

# Masking Academy

Advanced Modular Training for  
Specialized Single Sided Tapes  
with Masking Focus

3M Industrial Tapes 2021

# Masking Academy

## Overview

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- **Interactive Training Session**  
for specialized single sided and masking tapes
- **Target Group?** Distributor und Converter (Sales, Application Engineering, Marketing)
- **Location?** at the customer
- **Content?**
  - 3M tape overview
  - General and segment specific product trainings
  - Demos & hands on training
  - Applications and best practices
- **Modules?** Metalworking, Automotive, Aerospace, and appliance segments
- **Trainer?** Advanced 3M Application Engineer

# Masking Academy

## Overview

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- **Salesforce Campaign:**

The SFDC campaign is '**IATD-2003-EMEA-GLC-MUL-MaskingAcademy-A**'

This campaign is a 'child' campaign of the Assembly Solution campaign.

In this Campaign all contacts and opportunities should be linked

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# Single Sided Tapes Academy

Content: Metalworking

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- Basics
- Go-To Products and Alternatives
- Demo-Kit
- Lead Applications
- Finding Opportunities
- Value proposition vs. competition

## Topics:

- Anodization Masking
- Electroplate Masking
- Powder Coat Masking
- Liquid Paint Masking
- Machining & Shop Handling
- Coil Tapping, Splicing and Edge Protection & Packaging
- Safety & Floor Marking Tapes

# Where can you win with tapes and adhesives?

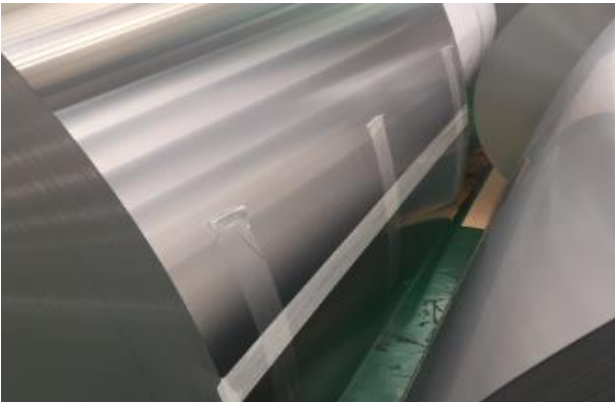
## Metal Processing

Processing raw or recycled metals

Cast houses, rolling mills & splicing machines.

Securing metal parts in place to protect materials and workers.

- Bundling
- Coil Tabbing
- Temporary Holding



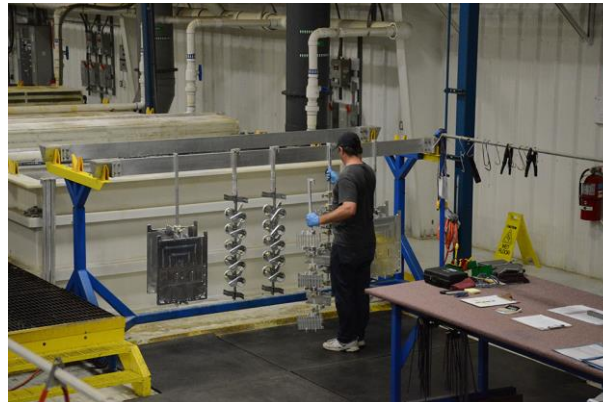
## Metal Surface Treatment

Coating or treating the surface of the metal to provide a protective or decorative layer.

Can be done at specialist coaters or at the OEM:

Aerospace, Automotive, Appliance, General Industry.....

- Electroplating
- Anodizing
- Powder Coating
- Painting
- Plasma Spray



## Bonding and Assembly

Building and joining of metal structures

USE 3M BONDING TAPES & ADHESIVES !

- Panel to Frame bonding of metal to dissimilar materials
- Small Joint bonding



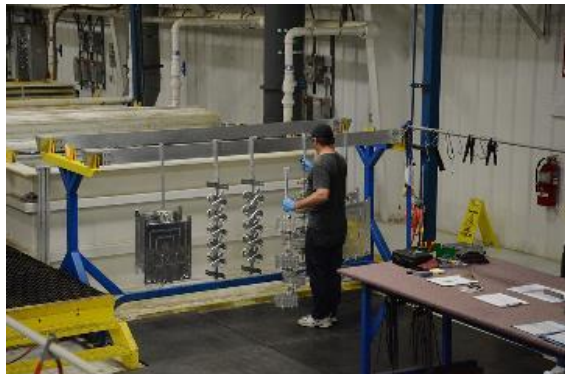


# Main Applications in Metal Surface Treatment

## Metal Surface Treatment

Coating or treating the surface of the metal to provide a protective or decorative layer

- Anodizing
- Electroplating
- Plasma Spray
- Powder Coating
- Liquid Paint
- Shot blasting/Sand blast



## Anodizing



## Electroplating



## Plasma Spray



## Powder Coating



## Liquid Paint



# High Strength Tapes in metalworking

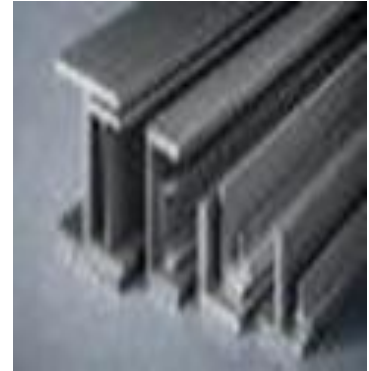
- Bundling
- Coil Tabbing
- Splicing
- Roll starting
- Edge protection





# Where do we have opportunity for Bundling?

Opportunity for **wire, rebar, rode, pipe, ladder, tube, bar, structural shapes**







# Core Starting

Holding the start of the metal coil to the core

Tape helps to keep the metal straight and secure to prevent metal from buckling.

Prevents core from slipping and spinning.

## Product or process replaced (competition):

- Double coated tape
- Indirect solutions

## HST Benefits and advantages to the customer:



### Cost Saving

Less waste as there is a reduced risk of damaging the coil.



### Speed

No need for additional tools or operators



### Strength

Metals are heavy



### Adhesion

Substrates are often oily





# Coil tabbing

Holding the outer layer of the metal coil to close the coil and to prevent it unraveling.

Tape is applied horizontally across the lap of a sheet metal coil and vertically to keep the coil securely closed.

## Product or process replaced (competition):

- Metal banding
- Plastic strapping
- Other filament tapes

## HST Benefits and advantages to the customer:



### Safety

Safer to use the tape than any indirect competition



### Cost Saving

Less waste as there is a reduced risk of damaging the coil.



### Speed

No need for additional tools or operators



### Strength

Metals are heavy



### Adhesion

Substrates are often oily



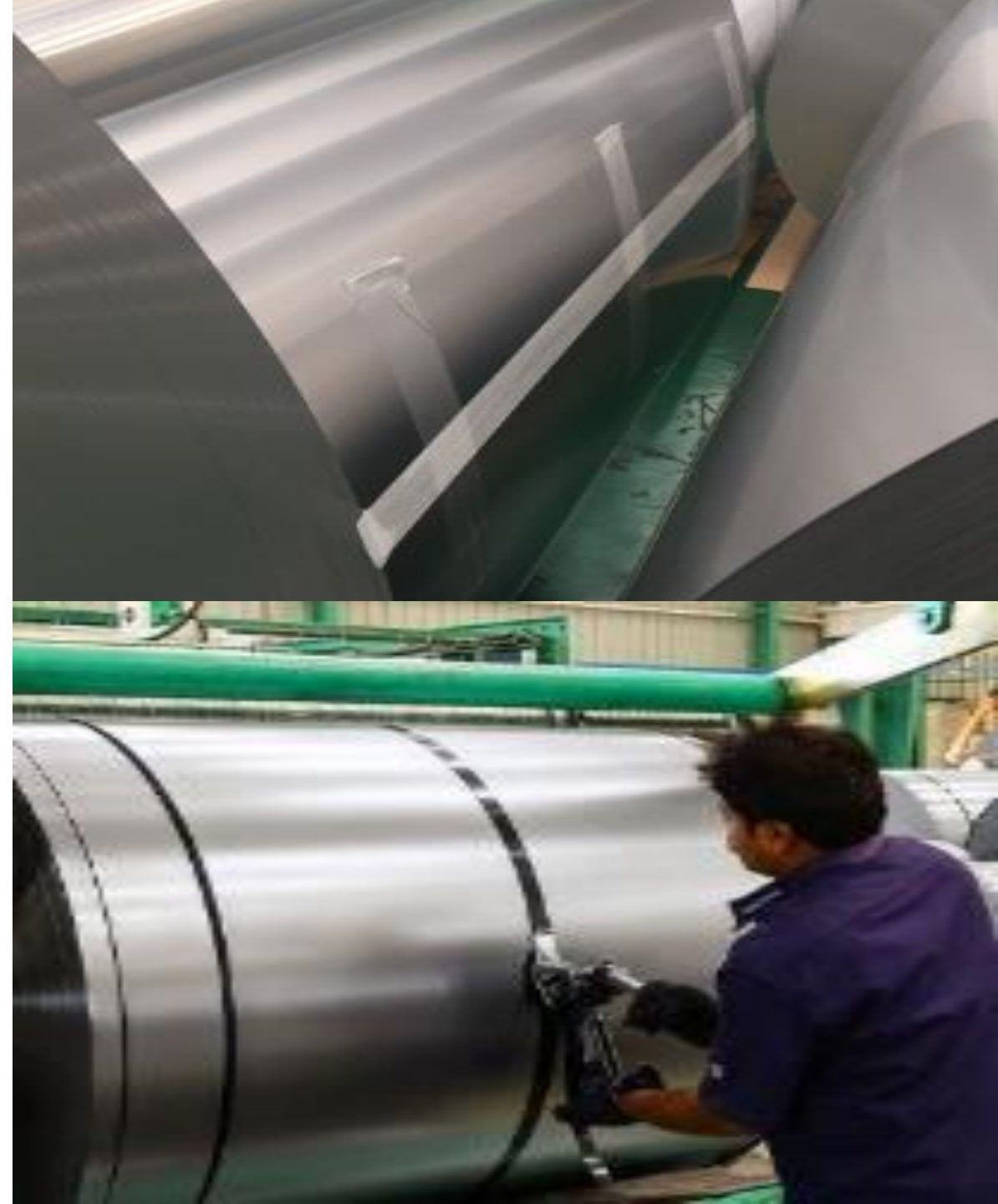
### Nick and Scratch Resistance

Metals are sharp



### Impact Resistance

Coils experience shifting and stacking







# Edge Protection & Packaging

Temporary edge protection of the coils or metal sheets packaging increase confidence and security during shipment

Cut resistance and high shear strength required to protect workers from sharp edges

## Product or process replaced (competition):

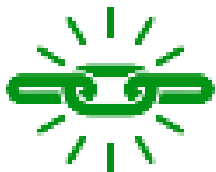
- Other filament tapes
- Indirect competition

## HST Benefits and advantages to the customer:



### Safety

Safer to use the tape than indirect competition



### Strength

Metals are heavy



Cut Resistance  
Metals are sharp



### Adhesion

Substrates are often oily



### Impact Resistance

Coils experience shifting and stacking







# Splicing

Temporary, simple overlap & butt splices on the metal sheets.

High initial adhesion tack and shear strength are needed to firmly hold the metal and to prevent potential splitting while the machine runs at higher speed.

## Product or process replaced (competition):

- Double coated tape
- Liquid adhesive
- Spot welding

## HST Benefits and advantages to the customer:



### Cost Saving

Less waste as there is a reduced risk of damaging the coil.



### Speed

No need for additional tools or operators



### Strength

Metals are heavy



### Adhesion

Substrates are often oily



# Other Metalworking Applications

## Long Term Metal Protection

### 7070UV

Industrial Protective Film

Strong protection:

Outdoor/Indoor

UV – Rain -Heat

Abrasion - Impact

- Protects
  - Metal finishes
  - Paint
  - Graphics
  - Labels
- Decreases warranty claims
- Increases end-user satisfaction
- Decreases quality rejects
- Potential for additional profit for add-on option





# Other Metalworking Applications

## Safety & Floor Marking Tapes

**764, 766, 767**

Pipes  
Walls  
Short Term Floors  
Equipment



Economical Choice



**971, 471, 5702**  
Long Term Floors  
Stairs



Anywhere you want clean removal  
Best for curves  
Superior abrasion resistance and durability



# Single Sided Tapes Academy

Content: Automotive

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- Basics
- Go-To Products and Alternatives
- Demo-Kit
- Lead Applications
- Finding Opportunities
- Value proposition vs. competition

## Topics:

- Buzz, Squeak, & Rattle Reduction
- Heat Protection & Light Reflection
- Paint Masking for Two-Tone Vehicles and Plastic Parts
- Reinforcing
- In-process Protection
- Special Applications
- Floor & Safety Marking

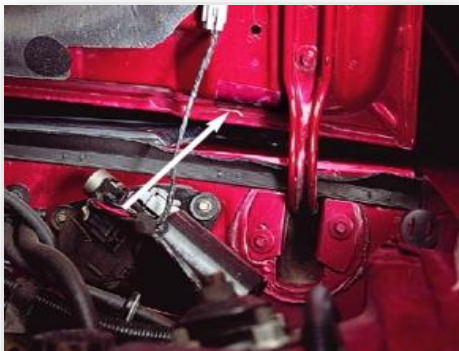
## Where can you win with tapes?

### Noise & Vibration Control

Unwanted noise in the instrument panel, door panel, and headliner is often caused by surfaces rubbing together or shifting during driving.

Tapes play a variety of roles in applications:

- Buzz
- Squeak
- Rattle



### Heat Protection & Light Reflection

Parts of the car must be protected from heat and/ or vibration during operation. In some cases, both heat protection and light reflection are required.

Tapes play a variety of roles in applications:

- Heat protection
- Light Reflection



### Part reinforcement

Despite careful design, some parts are found to need addition re-enforcement from heat, puncture, or stress.

Tapes play a variety of roles in applications:

- Reinforcement



### In-process Masking and Protection

During painting, assembly and transport, parts must be protected or temporary hold

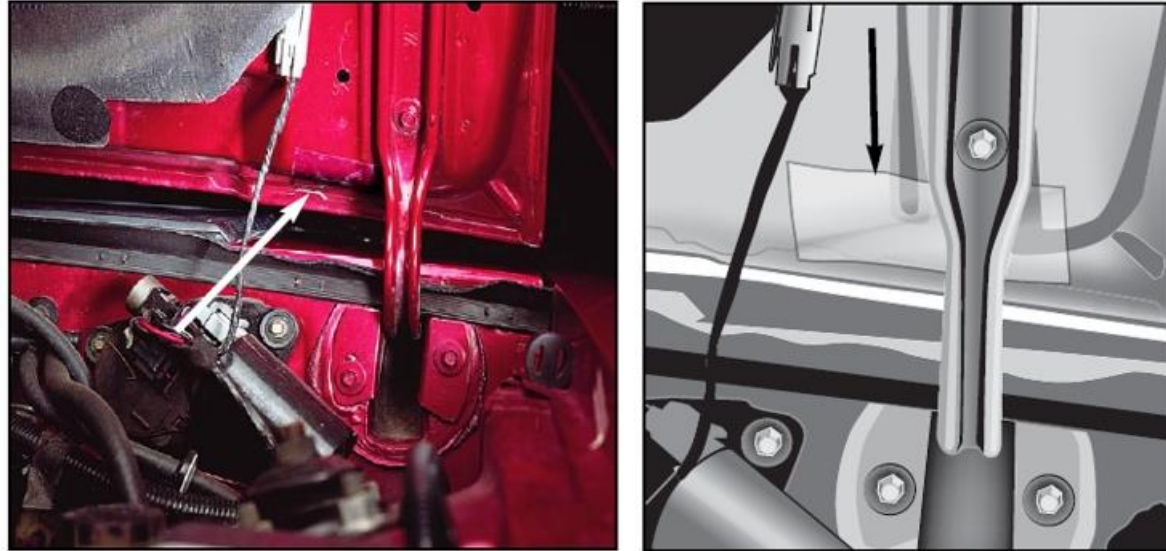
Tapes play a variety of roles in applications:

- Paint Masking
- Transportation Protection
- Assembly Protection



# BSR – a Quick Illustration in One Application

**Application Description:** Reducing squeak and rattle noises caused by surface-to-surface rubbing of hood hinge.



## **Key Application Requirements:**

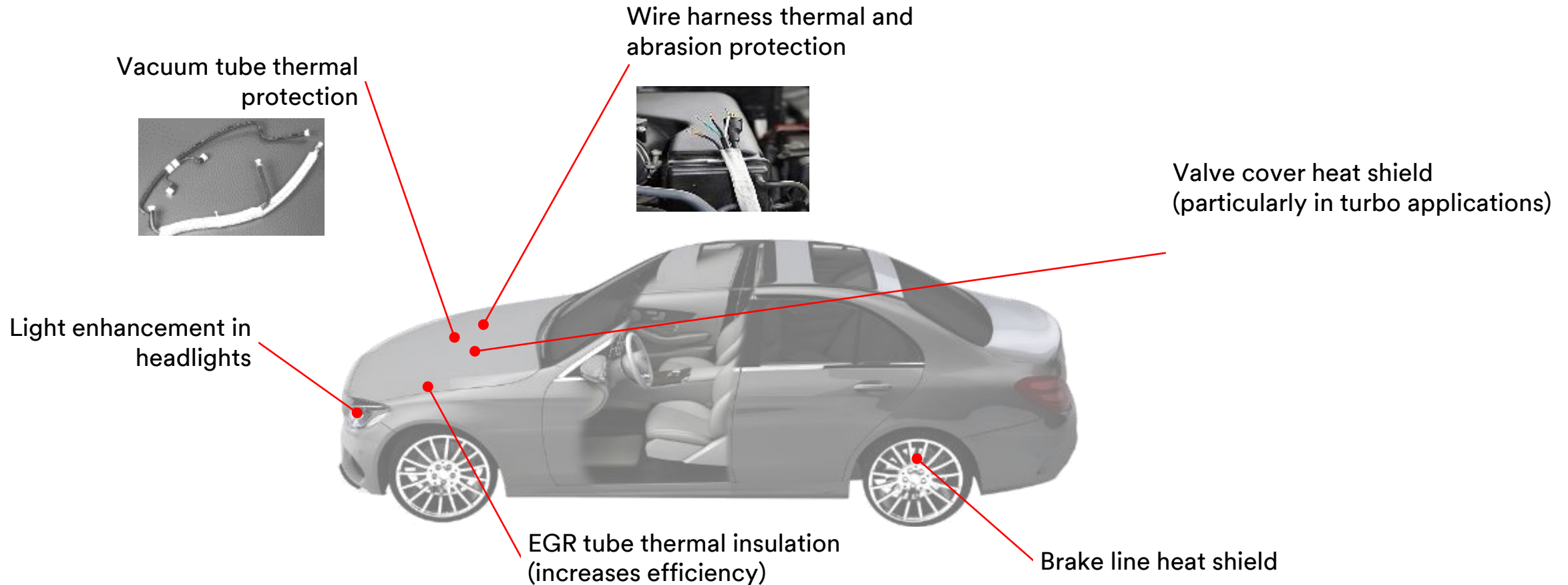
Abrasion and wear resistant ; anti-stick, low coefficient of friction properties ; must meet interior automotive component specification

## **Benefits/Advantages To Customer**

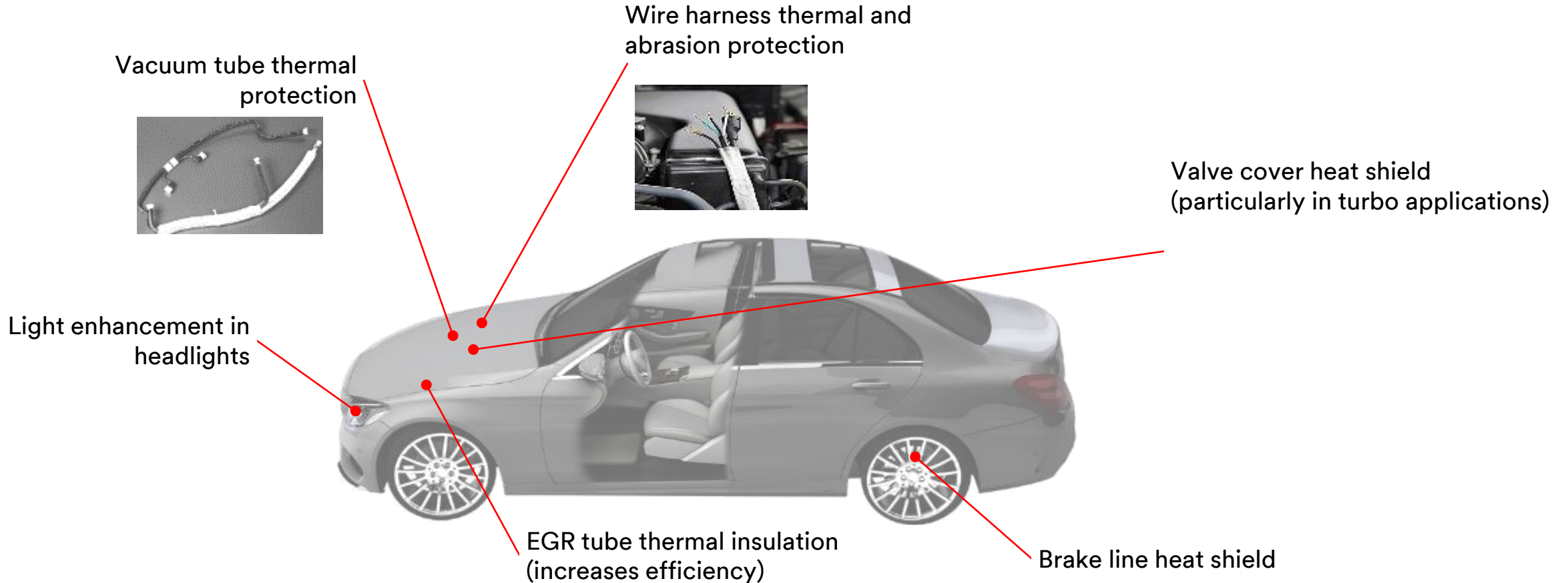
Noise reduction: these transparent Ultra High Molecular Polyethylene (UHMW-PE) tapes have a low coefficient of friction and excellent abrasion resistance, making them effective solutions for many noise and vibration problems



# Example Heat Protection and Light Reflection Applications Won by 3M™ Specialty Tape Solutions

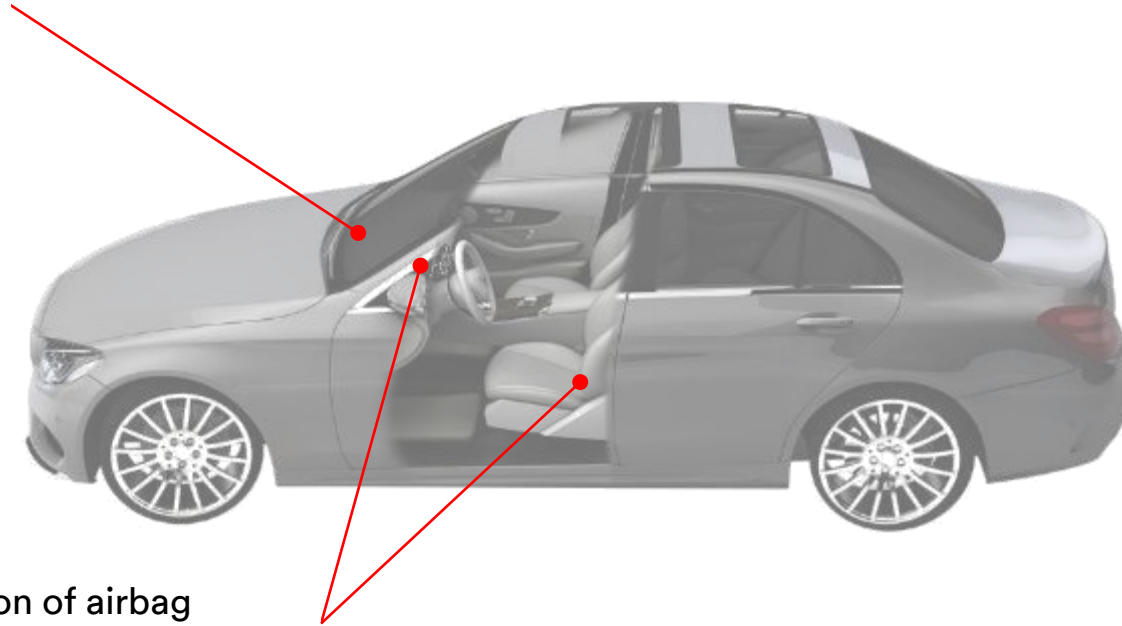


# Example Heat Protection and Light Reflection Applications Won by 3M™ Specialty Tape Solutions



# Example Reinforcing Applications Won by 3M™ Specialty Tape Solutions

Dash trim plastic tab reinforcement to prevent breakage during installation



Prevent disintegration of airbag covers upon airbag deployment





# Other Applications

## Safety & Floor Marking Tapes

**764, 766, 767**

Pipes  
Walls  
Short Term Floors  
Equipment



Economical Choice



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Long Term Floors  
Stairs



Anywhere you want clean removal  
Best for curves  
Superior abrasion resistance and durability

# Single Sided Tapes Academy

Content: Aerospace

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- Basics
- Go-To Products and Alternatives
- Demo-Kit
- Lead Applications
- Finding Opportunities
- Value proposition vs. competition

## Topics:

- Electroplating
- Anodizing
- Composite Bonding
- Painting & Coating Masking
- Tapes for Machining & Shop Handling
- Temporary Protection During Storage & Transportation
- Heat Protection
- Floor & Safety Marking

# Where can you win with tapes?

## Metal Surface Treatment

Coating or treating the surface of the metal to provide a protective or decorative layer.

- Electroplating
- Anodizing
- Powder Coating
- Painting



## Composite Bonding

Tapes play a variety of roles in composite bonding applications:

- Protect tools and molds
- Hold/attach bagging materials and wires
- Mask bond lines and remove flash during the autoclave cycle



## Temporary Protection

Protecting parts and assemblies during movement within a facility or transporting them domestically or globally. Temporary protection during short or extended periods of storage.

- Storage Protection
- Transportation Protection



# Powder Coating – the Basics

## What is Powder Coating?

A dry powder sprayed onto an electrostatically charged metal part.

The part is then cured at temperature 180-200C or greater for a typical bake cycle of 5-30 minutes.

Areas on the part that aren't intended to receive coating are masked off, usually with a tape or silicone plug.

## How Does it Work?

Powder coatings are based on polymer resin systems, combined with curatives, pigments, leveling agents, flow modifiers, and other additives. These ingredients are melt mixed, cooled, and ground into a uniform powder similar to baking flour.

A process called electrostatic spray deposition (ESD) is typically used to achieve the application of the powder coating to a metal substrate. This application method uses a spray gun, which applies an electrostatic charge to the powder particles, which are then attracted to the grounded part.

After application of the powder coating, the parts enter a curing oven where, with the addition of heat, the coating chemically reacts to produce long molecular chains, resulting in high cross-link density. These molecular chains are very resistant to breakdown. This type of application is the most common method of applying powders. No matter which application process is utilized, powder coatings are easy to use, environmentally friendly, cost effective, and tough!\*

\*Source: Powder Coating Institute

Clean/Pre-  
treat



Mask  
Part



Powder  
Coat



Curing  
Oven





# Where is it Used?

## GENERAL METAL



## FUNCTIONAL



## ELECTRICAL



## HVAC



## GARDEN

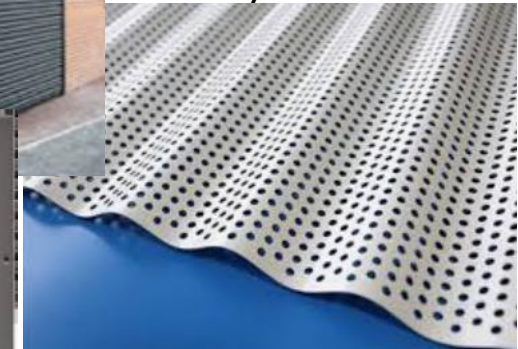


## ARCHITECTURAL



## AUTOMOTIVE & TRANSPORTATION

- Primers
- Wheels
- Bumpers
- Window trims
- Door handles
- Windshield wipers
- Steering wheels
- Radiators
- Suspension systems
- Oil/air filters
- Shock absorbers
- Valve covers
- Brake assemblies
- Luggage racks
- Mirror brackets
- Ashtrays



Powder Coated parts are used in virtually every industry – applied either at

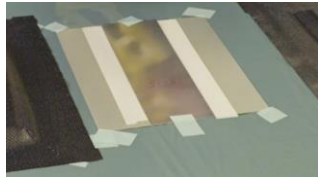
Specialist Coater

## APPLIANCE



# Composite Process

High performance tapes must securely hold a variety of materials, and withstand elevated temperatures and pressures. Clean removal from tools and parts is critical.



## Tool/Mold Preparation

- Mask parameter with 3M Masking tape
- Hold the release film with 3M Polyester Tape 875/876

## Lay-up Process

- Use 3M Polyester tape 875/876 to hold down corners
- Use 3M Polyester tape 875/876 to hold film down where air couples get attached
- Use 3M Polyester 875/876 to hold down wires

## Bagging Process

- Use 3M Polyester 875/876 tape to tape down material outside of bag

## Autoclave Process

- Up to 24 hour cure cycles at 177°C

## De-Bagging Process

- 3M Polyester tape 875/876 removes easily and cleanly with no residue post processing



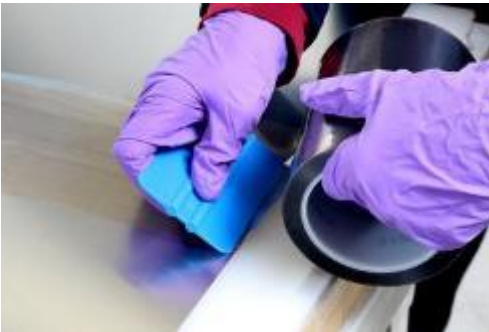
# 3M Products for Both Contact & Non-Contact Use

**Contact Use:** Approved for use in direct contact with the part lay-up (delivered materials) inside the trim line prior to completion of cure

**Non-Contact Use:** Approved for use as aids to process but shall not contact the deliverable materials inside the trim line prior to cure. Non-contact use processing aid materials may contact cured deliverable materials.

## Mold Release

*Contact Use*



Lining entire mold or covering cracks, crevasses, or imperfections on mold surface allowing parts to remove cleanly from mold

## Flashbreaker

*Contact Use*



Control excess flash or material squeezed out around edges at butt splices and at ends of assembly

## Holding - Inside Bag

*Non-Contact Use*



Securely hold/position laminate plys, release liners, bagging materials and thermocouple wires

## Holding - Outside Bag

*Non-Contact Use*



Securely hold/position bagging materials and thermocouple wires





# Temporary Protection of Surfaces

Temporary protection of parts and assemblies during movement within a facility or transporting them domestically or globally

Temporary protection during short or extended periods of storage

## **Type V: Storage Protection**

Class 1: Indoor Heated (49°C Maximum)

Class 2: Indoor Heated or Outdoor Covered

Class 3: Outdoor uncovered

## **Type VI: Transportation Protection:**

Class 1: Transportation within one plant

Class 2: Transportation up to 120 km

Class 3: Transportation over 120 km

Broad range of solutions including good UV & Temperature performance with Clean removal for extended periods of time



# Heat Protection– 3M Solutions



	3M™ High Temperature Aluminum Foil/Glass Cloth Tape 363
Temperature Resistance	-54°C to +316°C
Conformability	
Adhesive	Silicone  Adheres to many surfaces including silicone
Backing	Aluminum Foil / Glass Cloth  High Tensile Strength – Puncture, Fracture and Tear Resistance
Specifications	Flame Retardant - F.A.R 25.853(a)

Best Use	Ideal for heat protection of delicate parts
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# Other Applications

## Safety & Floor Marking Tapes

**764, 766, 767**

Pipes  
Walls  
Short Term Floors  
Equipment



Economical Choice



**971, 471, 5702**  
Long Term Floors  
Stairs



Anywhere you want clean removal  
Best for curves  
Superior abrasion resistance and durability

# Single Sided Tapes Academy

Content: Appliance

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- Basics
- Go-To Products and Alternatives
- Demo-Kit
- Lead Applications
- Finding Opportunities
- Value proposition vs. competition

## Topics:

- Energy Efficiency
- Heat Protection
- Foaming/ Insulation Processing
- Squeak/ Friction Reduction
- Vibration Sound Damping
- Holding
- Permanent Surface Protection
- Floor & Safety Marking

# Appliance Market

## What makes up the market?

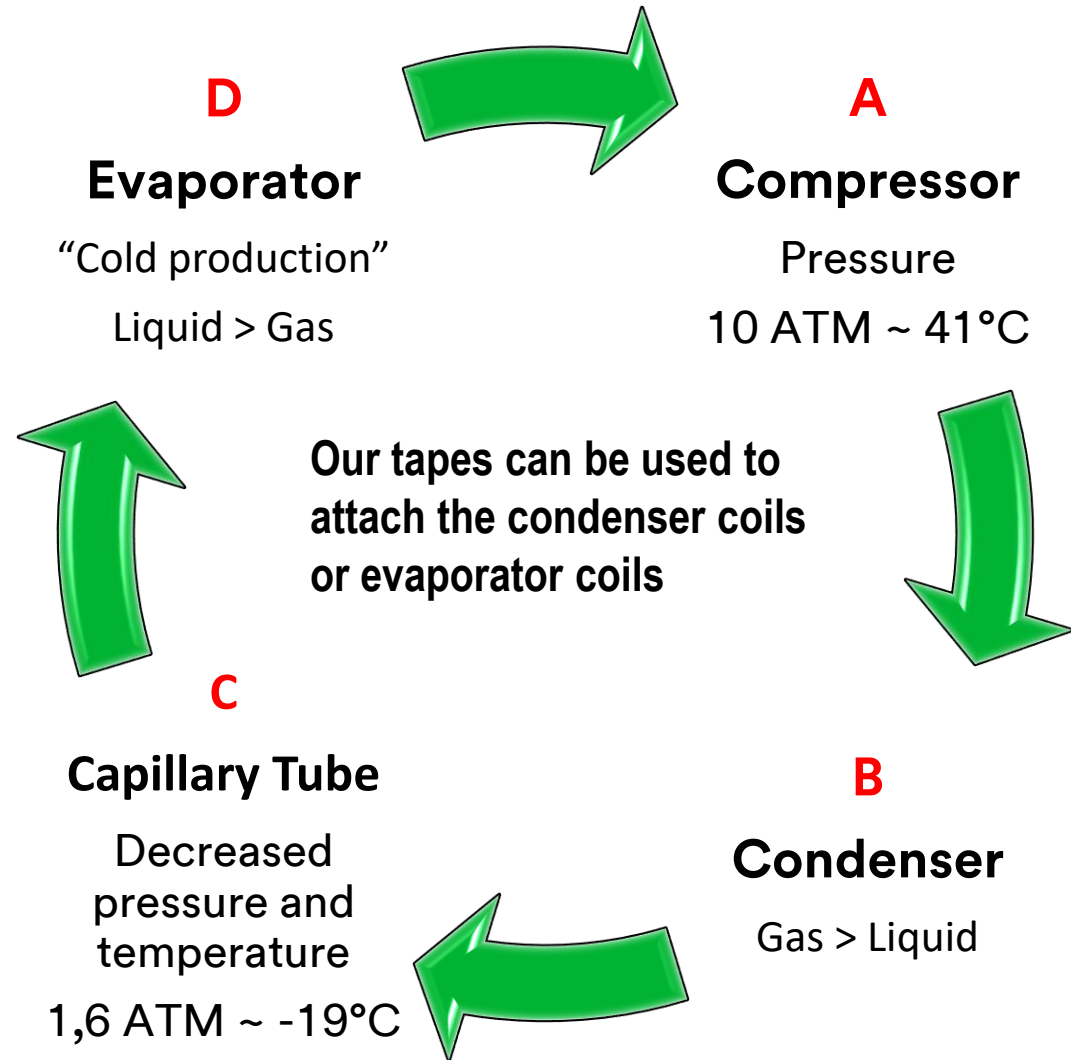
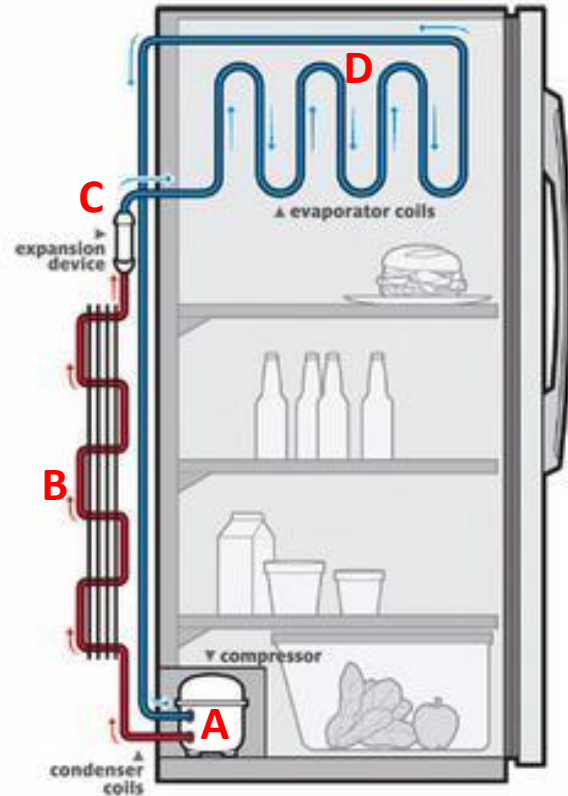
We focus on “White Goods.”

Larger products such as washing machines, dish washers, clothes dryers, refrigerators, microwave ovens and stoves





# Energy Efficiency– the basics

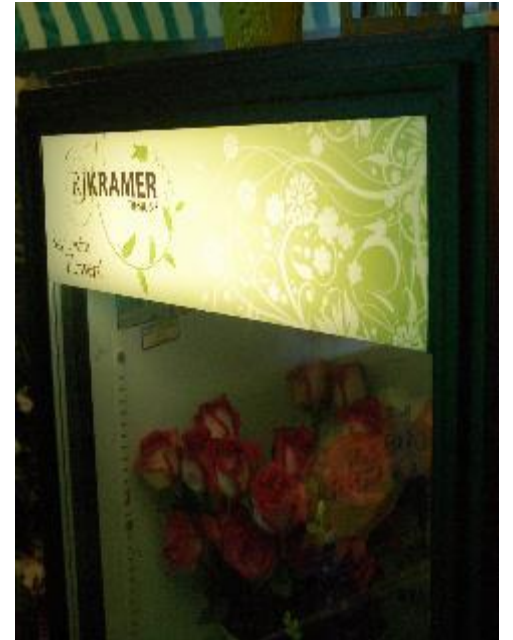
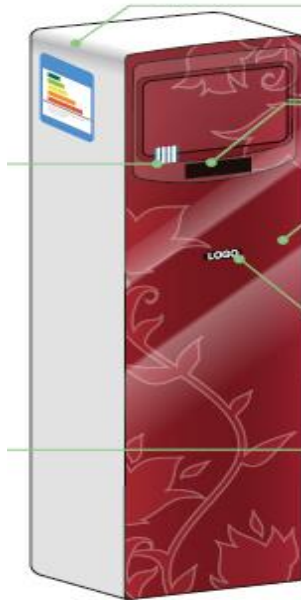
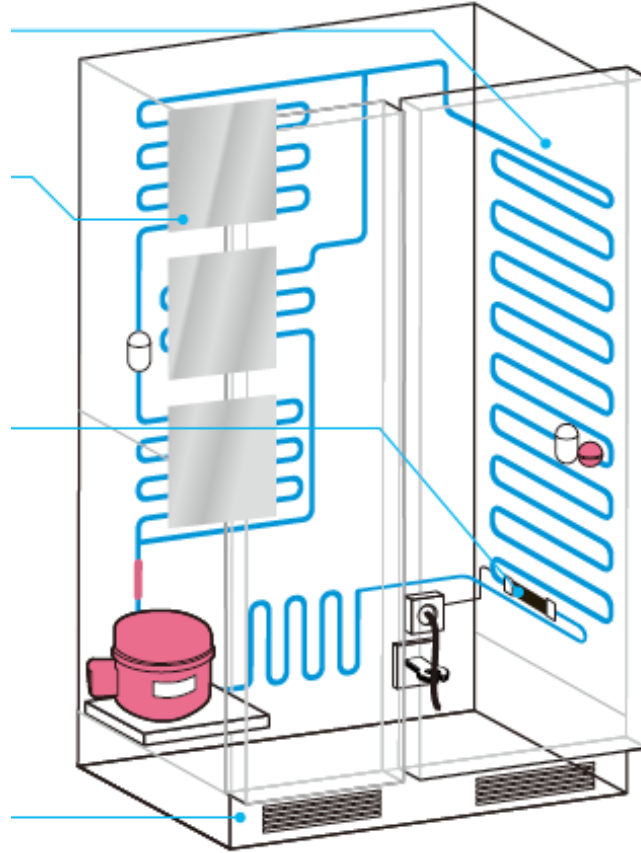


- high pressure (high temperature) = red part
- low pressure (low temperature) = blue part

# Appliance - Coil Attachment

Model designs of refrigerators and freezers will vary.

Where we see much of this coil design is in commercial types of freezers.



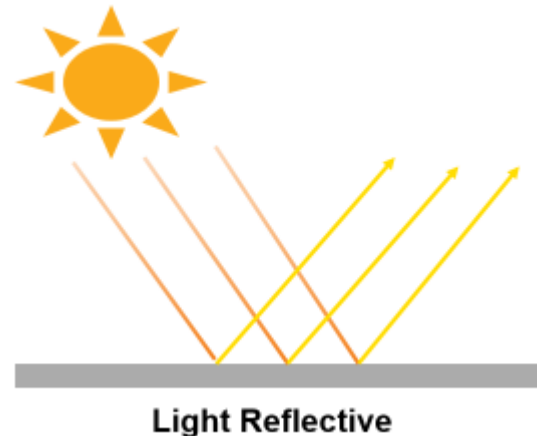
# Appliance– Lighting Efficiency

Foil tapes reflect light very well.

They can be used to maximize efficiency, essentially “brightening” the light source while also protecting any plastic housing from heat.

Go-to tapes for this application are 425 which has UL ratings. For extra heat protection from it’s thick backing, 425 is a good choice.

For an economical option, you can try 431 and 1436 which are thinner.



# Appliance Hot Spots

Appliances have a variety of areas where heat can become an issue

## Ovens



## Dishwashers







## Water Heaters





# Foaming/Insulation – 3M Solutions



	3M™ Vent Tape 394	3M™ Vent Tape 3294
Adhesive	Acrylic	Strip Coated Acrylic
Initial Adhesion		
Backing	Non-Woven Fibre	Rayon
Allows Gas to escape while preventing foam escaping		
Best Use	Hole Plugging in Refrigeration Foaming where higher adhesion is needed	Hole Plugging in Refrigeration Foaming where higher outgassing is required



# Appliance Friction/Squeak Reduction

## Drawer

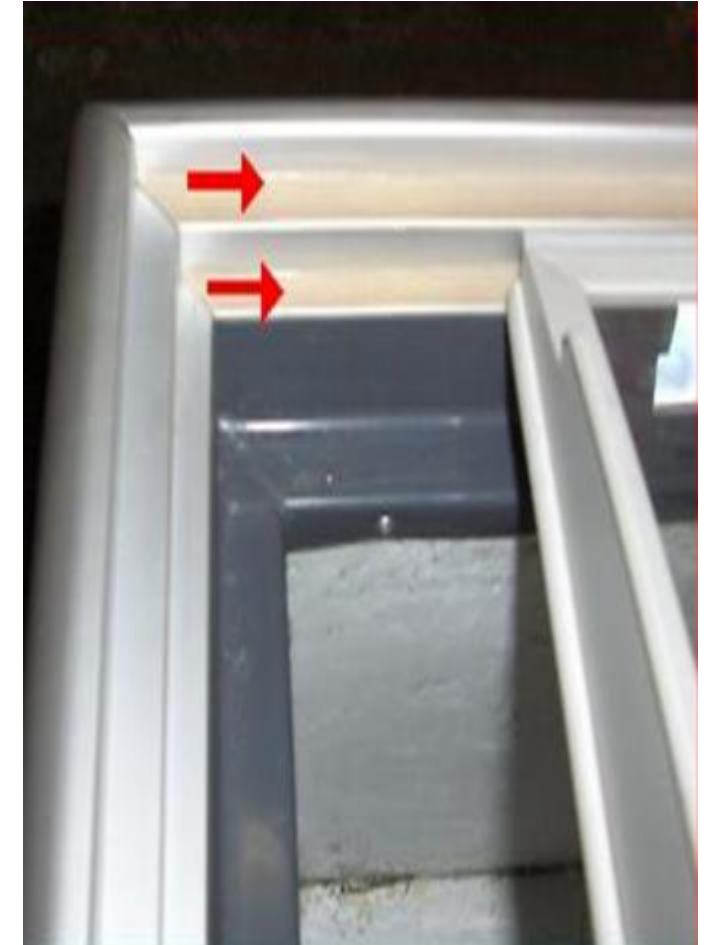
Surfaces can rub together causing excessive wear, noise or poor functionality

Drawer slides in refrigerators and freezers is a common application.

The drawers sit directly on the inner skin of the fridge.

The surfaces are not designed for smooth sliding.

Applying 3M 5421 UHMW Tape reduces the friction between the surfaces improving the drawer functionality.



# Appliance Friction/Squeak Reduction

## Lids and Doors

Reducing the friction between the door and the housing by applying 5421 helped reduce the noise when opening and closing the door



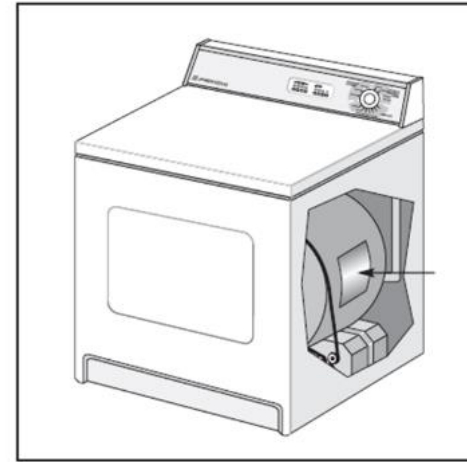
# Appliance Vibration Sound Damping

Drum, oven hood

Vibration noise, is usually found in areas with large sections of metal.

A common application is in the drum area of a clothes dryer or in the oven hood assembly.

The metal drum spins and clothing inside hits the inner walls. Applying our 2552 tape to the drum helps to reduce the noise and makes the appliance operate more quietly.

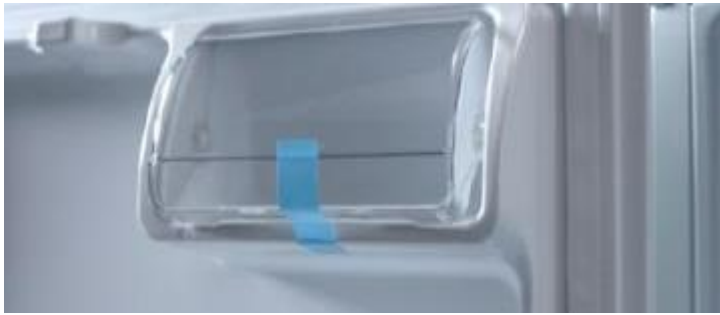




# Appliance Temporary Holding

It's necessary to hold appliance parts in place during shipping from factory to end-user to avoid damage. This includes:

- **Securing** racks, shelves, drawers and doors
- **Holding** power cords, packaging materials, spacers and corner boards
- **Bundling** loose parts



# Other Applications

## Long Term Metal Protection

### 7070UV

Industrial Protective Film

Strong protection:

Outdoor/Indoor

UV – Rain -Heat

Abrasion - Impact

- Protects
  - Metal finishes
  - Paint
  - Graphics
  - Labels
- Decreases warranty claims
- Increases end-user satisfaction
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- Potential for additional profit for add-on option



IPF Kit

# Other Applications

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