



Manufacturer of High-Performance Fluoropolymer Films,
Laminates, and Composites

FLUOROPOLYMER FILMS BUILT FOR HYDROGEN

Proven materials for fuel cells, electrolyzers, and the infrastructure that powers them.



**High Chemical
Resistance**



**High Temperature
Resistance**



**Low
Permeability**



**Consistent
Quality**

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**Boosting energy and cost efficiency
in hydrogen systems**

COMPANY OVERVIEW

Textiles Coated International (TCI) has been a global leader in high-performance fluoropolymer films, laminates, and composite materials since 1985.

For more than four decades, TCI has built its reputation on engineering materials that perform reliably in the most demanding chemical and thermal environments. From extreme heat to aggressive chemicals, TCI solutions are trusted across industries where durability, purity, and consistency are non-negotiable.

Operating from two advanced manufacturing facilities with more than 180,000 square feet of production space, TCI integrates customized coating, lamination, fabrication, film processing, mixing, maintenance, research and development, and laboratory testing. Supported by over 300 skilled employees and an around-the-clock manufacturing schedule, TCI delivers high-quality products with short lead times and exceptional customer support.



TCI offers engineered fluoropolymer solutions for fuel cell and electrolyser applications, including PTFE-coated polyimide, FEP-coated polyimide, LCP (Liquid Crystal Polymer), PTFE-coated glass fabric, laminated PTFE composites, and CrossFilm™. Designed for demanding chemical and thermal environments, TCI materials deliver excellent chemical resistance, dimensional stability, low permeability, and reliable performance where material integrity matters.

CrossFilm™ is a 100% PTFE cross-laminated material and a highlight of the TCI Hydrogen portfolio. Its proprietary cross-lamination provides exceptional multidirectional tear strength, flexibility, and durability without reinforcement. CrossFilm™ can be heat-sealed, is resistant to UV and moisture, and operates across an exceptionally broad temperature range, from -425°F to 600°F (-254°C to 316°C).

Learn more and explore our full product portfolio
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THE HYDROGEN OPPORTUNITY

Electrolysis is a leading process for hydrogen production, with the potential for zero greenhouse gas emissions when powered by renewable energy. Hydrogen provides a clean, efficient way to store and transport energy for homes, businesses, and vehicles.

TCI's fluoropolymer films, laminates, and composites are engineered for the most demanding positions within fuel cell and electrolyser stacks, where chemical inertness, dimensional stability, zero contamination, and resistance to extreme chemical, thermal, and mechanical conditions are essential.

TCI capabilities:

- Film casting, extrusion, and dip-coating
- PTFE & silicone coating and lamination
- Controlled, smooth surfaces
- Multi-material lamination
- Precision slitting and converting
- Roll-to-roll and sheet/die-cut supply
- Material science and in-house R&D
- Technical support from design through serial production

TCI MATERIALS FOR HYDROGEN APPLICATIONS:

Material	Key Properties	H2 Application
CrossFilm™ (100% PTFE)	Zero porosity, 600°F (316°C) continuous, superior tear resistance, FDA/FM certified, reduced cold flow	Decal substrate/carrier, frame gaskets, release liners
PTFE Coated Polyimide	High dielectric strength, chemical inertness, dimensional stability at high temps, reduced cold flow	Sub-gaskets, frame gaskets, decal substrate
FEP Coated Polyimide	Superior release, weldable, low thermal hysteresis, smooth uniform surface, reduced cold flow	Sub-gaskets, frame gaskets, CCM carrier
LCP (Liquid Crystal Polymer)	Thermoplastic, good adhesion to metals/polymers, extremely good barrier properties: hydrogen permeations lowest vs on other polymers	Sub-gaskets, frame gaskets
PTFE Coated Glass Fabric	Dimensionally stable, high tensile strength, superior chemical resistance, minimal cold flow	Decal substrate/carrier, lamination belts
Laminated PTFE Composites	Multi-layer construction, customizable thickness, zero gas permeation	Gaskets, liners, carrier films

TCI HYDROGEN MATERIALS BENEFITS



High Chemical Resistance

PTFE construction resists virtually all acids, bases, solvents, and aggressive process chemicals — including the harsh environments inside hydrogen electrolyzers and fuel cell stacks.



Low Permeability

CrossFilm™ laminate remains non-porous even after repeated flexing and thermal cycling — delivering zero gas crossover critical for membrane integrity in H₂ systems.



Excellent Electrical Insulation

High dielectric strength provides reliable stack-separating insulation between anode and cathode — preventing short circuits and ensuring safe, efficient electrochemical operation.



High Temperature Resistance

Operates reliably across an extreme temperature range from -328°F (-200°C) to 600°F (316°C), providing exceptional thermal stability for PEM, alkaline, and phosphoric acid fuel cell systems—from cryogenic conditions to high-temperature operation.



Cleaner Solution

Non-contaminating, FDA-compliant materials eliminate the risk of catalyst poisoning or membrane degradation — keeping your H₂ system pure from day one.



Consistent Quality

Roll-to-roll manufacturing within tight tolerances ensures uniformity ensures every gasket, liner, and carrier film meets exact specification — run after run, at high volume.

GASKETS FOR FUEL CELLS & ELECTROLYSERS

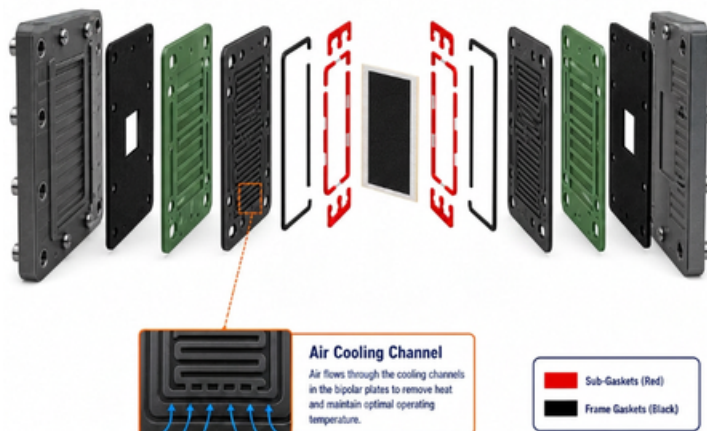
TCI films and composites are incorporated as frame gaskets and sub-gaskets within PEM, alkaline, and phosphoric acid fuel cell and electrolyser systems.

HOW TCI GASKETS PERFORM

Multi-functional, reliable, and robust, TCI composites serve as seals and separator components within fuel cell systems – ensuring energy efficiency and stack modularity. Reduced material creep and excellent tensile strength provide long-lasting performance. Supplied as sheets, roll-to-roll, or die-cut to specification.

FEATURES

- Excellent non-stick, non-contaminating surface
- Superior chemical resistance to acids & solvents
- Great electrical insulating properties
- High temperature resistance up to 600°F (316°C)
- Low shrinkage and low thermal hysteresis
- Configurable for any size, thickness, or format



BENEFITS

- Significant reduced cold flow
- Low permeability – zero gas crossover
- Low risk of failure due to chemical inertness
- Durable sealing properties – reduced downtime
- Insulation of anode and cathode
- Multiple gasketing functions in one material
- Bondable to the PEM membrane
- Tight seal under pressure – holds PEM in place
- Usable in harsh chemical and thermal environments

TCI FILMS

-  **CrossFilm™ PTFE** – pinhole-free, low permeability
-  **PTFE Coated PI** – high dielectric strength, weldable
-  **FEP Coated PI** – superior release, low thermal hysteresis
-  **LCP** – excellent adhesion and exceptionally low permeation

RELEASE SOLUTIONS FOR DECAL

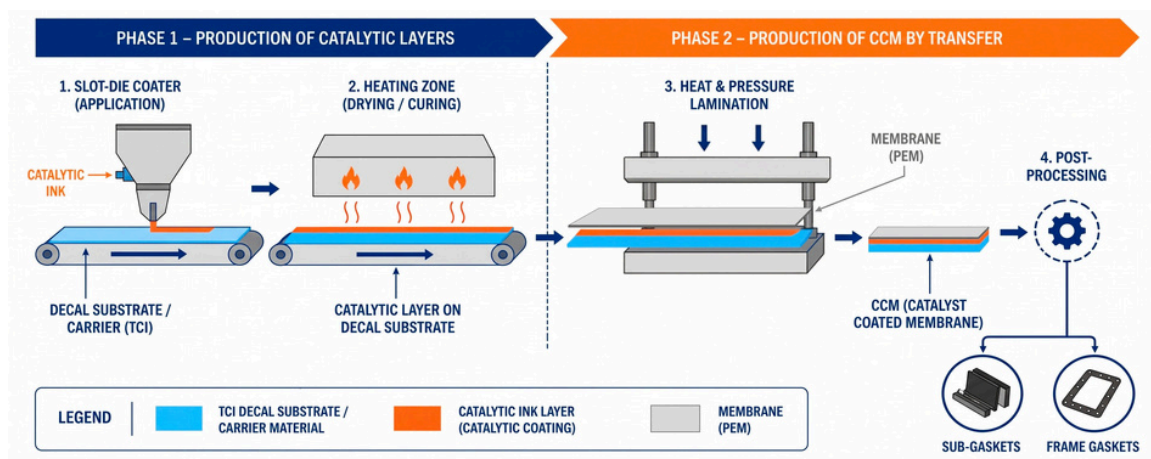
TCI films and coated fabrics can be used as release liners and carrier solutions for production of catalytic layers and lamination of Catalyst Coated Membranes (CCMs) by Decal Transfer.

HOW TCI DECAL SOLUTIONS WORK

TCI release solutions serve as processing belts and release sheets for thermal curing and lamination – providing a flat, smooth, mechanically stable substrate for even catalytic ink distribution. At the final stage of CCM production, substrates remove cleanly, allowing 100% transfer. Extremely thin and tight controlled (toleranced), TCI carriers can support thinner catalyst layers.

FEATURES

- Excellent non-stick surface – optimal wettability and release
- Thermal stability up to 600°F (316°C)
- Low thickness tolerance – consistent gauge across full width
- Excellent heat transfer for thermal curing processes
- Low shrinkage and hysteresis – suitable for repeated cycling
- Reusable several times*



BENEFITS

- 100% catalytic layer transfer – zero loss
- Thinner carrier means more CCM per roll
- Improved productivity – higher process speed
- Low risk of creasing – reduced waste and scrap
- Less downtime – consistent release every cycle
- Consistent production across all shift runs
- Increased cost efficiency via thinner catalyst layers

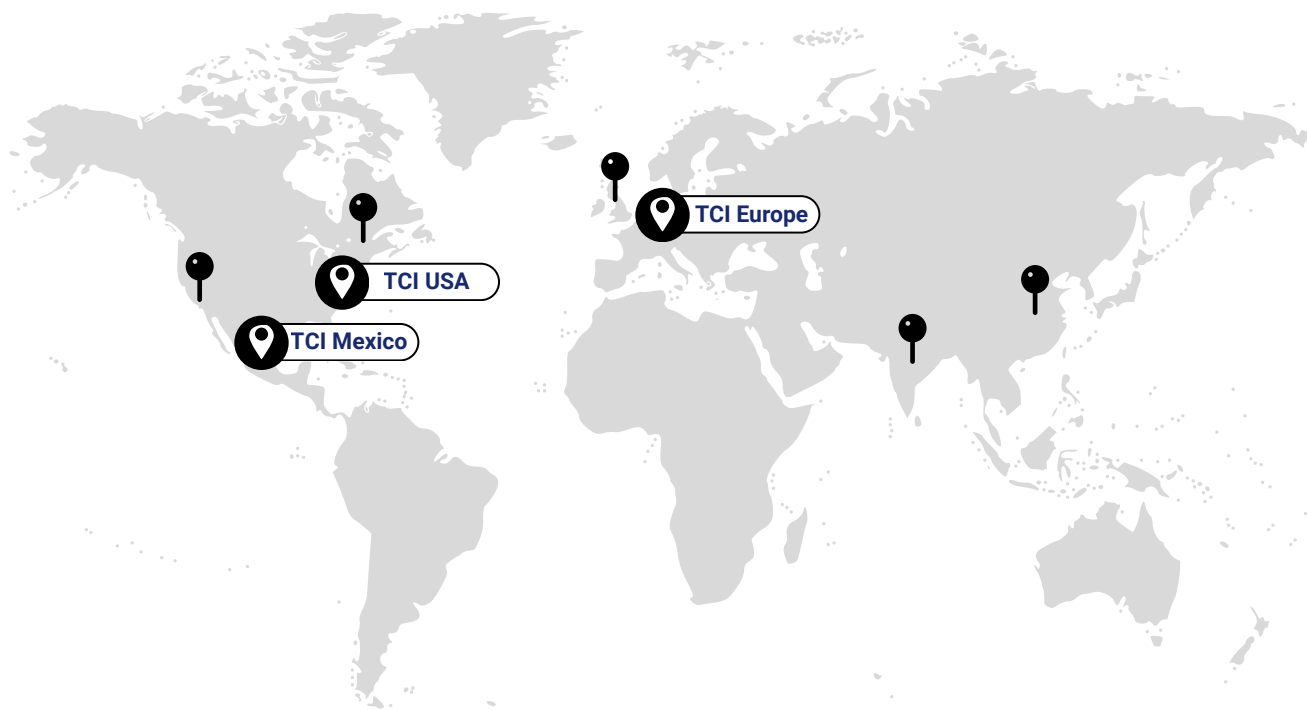
*Option to reuse several times depend on system parameters

TCI FILMS

- PTFE Coated Glass Fabrics** – stable, high tensile strength, uniform surface
- PTFE Coated PI** – wettability + release, low thermal hysteresis
- PTFE Cast Film** – enables thinner gauge for more CCM per roll
- Laminated Products** – multi-layer for complex lamination requirements



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