

Saunders Solutions: Automotive

**4 Ways to Save Time, Money, & Materials
During Automotive Assembly**



Surface Preparation | Masking & Painting | Interior Assembly | Finishing & Shipping

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Introduction:

What to Find in This Ebook

Building cars is big business, and the automotive industry is facing many changes. For instance, there is a constant focus on high-performance materials that cost less. Aluminum and composite materials are replacing steel and iron, and manufacturers are pushing boundaries looking for innovative ways to efficiently bond, coat, and paint. The following pages will outline various automotive building processes, their inherent challenges, and ways to reduce labor and costs.

The four different manufacturing practices described are:

- 1) Surface Preparation
- 2) Masking and Painting
- 3) Interior Assembly
- 4) Finishing and Shipping

Each section contains explanations of challenges, solutions, recommended 3M products, and how Saunders can streamline building processes by saving time and materials.

During assembly, substrates must be cleaned, coated, and bonded. Each of these procedures requires different types of masking. Before painting, metal surfaces are prepared through peening, blasting, or anodization. Failure to prepare surfaces before masking and painting can lead to a blistered, bubbled, or pitted appearance.

Shielding finished surfaces from areas that need more prep or paint is crucial to making a consistent, finished surface. Improper masking can put delicate surfaces at risk of damage and can increase labor costs if the job isn't done right the first time.

Manufacturers use low surface energy plastics to meet industry demand for lighter and stronger material. These low surface energy plastics require a special adhesive to permanently bond without a primer or adhesive promoter. Easy assembly of interior and exterior paneling requires seamless, permanent bonding without the use of liquid adhesives or primer. High-strength tapes that peel and stick make assembly quicker and more efficient.

Challenges for Manufacturers

Manufacturers can improve efficiency by first identifying weak points in the assembly process and then finding ways to reduce labor or other costs. Automation has allowed car companies to increase production rates and reduce errors. Careful programming ensures that the robotic arms don't damage the bodywork or interior. Dings or imperfections create expensive rework. Proper masking protects delicate or fragile areas and it keeps surfaces like glass or finished substrates from receiving over-spray.

3M and Saunders offer innovative ways to save time in the assembly process through specialized tapes and customized cutting services.

Saunders specializes in cutting and converting materials to ideal, workable lengths. Precutting tape and sheeting not only saves time on the floor, but it also ensures that the tape provided is right for the job. Adhesive requirements for bonding surfaces can vary, and Saunders brings over 60 years of experience working with commercial tape for car builders.

Surface Preparation

The Challenge:

Without proper protection, manufacturing processes such as peening, blasting, chemical removal, and anodizing can damage delicate surfaces. Manufacturers use masking tapes and protective films on areas they don't want painted, primed, or electric coated. Tapes and stencils that fail to fit over irregular surfaces or tight angles may compromise the integrity of the finished vehicle. Proper masking ensures protection from chemicals, anodization baths, and shot peens. Inconsistency in the tape can result in corrosion and rework.

Key Processes:

Peening

Shot peening is when numerous, tiny 'shots' are accelerated to a metal surface. Each shot acts like a peening hammer forming small dimples that stretch and strengthen the surface, thereby repairing and preventing cracks.

Blasting

Shot blasting is shooting a pressurized stream of abrasive material to the metal surfaces to remove dirt, oil, rust, or burs in preparation for other surface treatments.

Oil & Chemical Removal

Before any painting or priming, metal surfaces must be cleaned from any grease, oil, or chemicals accumulated during assembly.

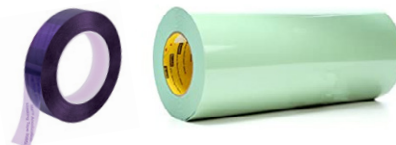
Anodizing

Anodizing is an electrochemical process that involves immersing metal (usually aluminum) into an acid bath and passing an electric current through the tank. This gives metal surfaces a decorative, durable, and corrosion-resistant finish.

Recommended 3M Tapes:

3M™ Anodization Masking Tape 8985L

3M™ Sandblast Stencil Splice Free 1532

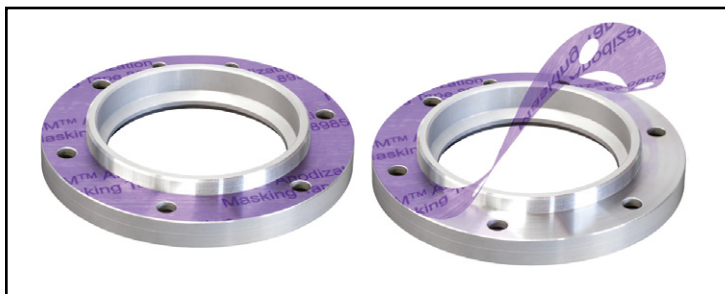


Ideal for:

- Creating reliable, consistent masking on irregular surfaces without the use of liquid masking
- Providing direct protection against blasting media on delicate designs
- Reducing labor, time, and associated costs up to 60%

Saunders Solution:

The experts at Saunders cut tapes and films to any length or conceivable design. Through die cutting and kiss cutting, assembly workers can save time by easily removing custom stencils from their backings.



Masking and Painting

The Challenge:

Electric baths and spray guns can harm delicate surfaces and areas not intended to be painted, such as glass or vinyl decals. Tight corners or irregular surfaces can be difficult to protect during the priming and painting process without the right masking tape. Low-performance tapes that don't hold during the baking process could cause damage to unprotected areas. Tapes that leave a residue or don't hold during harsh manufacturing processes can result in failed quality-control tests and more labor spent on a project.

Key Processes:

Priming

After the vehicle's shell is thoroughly inspected and cleaned, it passes through an electrostatically charged bath of 'E-coat' that covers every nook and cranny with primer. This primer acts as a substrate surface to which the finished paint adheres.

Painting

Most automotive assemblies today program robots to spray the interior and exterior body shell with the exact amount of paint necessary to give a finished, sleek look.

Temperature Baking

Once the shell has been covered with a base coat of paint and a clear topcoat, it passes through 275°F ovens that cure the paint and make it resistant to scratches and chips.

Pinstriping

Pinstriping is the application of thin lines of vinyl tape or paint for decorative purposes to give a custom look to any automobile.

Heat Shielding

Heat shields protect engine components and bodywork from heat damage by dissipating, reflecting, or absorbing heat.

Recommended 3M Tapes:

3M™ Performance Yellow Masking Tape 301+

3M™ High Performance Green Masking Tape 401+

3M™ Specialty High Temperature Purple Masking Tape 501+



Ideal for:

- Completing paint jobs right the first time, no matter the application
- Shielding corners, decals, or unprotected areas from unwanted paint or primer
- Creating sharp paint lines and detailed paint finishes without bleed-through or residue

Saunders Solution:

Avoid rework and save labor costs through precision die cutting. Die cutting creates custom individual shapes. Precutting masking tape moves the automotive shell to painting sooner and prevents excess material or waste.

Interior Assembly

The Challenge:

Automotive interiors must impress with aesthetics while also complying with updated safety standards. Modern consumers expect a \$40,000 interior on a \$30,000 car. Sections of wood, plastic, and high-end fabrics are added to panels to meet the demand for luxury. Maintaining a streamlined interior means bonding materials without spills from liquid adhesives or bleed lines from primer.

Interior panels are becoming more than an aesthetic part of the door. Companies such as Ford have added foam pads between the door and panel to increase protection during a side collision. Updated electronics such as cooled seats and power windows require different layouts and designs.

The search for cost-effective materials has led to increased use of low surface energy plastics. For luxury interiors, designers will bond wood, fiberglass, or aluminum sheeting with lightweight plastic. Unfortunately, bonding these materials with adhesives can be difficult and often requires the use of a primer or adhesion promoter.

Key Processes:

Interior Assembly

Floor workers assemble interior door and trim panels, lights, seats, and front and rear bumper fascia. The materials that make up interior panels have changed throughout the decades. Modern manufacturers prefer durable, low weight materials. Today's panels consist of molded plastic pieces with areas for storage and electronics.

Recommended 3M Tapes:

3M™ VHB LSE Series

3M™ Dual Lock Tapes



Ideal for:

- Bonding interior plastics and panels without liquid primer or mechanical fasteners
- Attaching interior fabrics with a clean, smooth “behind the scenes” hold
- Building modern interiors with a low-profile tape that adheres to virtually any material

Saunders Solution:

Adhering interior elements can be daunting. Consumers expect perfection, and only products with seamless adhesion and permanent bonding can create modern interiors. Our conversion engineers cut custom lengths of VHB or Dual Lock tapes to fit panels, fabric linings, and converted surfaces. Creating unique interiors and designs while maintaining a productive assembly is possible through Saunders.



Finishing and Shipping

The Challenge:

Hand cutting protective films during the shipping and handling of an automobile is time-consuming. In the push for faster and cheaper, saving time anywhere possible is in the best interest of the manufacturer and consumer. Fewer assembly processes or touchup jobs by dealerships helps get cars into the hands of customers with less hassle.

Key Processes:

Applying Protective Films

Manufacturers and dealerships use protective films to prevent surface damage during shipping or processing. These films must be cut to fit various car models and sizes.

Recommended 3M Tapes:

3M™ Paint Protection Film

Ideal for:

- Preserving the finished paint job on a freshly manufactured automobile
- Shielding vulnerable exterior surfaces from rocks, bugs, salt, and harsh weather
- Ensuring that a customer receives the automobile in mint condition



Saunders Solution:

Saunders' custom cut protection films protect internal and external surfaces during shipping. Assembly workers can use tapes and sheets cut to length to maintain the pristine condition of finished interiors during transportation and test drives. Likewise, a custom paint protection film will protect the exterior from dings, scratches, or chips.



About Saunders

Contact Information:

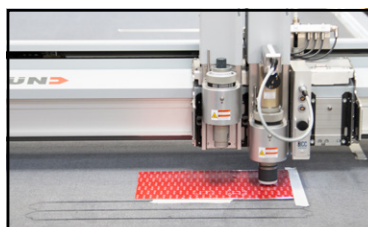
1-888-932-8836 | info@saunderscorp.com | www.saunderscorp.com

We are a converting manufacturer specializing in adhesive tapes and flexible materials. We have cutting machinery to handle any job. Our access to a network of over 50 distribution centers ensures that customers have access to the right products when they need them.

60 years of establishing relationships with customers have given us the reputation and experience required to uphold our end of the bargain. Aerospace, automotive, and maritime industries use our manufacturing practices to help save time and resources on the assembly floor. We offer unrivaled customer service as well as numerous solutions for problems that are holding back productivity. Our value propositions include:

- Comprehensive customer care and competitive pricing
- The ability to adjust our processes to meet unique business needs
- Responsiveness and fast turnarounds
- Experienced sales engineers that provide expertise about various products

Saunders eliminates the tedium of the masking process by finding the proper tape and cutting to the exact length required. Our engineers diagnose, pre-assemble, and consolidate parts under one single order number. We eliminate the need to cut tape to a determined size and cut it to shape by hand. Contact one of our representatives today to begin the time-saving process.

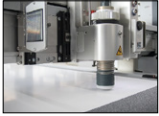


Services we offer:



Die Cutting & Kiss Cutting:

Die Cutting creates custom individual shapes. Kiss Cutting leaves custom shapes on a carrier liner so parts are supplied in roll or sheet formats.



Digital Cutting:

Uses blades to convert substrates with tight tolerances. It is a great solution for large format parts and is excellent for prototyping.



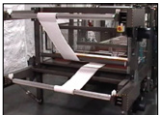
Flexographic Printing:

Uses cylinders, raised rubber plates, and ink to create custom branding, printed liners, and messaging on various substrates.



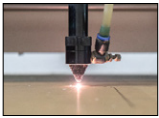
Kitting & Assembling:

Is a value added service to package various components to create a unique part set. We also offer product assembly options.



Laminating:

The process of bonding multiple substrates together to achieve improved strength, stability, and appearance.



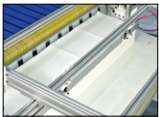
Laser Cutting:

Is a great option for creating intricate shapes out of challenging materials and allows for fast turnarounds with no tooling.



Rewinding:

Creates custom length rolls at desired widths and diameters that can reduce material changeover and eliminate waste.



Sheeting & Cut to Length:

Cuts adhesives and other flexible materials to any conceivable square or rectangular shape commonly with no tooling expense.



Slitting:

Creates rolls by cutting down wider rolls to narrower widths. Depending on the material, widths of 1/16" or narrower can be achieved.

MEASURE



CONTACT



APPLY



SAVE



Product Information

We understand that products used in automotive manufacturing are deliberately chosen for each process. We pride ourselves in researching the best tapes, masks, and protection films, and we place great emphasis on only promoting the best products. Car companies lose millions of dollars every year from recalls caused by faulty manufacturing. Stay up to date with modern products that will lower costs by reducing do-over work.

To speak with an expert and request a sample, call 1-888-932-8836 or email info@saunderscorp.com.

Surface Preparation

3M™ Anodization Masking Tape 8985L

- Specifically designed for masking in Type I chromic acid anodization baths
- Masks and de-masks up to 5x faster than liquid masking, with no cure time
- Transparent purple tape for fast, accurate positioning and easy identification
- Provides sharp masking lines and minimizes leaking, resulting in less rework



3M™ Sandblast Stencil Splice Free 1532

- Comfortable for use on irregular surfaces
- Ideal for intricate designs and detailing
- Provides superb blast resistance against a variety of blasting media



Masking and Painting

3M™ Performance Yellow Masking Tape 301+

- Solvent-free adhesive that removes cleanly in one piece with no residue
- Resists paint bleed-through to help create good paint lines
- Adheres with confidence to rubber moldings, plastic, glass, and metal



3M™ High Performance Green Masking Tape 401+

- Removes cleanly with no residue
- Excellent adhesion around corners, contours, and irregular surfaces
- Resists paint bleed-through to help create sharp paint lines



3M™ Specialty High Temperature Purple Masking Tape 501+

- Exceptionally conformable to irregular surfaces
- Removes cleanly with no residue, reducing unwanted tearing
- Withstands surface temperatures up to 300°F
- Ultra-high strength holding power to prevent paint blow-by on a variety of surfaces
- Holds securely through multiple or extended process cycles



Interior Assembly

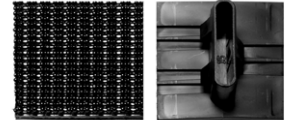
3M™ VHB LSE Series

- Create virtually invisible bonds with a slim, acrylic foam tape
- Bond plastics, composites and other LSE materials without primer or adhesion promoter
- No more drilling, grinding, refinishing, screwing, welding, or clean-up
- Simply peel and stick to complete your final assembly



3M™ Dual Lock Tapes

- Interlocking reclosable system up to five times stronger than traditional hook-and-loop fasteners
- Snap-in-place installation replaces screws, nails, snaps, and rivets
- Black fastener is hidden when closed and provides a clean, smooth appearance
- Available in different strength combinations



Finishing and Shipping

3M™ Paint Protection Film

- Unrivalled scratch, chip, and stain resistance backed by a ten-year warranty
- Tough, durable, and maintenance-free
- Available in clear or matte



References

3m.com (2015). *masking-made-simple.pdf*. Available online at:
<https://multimedia.3m.com/mws/media/1034717O/masking-made-simple-brochure-2015.pdf>.
Accessed 15 May 2020.

3m.com (2016). *3m-masking-and-surface-protection-products.pdf*. Available online at:
<https://multimedia.3m.com/mws/media/1016166O/3m-masking-and-surface-protection-products.pdf>.
Accessed 15 May 2020.

3m.com (2019). *3m-vhb-tape-lse-series-brochure.pdf*. Available online at:
<https://multimedia.3m.com/mws/media/1746982O/3m-vhb-tape-lse-series-brochure.pdf>.
Accessed 15 May 2020.

3m.com (2019). *scotchgard-pro-series-brochure.pdf*. Available online at:
<https://multimedia.3m.com/mws/media/958513O/scotchgard-pro-series-brochure.pdf>.
Accessed 15 May 2020.



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