

What is a scrim?



A laid scrim looks like a grid or lattice. It is made from continuous filament products (yarns). Kirson produces rectangular scrims exclusively. In order to keep the yarns in the desired right-angled position it is necessary to join these yarns together. In contrast to woven products the fixation of the warp and weft yarns in laid scrims must be done by chemical bonding. Scrims are used to reinforce many different materials and products.

Scrims reinforce roofing membranes

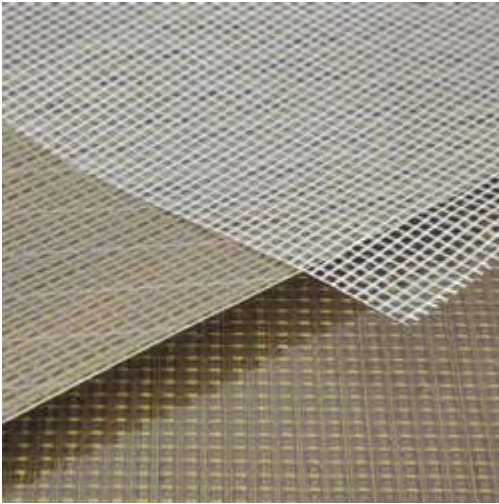


Roofing or waterproofing membranes are mostly used for large buildings such as supermarkets or production facilities. Their main application areas are flat and slightly sloped roofs. Roofing membranes are exposed to strongly varying material stress due to wind strength and temperature change during the day and year. Scrim-reinforced membranes will almost never break even when exposed to very strong winds. The membrane will keep its original shape for years due to its scrim reinforcement. Scrims will mostly form the central layer of a three layer laminate. As scrims tend to be very flat, they allow production of roofing membranes which are thinner than similar products reinforced with woven materials. This helps to reduce the use of raw materials and controls the costs of the end-product.



Kirson-scrims made from polyester- and/or glassfibres also Kirson scrim laminates made with glass or polyester-nonwovens are in use for many different polymer-based membranes. Kirson scrims can often be found in roofing membranes made from PVC, PO, EPDM or bitumen.

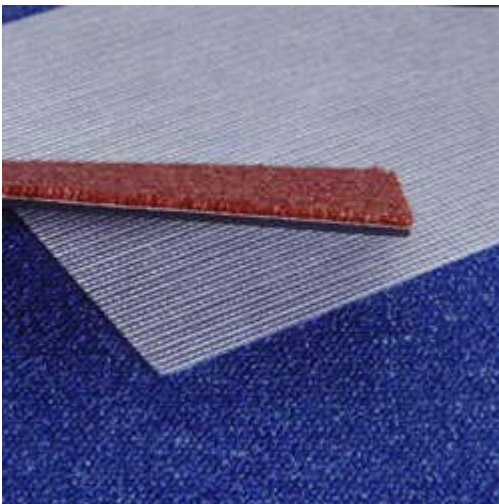
Scrim reinforce sailcloth



For many years now laminated sails have substituted traditional sails made from densely woven spinnaker cloth. Laminated sails do look very much like surf sails and are often composed of two layers of a transparent film where in between a layer or several layers of scrims are laminated.

As the winds on the open sea can be very strong, non-reinforced films would soon break under this stress, therefore laminated sails are reinforced with scrims made from high performance fibres. Due to the scrim reinforcement, laminates will last longer than woven sails. Kirson possesses many years of experience in converting aramide, PEN (polyethylene naphthalate), polyester and PE-yarns as well as several other high-tech-fibres for scrims.

Scrim reinforce flooring products



Flooring in public buildings such as airports, railway stations or administrative buildings is exposed to a lot of mechanical stress. Not only large numbers of people but many vehicles including fork-lift trucks may use such flooring day in, day out. Good flooring must bear this daily stress without any loss of performance or quality.

The larger the covered surface is, the higher the demands will be that the flooring material shall retain its dimensional stability. This important requirement can be fulfilled by the use of scrims or scrim/nonwoven laminates during the manufacturing of carpets, PVC or linoleum-flooring.



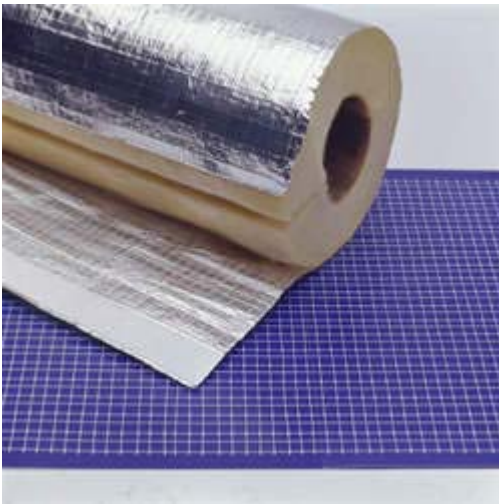
The use of scrims will often improve the production process of the flooring manufacturer as well and thus help to increase efficiency.

Scrims reinforce nonwovens



Today it is almost impossible to imagine a world without nonwovens: nappies, throwaway cloths, filtration media or building materials - many of these may be made from or under the use of nonwovens. Laid scrims may help to prolong the durability of nonwoven products considerably by reducing the wear and tear of such products through mechanical stress. Scrims may be laminated during or after production of a nonwoven. Depending on the manufacturing process scrims will be placed between two or more layers of fibres and bonded with these in line. Whilst many nonwovens only provide a low stability and stiffness of their own, these properties may be improved considerably by the use of glass or polyester scrims.

Scrims reinforce packaging materials



Large quantities of scrims are laminated against aluminium foils. The end product - mostly an aluminium-scrim-PE-laminate - is used by producers of glass- and rockwool during production of their insulation materials.

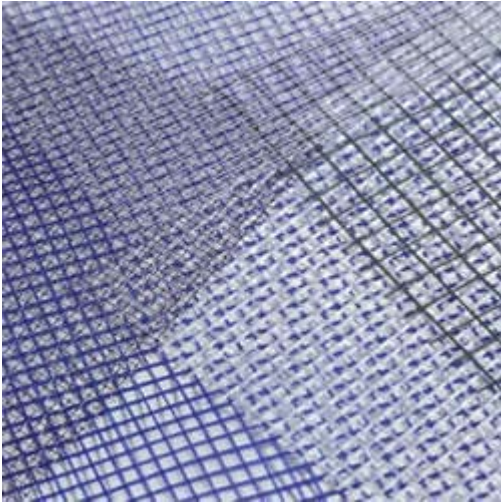
In between two layers of paper, scrims help to make large envelopes, bags or sacks more tear resistant.

Polyester scrims made from very thin yarns, weighing less than 5 g/m² are often used as support for adhesive tapes. Many of these tapes can be found in the automotive and building sector.

Scrims reinforce plastic films

Films which are to be used several times will often be reinforced with scrims in order to support strong mechanical stress. Usually the scrim will already be integrated during extrusion or calendering of the film. The durability of such reinforced products can often be multiplied. Typical applications are films to cover pools, greenhouses and large building sites.

Scrims reinforce many other products



Fire-retardant materials

Geo-textiles

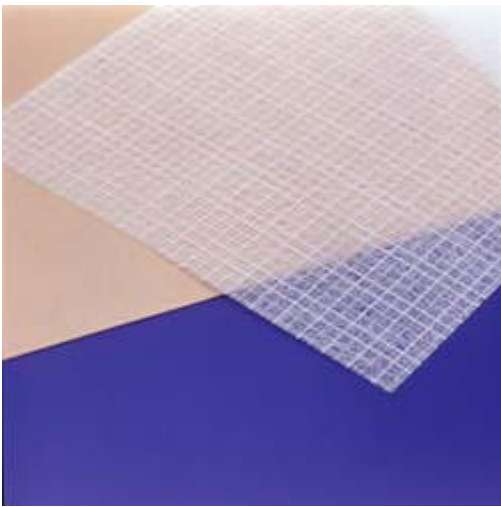
Wallboards made from gypsum or concrete

Sound insulation materials

Filter elements

Automotive components

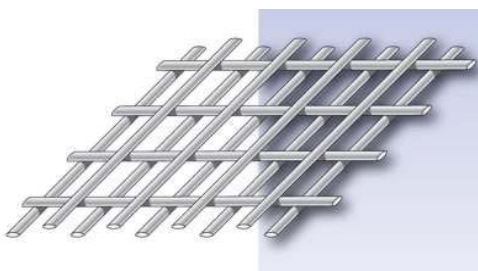
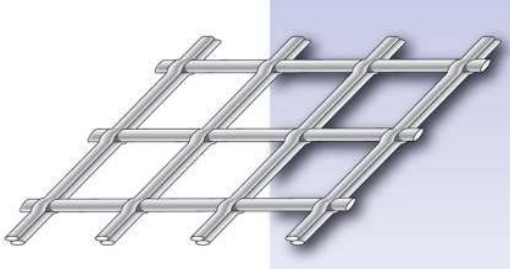
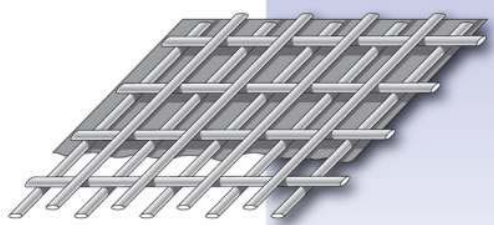
Wiping cloths

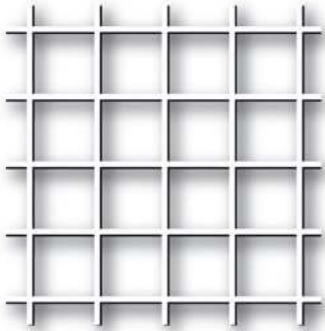
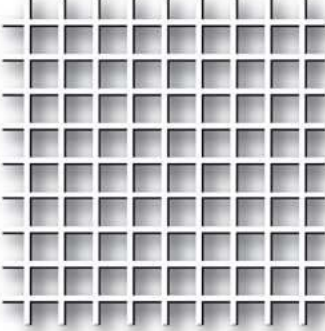
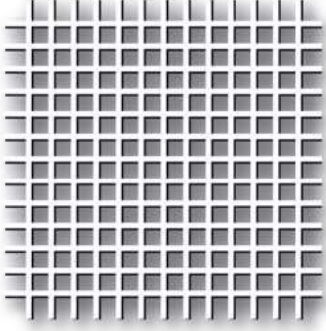

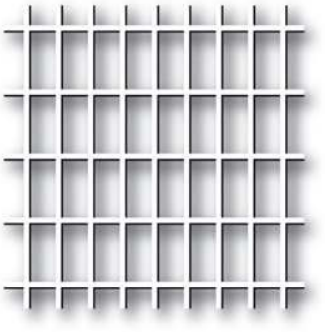
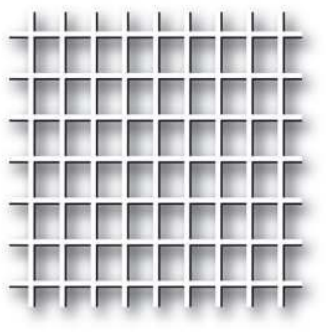
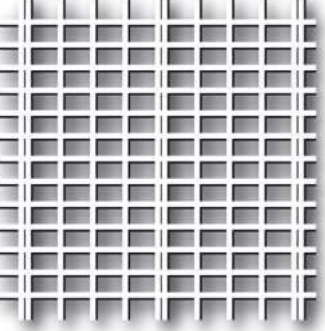
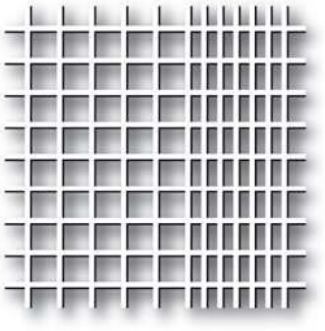
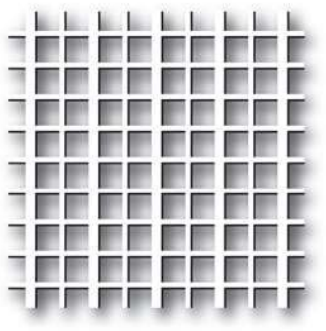


Glass fibre reinforced plastics

Moulded parts

Typical constructions

	<p>Single warp</p> <p>This is the most common scrim construction. The first warp* thread under a weft** thread is followed by a warp thread above the weft thread. This pattern is repeated across the whole width. Typically the spacing between the threads is regular across the whole width. At the intersections two threads will always meet each other.</p> <p>* warp = all threads in machine direction ** weft = all threads in cross direction</p>
	<p>Double warp</p> <p>The upper and lower warp threads will always be placed one upon the other so that the weft threads will always be fixed between an upper and a lower warp thread. At the intersections three threads will always meet each other.</p>
	<p>Scrim nonwoven laminates</p> <p>A scrim (single or double warp) is laminated onto a nonwoven (made from glass, polyester or other fibres). It is possible to produce laminates with nonwovens weighing from 15 to 200 g/m².</p>

Square constructions		
		
$1/1$ 1 warp thread/cm 1 weft thread/cm	$2/2$ 2 warp threads/cm 2 weft threads/cm	$3/3$ 3 warp threads/cm 3 weft threads/cm
Other rectangular constructions		
		
$2/0,5$ 2 warp threads/cm 0,5 warp threads/cm or 5 warp threads/dm	$2/1$ 2 warp threads/cm 1 weft thread/cm	$2/1,5$ 2 warp threads/cm 1,5 weft threads/cm or 15 weft threads/dm
Asymmetrical constructions		
		
$2/3\ 4d$ 2 warp threads/cm, each 4th warp thread doubled 3 weft threads/cm	$2/2\ RV$ 2 warp threads/cm, edges reinforced with 4 instead of 2 warp threads/cm 2 weft threads/cm	$2/2$ different threads 2 warp threads/cm; alternating, e.g. 1 thread polyester, then 1 thread glass 2 weft threads/cm (polyester or glass)

Advantages of scrims



Generally laid scrims are about 20 - 40 % thinner than woven products made from the same yarn and with an identical construction.

Many European standards require for roofing membranes a minimum material coverage on both sides of the scrim. Laid scrims help to produce thinner products without having to accept decreased technical values. It is possible to save more than 20 % of raw materials such as PVC or PO.

Only scrims permit production of a very thin symmetrical three layer roofing membrane (1.2 mm) that is often used in Central Europe. Fabrics cannot be used for roofing membranes that are thinner than 1.5 mm.

The structure of a laid scrim is less visible in the final product than the structure of woven materials. This results in a smoother and more even surface of the final product.

The smoother surface of final products containing laid scrims allows to weld or glue layers of the final products more easily and durably with each other.

The smoother surfaces will resist soiling longer and more persistently.

The use of glassfibre scrim reinforced nonwovens permits higher machine speeds for the production of bitumen roof sheets. Time and labour intensive tears in the bitumen roof sheet plant can therefore be prevented.

The mechanical values of bitumen roof sheets are substantially improved by scrims.

Materials that tend to tear easily, such as paper, foil or films from different plastics, will be prevented from tearing effectively by laminating these with laid scrims.

Whilst woven products may be supplied loomstate, a laid scrim will always be impregnated. Due to this fact Kirson has an extensive knowledge in respect to which binder may be best suited to different applications. The choice of the right adhesive may enhance the bonding of the laid scrim with the final product considerably.

The fact that the upper and lower warp in laid scrims will always be on the same side of the





weft yarns guarantees that the warp yarns will always be under tension. Therefore tensile powers in warp direction will be absorbed immediately. Due to this effect, laid scrim often show a strongly reduced elongation.

When laminating a scrim between two layers of film or other materials, less adhesive will be needed and the cohesion of the laminate will be improved.

The production of scrim always requires a thermal drying process. This leads to preshrinking of the polyester and other thermoplastic yarns which will improve substantially subsequent treatments done by the customer.

Technical data raw materials

Fibre	Polyester high-tenacity	Polyester textile	Glass	Cellulose	Aramid	PEN	Nomex
Linear density	dtex	dtex	tex	dtex	dtex	dtex	dtex
	80	76	11	200	420	550	220
	140	167	22	294	840	1100	
	280		34	500	1260		
	550		68		1680		
	1100		136		2520		
	1670 2200		272		3360		
Tenacity cN/tex	60-70	40-45	55-60	14-20	160-185	75-85	
Tear strength %	14-24	17-25	2-5	8-18	3-4	5-9	

Binders		Nonwovens	
Impregnation	Chemical Basis	Nonwoven type	Weight g/m ²
A	Acrylate	Glass fibre	25-200
EVA	Ethylenvinyl acetate	Polyester	15-160
PUR	Polyurethane	Cellulose	15-100
PVA	Polyvinyl alcohol	Mixed fibres	20-100
PVAc	Polyvinyl acetate		
PVC	Polyvinyl chloride		
SB	Styrol Butadiene		

Technical data scrims

Construction	Yarns / cm	dtex WA/WE	tex WA/WE	Tenacity N/5 cm	Elongation %	Weight g/m ²	Thickness mm
RG 2/2 34 PVA	2		34	ca. 200	< 4	15	ca. 0,25
RG 3/3 68 PVAc	3		68	ca. 600	< 4	50	ca. 0.30
RG 4/4 34 PVAc	4		34	ca. 400	< 4	34	ca. 0,20
RPES 2/2 1100 SB	2	1100		ca. 700	< 24	55	ca. 0,30
RPES 2,5/2,5 1100 PVC	2,5	1100		ca. 900	< 24	90	ca. 0,30
RG 3/3 34 PVAc on NW 30 g	3		34	ca. 400	< 4	60	ca. 0,25

Product make-up

Width	10 - 340 cm	Stripes >10 cm width are possible
Diametre	< 120 cm	
Reel length	< 80.000 m	Depending on the construction
Core	152 mm / 6"	Standard interior diametre Insertions on request

