



GUIDE TO AUTOMOTIVE SURFACE PROTECTION FILMS

MAXIMISING EFFICIENCY. MINIMISING COST.

TECMAN SPECIALITY MATERIALS LTD

AUTOMOTIVE PROTECTION FILM



<http://www.tecmanuk.com>



ISSUE NO.3



01

INTRODUCTION

03

GUIDE TO SURFACE PROTECTION FILMS

04

GUIDE TO APPLICATIONS

06

TECMAN: A PROVEN PARTNER

08

SURFACE PROTECTION PRODUCT INFORMATION

10

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02



GUIDE TO AUTOMOTIVE SURFACE PROTECTION FILMS

This guide is written for OEM and Tier 1 suppliers looking for the most effective solutions for automotive surface protection applications.

With vehicle aesthetics being an integral part of creating a positive customer experience, using the most effective protection film during each stage of the process, from production through to final delivery, is essential for presenting a flawless finish.

Tecman provide a concise range of surface protection films that focus on the complex requirements of the automotive industry. Combining extensive product, engineering and industry knowledge, we go beyond simply providing a product, we create solutions that optimise application processes, whilst reducing cost and wastage.

GUIDE TO SURFACE PROTECTION FILMS



CARRIER

Also known as a backing, the carrier is the flexible, thin material that provides the surface protection. Carrier types include:

Polyethylene: flexible, conformable and cost effective, Polyethylene is the most common carrier for surface protection film.

Polyurethane: a very tough and durable film, most commonly used for permanent stone chip protection.

Polyester: a tough film with high temperature resistance properties, often selected for protection during paint curing process. Not a very conformable film.

Polypropylene: an economical and cost effective film with a medium toughness, Polypropylene is versatile but lacks the conformability of Polyethylene.

Polyolefin: a generic term used for thermoplastic films.

Calendared PVC: a high quality PVC film with enhanced physical properties which provides a very conformable, protection film.



ADHESIVE

The medium that holds the protection film to the substrate. Typical adhesives include:

Acrylic: Good removability and suitable for outdoor use, acrylic is the most common adhesive used on protection film.

EVA: Low cost sensitive adhesive, EVA has a low working temperature and will only remove cleanly below 30°C.

Natural rubber: An excellent adhesive for sensitive and high gloss surfaces, natural rubber has a high working temperature but has limited UV resistance. This can be improved by selecting a UV resistant carrier.

Silicone: Silicone PSA is a cured silicone and suitable for very high temperature protection up to 250°C.

Static: Uses static energy to adhere to the substrate without the use of an adhesive. Particularly used on sensitive materials such as gloss finish and chromed plastic. Provides clean removability and long term outdoor use.



TACK

The initial grab upon contact, tack is an important factor when considering the surface as various levels of tack are used depending on the intended function.



UV RESISTANCE

Measures the suitability for outdoor use.



WORKING TEMPERATURE

The surface protection films ability to withstand temperatures during application.



REMOVAL TEMPERATURE

The maximum temperature at which the surface protection film can be removed.



LINER CONFIGURATIONS

The presentation of rolls, sheets or die-cuts vary depending on material, application, volumes and complexity of the component.

GUIDE TO FILM SELECTION

There are various areas that must be considered when selecting a protection film. The performance of the adhesive and the film can be adversely effected if a product is specified without taking critical factors into consideration.

Tecman's application engineers assist at every stage of the process, ensuring the complex product selection process is precise.



THE SURFACE

A critical factor when selecting protection films as each aspect of the surface needs careful consideration, including texture, finish, paint type and the delicateness of the surface.



EXTERNAL CONDITIONS

This includes all the conditions the protection film is exposed to, from point of application to point of removal, including conditions during manufacturing, storage, transportation and at the dealership. Temperature at removal is a critical consideration.



TIME ON PART

The total period of time the film will remain on the part.



AESTHETICS

Whether the part to be protected is an A surface (a visible surface of the vehicle) or a B surface (a surface that is not always visible).



APPLICATION METHOD

Is the film to be applied manually by hand or automated using application equipment.

DID YOU KNOW...



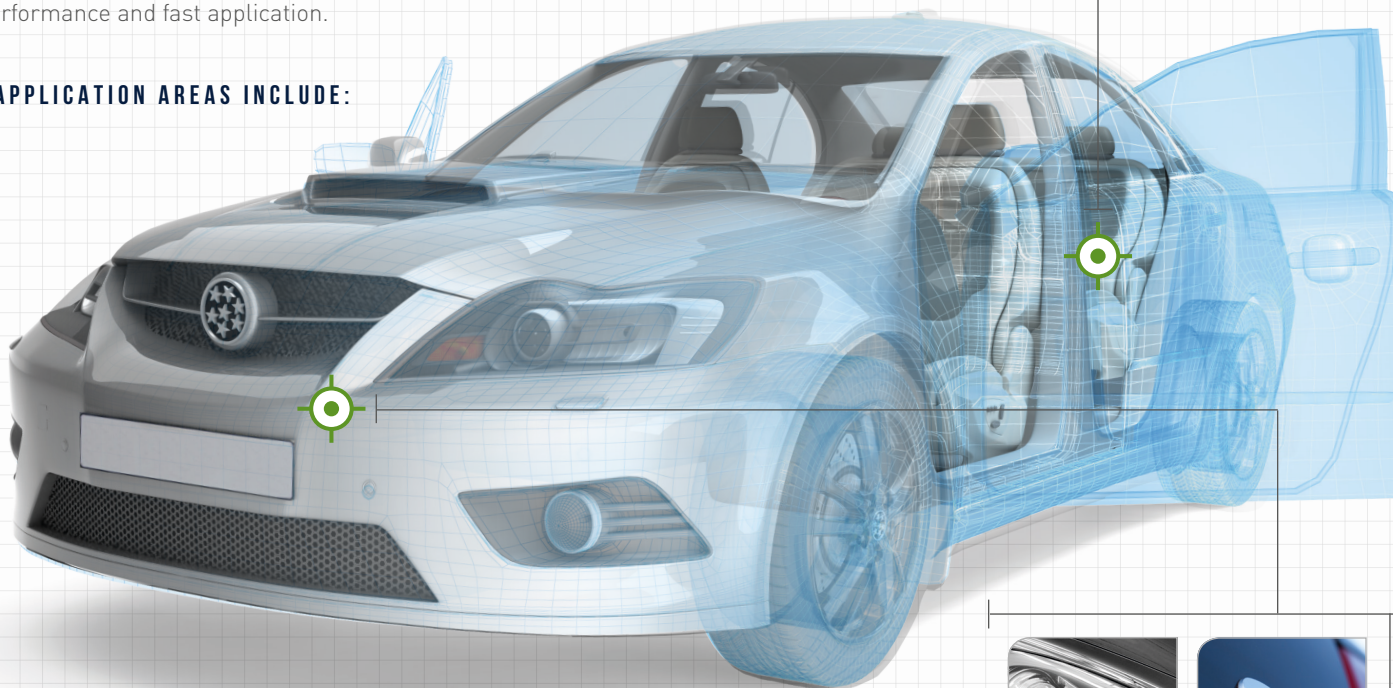
Tecman provides application and assembly support to assist in the precise application of die-cut protection film to plastic mouldings.

Our range of application and assembly support includes low-cost applicators and dispensers as well as developing solutions that are designed to work seamlessly with our customers' own equipment and processes.

APPLICATIONS

Tecman's automotive surface protection films include temporary and permanent protection for both interior and exterior applications. Our range covers every stage of the manufacturing process, from preparation and painting to final delivery, meeting the most exacting requirements and providing consistent performance and fast application.

APPLICATION AREAS INCLUDE:



INTERIOR

- Upholstery [3.0]
- Decorative interior trims
- Door panels [4.0]
- Interior trims [5.0]
- Door sills
- Floor coverings
- Screen protectors



EXTERIOR

- Freshly painted metal
- Wheel protection
- Light lenses [1.0]
- Plastic components: spoilers, b-pillars & c-pillars
- Exterior trim
- Badging [2.0]

GUIDE TO FORMATS

Tecman's advanced manufacturing and conversion facility enables us to deliver a vast range of die-cut components using customised liner configurations and presentation styles.

By looking beyond the initial drawings, we carefully analyse and consider all aspects of the application, focusing on how we can most effectively configure the format to improve efficiency and reduce costs.

DIE-CUT SHAPES

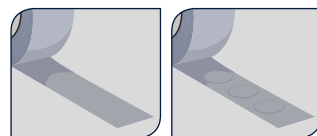
Precision die-cut shapes are produced to specific requirements with endless possibilities.

APPLICATION METHOD

The planned method of application will influence liner configurations and presentation requirements. Refer to the application equipment section for further details regarding automated equipment for applying protection film.

- Manual application by hand
- Automated application using equipment

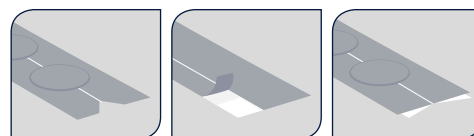
ROLLS



▲ Standard Roll

▲ Roll of Die-Cut Components

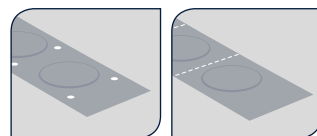
LINER CONFIGURATIONS AND PRESENTATION OPTIONS



▲ Split Bottom Liner

▲ Alignment Strip

▲ Butterfly Liner



▲ Jig Placement holes in Liner

▲ Perforated Bottom Liner

GUIDE TO APPLICATION & ASSEMBLY SUPPORT

We recognise the application of adhesive parts is one of the most challenging aspects of using our advanced materials. As part of our value-add solutions, we develop assembly aids and equipment to assist in the precise application of components and increase productivity during the assembly processes.

- We work with process engineers to develop assembly aids and equipment
- Offering bespoke and standard fixtures and equipment
- Designing parts to work with our customers' own equipment

APPLICATION TYPE	APPLICATION DETAIL
Dispensers	Used during the manual application of protection film to bonnet and roof areas of the vehicle. This method is suitable where accuracy is not critical.
Applicators	Where accurate application of protection film to plastic mouldings is required, we supply semi-automated jig and fixture equipment designed for simple, cost effective application of die-cut protection film to components. The equipment requires no previous experience to operate and speeds up the process to one parts per 10 – 15 seconds.
Customers' Own Equipment	Where there is existing equipment, we develop our solutions to work seamlessly with the equipment and processes.



MORE INFORMATION

More information regarding application equipment can be found by scanning the QR code or visiting:
www.tecmanuk.com/applicationsolutions

A PROVEN PARTNER

Tecman is a trusted partner of global organisations such as Siemens, Antolin Interiors and Magna Group, with a proven track record that underlines our commitment to delivering value added products, consistent quality and on time delivery.

We also work as conversion partners for some of the world's largest adhesive tape manufacturers; including tesa and are partnered with the UK's leading manufacturer of industrial automated systems; Expert Tooling and Automation Ltd.

Through our vertically integrated partnerships, working together with our clients, we are able to deliver 360degree solutions that are customised to our client's needs.

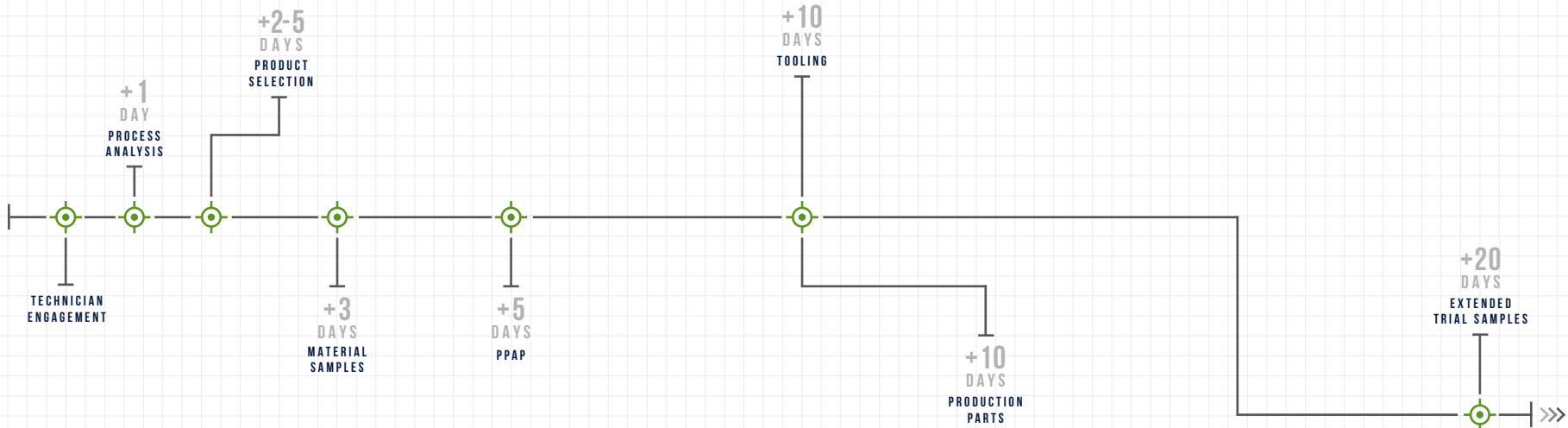
Engaging with our technicians at the beginning of a project is the most effective method for achieving the most productive outcome.

WHAT OUR CLIENTS THINK...



The service from Tecman has been 1st class, over and above in every aspect of a difficult programme launch phase. From delivery and supply to ensure no disruption to technical support in product definition, problem solving and product improvements. Highly recommend.

Scott Carver
Programme Quality Manager,
Tier 1 Automotive Supplier



GUIDE TO OPTIMISED SOLUTIONS

We don't subscribe to one-size-fits-all. Every project is evaluated on an individual basis and formatted to optimise the application by drawing on our experience and knowledge within the automotive industry. Using this strategic approach ensures overall costs and wastage is reduced during the assembly process, which contributes to an increased competitive advantage for our clients.

As a high precision converter and manufacturer of self-adhesive materials, our product and engineering knowledge, combined with design, development and delivery capabilities, have enhanced applications for over 20 years.

Working alongside Tier 1 and Tier 2 suppliers, and in close collaboration with OEM's engineering and design teams, we develop innovative solutions by aligning our processes to meet the needs of our client. Our experience across numerous areas of automotive manufacturing processes include structural bonding technology for BIW, surface protection, paint and specialist masking, plus bonding, sealing, insulating and cushioning solutions for interior and exterior applications.

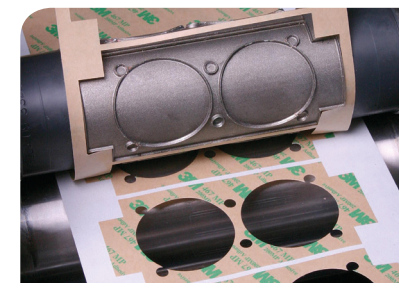
B PILLAR PROTECTION	MANUAL SOLUTION	OPTIMISED SOLUTION
Typical protection area	100mm x 400mm	100mm x 400mm
Typical film used	180mm x 480mm	120mm x 400mm
Typical film cost	£0.14	£0.16
Application time	1 per 60 seconds	1 per 15 seconds
Application cost based on £15.00/hour	£0.25	£0.0625
Total cost per application	£0.39	£0.2225

IN-HOUSE CONVERSION FACILITIES

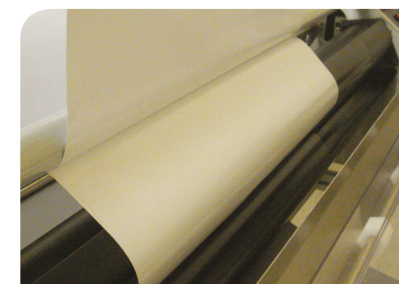
Tecman's extensive in-house conversion facility provides the flexibility to convert nearly all adhesive tape, film, foam, rubber, felt and other specialist materials into customised self-adhesive components. By utilising high speed precision rotary die-cutting equipment, multi-layer lamination, Inline Corona Treatments and advanced slitting and sheeting methods the possibilities are endless.

Additional to our in-house conversion facilities:

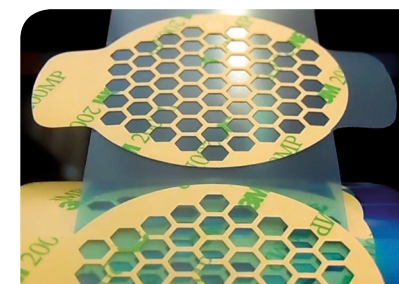
- **IATF 16949 STANDARDS** – working with APQP & PPAP standards
- **PRODUCT APPROVALS** – pre production parts supplied for signoff, including OEM approvals
- **PRODUCT TESTING** – thermal cycling, environmental cycling, adhesion testing
- **R&D** – adhesive development for application compatibility



▲ HIGH PRECISION ROTARY DIE-CUTTING



▲ MULTI-LAYER LAMINATION



▲ COMPLEX INNER WASTE MATRIX REMOVAL

SURFACE PROTECTION FILM

PRODUCT INFORMATION

PRODUCT	KEY FEATURES	BACKING TYPE	PRODUCT THICKNESS	ADHESIVE	COLOUR	ADHESION TO STEEL	ELONGATION AT BREAK	UV RESISTANCE
0250540	An economical film for painted and unpainted plastic components for long-term outdoor exposure.	Polyolefinic Film	75 µm	Synthetic Rubber	White	1.5 N/cm	450%	24 weeks
1320700	Transparent wheel rim protection film for long-term outdoor exposure.	PE Film	70 µm	Acrylic	Transparent	1.2 N/cm	200%	26 weeks
0230790	Premium grade for freshly painted surfaces for long-term outdoor exposure.	Polyolefinic Film	79 µm	EVA	White	0.9 N/cm	800%	52 weeks
0230590	Economy grade for freshly painted surfaces for long-term outdoor exposure.	Polyolefinic Film	59 µm	EVA	White	0.6 N/cm	650%	52 weeks
0230960	High adhesion edge securing tape for freshly painted surfaces.	Polyolefinic Film	96 µm	EVA	White	3.0 N/cm	660%	52 weeks
1521100	Interior protection tape for slightly structured surfaces.	PE Film	110 µm	Acrylic	Green Translucent	2.6 N/cm	300%	Not applicable
1320850	Interior protection tape for structured and LSE surfaces.	PE Film	85 µm	Acrylic	Transparent	2.8 N/cm	250%	Not applicable
2201504	A non-adhesive static bond flexible protection film that conforms to complex shapes and geometries.	Calendared PVC	150 µm	Static	White	N/a	300% +	52 weeks +
1110501	Low tack general purpose protection film ideal for gloss surfaces.	Polyethylene	50 µm	Acrylic	Blue	0.6 N/cm	→180%	52 weeks
1310501	Low tack general purpose protection film ideal for gloss surfaces.	Polyethylene	50 µm	Acrylic	Transparent	0.6 N/cm	→180%	52 weeks
1310622	High tack but clean peel adhesive system ideal for interior carpet protection.	Polyethylene (LDPE)	75 µm	Acrylic	Transparent	1.7 N/cm	→200%	52 weeks



FREE HEALTH CHECK

Regardless of your current solution, we're confident we can bring tangible benefits and added value to your protection film requirements.

With world-class capabilities and resourceful application engineers, our products are constantly breaking new ground. We make a positive difference by applying intelligent and creative thinking to each project we work on.

We offer a complete review of your protection film applications, at no cost or obligation. We analyse the current provision and then demonstrate how we can deliver improvements in the following areas:



COST SAVINGS



**PROCESS
BENEFITS**



**MATERIAL
IMPROVEMENTS**



**PRODUCT
ENHANCEMENT**

Contact a member of our Team, who will be happy to discuss your requirements and establish how we can bring improvements to your protection film applications.

HERE TO HELP

Please get in touch to find out more about how we can help maximise efficiency and minimise costs on your existing application or new project. We look forward to hearing from you.

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 | sales@tecmanuk.com

 | <http://www.tecmanuk.com>

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TECMAN 
ADVANCED MATERIAL ENGINEERS



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