Platilon® Dureflex®

Thermoplastic (TPU) Films for surgical supplies

Improving surgical safety and personnel focus in the operating theater

covestro

Overview

The operating room (OR) environment demands high safety and care for patients. Maintaining sterility during the use of medical devices and high-tech equipment is critical.

TPU films are ideal for use in multiple applications in surgery, thanks to their versatility and biocompatibility. Moreover, TPU films are easy to fabricate due to their weldability, bonding capabilities, and formability, as they are highly conformable to take the shape of unique designs.

Covestro offers a large range of medical-grade TPU films with customized properties such as an innate soft touch, enhanced tensile strength, and good visual clarity.

Covestro's advanced multilayer film technology offers the flexibility to create tailor-made solutions by incorporating multiple functionalities within the layers of a single film.

This distinctive manufacturing process can serve to enhance bonding to olefinic substrates, improved surface haptics, or a reduced moisture vapor transmission, for instance.

TPU films provide a sterile barrier to surgical robots, lowering contamination risk. These highly flexible drapes remain intact and fully operational, adapting well to a greater range of movement.

Endoscopy equipment covers help protect patients and healthcare personnel from contamination risk during procedures.

Infection control of surgical equipment – enabling a sterile barrier

Safety

TPU films are used in infection control supplies such as protective covers, drapes, and sleeves of OR machines and instruments. Articulated OR equipment – such as exoscopes, C-arms, or surgical robots – requires a greater range of movement, and their electrical motors emit heat. Dureflex® and Platilon® TPU films are preferred for their good tear and high heat resistance, elevating performance over alternative materials.

Benefits:

- Stretchable, high tear resistance
- Heat-resistant
- Low noise
- Ethylene oxide (ETO)/gamma-sterilizable
- Microbial barrier
- Formable, easy to weld and bond
- Compatible with secondary processing including thermoforming, RF welding

Ease of handling

Efficient and precise draping of OR equipment is enhanced using Covestro TPU films with tailored formulations to optimize surface slip. OR staff benefit from the low noise output during handling of the film, avoiding distractions and added strain, allowing care teams to focus on critical tasks. For products like probe covers in contact with skin, TPU films offer a gentle and skin-friendly material option while ensuring high-quality image transmission essential for the procedure.

Benefits:

- Customizable surface friction: non-sticky for easy unfolding, higher tack for good anchorage
- Puncture resistance/high tear resistance
- Low noise
- Soft touch, skin-friendly, non-irritating
- Visual clarity

Procedure support (patient, surgeon) – high tear resistance for reliable support during the procedure

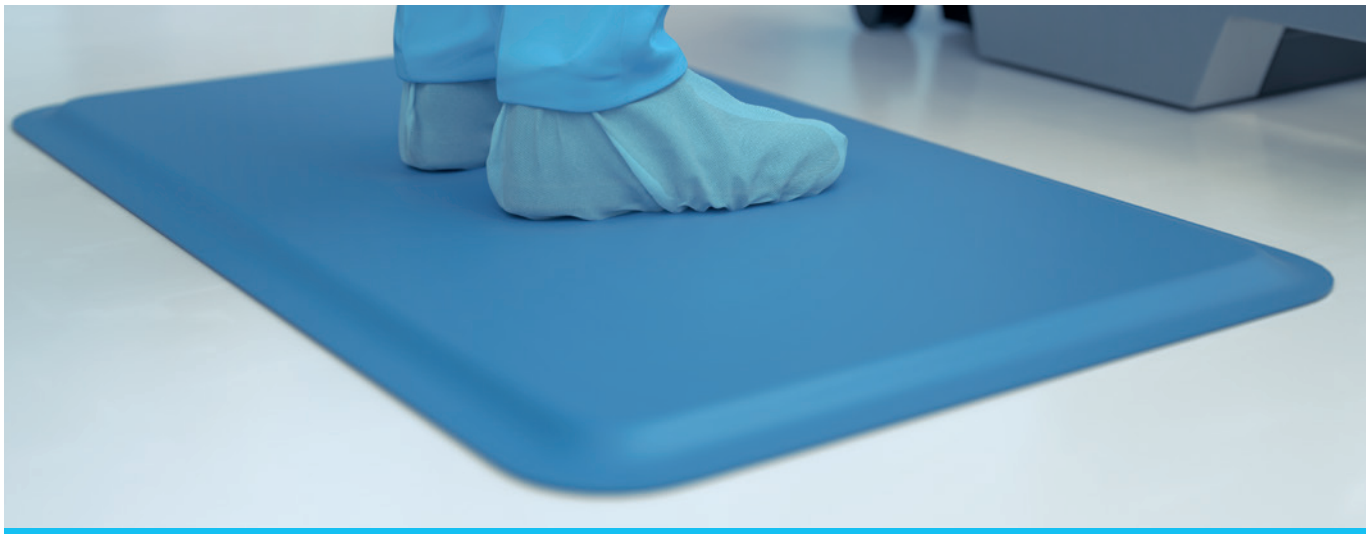
Whether the procedure lasts two or twelve hours, it is important that OR staff and patients remain comfortable. Covestro low-durometer TPU films offer a soft and warm feel against the skin. They have also high puncture resistance and good stretchability, which are highly appreciated in patient positioners, usually filled with damping gel, or in inflatable warming blankets.

For surgical positioners, it is particularly important that TPU films feature high chemical resistance to withstand exposure to frequent disinfection procedures. Fungal-resistant and hydrolytically stable TPU films are ideal for devices exposed to water and high humidity.

Benefits:

- Soft, warm touch
- High puncture resistance
- Stretchable, high tear resistance
- High chemical resistance
- High fungus resistance

High tensile strength and puncture resistance of TPU films make gel-filled surgical positioners and inflatable warming blankets resistant to damage and tears. Formulations with good hydrolytic stability reduce material degradation for device longevity.



Anti-fatigue mats enhance comfort and reduce leg and foot pain for healthcare personnel who stand for long hours during procedures. With high puncture and tear resistance, TPU films work well with damping gel, air, or foam-filled anti-fatigue mats.

Surgical site – ensuring patient safety and reliable surgical procedures

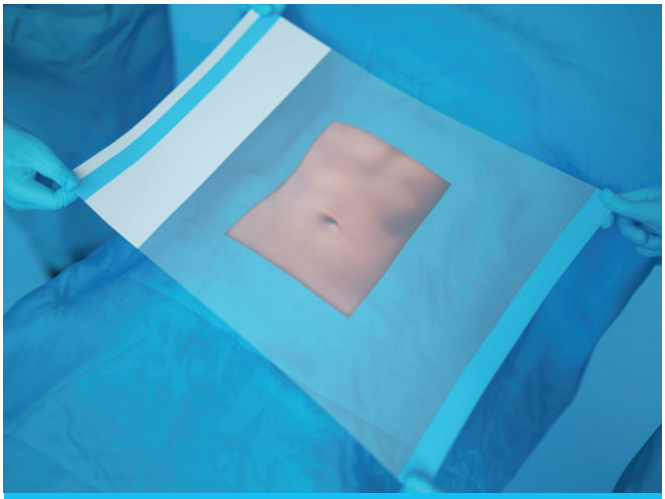
The high mechanical strength of TPU films is acknowledged for incision drapes, extraction bags, and wound retractors that aim at protecting the surgical site from infection and tissue damage. These devices are increasingly being adopted during procedures as they provide enhanced safety and reduce the risk of postoperative complications. Durable TPU film is highly pliable, allowing the device to be folded or rolled without creasing for improved patient comfort.

Low gloss TPU film grades are particularly appreciated by OR personnel for improved visual comfort by reducing glare and distractions created by bright, intense white light in an OR environment.

Benefits:

- High tear resistance
- Highly pliable
- Low gloss, low glare, matt effect
- Low tack formulations, easing the unfolding

The good mechanical strength of TPU films in specimen retrieval bags lowers the risk of tears and spillage, enhancing patient safety. The highly pliable films easily roll up and unfold to facilitate insertion through a small incision.



The thin but strong and elastic features of TPU films used in incision drapes allow them to be suitable for diverse surgeries. Low gloss TPU films provide clear surgical site visuals without glare, which improves the focus and concentration of surgeons and medical teams.

Covestro – brings added value to the medical device industry

The medical market is amongst the highest regulated industries requiring stringent standards and demands. Covestro, via its long-established films business, is an experienced supplier and collaborative partner to the medical community. The extensive portfolio of medical-grade TPU films is complemented with documents demonstrating a consistent and highest level of material quality and product safety.

TPU films for drapes in slush machines and fluid warming equipment provide a sterile barrier. High tear resistance ensures the integrity of the drape during usage. Good drapability favors film anchorage to the basin during the surgical procedure.

TPU films for medical device manufacturers

- … benefit from the generally accepted skin-friendliness and biocompatibility of TPU
- … offer long-term established film solutions as well as newly developed film concepts
- … are manufactured in ISO 9001 accredited facilities
- … are produced applying GMP* concepts using traceable raw materials
- … benefit from biocompatibility assessment/evaluation according to selected ISO 10993 standards
- … are supported with experience in different systems of international regulatory standards from Europe and North America to Asia

* GMP = good manufacturing practice

Global manufacturing footprint: reliable supply and stable formulation

Covestro Specialty Films has a global technical and manufacturing footprint to support customers in Asia, Europe, and the Americas. We provide reliable global supply by applying a strict change management policy yielding excellent quality materials with long-term stable formulations and consistent standards that are critical for design and production of medical devices and surgical products.

Product stewardship: material safety and consistent quality

With a full range of TPU films with acknowledged applications requiring biocompatibility for surgical disposables used in the OR, Covestro Specialty Films has recorded several decades of experience and expertise in this field.

Want to learn more?

We are always ready to work with you in developing customized features that will provide an excellent combination of quality and performance. Reach out to us or visit the Covestro Solution Center to find out more about our Specialty Films solutions (films.covestro.com), or send an email to films@covestro.com.

Covestro Deutschland AG
Kaiser-Wilhelm-Allee 60
51373 Leverkusen
Germany

films.covestro.com
films@covestro.com