TPC CONVERTING'S

PROTECTIVE FILM SOLUTIONS FOR TEXTURED METALS IN DIVERSE INDUSTRIES

TPC CONVERTING
New Ideas. Valued Partner. Optimized Solutions.

tpcconverting.com

THE EVOLUTION OF INDUSTRIAL METAL SURFACES

Many industries, from construction to appliances to electronics, benefit from using textured stainless steel, copper, or aluminum. Embossed, deep-textured, or micro-textured, these metals can reduce glare on building facades, hide fingerprints on appliances, improve traction on walkways, and help manage heat in high-performance electronics. They allow designers and engineers to achieve both durability and visual impact.

While smooth and textured metals are equally susceptible to scuffs, scratches, and contamination during fabrication, transport, and assembly, textured surfaces introduce unique challenges to surface protection. The very peaks, valleys, and patterns that give these metals their aesthetic and functional value also make them significantly more difficult to protect. Protective film adhesives must conform to uneven substrates and be removed cleanly without leaving residue trapped inside the texture.

TPC Converting specializes in protective film solutions and adhesives engineered specifically for textured metal surfaces. Materials can be slit, die-cut, laminated, and perforated to match the exact dimensions of a part, ensuring protection exactly where it is needed. Our protective films overcome the challenges of textured metal surface protection, preserving the integrity of these components from initial fabrication through final installation.

Read on to learn more about the functions and applications of textured metals, as well as how our expertise and capabilities offer superior surface protection.

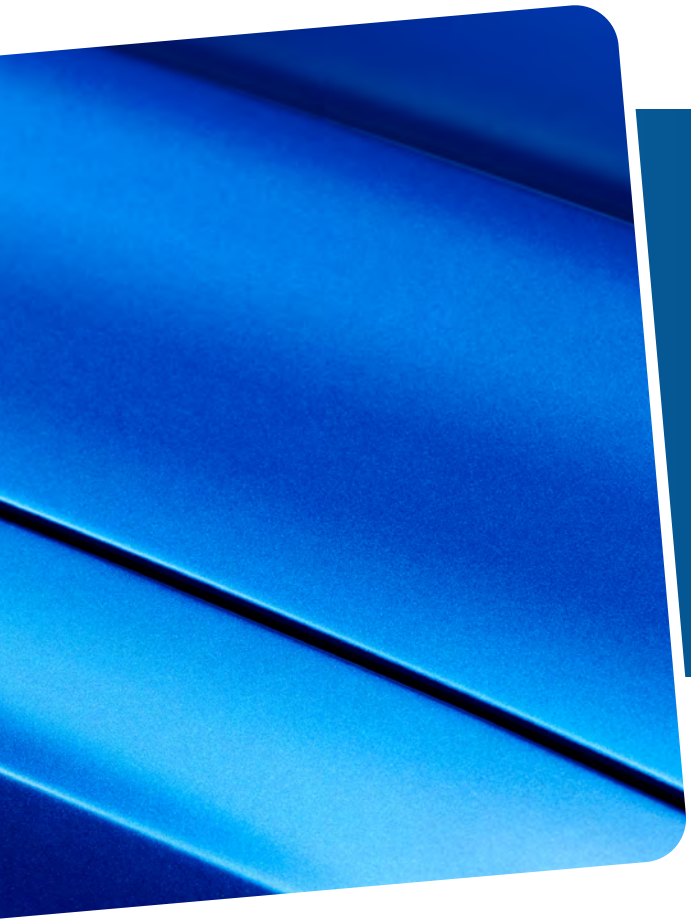
CHAPTER 1.
BEYOND AESTHETICS: THE FUNCTIONALITY OF TEXTURED METALS

Textured metal is rarely chosen for appearance alone. The pattern on the surface usually reflects a deliberate engineering decision.

STRUCTURAL INTEGRITY

Embossing patterns into aluminum or stainless steel increases its rigidity without increasing thickness. The ridges and contours reinforce the material, allowing engineers to down-gauge and use thinner, lighter metals while still meeting performance requirements.

In automotive and electric vehicle applications, that translates into reduced weight and improved efficiency. In architecture, it leads to more durable exterior panels that do not add unnecessary structural load.

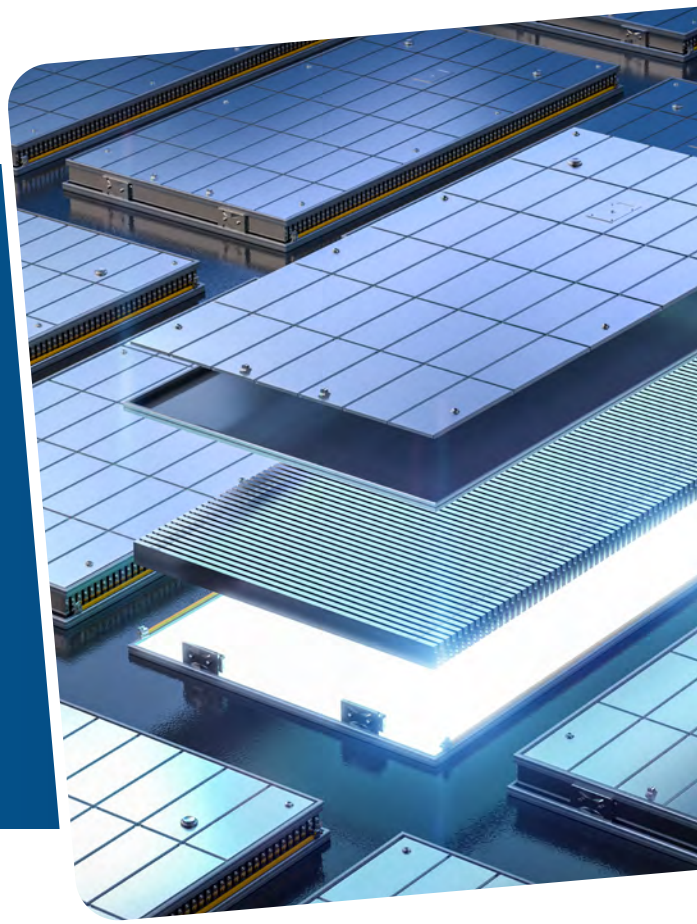


DAMAGE RESISTANCE

Textured surfaces also perform better in high-touch or high-traffic environments. Micro-textures and patterned finishes scatter light in ways that help conceal scratches, minor dents, and fingerprints. This is especially important for Class A automotive surfaces.

THERMAL AND ACOUSTIC PERFORMANCE

In advanced electronics applications, texture contributes to performance beyond strength and cosmetics. Certain patterns enhance thermal dissipation, which makes them valuable in EV battery enclosures and electronics housings. Other textures support sound dampening, reducing vibration and noise.



CHAPTER 2.
TEXTURED SURFACES: APPLICATIONS, TYPES, AND TEXTURE-SPECIFIC SURFACE PROTECTION FILMS

TEXTURED METAL APPLICATIONS

Textured metals are found in a variety of applications where both aesthetics and functionality matter:

ARCHITECTURE AND CONSTRUCTION

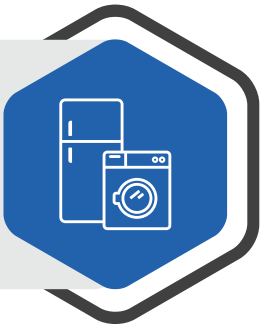
Architectural facades often use textured panels to reduce glare while adding visual dimension.

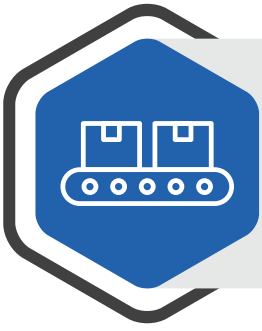
AUTOMOTIVE MANUFACTURING

Textured steel and aluminum are used for interior trim to reduce fingerprint visibility and improve grip.

CONSUMER ELECTRONICS AND APPLIANCES

Textured metals offer durability and a premium finish to consumer electronics and appliances.





INDUSTRIAL EQUIPMENT

Machine guards and conveyor belts often contain textured metal components to improve traction and safety.

TEXTURED METAL TYPES

Metals can be textured in a wide variety of ways, depending on the end use:

EMBOSSED AND STAMPED

Diamond plate and basketweave patterns are common in architectural panels, elevator interiors, industrial platforms, and appliance trim. These textures add slip resistance and structural reinforcement.

BRUSHED AND GRAINED

Linear grain or brush patterns on stainless steel and aluminum soften the appearance while reducing fingerprint visibility. These finishes are widely used in appliances, electronics, and automotive trim.

BEAD-BLASTED

Matte, non-directional textures reduce glare and create a uniform surface. These finishes appear in architectural components, handrails, medical equipment, and aerospace applications.

HAMMERED AND DECORATIVE PATTERN

Copper, brass, stainless steel, and aluminum can be hammered or laser-etched for decorative facades, lighting, cabinetry, and furniture, where the surface itself is a design feature.

ADHESIVE-COATED PROTECTIVE FILM: TEXTURE-SPECIFIC APPLICATIONS

Each textured surface type presents a different protection challenge. A film that performs well on smooth metal may fail on a deep or irregular texture. Here's how our texture-specific protection films address the unique geometries of textured metals:

TEXTURED FILM

Architectural facades or other embossed and stamped metals require films that conform to valleys and across raised patterns. Our TPC polyethylene protective films protect deep channels from scratches, dust, and coating damage, while removing cleanly without leaving residue behind.

MEDIUM-TACK POLYETHYLENE FILM

Brushed stainless steel and grained aluminum—such as for stove hoods or refrigerator doors—typically require medium-tack polyethylene-based protective films that hold throughout painting and bending stations.

RUBBER ADHESIVE FILM

Surgical trolley trays and other bead-blasted surfaces often require higher-tack, rubber adhesives to maintain contact with non-directional peaks during fabrication, transport, and washing cycles.

PROTECTIVE MASKING

Hammered and decorative metals, such as those for lighting fixtures, benefit from protective masking that withstands powder coating cycles and shipping conditions without damaging intricate details.

Protective films support textured metal surfaces at every stage of component processing:

EMBOSSING AND ROLL FORMING

Removable films prevent tooling marks and abrasion during coil processing.

LASER CUTTING AND FABRICATION

Specialized films remain intact during punching, cutting, and heat exposure.

TRANSPORT AND HANDLING

Custom-width and perforated films protect panels on pallets and in crates.

INSTALLATION AND ASSEMBLY

UV-stable films preserve surface quality until final delivery.

CHAPTER 3.
THE SCIENCE OF ADHESION ON TEXTURED METAL SURFACES

Adhering protective materials to textured metals requires more than standard tapes.

THE CHALLENGE OF WET-OUT

Wet-out describes how well an adhesive flows into the surface it contacts. On flat metal, achieving contact is straightforward. On textured substrates, adhesives must move into micro-crevices and across ridges to create full surface contact.

If they do not, air gaps form. Those gaps weaken bond strength and increase the risk of lifting. We address this at TPC Converting by selecting high-flow adhesive systems engineered to conform to uneven surfaces. These adhesives maximize contact across peaks and valleys.

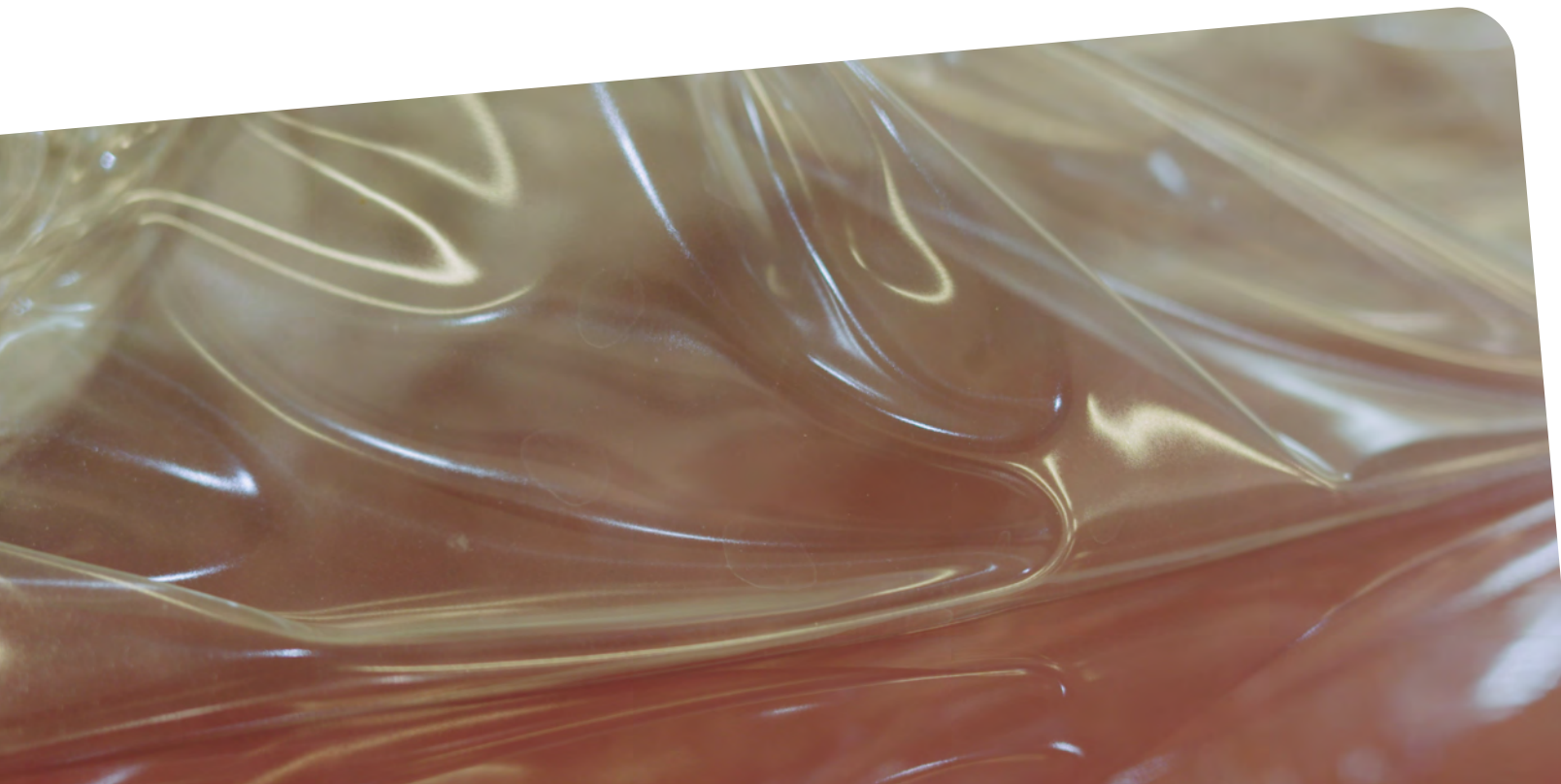
PRECISION DIE-CUT ADHESIVES

Many applications require targeted protection rather than full-sheet coverage. Our tight-tolerance die-cut protective adhesive films are shaped to match the exact footprint of textured components. This ensures adhesive materials do not extend beyond edges or migrate into other areas.

TEMPORARY PROTECTION THAT STAYS PUT

Protective film must balance adhesion and removability. Too little tack leads to premature lifting. Too much tack risks residue embedded in textured recesses.

TPC Converting selects films with tack levels matched to specific surface textures, ensuring secure adhesion throughout fabrication, storage, and transport, as well as clean peeling at final assembly.

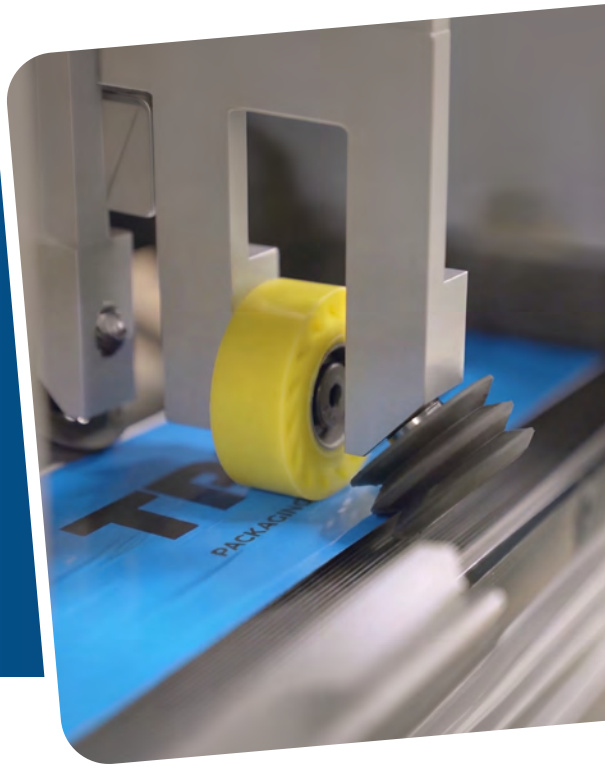


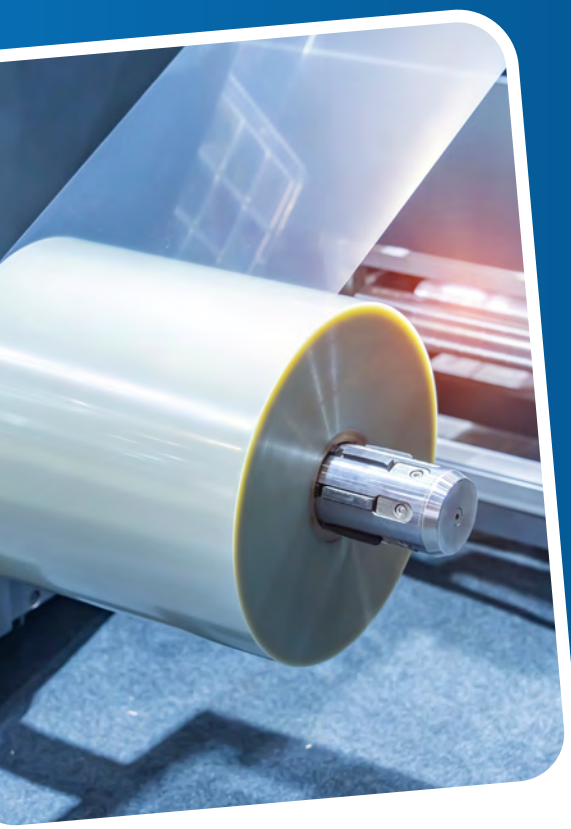
CHAPTER 4.
AUTOMATING THE APPLICATION

Application method plays a significant role in surface protection quality and efficiency, especially when it comes to textured metals.

THE LIMITATIONS OF MANUAL APPLICATION

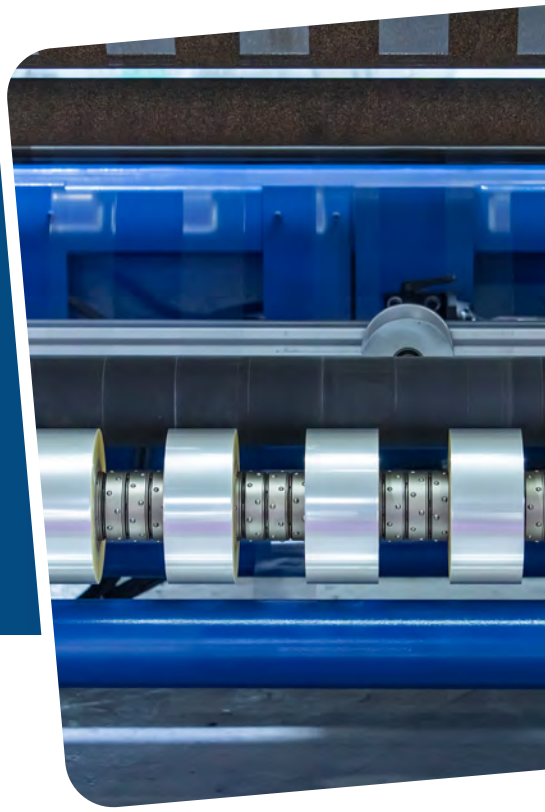
Applying film by hand to textured metal can lead to air bubbles, uneven pressure, and misalignment. Texture can distort visual reference lines, making consistent placement difficult. In high-volume production, operator variability increases scrap and rework.





INTEGRATED AUTOMATION SOLUTIONS

TPC Converting prepares materials specifically for automated tape and film application systems. Converted products may include lined die cuts, kiss-cut components, and custom pull-tabs designed for robotic pick-and-place systems. These formats allow automated equipment to handle and position adhesive components accurately and repeatably, even on complex textured housings. Our expertise in automated converting machinery allows us to build custom applicators to process our precision-cut protective films.



BOOSTING THROUGHPUT AND ROI

Automation transforms a labor-intensive peel-and-stick process into a repeatable system. Consistent placement is especially critical for Class A surfaces and applications such as EMI and RFI shielding, where small gaps can compromise performance.

By aligning material converting with automation compatibility, TPC Converting supports faster cycle times, reduced scrap, and predictable results that strengthen your textured metal surface protection efforts.

PARTNER WITH TPC CONVERTING TO PROTECT YOUR TEXTURED METALS

Textured metals continue to expand in applications across industries because they deliver structural, aesthetic, and performance advantages. As surfaces become more engineered, protecting them requires equal precision.

At TPC Converting, we have protective film and adhesive solutions specifically designed for textured metal applications. With precision converting, tailored adhesive selection, and automation-ready formats, manufacturers can protect high-value finishes from fabrication through final installation.

If textured metal is part of your product design, surface protection should be part of your strategy. Contact us today to learn how converted protective film solutions can support your next project, or request a quote to get started.

TPC CONVERTING
New Ideas. Valued Partner. Optimized Solutions.

ABOUT TPC CONVERTING

At TPC Converting, we believe every challenge deserves a tailored solution. That's why we go beyond standard converting services; offering not only tapes, protective films, and converting capabilities, but also automated application systems designed to apply those materials with precision and efficiency. As a true one-stop shop for the supply, conversion, and application of tapes and protective films, we help customers streamline production and elevate quality.

With more than 58 years of industry experience, our team understands the diverse needs of modern manufacturing. Whether you require standard or custom-engineered solutions, we deliver materials and systems that meet the highest standards of performance and reliability. We also provide sample materials and parts for testing to guarantee the perfect fit for your specific application.

Our commitment to quality is reflected in our ISO and IATF certifications, which demonstrate our dedication to customers, suppliers, and continuous improvement.

CONTACT US

RESOURCE LIBRARY

CONTACT

TPC Converting
11630 Deerfield Rd., Building 2,
Cincinnati, OH 45242
Tel: 800.582.2049
Email: **info@tpcconverting.com**

BRANCH LOCATIONS

Florida
6835 S Conway Rd Suite 350
Orlando, FL 32812
800.543.4930

Texas
901 Parkway Dr
Grand Prairie, TX 75051
800.543.4930

Illinois
1401 Davey Road, Suite 800
Woodridge, IL 60517
800.543.4930

TPC CONVERTING
New Ideas. Valued Partner. Optimized Solutions.