bulletproof vests

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF100 840 denier & HF100 840 denier

Physical Properties

Breaking Force Warp	8,200 N/5cm (Min, 6,600 ~ Max. 10,100)	ISO 13934-1
Breaking Force Weft	8,200 N/5cm (Min. 6,600 ~ Max. 10,100)	ISO 13934-1
Weight	200 g/㎡ (Min. 188 ~ Max. 208)	ISO 3801
Thickness	0.30 mm (Min. 0.25 ~ Max. 0.34)	ISO 5084
Count Warp	105 yarns/10cm (Min. 102 ~ Max. 108)	ISO 7211-2
Count Weft	105 yarns/10cm (Min. 102 ~ Max. 108)	ISO 7211-2

This fabric is available in greige, scoured, and water-repellent finishes

Ballistic Protection Fabric Technical Data Sheet

HT100

Description

This product is primarily used for bulletproof vests and is made from high-tenacity 1,000 denier yarn in a plain weave structure

Benefit / Feature

This aramid fabric provides enhanced resistance to ballistic threats such as shrapnel and bullets

Variants HT100G(greige), HT100S(scoured), HT100W(water-repellent)

Applications bulletproof vests

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF100 1,000 denier & HF100 1,000 denier

Physical Properties

Breaking Force Warp	7,200 N/5cm (Min, 6,700 ~ Max. 8,700)	ISO 13934-1
Breaking Force Weft	7,200 N/5cm (Min. 6,700 ~ Max. 8,900)	ISO 13934-1
Weight	190 g/㎡ (Min. 182 ~ Max. 201)	ISO 3801
Thickness	0.30 mm (Min. 0.25 ~ Max. 0.35)	ISO 5084
Count Warp	85 yarns/10cm (Min. 83 ~ Max. 87)	ISO 7211-2
Count Weft	85 yarns/10cm (Min. 83 ~ Max. 87)	ISO 7211-2

This fabric is available in greige, scoured, and water-repellent finishes

Ballistic Protection Fabric Technical Data Sheet

HT101

Description

This product is primarily used for bulletproof vests and is made from high-tenacity 1,000 denier yarn in a plain weave structure

Benefit / Feature

This aramid fabric provides enhanced resistance to ballistic threats such as shrapnel and bullets

Variants HT101G(greige), HT101S(scoured), HT101W(water-repellent)

Applications bulletproof vests

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF100 1,000 denier & HF100 1,000 denier

Physical Properties

Breaking Force Warp	10,500 N/5cm (Min, 8,400 ~ Max. 12,600)	ISO 13934-1
Breaking Force Weft	12,000 N/5cm (Min. 9,600 ~ Max. 14,400)	ISO 13934-1
Weight	280 g/㎡ (Min. 266 ~ Max. 294)	ISO 3801
Thickness	0.43 mm (Min. 0.36 ~ Max. 0.50)	ISO 5084
Count Warp	122 yarns/10cm (Min. 117 ~ Max. 127)	ISO 7211-2
Count Weft	122 yarns/10cm (Min. 117 ~ Max. 127)	ISO 7211-2

This fabric is available in greige, scoured, and water-repellent finishes

Ballistic Protection Fabric Technical Data Sheet

HT152

Description

This product is used in ballistic helmets and vehicle armor, made with high-tenacity 1500 denier yarn in a 2x2 basket weave pattern.

Benefit / Feature

Variants HT152G(greige), HT152S(scoured)
HT152L1(One-side), HT152L2(Double-side phenolic/PVB lamination)

Applications Ballistic helmets, vehicle armor

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	2X2 Basket
Warp & Weft Yarn	HF100 1500 denier & HF100 1500 denier

Physical Properties

Breaking Force Warp	18,000 N/5cm (Min, 14,400 ~ Max. 22,200)	ISO 13934-1
Breaking Force Weft	18,000 N/5cm (Min. 14,400 ~ Max. 22,200)	ISO 13934-1
Weight	410 g/㎡ (Min. 385 ~ Max. 430)	ISO 3801
Thickness	0.62 mm (Min. 0.52 ~ Max. 0.71)	ISO 5084
Count Warp	120 yarns/10cm (Min. 116 ~ Max. 124)	ISO 7211-2
Count Weft	120 yarns/10cm (Min. 116 ~ Max. 124)	ISO 7211-2

This fabric is available in greige, scoured, and phenolic/PVB prepreg

Ballistic Protection Fabric Technical Data Sheet

607SIC

Description

This fabric is made from high-density 600 denier yarn and coated with silicon carbide, providing effective protection against blades

Benefit / Feature

Coated with silicon carbide, this fabric effectively resists blade attacks

Variants 607SIC

Applications Anti-stab protection

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF200 600 denier & HF200 600 denier

Physical Properties

Breaking Force Warp	7,000 N/5cm (Min, 5,500 ~ Max. 8,500)	ISO 13934-1
Breaking Force Weft	9,500 N/5cm (Min. 8,000 ~ Max. 11,000)	ISO 13934-1
Weight (Base Fabric)	220 g/㎡ (Min. 205 ~ Max. 235)	ISO 3801
Weight (Coated Fabric)	450 g/㎡ (Min. 420 ~ Max. 480)	ISO 3801
Count Warp	160 yarns/10cm (Min. 155 ~ Max. 165)	ISO 7211-2
Count Weft	160 yarns/10cm (Min. 155 ~ Max. 165)	ISO 7211-2

Ballistic Protection Fabric Technical Data Sheet

ST152

Description

This product is used in ballistic helmets and vehicle armor, made with Standard-tenacity 1500 denier yarn in a 2x2 basket weave pattern.

Benefit / Feature

Variants ST152G(greige), ST152S(scoured)
ST152L1(One-side), ST152L2(Double-side phenolic/PVB lamination)

Applications Ballistic helmets, vehicle armor

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	2X2 Basket
Warp & Weft Yarn	HF210 1500 denier & HF210 1500 denier

Physical Properties

Breaking Force Warp	15,000 N/5cm (Min, 12,000 ~ Max. 18,000)	ISO 13934-1
Breaking Force Weft	15,000 N/5cm (Min. 12,000 ~ Max. 18,000)	ISO 13934-1
Weight	410 g/㎡ (Min. 385 ~ Max. 430)	ISO 3801
Thickness	0.60 mm (Min. 0.51 ~ Max. 0.70)	ISO 5084
Count Warp	120 yarns/10cm (Min. 114 ~ Max. 122)	ISO 7211-2
Count Weft	120 yarns/10cm (Min. 114 ~ Max. 122)	ISO 7211-2

This fabric is available in greige, scoured, and phenolic/PVB prepreg

Ballistic Protection Fabric Technical Data Sheet

ST153

Description

This product is used in ballistic helmets and vehicle armor, made with Standard-tenacity 1500 denier yarn in a 2x2 basket weave pattern.

Benefit / Feature

Variants ST153G(greige), ST153S(scoured)
ST153L1(One-side), ST153L2(Double-side phenolic/PVB lamination)

Applications Ballistic helmets, vehicle armor

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	2X2 Basket
Warp & Weft Yarn	HF210 1500 denier & HF210 1500 denier

Physical Properties

Breaking Force Warp	15,000 N/5cm (Min, 12,000 ~ Max. 18,000)	ISO 13934-1
Breaking Force Weft	15,000 N/5cm (Min. 12,000 ~ Max. 18,000)	ISO 13934-1
Weight	430 g/㎡ (Min. 408 ~ Max. 452)	ISO 3801
Thickness	0.60 mm (Min. 0.51 ~ Max. 0.70)	ISO 5084
Count Warp	122 yarns/10cm (Min. 118 ~ Max. 126)	ISO 7211-2
Count Weft	122 yarns/10cm (Min. 118 ~ Max. 126)	ISO 7211-2

This fabric is available in greige, scoured, and phenolic/PVB prepreg

Ballistic Protection Fabric Technical Data Sheet

ST158

Description

This fabric is made with standard-tenacity 1500 denier yarn in a plain weave structure

Benefit / Feature

Designed as an economical solution for ballistic vests, this product offers favorable protection against bullets

Variants ST158G(greige), ST158S(scoured), ST158W(water-repellent)

Applications bulletproof vests

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF210 1500 denier & HF210 1500 denier

Physical Properties

Breaking Force Warp	10,500 N/5cm (Min, 8,400 ~ Max. 12,600)	ISO 13934-1
Breaking Force Weft	11,000 N/5cm (Min. 8,800 ~ Max. 13,200)	ISO 13934-1
Weight	270 g/㎡ (Min. 257 ~ Max. 283)	ISO 3801
Thickness	0.45 mm (Min. 0.35 ~ Max. 0.55)	ISO 5084
Count Warp	84 yarns/10cm (Min. 82 ~ Max. 86)	ISO 7211-2
Count Weft	80 yarns/10cm (Min. 78 ~ Max. 82)	ISO 7211-2

This fabric is available in greige, scoured, and water-repellent finishes

Ballistic Protection Fabric Technical Data Sheet

ST300

Description

This product is used in ballistic helmets and vehicle armor, made with Standard-tenacity 3000 denier yarn in a plain weave pattern.

Benefit / Feature

Designed as an economical solution for ballistic vests, this product offers favorable protection against bullets

Variants ST300G(greige), ST300S(scoured)
ST300L1(One-side), ST300L2(Double-side phenolic/PVB lamination)

Applications Ballistic helmets, vehicle armor

Configuration

Fiber	Kolon Industries' p-Aramid "Heracron"
Weave Pattern	Plain
Warp & Weft Yarn	HF210 3000 denier & HF210 3000 denier

Physical Properties

Breaking Force Warp	18,200 N/5cm (Min, 13,500 ~ Max. 22,300)	ISO 13934-1
Breaking Force Weft	18,200 N/5cm (Min. 13,500 ~ Max. 22,300)	ISO 13934-1
Weight	460 g/㎡ (Min. 385 ~ Max. 430)	ISO 3801
Thickness	0.70 mm (Min. 0.51 ~ Max. 0.70)	ISO 5084
Count Warp	67 yarns/10cm (Min. 65 ~ Max. 69)	ISO 7211-2
Count Weft	67 yarns/10cm (Min. 65 ~ Max. 69)	ISO 7211-2

This fabric is available in greige, scoured, and phenolic/PVB prepreg