



POLIFILM

# DEEP DRAWING **PROTECTION FILMS**

YOUR IN DEPTH SOLUTIONS

EXCELLENCE IN FILMS

# INCREASES EFFICIENCY SURFACE PROTECTION FILM IN SHEET METAL FORMING

## OPTIMISED TEMPORARY PROTECTION FILMS FOR DEEP DRAWING

In our lives we encounter many products made of sheet metal on a daily basis, with high quality Stainless Steel or Aluminium surfaces being common place. In order to reach the customer in a flawlessly clean condition, these surfaces must be preserved during every manufacturing process and beyond. This places high demands on our customers, especially those that use deep drawing forming processes. They often supply the automotive, domestic appliance and engineering industries and must ensure they meet the high quality standards demanded. Temporary adhesive protection films are essential in order to succeed. They are a critical protection component throughout production processing, manufacturing and other associated supply chain operations. Surface protection films contribute to quality assurance and value retention throughout, guaranteeing significant enhancement in efficiencies.

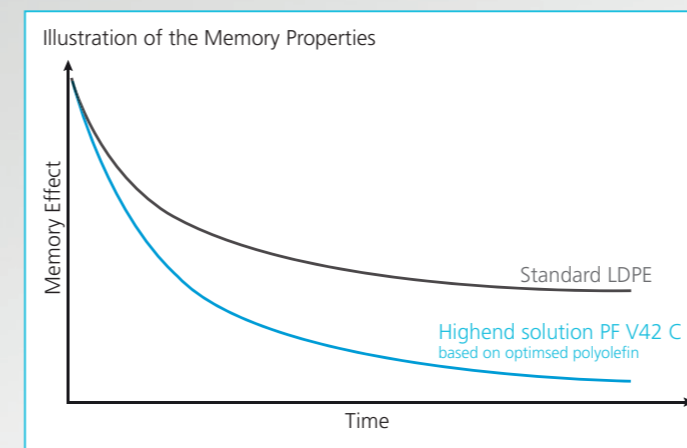
## DEEP DRAWING: A CHALLENGE FOR FILM DEVELOPMENT

Extreme forces are exerted during deep drawing, profiling and bending. Therefore a surface protection film must be designed to not only withstand these processes but also protect the delicate surface finish at the same time. When, for example, a Stainless Steel sink is drawn from a flat sheet, the film must cope with all of the forces exerted on it and remain intact. In addition, it has to deal with the demands of all the processes that follow: fabrication, production processing, manufacturing and any other associated operations. A tough challenge for any protective film.

### Complete process integration with highly efficient surface protection.

Protection films must effectively protect a wide range of different surface structures from scratches and draw marks. They must be able to withstand the production process itself, counteract the wear of tools and be integrated perfectly into the customers own production and handling processes.

These processes are wide ranging and highly specialised. Many manufacturers such as the domestic appliance industry, have developed their own production processes for brand specific end products such as sinks, refrigerators, hobs and air conditioning systems.



### High performance protection films.

A protection film must be elastic enough to withstand all distortions without tearing whilst ensuring very low memory properties. The film must not peel away from the protected component during processing and must guarantee 100% protection throughout all the numerous manufacturing steps.

### Perfect adhesion when it counts.

The adhesive strength of deep drawing protection films must be sufficient enough to ensure that the film sticks to the component during and after the deep drawing process. However at the same time the film must be quick and easy to remove ensuring a smooth and efficient total manufacturing process.

### Flawless surfaces as a result of optimised films.

If the focus is on a high end visual appearance, the carrier film and adhesive layer are equally critical and must be homogeneous and gel free. Inclusions in the carrier film or glue spots in the adhesive layer inevitably cause damage to sensitive Stainless Steel or Aluminium surfaces during the deep drawing process. POLIFILM uses sophisticated quality assurance procedures and optical control systems to monitor its extrusion and coating processes eradicating unnecessary risks.

### Transparency for immediate quality inspections.

A fast and precise visual inspection of high value end products is a key factor for ensuring efficient quality control during the entire manufacturing process. Deep drawing films therefore need to be as transparent as possible to ensure quick and easy visual inspection.

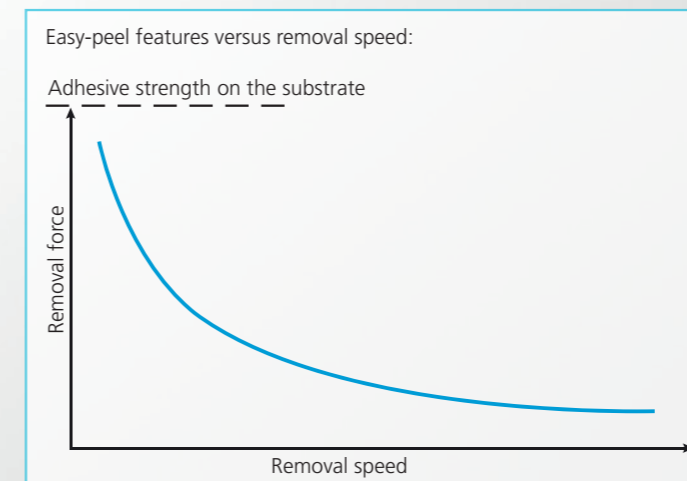
**On the following pages you will find an overview of our deep drawing films and a detailed description of the different POLIFILM PROTECTION solutions.**

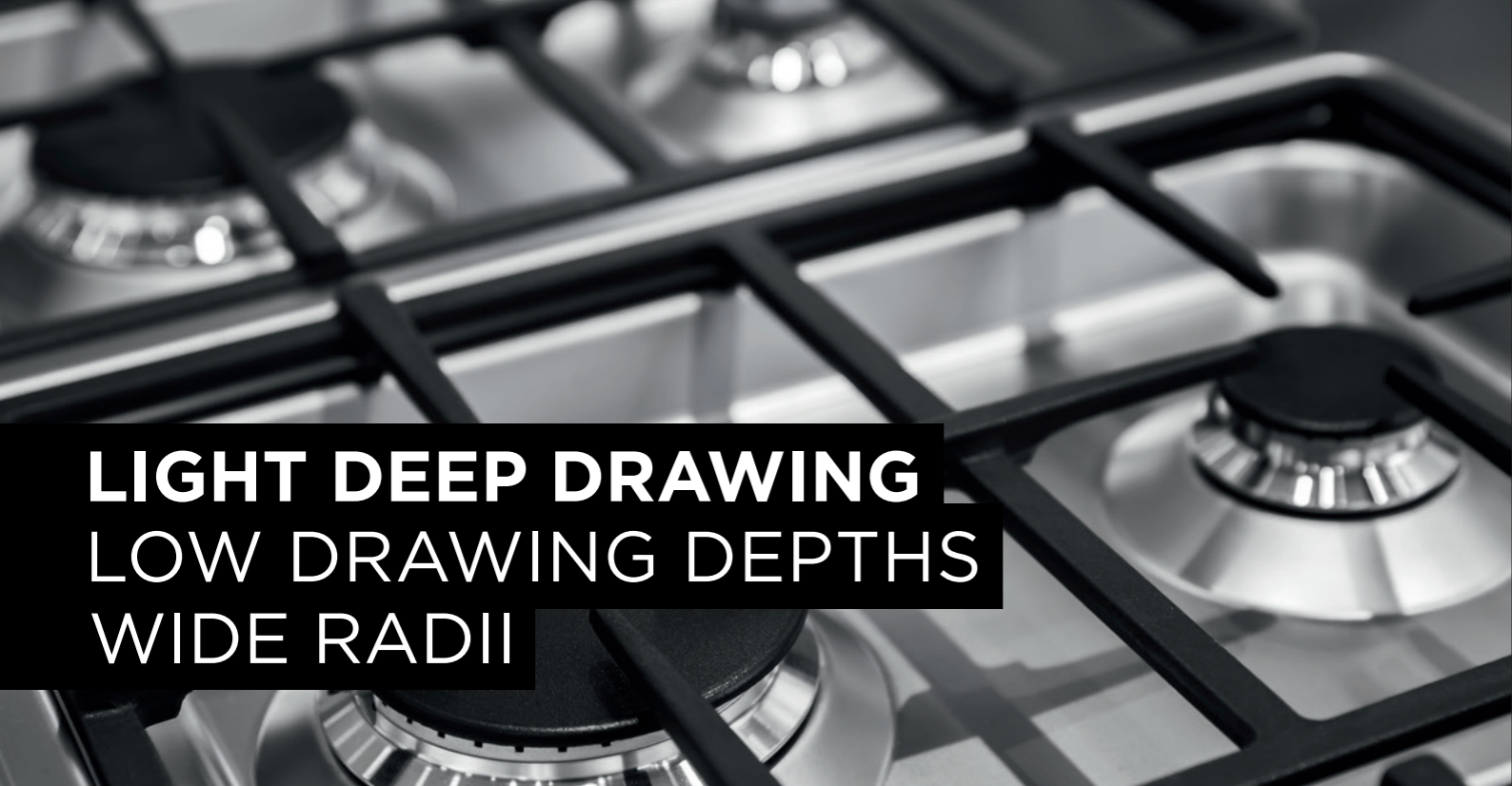
### “EASY PEEL” - FASTER, EASIER

Tightly synchronised processing sequences and automation of manufacturing processes demand highly sophisticated, efficient protection solutions. Protection films that can be quickly and easily removed without leaving a residue offer a key advantage.

POLIFILM PROTECTION has responded to this requirement with a special adhesive formula with easy-peel properties perfectly matched to light and heavy deep drawing processes.

Easy peel means that the faster the film is being removed, the less force is needed. With this unique property the protection film can be removed quickly and efficiently in a matter of seconds, even from large intricate components.





# LIGHT DEEP DRAWING LOW DRAWING DEPTHS WIDE RADII

POLIFILM PROTECTION polyethylene based protection films for light deep drawing processes, offer the ideal balance between reliable adhesion and optimum removal properties. They meet your exact process requirements offering the best possible protection for your highly valued products.

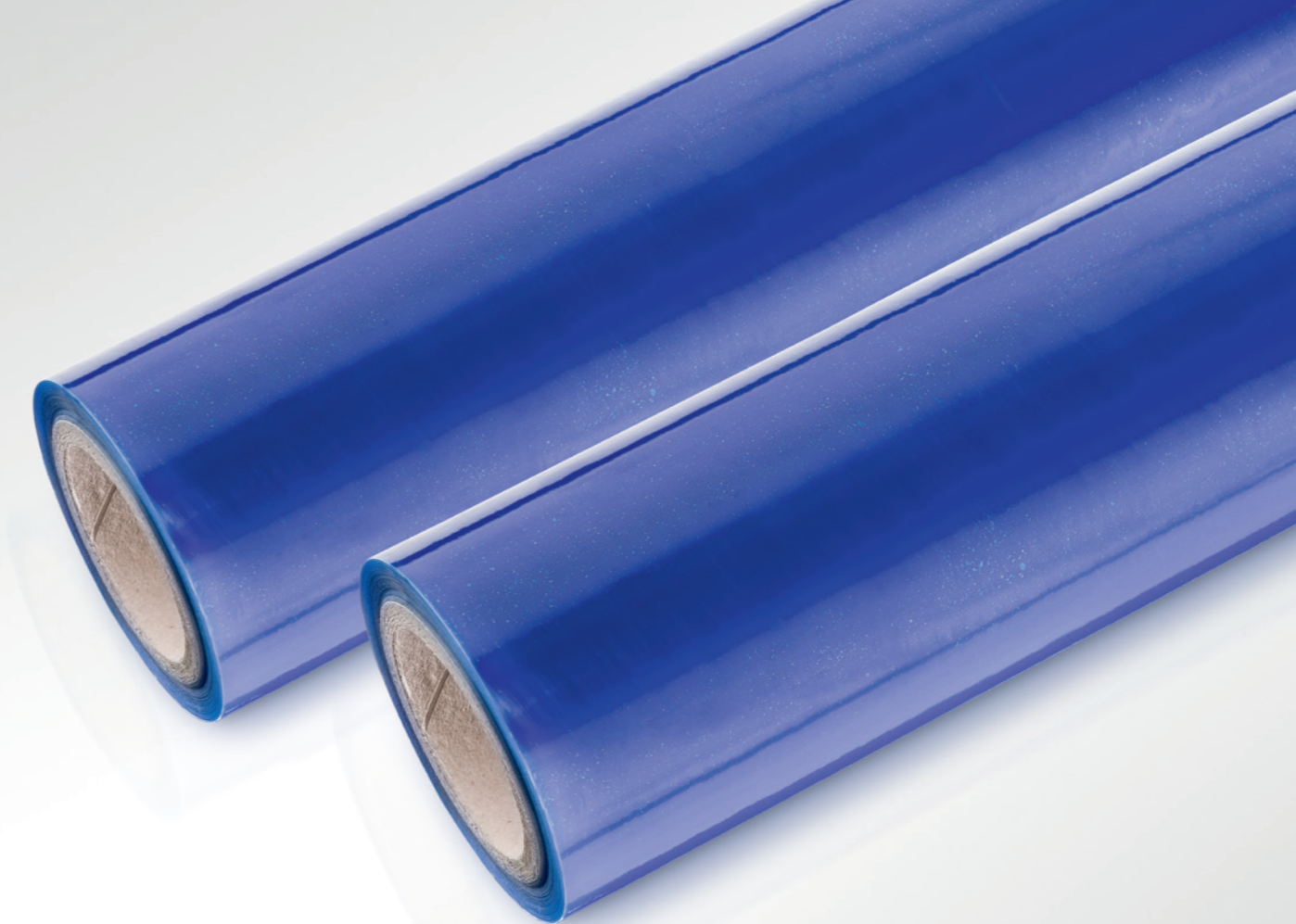
## PF22 C/N/60 TOTAL SURFACE PROTECTION

THE FILM SOLUTION FOR LIGHT DEEP DRAWING PROCESSES

PF22 C/N/60 offers effective protection to sensitive Stainless Steel and Aluminium surfaces throughout production. As a result this film has proved to be the first choice, for example, in the protection of cooking hobs during the production process. This LDPE film features excellent forming characteristics, is tear resistant and resistant to moisture and oil too. Thanks to the optimal adhesive strength from the natural rubber based adhesive system, PF22 C/N/60 offers tailor-made adhesion and reliability throughout the entire deep drawing process and associated operations. Its excellent peel properties allow removal in one piece without leaving a residue ensuring there is no need for any subsequent cleaning. The film is characterised by its very clean, homogeneous appearance and inconsequential gel content. It is ideally suited for use during the processing of high quality, sensitive material surfaces ensuring a flawless final product. The blue transparent film colour allows instant visual inspection at all times simplifying quality control during production.

### Pure LDPE protective film for light deep drawing

- ✓ Tried and tested natural rubber adhesive system.
- ✓ Tear resistant with excellent forming characteristics.
- ✓ Stable and reliable adhesion.
- ✓ Residue free removal.
- ✓ Homogeneous film quality, virtually gel-free.
- ✓ Oil and moisture resistant.
- ✓ Fully recyclable PE film.



## PF21/60 S W PV2 EASY PEEL FOR FAST REMOVAL

PROCESS OPTIMISATION FOR DEEP DRAWING

Sometimes a protection film has to be removed immediately after a forming process. In these circumstances PF21/60 S W PV2 allows fast and easy removal. Its polyethylene construction and specific acrylic based easy-peel adhesive ensure the removal force decreases as the removal speed increases. Consequently, it can be removed quickly and efficiently in seconds. As with all of our products, it leaves no residue or traces of adhesive behind guaranteeing a perfect surface every time.

PF21/60 S W PV2 with its easy-peel feature offers full protection, optimal adhesion and high tear resistance, making this the ideal solution for both short production intervals and fully automated pressing lines. It has a proven track record in the household appliance industry in the production of extractor fans, interior doors of dishwashers and much more.

### Pure LDPE protection film with easy-peel properties

- ✓ Special acrylic adhesive with easy-peel properties.
- ✓ Extremely quick and easy to remove from large intricate components.
- ✓ Clean effortless removal.
- ✓ Tear resistant with excellent forming characteristics.
- ✓ Homogeneous film quality, virtually gel-free.
- ✓ Oil and moisture resistant.
- ✓ Fully recyclable PE film.



# HEAVY DEEP DRAWING LARGE DEEP DRAWING DEPTHS TIGHT RADII

The following film solutions developed by POLIFILM PROTECTION are designed to meet the exceptional demands placed on them by the deep drawing process. They fulfil any processing requirements. Whether short term protection is needed until the next processing step, such as the polishing or welding of partially drawn sinks, or where long term protection is needed covering the entire processing route. The polyolefin based 'V' deep draw films offer the optimal adhesion alongside perfectly adapted removal characteristics.

## PF V32 C RELIABLE PROTECTION IN DEEP DRAWING

RELIABLE ADHESION FOR RIGOROUS FORMING

The polyolefin film solution has been developed specially to meet the demanding requirements of deep drawing and is ideally suited to provide temporary protection to high quality Stainless Steel surfaces. It is routinely used in the production of partly deep drawn Stainless Steel sinks.

Thanks to the customised adhesive strength and specific adhesive formula based on natural rubber, PF V32 C offers excellent adhesion with reliable, effective protection of the components throughout the production process. PF V32 C can withstand extreme depth of forming and tight drawing radii due to its excellent bespoke elasticity. The film adheres securely to the surface throughout the entire forming process. No tearing at the edges; scratches are effectively avoided thus reducing rejections.

Even after the forming process, PF V32 C guarantees the perfect appearance and quality of all components. It provides a clean removal eradicating any need for additional reworking or cleaning costs.

### Polyolefin V-deep draw film for demanding deep drawing processes

- ✓ Reliable natural rubber adhesive system.
- ✓ Excellent elasticity during deep drawing.
- ✓ Optimum adhesion suited to the most difficult parts.
- ✓ High tear resistance.
- ✓ Clean removal.
- ✓ Low gel level.
- ✓ Fully recyclable polyolefin film.

## PF V21/60 S WP PV3 FULL PROTECTION WITH EASY-PEEL PROPERTIES

GUARANTEES HIGHLY EFFICIENT DEEP DRAWING PROCESSES

PF V21/60 S WP PV3 combines the highly effective protection of a deep draw film with optimised removal properties after the forming process. The polyolefin film solution has a special acrylic based easy-peel adhesive allowing the removal of the protection film in seconds, including intricate components with large surface areas. The faster the film is removed, the lower the force is needed to remove it. The advantages: increased efficiency creating shortened production times.

This easy-peel protection film is ideally suited to demanding deep drawing processes and is characterised by its excellent adhesion and high tear resistance. It can be removed safely and cleanly eradicating the need for rework associated with subsequent cleaning.

### Polyolefin V-deep draw film with easy-peel properties

- ✓ Special acrylic adhesive with easy-peel properties.
- ✓ Extremely quick and easy to remove, including large intricate areas.
- ✓ Excellent elasticity during deep drawing.
- ✓ Optimum adhesion.
- ✓ High tear resistance.
- ✓ Clean removal.
- ✓ Low gel level.
- ✓ Fully recyclable polyolefin film.





# PF V42 C FOR LONG-TERM PROTECTION

POLYOLEFIN DEEP DRAW FILM WITH PVC CHARACTERISTICS

PF V42 C's unique film formulation and optimally adapted natural rubber based adhesive system, ensures the protection of the products throughout the entire processing route; from the start of the deep drawing process and associated operations through until the conclusion. The film offers the ultimate long term protection with a proven track record in the production of fully deep drawn Stainless Steel sinks.

#### First class formation. Optimal adhesion.

The deep drawing process dramatically changes the shape and form of any base material, so in order to remain effective and intact, a protection film has to have highly sophisticated elasticity and tear resistant properties to meet the highest demands of such processes. To date, only PVC based films could guarantee such features. However, now with PF V42 C, POLIFILM PROTECTION have managed to reproduce the expectations in performance whilst matching the benefits of a PVC film by using a polyolefin based film instead.

The advantages: Polyolefin films are more cost effective, environmentally friendly, meet the REACH requirements and are fully recyclable.

The innovative PF V42 C copes effortlessly with deep drawing depths and tight drawing radii. It is also the ideal solution for patterned finish steels. The modified polyolefin film exhibits excellent deformation behaviour whilst having extremely low memory properties, which sets it apart from PVC based protection films. Even with complex deep drawing processes with multiple or staggered processing steps, PF V42 C offers reliable and strong adhesion throughout the complete processing cycle. No peel back, no creasing, no tearing. Damage to the protected component is effectively prevented whilst rejections are systematically avoided. High quality surfaces remain securely protected throughout the entire supply chain process.

#### Process efficient film solutions.

PF V42 C is extremely tear resistant and allows easy and clean removal even from complicated component shapes. The green transparent colour makes visual inspection easier and ensures simple and effective quality control throughout the full production process. With its special surface coating, this protection film increases the anti-friction properties allowing reduced pressure during deep drawing. It effectively counteracts wear and tear of the tools themselves.



#### Optimised polyolefin V-deep draw film for long term protection

- ✓ Reliable natural rubber adhesive system.
- ✓ Extremely low memory effect.
- ✓ Excellent elasticity during deep drawing.
- ✓ Optimum adhesion on the most intricate components.
- ✓ High tear resistance.
- ✓ Clean removal.
- ✓ Low gel level.
- ✓ Cost effective alternative to traditional PVC films.
- ✓ Fully recyclable polyolefin film.

# YOUR FINISH YOUR PROCESS OUR SOLUTIONS

At POLIFILM PROTECTION, we have a clearly defined mission: We want to offer highly effective protection for the surfaces of your high value products, protection against scratches, damage and contamination during production processing, manufacturing and other

associated operations. To achieve this, our experts have developed an extensive variety of protection film solutions perfectly matching your production processes. Protection where you need it most, for as long as your application requires.

## PROTECTIVE FILM SOLUTIONS FOR LIGHT DEEP DRAWING

FILM CHARACTERISTICS						SURFACE		
PRODUCT TYPE	MATERIAL	ADHESIVE TYPE	ADHESIVE STRENGTH	FILM THICKNESS	COLOUR	STAINLESS STEEL	ALUMINIUM	PRE-PAINTED SHEETS
PF22 C/N/60	Polyethylene	Natural Rubber	Low   Medium	60 µm	Blue Transparent	All Standard Stainless Steel Surfaces	Gloss   Mill Finish	
PF21/60 S W PV2*	Polyethylene	Acrylic Water Based	Low   Medium	60 µm	Blue Transparent   Green Transparent	All Standard Stainless Steel Surfaces	High Gloss   Mill Finish	Anti-Fingerprint

\*Film with an easy-peel effect

## PROTECTIVE FILM SOLUTIONS FOR HEAVY DEEP DRAWING

FILM CHARACTERISTICS						SURFACE		
PRODUCT TYPE	MATERIAL	ADHESIVE TYPE	ADHESIVE STRENGTH	FILM THICKNESS	COLOUR	STAINLESS STEEL	ALUMINIUM	PRE-PAINTED SHEETS
PF V32 C/SA/R/PV3	Polyolefin	Natural Rubber	Medium	80 µm	Green Transparent	All Standard Stainless Steel Surfaces	Gloss   Mill Finish	Anti-Fingerprint
PF V32 C/60	Polyolefin	Natural Rubber	Medium	60 µm	Blue Transparent	All Standard Stainless Steel Surfaces	Gloss   Mill Finish	
PF V21/60 S W PV3*	Polyolefin	Acrylic Water Based	Medium	60 µm	Blue Transparent	All Standard Stainless Steel Surfaces	High Gloss   Mill Finish	Anti-Fingerprint
PF V42 C	Modified Polyolefin	Natural Rubber	Medium	80 µm	Green Transparent	All Standard Stainless Steel Surfaces	Gloss   Mill Finish	
PF V43 C	Modified Polyolefin	Natural Rubber	Medium   High	80 µm	Green Transparent	All Standard Stainless Steel Surfaces	Mill Finish / Matt / Structured	

\*Film with an easy-peel effect



# YOUR VALUES. OUR PROTECTION. POLIFILM PROTECTION

FAMILY-OWNED. GLOBALLY RECOGNISED.

## YOUR PARTNER FOR TEMPORARY SURFACE PROTECTION FILM SOLUTIONS

When carrier film expertise is combined with specialised adhesive systems, when customers' applications and manufacturing processes are the focus, the results are tailor-made solutions for temporary surface protection featuring exceptional benefits.

POLIFILM PROTECTION has been delivering high quality temporary protection film solutions for over 40 years. Protection that is expertly designed, highly effective which creates real added value. Protection that will take your products safely through production processing, manufacturing and other associated operations delivering satisfaction throughout.

### Knowing what's important in protection and service.

As a process partner and specialist in co-extrusion, adhesive development and coating, within our wide range of self-adhesive and adhesive coated film solutions, we will find the ideal protection film for your needs. Understanding our customers demanding technological processes with differing surface materials is just as much part of our day-to-day business as providing excellence in service. Local presence, market leading flexibility, assured product availability and immediate delivery are integral to our service and a direct result of our global philosophy.

POLIFILM PROTECTION is part of the family owned internationally represented POLIFILM Group: A leading manufacturer of polyethylene based film solutions. No matter where you are located, with our global network of production, sales and distribution locations, our continuously evolving expertise is always on hand.

### Expertise in films. Expertise in adhesives. Expertise in the ideal protective solutions.

A protection film is only as good as the interaction of its components. We maintain our quality standards by using only the highest functionality in carrier films and adhesives. We use three distinct adhesive systems: Firstly, our own Natural Rubber adhesive which is made in-house, secondly, our Water based Acrylic adhesive and finally our Solvent based Acrylic adhesives; all of which enable us to cover each and every application. Our carrier films and their adhesive systems are precisely selected and matched to create a film with properties that meet the requirements of the finished product and the demands of the production process.

### Protection solutions for every imaginable task.

Are you looking for film solutions that go beyond deep drawing? No problem! At POLIFILM PROTECTION we have specifically designed protection films for every application covering an extensive range of industries.

- ✓ Stainless Steel
- ✓ Aluminium
- ✓ Pre-Painted Metal
- ✓ Plastic Plates / Profiles
- ✓ Glass
- ✓ Carpets
- ✓ Laminates



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# OPTIMUM PROTECTION DELIVERED TO YOU

FROM OUR GLOBAL NETWORK

Temporary protection film solutions where you need them, when you need them, with all-round service and outstanding quality you expect. This is the mission we live up to each and every day.

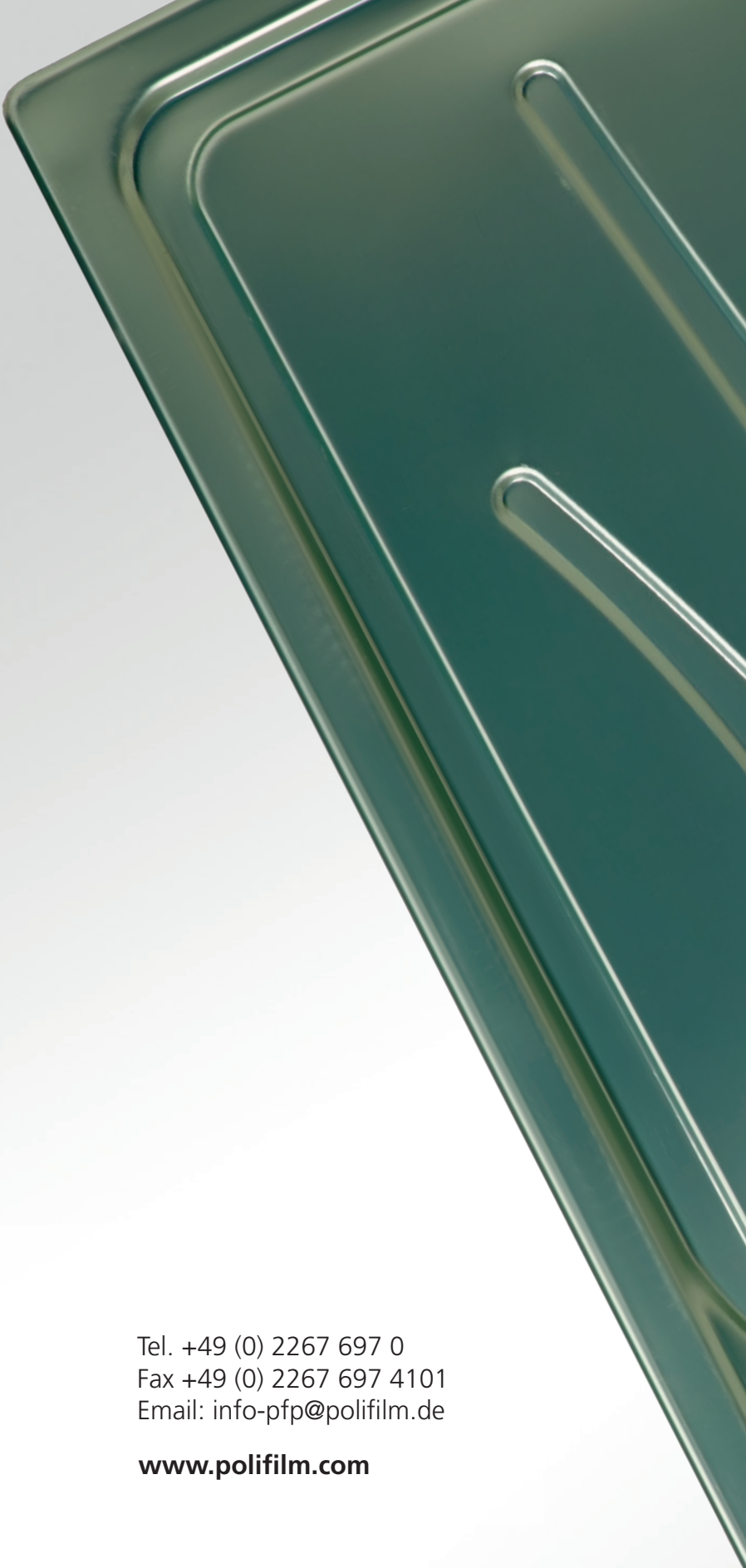
Our global network of production locations, sales branches with integrated service and logistics centres alongside more than 20 well established distribution partners, help us to achieve this. POLIFILM PROTECTION is always nearby and able to offer you the global flexibility of our reliable family-owned company.



If your location is not listed, no problem! We are happy to direct you to the right place.

Simply scan the barcode and select your distribution partner, otherwise please contact POLIFILM PROTECTION GMBH at info-pfp@polifilm.de, Phone +49 2267 697 0, Fax +49 2267 697 4101 and allow us to do the rest, then we'll be in touch.





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