

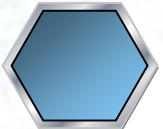


Farnam Baspar Co. Introduction of company

www.farnambaspar.ir

www.farnambaspar.com

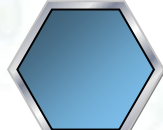
Agenda



History of the Company



Introduction of Company, Equipment and Products



Introduction of PET sheets, Benefits and applications



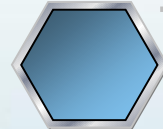
Introduction of Geo-membrane, Benefits and applications



Introduction of Anchored sheets, Benefits and applications



Introduction of Geo-grid, Benefits and applications



Introduction of Automotive Products



Introduction of Battery Separator

Farnam Baspar Co. launched its business by producing Vacuum Thermoforming parts in 1986 and extended it to packaging products, thereafter based on market requirements, it has developed its market by manufacturing plastic sheets made of different kind of polymeric materials and set up a cooperation relationship with domestic car manufacturers by producing automotive parts. This company has been constantly trying to have innovation to design and produce various products.



Site No 1

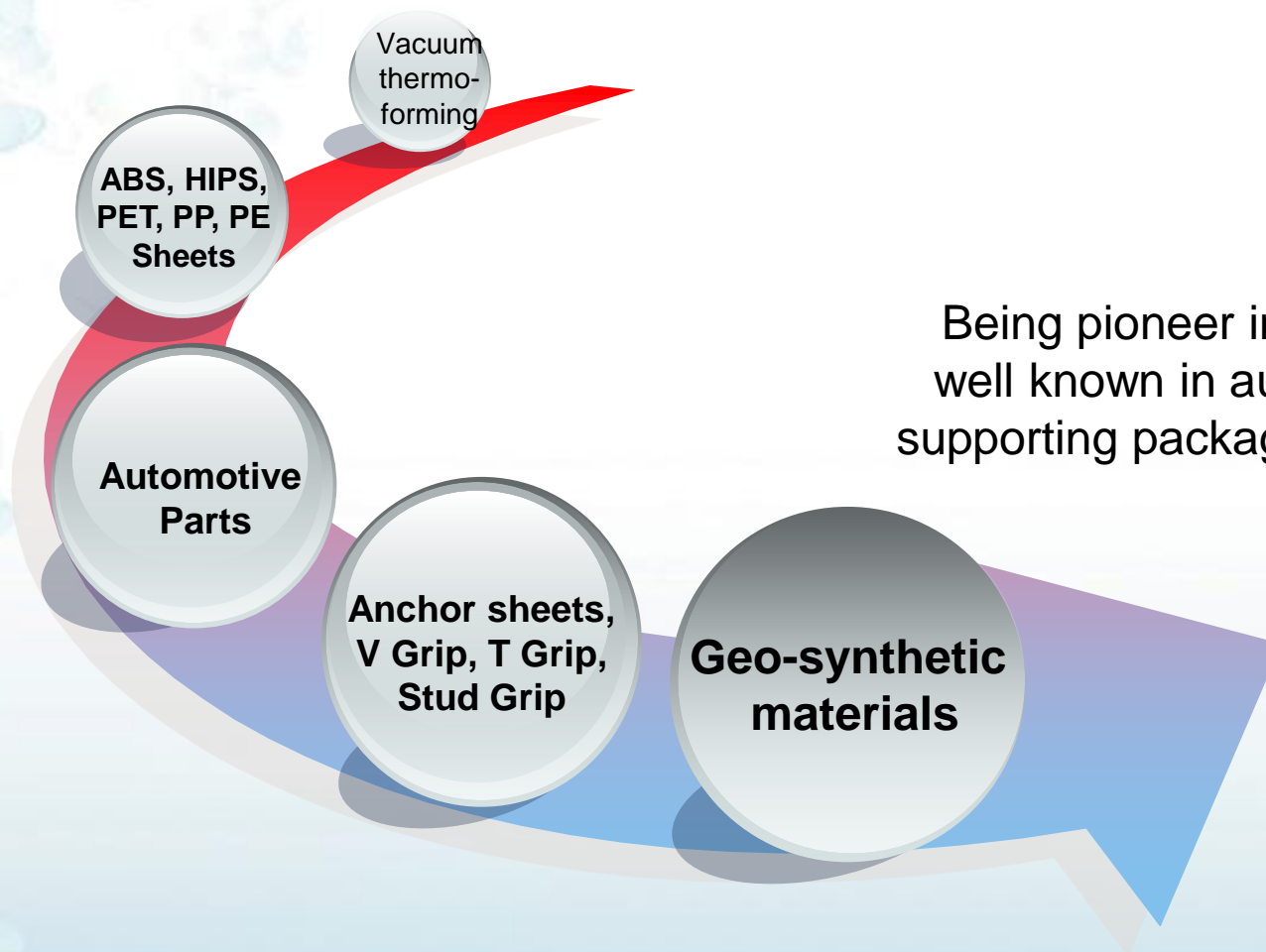


Farnam Baspar Co. designed and produced Polyethylene Anchor sheets machinery in 2000 and has joined Geo-synthetic international market by producing standard Geo-membrane.

This company possesses several technologies like vacuum thermoforming, sheet extrusion, blow molding and plastic diffusion welding like high frequency, ultrasonic, hot plat welding and hot air. One of our most recent product is battery separator which is used in lead-acid batteries. To ensure to obtain the quality factors, quality assurance system and testing equipment are being used to test all products according to the customers test plan. This is the main performance of FBC which has grown our ability to earn the customer satisfaction



Development process



Being pioneer in Geo-synthetics, well known in automotive and still supporting packaging industry in Iran

SafaDasht Site
Automotive Parts

Abbas Abad Site
Automotive Parts

Abbas Abad Site
Polymeric Sheets

Office
Commercial Section

Certificates:

1. ISO 9001/2010 (Since 2000)
2. ISO TS 16946(Since 2003)
3. Certificate of quality management grade B from Bahman Khodro
4. Certificate of quality management grade B from SAPCO
5. Certificate of quality management grade B from Sazeh Gostar
6. Certificate of quality management grade A⁺ from Saipa Azin

Quality Policy

In order to achieve our goal, which is “ being pioneer in the field of Polymeric sheets and automotive parts” ,carried out a mission:

Design and production of new automotive parts taking the advantages of skilled engineers, in order to overcome commercial difficulties.

This company believes in continuous improvement of process and products based on ISO/TS 16949:2009 standard in order to make relationships and trust.

Improve the product quality and decrease the waste products.

Identify, control and continuous improvement of effective process

Improve the engineering knowledge

Increase the staff satisfaction level.

Using participatory management

Manufacturing Products and Machineries in Abbas Abad Site

A Products



ABS Sheet

HIPS Sheet

PET Sheet

**Geo
membrane**

**Anchored
Sheet**

**Geo-grid
Combo-grid**

**Floating
Geo
membrane**

Geo-drain

- PET sheet extrusion machine able to produce Transparent, Opaque, Colored, Metalized sheets.
Dimensions: Thickness: 200 μm to 1000 μm
Width: 250 mm to 1000 mm



- Farnam Baspar Co. is equipped with sheet extrusion machineries and is able to produce PET , HIPS, PP , ABS & PE sheets.



HIPS machinery is able to produce 800 micron thick for packaging industries .

- Farnam Baspar Co. entered Geo-synthetic market by launching its production line of 3-meter Geo-membrane on 2007.



Farnam Baspar Co. started the production of 7-meter Geo-membrane HDPE & LLDPE with the thickness of 0.75 up to 2.5 mm according to GM13 & GM17 specifications which is from America Geo-synthetic institute.



آزمایشگاه کارخانه عباس آباد

Farnam Baspar Co. due to the assurance of products quality , has assigned a strict Quality Control & Assurance system and established a laboratory for Geo-synthetics and automotive parts which is equipped for carrying out carbon content ,carbon dispersion ,OIT ,tear strength , puncture strength , MFI , density , oven aging & UV tests



PET advantages

- Good thermal stability
- Good electrical properties
- Good chemical resistance
- Good erosion resistance
- Low friction factor
- High toughness
- High transparency
- Good flame resistance
- Completely recyclable
- Low impact on food

Comparison between PET & PVC sheets

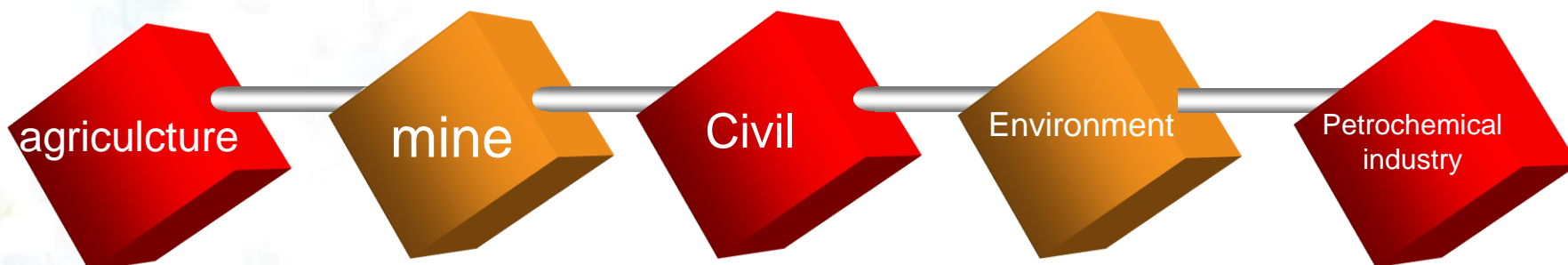
Specification	Unit	PVC	PET
Density	gr/cm ³	1.4	1.4
Melting point	°C	180	260
Elongation at break	%	50	120
Tensile strength	Kgf/mm ²	10	22
Tear resistance	Kgf	8	22
Shrinkage	%	4-7	1-3
Di-electric constant	%	4.2	3.3
O ₂ permeability	ml/m ² /hr	6	3
Water absorption	%	0.05	0.3
Application Temp.	°C	-20 to 80	-70 to 150

Geo-membrane

The properties enable geo-membrane to be used in following environmental, geotechnical, civil, transportation and oil and gas products

1. PVC Geo-membranes (thermoplastic)
2. HDPE Geo-membranes (thermoplastic)
3. LLDPE Geo-membranes (thermoplastic)
4. FPP Geo-membranes (thermoplastic)
5. EPDM Geo-membranes (elastomer)
6. GCL's

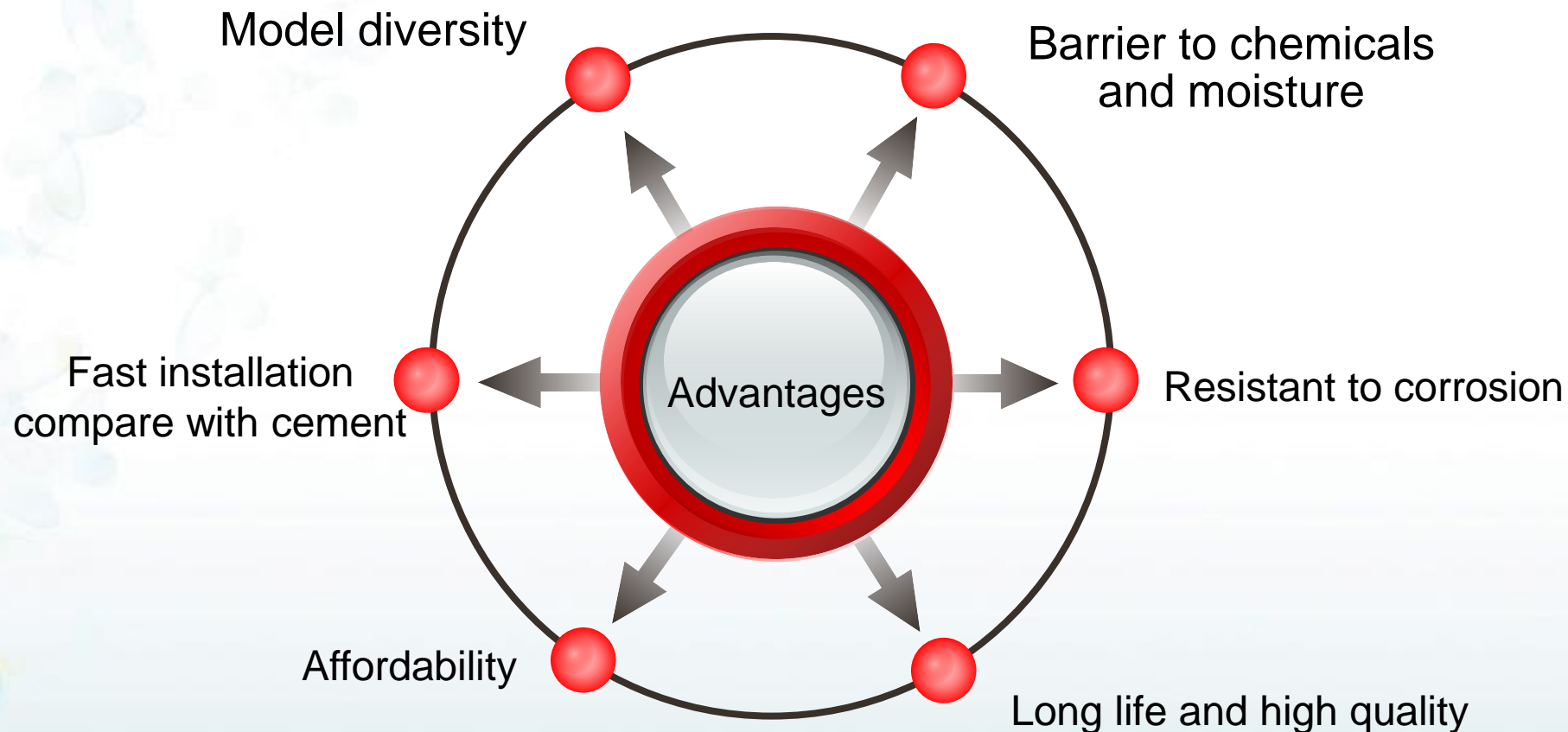
Geo-membrane applications



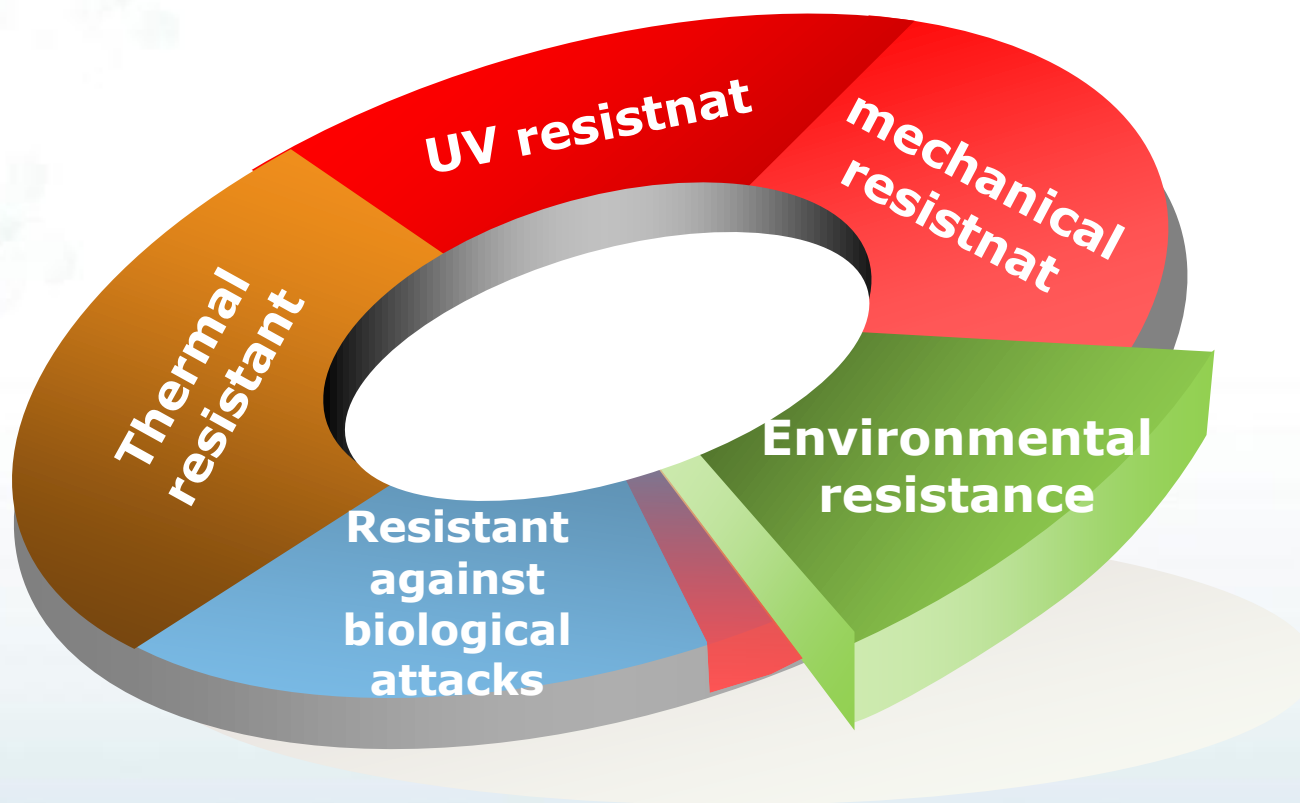
- Track-beds and roadbeds
- Landfill liners
- Leachate collection and removal system
- Fuel tanks and reservoirs liners
- Insulation of building's foundations
- Infiltrating water drainage layer
- Earth and concrete dams

- Liner and cover for potable water containments
- Liner and for ponds and artificial lakes
- Liner for pisciculture enclosures
- Liner and cover for water refinery Lagunas
- Liner and cover for chemical and petrochemical materials
- Liner for tunnels
- Water conveyance liners

Geo-membrane benefits

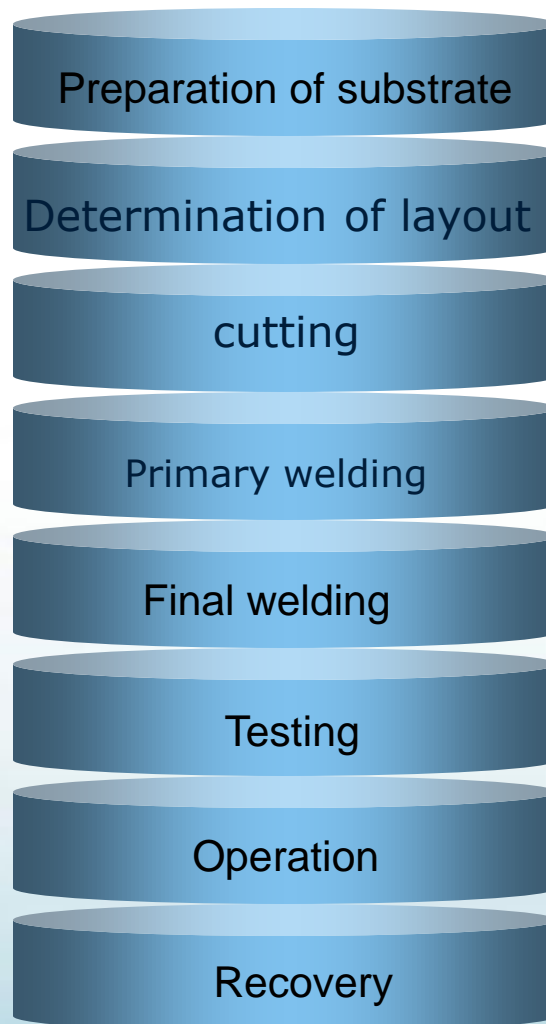


Geo-membrane characteristics



Geomembrane Specifications

Geomembrane installation



Preparation of substrate

- The substrate should be prepared. The soil should be compressed
- All the surface must be smooth and without any impurities. Extra moisture should be removed.

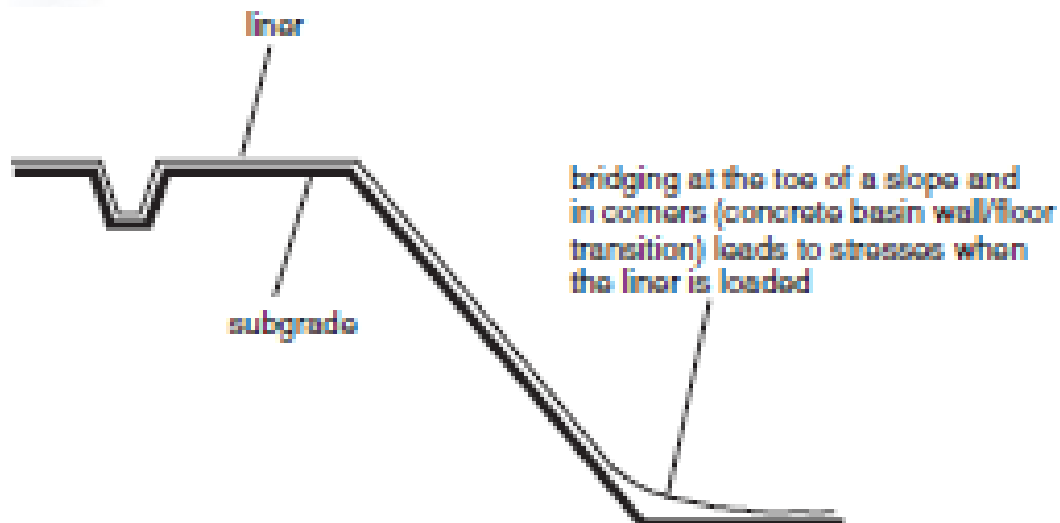


Anchor trench

- Anchor trench is designed and dig according to pond dimensions. The edges should be curved to prevent damages.
- It should be filled such that avoid damaging geo-membrane.



Anchor Trench



Schematic showing of trench

Trench depth(m)	Trench width (m)	slope length (m)
>0.5	>0.5	<10
>0.6	>0.8	10-40
>0.8	>1	>40

Trench design based on pond dimensions

Installation

- The installation should be start from the above of the pond and continue to toward wind.
- Expansion and shrinkage should be determined
- The welding has to be done at the earliest time after installation



Welding

- moisture and dust must be cleaned from the geo-membrane surface. Avoid using solvent or glue for cleaning.
- Consider at least 10 cm overlap for welding.
- The overlap should be smooth and without any fold or skew.
- Geo-membrane should be welded toward the slope.
- Installation should be done at 0-40 °C



Testing

- Vacuum: vacuum pressure of 28-55 Kpa is applied and bubbles of foam show the defects.
- Air pressure: air pressure is fixed at 25 to 30 psi and after 5 min, less than 4 psi decrease in pressure should be observed.



Implementation completed



87-03-26 11:08





Persian gulf's martyrs basin (Chitgar)



Anchored sheets

T grip

Single Stud

Double stud





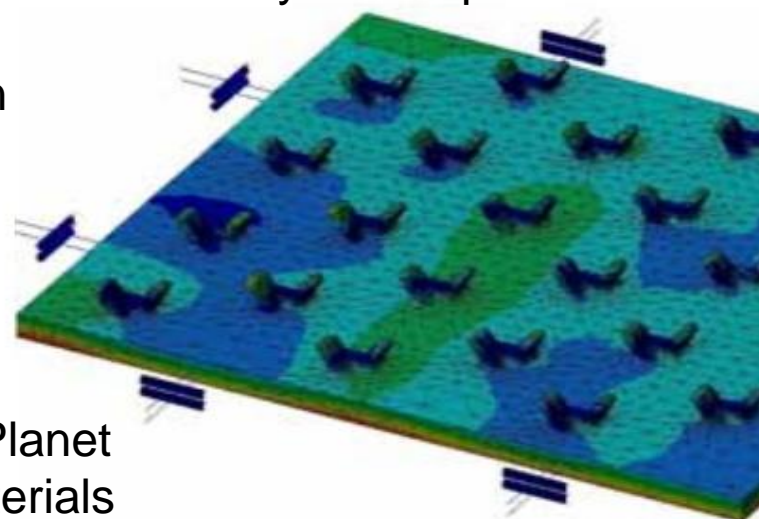
Lining of concrete pipes with V grip liner of Farnambaspar for
Sewage network of Tehran and Esfahan Cities

Anchored sheets benefits

- Increase friction with the substrate.
- Prevent slippage in steep slope.
- Impossible for algae to grow on geo-membrane.
- Barrier to chemicals. Prevent the groundwater to be contaminated.
- Improve the flow of the liquids due to its smooth surface.
- The self-cleaning of its structure lessen the amount of sediment on the pipe inner surface.

Anchored sheet application

- Liner for Concrete Water/Waste Water Conveyance Tunnels
- Liner for Concrete and Steel Water/ Waste Water Conveyance Pipes
- Liner for Subway/Urban Tunnels
- Protect Concrete Structures from Corrosion
- Liner for Water Refinery Lagunas
- Liner for Concrete Dams
- Liner for Earth Dams
- Liner for Chemical Reservoirs
- Liner for Chemical Reactors and Towers
- Liner for Heat Transfer Systems in Power Plant
- Insulation Against Water and Chemical Materials
- Fuel Tanks and Reservoirs Liners
- Liner for Marine Structures
- Ponds and Pools Liners
- Earth and Concrete Dam



TECHNICAL DATASHEET

V GRIP LINER

Tel: +98 21 22823491-2

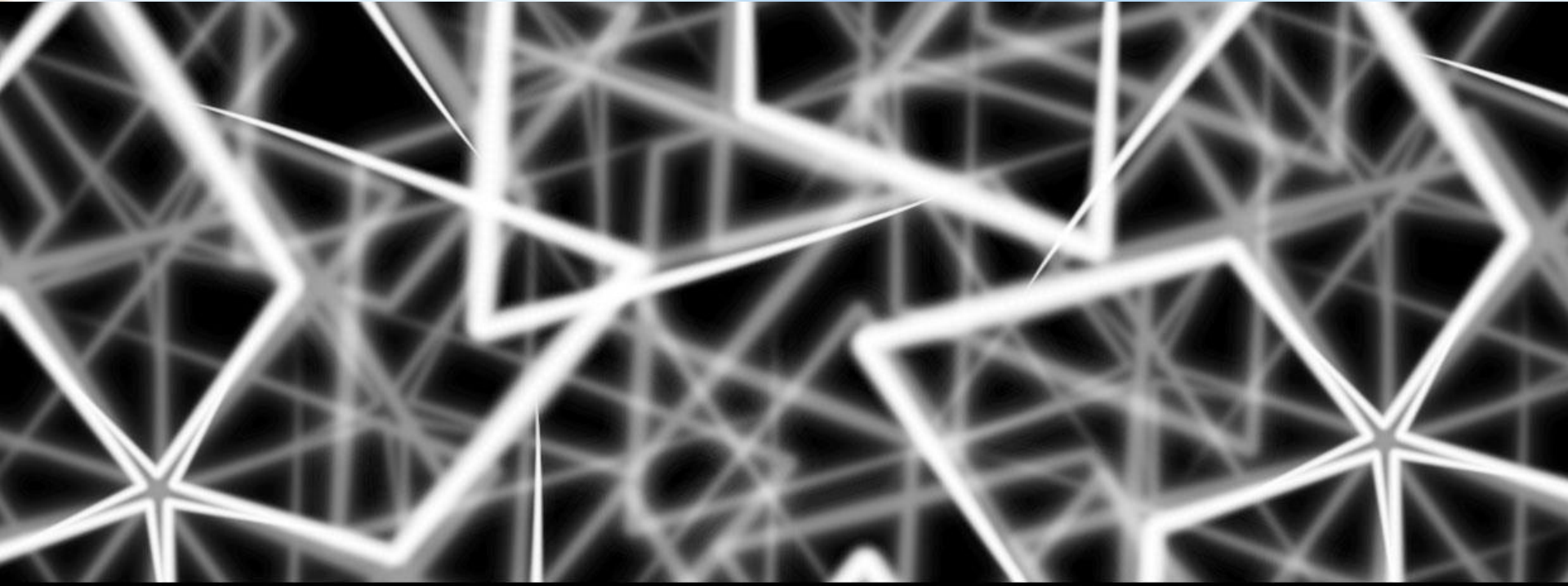
Fax: +98 21 22280823

www.farnambaspar.com

9, 3rd Narenjestan, Nobonyad Sq., North Pasdaran St. Tehran, Iran.

ردیف	نام آزمایش	روش تست	واحد	ملاحظات Y mm	دوره تناوب
1	Thickness کثافت	ASTM D5199	mm	2	Per roll هر رول
2	Grip Height ارتفاع گیره ها	ASTM D7466	mm	>10	Per roll هر رول
3	Density دانشسته	ASTM D792	gr/cm3	0.94	Every 90 tons هر ۹۰ تن
4	Tensile Strength مقاومت کششی	ASTM D6693	KN/m	20	Every 9 tons هر ۹ تن
5	Elongation at break افزایش طول در نقطه شکست	ASTM D6693	%	100	Every 9 tons هر ۹ تن
6	Yield Strength مقاومت تسلیم	ASTM D6693	KN/m	33	Every 9 tons هر ۹ تن
7	Yield Elongation افزایش طول در نقطه تسلیم	ASTM D6693	%	12	Every 9 tons هر ۹ تن
8	Tear Strength مقاومت پارگی	ASTM D1004	N	250	Every 20 tons هر ۲۰ تن
9	Puncture Strength مقاومت سوراخ شدگی	ASTM D4833	N	535	Every 20 tons هر ۲۰ تن
10	Environmental Stress Crack Resistance مقاومت محیطی در برابر ترک تنشی	ASTM D5397	hr	300	Per formulation هر فرمولاسیون
11	Carbon Content درصد دوده	ASTM D1603	%	0.8	Every 9 tons هر ۹ تن
12	Carbon Dispersion پخش دوده	ASTM D5596	-	10 in cat 1,2or3	Every 20 tons هر ۲۰ تن
13	Oxidative Induction Time زمان القای اکسیداسیون	ASTM D3895	min	100	Every 90 tons هر ۹۰ تن
14	Oven Ageing Resistance at 85 مقاومت در برابر پیرسازی در آون در دمای ۸۵ °C	ASTM D5721 & ASTM D3895	%	60% Retained OIT after 3 months	Per formulation هر فرمولاسیون
15	UV Resistance مقاومت در برابر UV	Local standards & ASTM D3895	%	60% Retained OIT after 3 months	Per formulation هر فرمولاسیون
16	Melt Flow Index(MFI) شاخص جریان مذاب	ASTM D1238	gr/10 min	<1	Every 90 tons هر ۹۰ تن

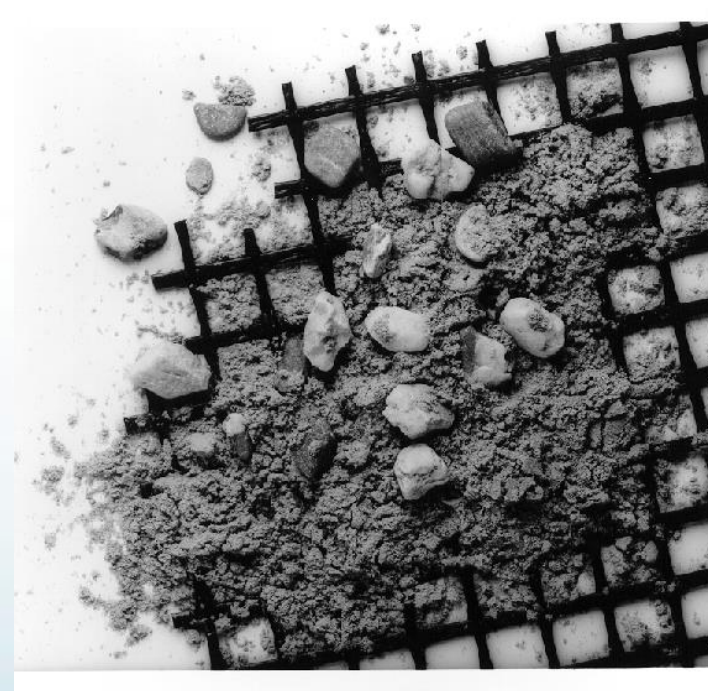
By Quality Control Laboratory of Farnam Baspar Corporation.



- Introduction to Geo-grid and Combo-grid

Preface

- Geo-grid is a kind of geo-synthetic material which is commonly produced from Polyester and polyethylene and mainly used for reinforcement because of its high tensile strength.
- Its advantages is almost same as using geo-textiles.



Geo-grid application:

- Erosion Control
- Embankment and Soft Soils
- Highway Infrastructure
- Roadway Improvements
- Reinforced Steep Slopes
- Retaining Walls
- Landfill Construction

Geo-grid advantages:

- Reinforcement of the soil with lower price
- Fast and easy installation
- Adaption with earth topologic difficult situation
- Increasing in loading of natural substrate
- Decreasing the substructure layer thickness
- High tensile strength, low weight and good flexibility
- Increasing the life time

Geo-grid mechanical properties

TECHNICAL DATA			
PRODUCT DESCRIPTION			
Product Name	GeoGrid		
Product Description	Biaxial Geogrid		
Raw Material	Raw Material of the Geogrid PP		
MECHANICAL DATA			
Nominal Tensile Strength (ASTM D6637)	MD	kN/m	>30
	CMD		>30
Strain at Nominal Tensile Strength (ASTM D6637)	MD	%	<10
	CMD		<10
Tensile Strength at 2 % Strain (ASTM D6637)	MD	kN/m	>4
	CMD		>4
Tensile Strength at 5 % Strain (ASTM D6637)	MD	kN/m	>12
	CMD		>12
Mesh Size of the Geogrid		mm	50x50
PHYSICAL PROPERTIES			
Roll Width		cm	400
Roll Length		m	Max : 100
*Application : Reinforcement , Stabilisation , Filtration. *Made In IRAN. www.farnambaspar.com Address : 9 , 3rd Narenjestan , Nobonyad Sq. , North Pasdaran St. , Tehran , Iran. Tel : +98 21 26 11 06 45 , Fax : +98 21 22 28 08 23			

Introduction of Combo-grid

- Combo-grid is a composite of geo-grid and geo-textile
- Prevent erosion in humid situation
- Filtration of polluted water
- All the advantages of geo-grid

Combo-grid mechanical properties

TECHNICAL DATA			
PRODUCT DESCRIPTION			
Product Name	ComboGrid		
Product Description	Nonwoven Geotextile Plus Biaxial Geogrid		
Raw Material	Raw Material of the Geotextile	PP	
	Raw Material of the Geogrid	PP	
MECHANICAL DATA			
Mass Per Unit Area (DIN EN ISO 9864)		g/m ²	600
Nominal Tensile Strength (DIN EN ISO 10319)	MD	kN/m	>30
	CMD		>30
Strain at Nominal Tensile Strength (DIN EN ISO 10319)	MD	%	<10
	CMD		<10
Tensile Strength at 2 % Strain (DIN EN ISO 10319)	MD	kN/m	>4
	CMD		>4
Tensile Strength at 5 % Strain (DIN EN ISO 10319)	MD	kN/m	>12
	CMD		>12
Mesh Size of the Geogrid		mm	50x50
PHYSICAL PROPERTIES			
Roll Width		cm	400
Roll Length		m	Max : 60
<p>*Application : Reinforcement , Stabilisation , Filtration. *Made In IRAN. Wwww.farnambaspar.com Address : 9 , 3rd Narenjestan , Nobonyad Sq. , North Pasdaran St. , Tehran , Iran. Tel : +98 21 26 11 06 45 , Fax : +98 21 22 28 08 23</p>			

Floating geo-membrane

Floating geo-membrane is used as pond cover.

- Water Evaporation
- Water Contamination
- Odor and Gas Control
- Consistent Fluid Temp.
- Algae Control
- Dilution Control
- Durable (Dimensional stability, tear resistance, seam strength)

Floating geo-membrane



Geo-drain

Geo-drain is mainly used in drainage and protecting sensitive walls against water and chemicals. Its task is to deliver the liquid to the predetermined ways and prevent it from reaching the protected surface

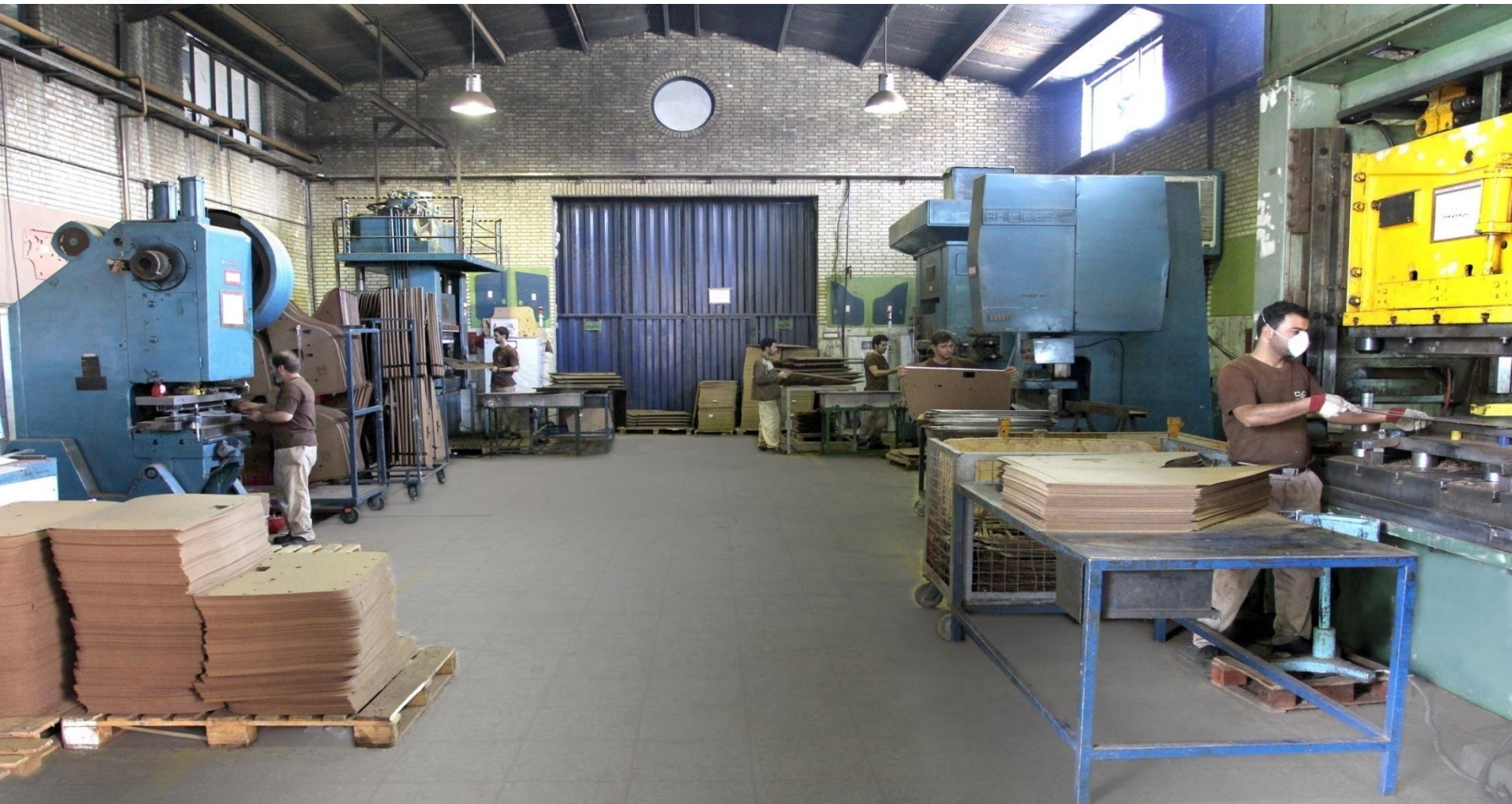


Manufacturing Products and Machineries in Safa Dasht Site

Some plastic injection machines up to 7.5kg.



Punching and Forming Machineries for Automotive Parts



Blow molding of product up to 20L volume capacity

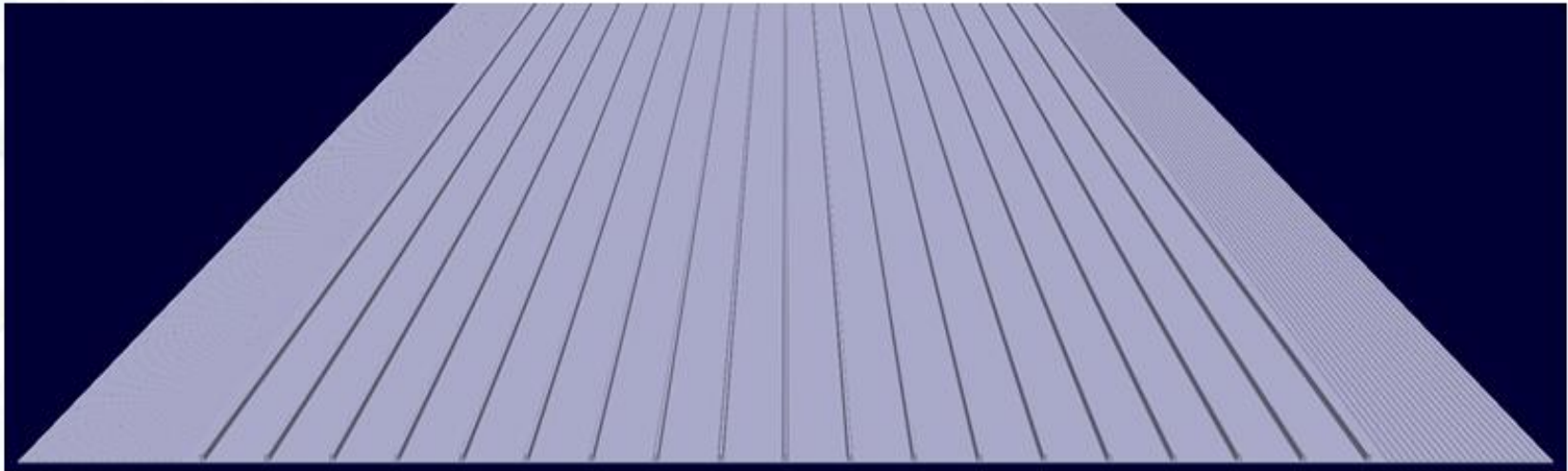


Battery Separator

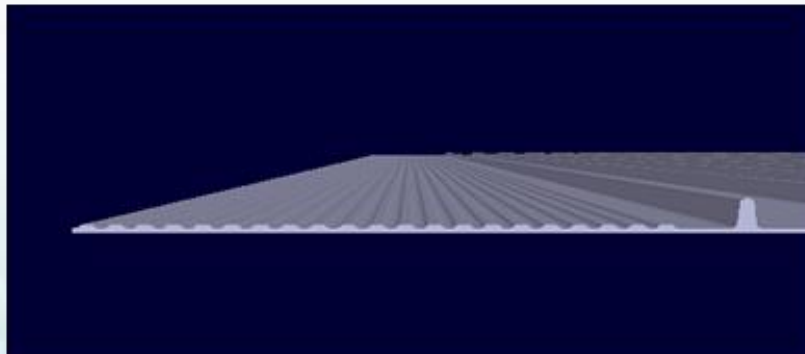
- Permeable membrane to separate anode and cathode
 - Prevent short circuit
 - Allow the ions to make connection
 - Porous polymeric layer
 - Chemically resistant against electrolytes (sulfuric acid)
 - Mechanically resistant against tensions
 - (Thermal Shutdown)
 - Effective on
 - Stored energy
 - Effective life
 - Safety

Battery Separator

RR Profile:



RR Profile: Shoulder



RR Profile: Ribs



Battery Separator

ردیف	کد آزمون	تاریخ شروع	تاریخ پایان	نام آزمون	روش انجام آزمون	نتیجه	حدود قابل قبول
۱	۰۱	۰۶/۳۰	۰۶/۳۰	Overall Thickness (mm)	استاندارد مرجع : Jungfer / Sebang	0.88mm	0.9 ± 0.03
۲	۰۲	۰۶/۳۰	۰۶/۳۰	Back Web Thickness (mm)	استاندارد مرجع : Jungfer / Sebang	0.24mm	0.25 ± 0.03
۳	۰۳	۰۶/۳۰	۰۶/۳۰	Width (mm)	استاندارد مرجع : Jungfer / Sebang	159.54mm	160.0 ± 0.5
۶	۰۴	۰۶/۳۰	۰۶/۳۰	Max Load Displace (mm) سمت سالن	استاندارد مرجع : Jungfer / Sebang	۳۳۶,۴۳ mm	Sebang
۷	۰۵	۰۶/۳۰	۰۶/۳۰	Maximum Load (kn) سمت سالن	استاندارد مرجع : Jungfer / Sebang	0.101 kn	Sebang
۸	۰۶	۰۶/۳۰	۰۶/۳۰	Break Elong (%) سمت سالن	استاندارد مرجع : Jungfer / Sebang	400%	300%

Battery Separator

ردیف	کد آزمون	تاریخ شروع	تاریخ پایان	نام آزمون آزمون	روش انجام آزمون	نتیجه	حدود قابل قبول
۱	۰۱	۰۶/۳۰	۰۶/۳۰	سمت سالن Break Load / W (N/mm)	استاندارد مرجع : Jungfer / Sebang	0.78(N/mm)	Sebang
۲	۰۲	۰۶/۳۰	۰۶/۳۰	سمت سالن Yield Elong (%)	استاندارد مرجع : Jungfer / Sebang	78.45%	Sebang
۳	۰۳	۰۶/۳۰	۰۶/۳۰	سمت سالن Yield Load/w(N/mm)	استاندارد مرجع : Jungfer / Sebang	1.22(N/mm)	Sebang
۶	۰۴	۰۶/۳۰	۰۶/۳۰	سمت سالن Break Stress (Mpa)	استاندارد مرجع : Jungfer / Sebang	2.78(Mpa)	Sebang
۷	۰۵	۰۶/۳۰	۰۶/۳۰	سمت دیوار Max Load Displace (mm)	استاندارد مرجع : Jungfer / Sebang	۲۲۹,۶۰ (mm)	Sebang
۸	۰۶	۰۶/۳۰	۰۶/۳۰	سمت دیوار Maximum Load (kn)	استاندارد مرجع : Jungfer / Sebang	۰,۰۹۴ (kn)	Sebang

Battery Separator

ردیف	کد آزمون	تاریخ شروع	تاریخ پایان	نام آزمون آزمون	روش انجام آزمون	نتیجه	حدود قابل قبول
۱	۰۱	۰۴/۳۰	۰۴/۳۰	سمت وسط Break Elong (%)	استاندارد مرجع : Jungfer / Sebang	۳۹۹,۹۹%	۳۰۰%
۲	۰۲	۰۴/۳۰	۰۴/۳۰	سمت وسط Break Load / W (N/mm)	استاندارد مرجع : Jungfer / Sebang	۲,۲۴(N/mm)	Sebang
۳	۰۳	۰۴/۳۰	۰۴/۳۰	سمت وسط Yield Elong (%)	استاندارد مرجع : Jungfer / Sebang	۶۸,۷۶%	Sebang
۶	۰۴	۰۴/۳۰	۰۴/۳۰	سمت وسط Yield Load/w(N/mm)	استاندارد مرجع : Jungfer / Sebang	۱,۲۷(N/mm)	Sebang
۷	۰۵	۰۴/۳۰	۰۴/۳۰	سمت وسط Break Stress (Mpa)	استاندارد مرجع : Jungfer / Sebang	۷,۹۹(Mpa)	Sebang
۸	۰۶	۰۴/۳۰	۰۴/۳۰	سمت وسط Maximum Load (kn)	استاندارد مرجع : Jungfer / Sebang	۰,۱۳۴(kn)	Sebang

Battery Separator



Battery Separator production line



Battery Separator production line



Some of blow molding &
injection molding parts



the middle tube in 405 & Samand ventilator



Samand & Peugeot
Acceleration cable
Control part



Samand radiator ventilator case

High frequency welding parts



Front Peugeot 405 Door
Trim Panel (Brown)



Front Peugeot 405 Door
Trim Panel (Black)



405 trunk cover



206 trunk cover

Some of blow molding parts



405 washer pump tank



206 Washer pump tank



Peykan Washer pump



Samand Washer pump



Impact Test
Apparatus

Safa Dasht Laboratory



Tensile strength Apparatus



Flame test Apparatus



Oven for filler Content
Measurement



Hardness Apparatus

Warehouse



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Site No.2 :East 1st ., Farvardin Blvd ., Safadasht Industrial Park , 20th Km . Shahriar – Eshtehard Road –Iran Tel:+982165435222-4

Thanks for your attention.

|