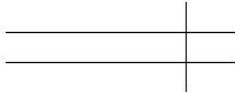
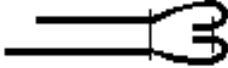


Processing instructions for ETTLIN *lux*[®] light technical fabrics

(Valid for ETTLIN *lux*[®] I MoodFabric, ETTLIN *lux*[®] I Decolux and ETTLIN *lux*[®] I MiracleFabric)

Advice: ETTLIN *lux*[®] Fabrics are highly sensitive to buckling. Also single yarns can be displaced when they are exposed to a high load. Therefore the fabric should not be folded, treated gently and be transported and stored on a roll.

Separating	
Cutting	<p>All ETTLIN <i>lux</i>[®] fabrics can be cut with scissors, craft knives or a rotary cutter. Hereby the cutting edges will remain open. Additional fixing of the cutting edges is not necessary. When using a craft knife or a rotary cutter, guiding assistance is necessary to get a clean cut. Electric scissors can also be used, but in this case guiding assistance should be used as well.</p> <p>Recommendation: The best results are achieved with a rotary cutter.</p>
Hot Cutting	<p>All ETTLIN <i>lux</i>[®] fabrics can be cut with a hot cutting machine. Sometimes fixation of the cutting edges can take place at the same time. This depends on the cutting speed.</p>
Ultrasonic Separating	<p>Ultrasonic welding is possible using a hand-held device (stationary sonotrode) or a large ultrasonic welding machine (stationary or rolling sonotrode). The fabric is cut and at the same time cutting edge fixation takes place.</p>
Laser cutting	<p>Laser cutting is possible with all ETTLIN <i>lux</i>[®] fabrics. Thereby the cutting edges are fixated in the same step.</p>

Connecting	
Sewing	<p>Generally, the ETTLIN <i>lux</i>[®] fabrics can be sewn well. For this, a simple seam can be used.</p>  <p>With the simple seam it should be noted that the cutting edges remain open. If this is not desired, then another seam should be used.</p> <p>With a right-left seam, the cutting edges are hidden, while providing higher strength values than the simple seam.</p>  <p>Another advantage of the right-left seam is that this seam stands away at the back and thus hardly disturbs the light effects.</p>

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	<p>When sewing, a machine with top and bottom feed and with a Teflon pressure foot is recommended, in order to prevent pressure on the tissue. To keep the needle puncture holes as inconspicuous as possible, a fine needle (a 70-pin) should be used. The stitch length is ideally in the central area, for example at 2.5 (4 stitches per cm).</p> <p>When the seam is parallel to the direction of effect, one should pay particular attention that the seam is straight with the yarns, since an oblique seam is clearly visible when opening the two layers of the fabric.</p> <p>The sewing thread which will be used should be chosen based on the application. Transparent monofilament sewing threads are the most unobtrusive. These are however limited in their strength. At a high load, e.g. when clamping, PES sewing thread or PTFE sewing thread may be used. These are more stable, although visually more conspicuous.</p>
<p>Ultrasonic Connecting</p>	<p>Ultrasonic welding:</p> <p>First experiments with ultrasonic welding machines have been successful. Frequency and pressure must be adjusted in order for the fabric not to become brittle. Welds were tested with a hand welder (with stationary sonotrode) and a fully automatic ultrasonic welding device (with rolling sonotrode). Doing this, individual layers of fabric can be cut and fixed simultaneously. Furthermore, it is possible to connect two layers of fabric. This also needs a proper setting of the welding parameters and the use of a suitable sonotrode (rather flat).</p> <p>Important: The two fabric directions behave differently regarding the weldability: If the welding seam is running parallel to the effect direction, then it is possible to cut and fix the tissue and connect two fabric layers simultaneously. A welding seam which is orthogonal to the effect direction can only cut the tissue, but not connect two fabric layers.</p> <p>Ultrasonic Bonding:</p> <p>With ultrasonic bonding, hot melt adhesive tape is inserted in the ultrasonic welding machine and the fabric layers are bonded together. This works very well for all ETTLIN <i>lux</i>[®] fabrics. If possible, it is important to use a narrow hot melt adhesive tape, which has a high transparency after processing.</p>



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<p>Gluing</p>	<p>Gluing fabric on acrylic glass: ETTLIN <i>lux</i>[®] fabrics can be fixed on acrylic glass with a transparent adhesive tape; for this acrylic adhesive tape is suitable (e.g. highly transparent VHB tape of 3M).</p> <p>General note: Especially when bonding with acrylic glass, it is important to use solvent-free adhesives, since the acrylic glass can otherwise be damaged. The adhesive strength and other properties of the bond always depend on the fabric type.</p>
<p>Gluing with iron-on nonwovens</p>	<p>Double-sided iron-on nonwovens can be used to join two ETTLIN <i>lux</i>[®] fabrics. If the nonwoven is thin, it does not disturb the appearance. However, the durability of the joint is very limited when it is stressed.</p>
<p>Deforming</p>	<p>When the fabric is embedded in acrylic glass, thermal deformation is possible, but only two-dimensional. The fabric itself cannot be thermoformed respectively only partially thermoformed.</p>

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General notes	
Workplace design	When processing ETTLIN <i>lux</i> [®] fabrics, it should be made sure that the working space is sufficiently large. Also sewing machines should be integrated on large working surfaces.
Material supply	<p>If a large amount of material is inserted in the sewing machine, this should be best done in the rolled-up condition.</p> <p>Feeding parallel to the processing direction:</p>  <p>Feeding orthogonally to the processing direction:</p> 
Kink reduction	If the fabric was folded during processing, these kinks can be reduced by hot air. The temperature must be chosen carefully and should be matched with the fabric.