

SewGlo™ ILLUMINATED THREAD

EMBROIDERY GUIDE

SewGlo™ Illuminated Thread is a nano-scale electroluminescent fiber at 0.3mm (300µm) diameter, similar in fineness to standard embroidery thread. This guide covers the machine settings, tension, fabric recommendations, and critical handling notes developed through prototyping and production runs. Use as a reference; results may vary by machine manufacturer and fabric substrate.

EMBROIDERY MACHINE SETTINGS

- 1 Needle Type: #18
- 2 Embroidery Type: plain embroidery, cording embroidery
- 3 Stitch Type: plain stitch, satin stitch, tatami stitch
- 4 Automatic Jumping Stitch: ON
 Max jump and stitch length: 3mm. For patterns smaller than 3x3 cm², reduce to 1mm.
- 5 Cutting thread / locking at start / end knot: OFF
- 6 Automatic segmentation of stitches: OFF
- 7 Automatic sewing down: OFF
- 8 Speed: 300-400 needle/min (plain embroidery) | 400-600 needle/min (cord embroidery)

STITCH SPACING REFERENCE

Stitch Type	Fiber Diameter (mm)	Stitch Spacing (mm)	Stitch Length (mm)
Satin Stitch	0.3	0.9	≤2cm
Tatami Stitch	0.3	1.8	4mm
Plain Stitch	0.3	N/A	4mm
Plain Stitch (Cord Embroidery)	0.3	N/A	1.5mm

TENSION

Tension should vary based on fabric texture and density. The values below were measured on soft woven fabric using a Tajima tension gauge. When pulling the thread by hand, it should move smoothly with relatively low resistance.

Thread Position	Tension Range (Tajima gauge)
Upper thread	100-120
Bottom thread	30-35

The back side of the embroidery should show: upper thread (2 passes) over bottom thread (1 pass).

FABRIC AND BOTTOM YARN

Recommended Fabrics

TPU film, woven fabrics, and artificial leather are all compatible. Natural leather is more challenging. For leather applications, use SewGlo™ HD (Sewing variant) rather than the embroidery thread, as it provides greater durability and pull strength through dense materials.

Bottom Yarn

Use standard yarns such as cotton. The bottom yarn fineness should match SewGlo™ thread at approximately 0.3mm for best stitch balance and thread visibility.

CRITICAL NOTES

- 1 Do not let the needle pierce the SewGlo™ fiber.** If the needle passes through the conductor, it will cause a short circuit and the thread will not illuminate. The needle should pass alongside the thread, never through it.
- 2** Use a single continuous thread under 10m for uniform luminance. For complex patterns requiring parallel connections, keep each segment within 10m. Longer runs create luminance drop-off toward the far end.
- 3** Leave 10-20cm of thread at the start and end for making connections to power leads or connectors. Do not trim flush to the fabric.
- 4** Thread can be rewound onto standard embroidery cones for use on multi-head or high-volume embroidery equipment.

CONNECTING

To connect SewGlo™ thread to a power lead or connector, follow the step-by-step guide at our Learning Center. Video walkthroughs covering the connection process are available alongside written instructions.

LEARN MORE

Full guides, connection videos, and integration tips: ellumiglow.com/pages/el-guide