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# ALUMINUM REPAIR & REFINISHING

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ALUMINUM REPAIR & REFINISHING

## FEATURED PROCEDURES

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BONDING & RIVET BONDING

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INNER PANEL REFINISHING

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2K SEAM SEALING

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SOUND DAMPENING

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# BONDING & RIVET BONDING

## 1 PREPARATION

Remove spot welds with a spot weld cutter; remove rivets by drilling or grinding. Remove damaged panel and straighten bent flanges with a hammer and dolly.

## 2 DRY FIT

Dry fit all panels before applying adhesive to ensure proper alignment and clearance. While dry fitting the panel during rivet bonding process, drill holes for replacement rivets or mark the location of self-piercing rivets per manufacturer's instructions.

## 3 CLEAN

Clean surfaces to be bonded with **SEM Solve** or **Zero VOC Surface Cleaner** per directions.

## 4 GRIND

Grind mating flanges with a 36 grit grinding disc at low speed to maintain grinding marks, removing any adhesive or protective coating, such as paint, e-coat or galvanized coating. Some manufacturers may recommend leaving the OEM e-coat on the surface of the new replacement panel if rivet bonding. If this is the case, omit grinding with 36 grit and instead, scuff with a red scuff pad.

## 5 RE-CLEAN

Blow off and re-clean surfaces with **SEM Solve** or **Zero VOC Surface Cleaner** if necessary. Always use lint-free towels when cleaning surfaces to avoid particle contamination. Bonding surfaces should be clean, dry and free of debris.

## 6 EQUALIZE

Equalize cartridge by dispensing product until both parts flow evenly. Install **Static Mixer**. Purge a small amount of material to ensure proper mix. Cut tip to desired size.

## 7 APPLICATION

Apply a 3/8" – 1/2" bead of **Multi-Purpose Panel Adhesive** or **Weld-Bond Adhesive** to both bonding surfaces and tool with a spreader or acid brush, covering all exposed bare metal. Use enough material to completely fill the joint when parts are clamped.

## 8 BONDING

Clamp panel into place. Wipe away excess material. To assure maximum bond strength, surfaces must be mated within the adhesive's working time. Do not over clamp.

## RIVET BONDING

Clamp panel into place. Install rivets per manufacturer's recommendations during adhesive's working time. Clamps may be removed after rivets have been installed. Wipe away excess material.

Temperatures below 55°F (13°C) will slow the cure rate

Temperatures above 85°F (29°C) will accelerate the cure rate.

To minimize cure time, heat to 120° – 140°F (49° – 60°C) for 1 hour.

# INNER PANEL REFINISHING

## 1



## CLEAN

Clean surface with **SEM Solve** or **Zero VOC Surface Cleaner**.

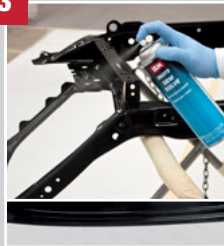
## 2



## SAND

Sand with 320 grit sandpaper or scuff with a gray scuff pad.

## 3



## RE-CLEAN

Re-clean surface with **SEM Solve** or **Zero VOC Surface Cleaner**.

Use a clean tack rag to remove any dust or contaminants from the surface.

## 4



## APPLY EZ COAT™

Shake aerosol for a minimum of 1 minute.

Apply 2 – 3 medium wet coats allowing 5 – 10 minutes flash time between coats.

If using **Factory Pack** to topcoat, apply immediately after **Ez Coat** flashes. If using any other refinishing product, allow **Ez Coat** 30 minutes to dry.

Because of its size, a radiator support will flash as you are finishing the part. For smaller parts, be sure to allow adequate flash time.

## 5



## APPLY FACTORY PACK™

Use a clean tack rag to remove any dust.

Shake aerosol for a minimum of 1 minute.

Apply 2 – 3 medium coats of **Factory Pack** or until hiding is achieved. Allow 2 – 4 minutes flash time between coats.

If using **1K HS Clear**, apply immediately after **Factory Pack** flashes.

## 6



## APPLY 1K HS CLEAR

Use a clean tack rag to remove any dust.

Shake aerosol for a minimum of 1 minute.

Apply 2 full coats or 3 medium coats allowing 3 – 5 minutes flash time between coats.

Allow 1 hour dry time after final coat before handling.

# 2K SEAM SEALING

1



## CLEAN

Clean joints and seams thoroughly with **SEM Solve** or **Zero VOC Surface Cleaner**.

2



## SAND & RE-CLEAN

### FOR BARE METAL

Sand bare metal with 80 grit sandpaper.

### FOR PRIMED SURFACE

Sand primed surface with 400 grit sandpaper or gray scuff pad. Re-clean with **SEM Solve** or **Zero VOC Surface Cleaner**. Blow off and tack clean to remove lint and dust.

3



## EQUALIZE

Equalize cartridge by dispensing product until both parts flow evenly. Install **Static Mixer**. Purge a small amount of material to ensure proper mix. Cut tip to desired size.

4



## APPLY DTM OR TO PRIMER

All **SEM** standard two-component seam sealers can be applied direct-to-metal, over cured and sanded epoxy primer, or direct-to-metal 2K urethane primer. Never apply over a self etch primer. Always apply over a primer when filling all drip rails of vehicles.



## FOR DRIP RAILS

Use **High-Build Self Leveling Seam Sealer** with a **Versa-Tip** for applications where a thicker viscosity is needed such as sloped/vertical surfaces. Dispense into the center of channel and allow product to flow. Keep tip submerged to minimize air bubbles.



## AIR BUBBLE REMOVAL

Immediately after application, a heat gun can be used to remove any air bubbles that become entrapped. With a steady motion, sweep the heat gun across surface of **Self Leveling Seam Sealer** or **High-Build Self Leveling Seam Sealer** at a distance of 2" – 6".



## PAINTING

All **SEM** standard two-component seam sealers are paintable immediately with most solvent based paint systems.

# SOUND DAMPENING

1



## CLEAN

Clean surface thoroughly with **SEM Solve** or **Zero VOC Surface Cleaner**.

2



## SAND & RE-CLEAN

Sand primed surface with 180 grit sandpaper or sand bare metal surface with 80 grit sandpaper.

Blow off and re-clean with **SEM Solve** or **Zero VOC Surface Cleaner**, then tack clean to remove lint and dust.

Do not apply **Sound & Seal Sprayable Coating** directly over a self etching primer.

3



## EQUALIZE

Place cartridge into the **Universal Pneumatic Applicator** and equalize cartridge until both sides dispense equally.

Attach **Quick Spray System Static Mixer** to cartridge.

Attach **Quick Spray System**. Do not cut the tip of the static mixer to modify the spray out. Modify the air pressure to adjust the spray.

4



## APPLY

Apply to necessary areas, duplicating existing texture. There is no need to apply in coats.



## 70101 ROUND AIR ASSEMBLY:

For spraying sound dampening pads and seams. Spraying at a distance of 1" allows the user to spray a consistent bead seen on shock towers and rear body pans.



## 70102 FLAT AIR ASSEMBLY:

Used to match rocker panels on Honda Civics and Accords. Sprays a directional pattern of about 3" in width. Turning the gun sideways allows for the creation of a built-up edge.

# PREP PRODUCTS



## SEM Solve

A virgin solvent blend to clean panels prior to repair or refinish.

- Removes wax, grease and solvent soluble contaminants
- Leaves no residue

Part	Size
38371	Gallon
38373	20 oz. Aerosol
38374	Square Quart
38378	5 Gallon



## Zero VOC Surface Cleaner

A water-based cleaner designed to eliminate surface contaminants prior to refinishing.

- Removes dirt, oil, grease and silicone
- VOC compliant everywhere
- Eliminates static for better blends
- Non-flammable
- Environmentally friendly

Part	Size
40401	Gallon
40404	Quart

# ADHESIVES



## Dual-Mix™ Multi-Purpose Panel Adhesive

A two-component epoxy for panel bonding steel, aluminum, SMC and fiberglass.

- **Dual-Mix™ Forever Warranty**
- Superior impact and peel strength
- Excellent corrosion resistance
- Glass beads for consistent bond line thickness
- Non-sag formula
- 90 minute working time

Part	Size
39747	7 oz. Cartridge



## Dual-Mix™ Weld-Bond Adhesive

A two-component, acrylic adhesive formulated to bond steel and aluminum surfaces without the use of an external primer.

- **Dual-Mix™ Forever Warranty**
- Superior impact and peel strength
- Glass beads for consistent bond line thickness
- Excellent environmental resistance
- 60 minute working time

Part	Size
39537	7 oz. Cartridge



## Dual-Mix™ Door Skin & SMC Adhesive

A two-component epoxy that quickly bonds any combination of steel, aluminum, SMC and fiberglass.

- **Dual-Mix™ Forever Warranty**
- Non-sag formulation
- Excellent corrosion protection
- Bonds multiple substrates
- 30 minute working time

Part	Size
39337	7 oz. Cartridge



## Dual-Mix™ Patch Panel Adhesive

A two-component, acrylic adhesive for quickly bonding metal panels without the use of an external primer.

- **Dual-Mix™ Forever Warranty**
- Superior impact and peel strength
- Non-sag formula
- Excellent corrosion resistance
- 10 minute working time

Part	Size
39897	7 oz. Cartridge



## Dual-Mix™ Non-Sag Fast Set Adhesive

A two-component epoxy based adhesive for fast bonds on most surfaces.

- **Dual-Mix™ Forever Warranty**
- Superior adhesion
- Bonds multiple substrates
- 3 minute working time

Part	Size
39907	7 oz. Cartridge



## Dual-Mix™ Quick Set 20

A fast, two-component, opaque, urethane adhesive designed for bumper tab repair and bonding most small plastic, steel and aluminum parts.

**20 SECOND WORKING TIME**

## Dual-Mix™ Quick Set 50

A fast, two-component, black, urethane adhesive designed for automotive plastic repair and bonding most small plastic, steel and aluminum parts.

**50 SECOND WORKING TIME**

## Dual-Mix™ Quick Set 180

A two-component, general purpose, black, urethane adhesive with a three minute working time designed for repair and bonding of most small to medium plastic, steel, aluminum, glass, SMC and fiberglass parts.

**3 MINUTE WORKING TIME**



- **Dual-Mix™ Forever Warranty**
- For bonding most small to medium plastic, metal and aluminum parts
- High strength and sandable
- Non-sag formula

Part	Product	Size
40202	Quick Set 20	1.7 oz. Cartridge
40207	Quick Set 20	7 oz. Cartridge
40502	Quick Set 50	1.7 oz. Cartridge
40507	Quick Set 50	7 oz. Cartridge
41807	Quick Set 180	7 oz. Cartridge



### Insta-Bond 2K Kit

This kit contains an acrylic adhesive and accelerator for instant bonding of small parts.

- Holds torn plastic together during repair
- Provides high strength bonds
- Also for use on vinyl, metal and glass
- Accelerator creates instant bond

Part	Product	Size
39310	Kit	3 oz.
39311	Insta-Bond Adhesive	1 oz.
39322	Insta-Bond Accelerator	1 oz.



### Mini-Max™ General Purpose Adhesive

A two-component, epoxy based adhesive for fast bonds on most surfaces.

### Mini-Max™ Clear Fast Set Adhesive

A two-component, clear epoxy for an invisible bond on plastic, metal, fiberglass and wood.

Part	Product	Size
68432	General Purpose Adhesive	1 oz.
68442	Clear Fast Set Adhesive	1 oz.

## SOUND DAMPENING



### Dual-Mix™ Flexible Urethane Foam

A two-component, black foam that duplicates OEM foams used for sound dampening.

- Dual-Mix™ Forever Warranty
- Excellent sound dampening qualities
- Stops panel flutter
- 10x volume expansion
- Resists shrinking
- Working time of 15 seconds

Part	Size
39357	7 oz. Cartridge



### Dual-Mix™ Rigid Urethane Foam

A two-component, urethane, expanding foam for filling pillars, posts, and box sections.

- Dual-Mix™ Forever Warranty
- Meets UL 94HB flammability tests
- Restores crash parts to OEM condition
- Superior expansion
- Working time 45 seconds

Part	Size
39997	7 oz. Cartridge



### Dual-Mix™ Panel Vibration Control Material

A two-component, epoxy/urethane blend for reducing noise and vibration on roof skins and intrusion beams.

- Dual-Mix™ Forever Warranty
- Excellent sag resistance
- Reduces noise and vibration
- Protects against corrosion
- Superior flexibility
- Working time of 1 hour

Part	Size
39977	7 oz. Cartridge

## SEAM SEALING



### Dual-Mix™ Seam Sealer

A two-component, epoxy sealer for sealing of interior or exterior seams, joints and voids.

- Dual-Mix™ Forever Warranty
- Direct to metal
- Paintable Immediately
- Will not shrink, harden or crack
- Non-sag formula duplicates OEM sealers
- Fast cure increases production
- Sprayable for additional versatility

Part	Size
39377	7 oz. Cartridge



### Dual-Mix™ Self Leveling Seam Sealer

A two-component, low viscosity epoxy for use on drip rails, roof and trunk seams.

- Dual-Mix™ Forever Warranty
- Direct to metal on non-flexing roof skins
- Paintable in 15 minutes
- Will not shrink, harden or crack
- Permanently flexible

Part	Size
39387	7 oz. Cartridge



### Dual-Mix™ High-Build Self Leveling Seam Sealer

A two-component, high viscosity epoxy ideal for use on roof seams, drip rails and trunk seams.

- Dual-Mix™ Forever Warranty
- Direct to metal on non-flexing roof skins
- Paintable in 15 minutes
- Will not shrink, harden or crack
- Permanently flexible

Part	Size
39777	7 oz. Cartridge



### Dual-Mix™ Sound & Seal Sprayable Coating

A unique, sprayable, epoxy/urethane blend for replacing OEM coatings under rocker panels, in trunks, and on floor sections and frame rails.

- Dual-Mix™ Forever Warranty
- Will not shrink, harden or crack
- Retains flexibility
- Excellent adhesion to properly prepped surfaces
- Paintable in 30 minutes

Part	Size
40977	7 oz. Cartridge



## 1K Sprayable Seam Sealer

High performance, MSP seam sealers for duplicating OEM sprayed seams and sound dampening pads.

- Direct to metal
- Paintable immediately
- Excellent adhesion
- Remains flexible
- No shrinking or cracking
- Working time of 20 minutes
- Color variety to match OEM sealers

### Part Color

29462	White
29472	Gray
29482	Beige
29492	Black



## 1K Seam Sealer

Versatile single-component, MSP sealer for interior or exterior seams, joints and voids.

- Direct to metal
- Paintable immediately
- Non-sag formula
- Remains flexible without shrinking or cracking
- Color matches many OEM sealers

### Part Color

29362	White
29372	Gray
29382	Beige
29392	Black



## 2K Seam Sealer

Two-component epoxy sealers for use on interior or exterior seams, joints and voids.

- Direct to metal
- Paintable immediately
- Excellent adhesion to bare metal or primed surfaces
- Will not shrink, harden or crack
- Non-sag formula duplicates OEM sealers
- Sprayable for additional versatility

### Part Product

39477	Beige Seam Sealer
40377	Heavy Bodied Black Seam Sealer
40477	Heavy Bodied White Seam Sealer

# FILLERS & GLAZES



## Carbo Fill+™

An enriched filler with exceptional qualities for repairing SMC, FRP, HPA and PPO/PA, aluminum and metal.

- Carbon fiber for added strength
- Prevents swelling
- Resists staining and shrinkage
- Helps eliminate halo effect
- Easy to sand
- Excellent corrosion control

### Part Size

40542	16 oz. Tube
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## Metal Bite™

A two-component, polyester finishing glaze that quickly fills sand scratches and other minor imperfections.

- Fast drying to a tack-free finish
- Seals the repair area and prevents staining
- Exceptional sanding and feather edge
- Outstanding adhesion
- Use on aluminum, steel, SMC and fiberglass

### Part Size

39592	24 oz. Tube
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# PRIMERS



## World Class™ DTM Primer

A VOC compliant, two-component epoxy that provides bare metal adhesion and filling in one product.

- 2.1 VOC compliant
- 4:1 Mix
- Outstanding adhesion on steel, aluminum and fiberglass
- Excellent corrosion control
- Builds quickly, sands easily
- Excellent color holdout

### Part Product Size

50121	DTM Primer	Gallon
50124	DTM Primer	Quart
50134	DTM Primer Activator	Quart
50136	DTM Primer Activator	1/2 pint



## World Class™ Acrylic Primer Surfacer

A VOC compliant coating for quick and easy priming of spots or complete panels.

- 2.1 VOC compliant
- 1:1 Mix with urethane reducer
- Excellent filling properties
- Sands quickly

### Part Size

50101	Gallon
50104	Quart



## World Class™ HS Urethane Primer

A premium, high build, two-component, urethane primer formulated for use on automotive substrates.

- 4.2 VOC compliant
- 4:1 Mix
- Outstanding adhesion
- Excellent filling properties
- Sands quickly
- Excellent color holdout
- Available in gallons and quarts

### Part Product Size

50151	HS Urethane Primer	Gallon
50154	HS Urethane Primer	Quart
50444	Extra Fast Activator	Quart
50446	Extra Fast Activator	1/2 pint
50454	Fast Activator	Quart
50456	Fast Activator	1/2 pint
50464	Medium Activator	Quart
50466	Medium Activator	1/2 pint
50474	Slow Activator	Quart
50476	Slow Activator	1/2 pint



### Metalock™ DTM High Build Primer

A two-component epoxy primer for use on metal, aluminum, SMC and fiberglass.

- Superior adhesion
- Outstanding corrosion protection
- Exceptional filling properties
- High build formula
- Sealer mixing option
- Easy to sand

Part	Product	Size
ML010	Kit	5 Quart Kit
ML014	Primer	Quart
MLH16	Hardener	1/2 Pint



### Ez Coat™

A unique, direct-to-metal coating that matches factory primers and e-coat colors.



OEM REFINISHING SYSTEM

**REDUCE LABOR UP TO 85%**

[semproducts.com/ors](http://semproducts.com/ors)

- Duplicates factory appearance
- Direct-to-metal
- Quick curing and hiding
- Available in 7 popular OEM colors
- Paintable with most automotive base coats
- Excellent corrosion control

Part	Color	Part	Color
62213	Black	62253	Tan
62223	Olive Green	62263	Olive Brown
62233	Light Green	62273	White
62243	Gray		



### Self Etching Primer

A first step coating that provides excellent adhesion to bare substrates.

- Excellent adhesion to steel, aluminum and stainless steel
- Quick drying
- Black, gray and green colors available
- Comes in gallons, quarts and aerosols
- Bulk products VOC compliant

Part	Color	Size
39673	Black	20 oz. Aerosol
39683	Gray	20 oz. Aerosol
39693	Green	20 oz. Aerosol

Bulk sizes available in quarts and gallons



### High Build Primer Surfacer

An elastomeric coating for priming automotive steel, aluminum, urethane and plastics.

- Provides superior adhesion
- Excellent filling properties
- Works on flexible or rigid substrates
- Easy to sand
- Topcoat with most refinish material

Part	Color	Size
42003	Black	20 oz. Aerosol
42013	Gray	20 oz. Aerosol
42023	Beige	20 oz. Aerosol
42033	Rose	20 oz. Aerosol
42043	White	20 oz. Aerosol

## UNDERCOATINGS



### Undercoating & Low VOC Undercoating

For corrosion protection, chip resistance and sound dampening on automotive frames, wheel wells and undercarriage areas.

- Asphalt based aerosol coatings
- Uniform final appearance
- Excellent adhesion
- Economical

Part	Product	Size
39463	Regular	24 oz. Aerosol
40463	Low VOC	24 oz. Aerosol



### Rubberized Undercoating & Low VOC Rubberized Undercoating

Premium, paintable, textured coatings for sound dampening, chip resistance and corrosion protection.

- Asphalt free
- Uniform final appearance
- Paintable without bleed through
- Fast-drying
- Aerosols include straw for tight spots

Part	Product	Size
39523	Regular	24 oz. Aerosol
40523	Low VOC	24 oz. Aerosol
40524	Low VOC	Cone Quart

## TOP COATINGS



### Factory Pack™

A unique, time-saving line of basecoat colors for use on jambs, cut-ins, small accessories, and touch ups.

- Lower material cost
- Reduces booth bottlenecks
- Increases production
- Superior adhesion, flexibility and hiding
- Compliant everywhere
- Aerosol matched to OEM standards
- Should be clear coated



### Trim Black

Acrylic coatings formulated to restore the OEM finish on automotive trim components. For use on plastic, steel, aluminum, stainless steel and chrome.

- Excellent adhesion and durability
- No primer required
- Matches OEM appearance
- Retains flexibility
- Great coverage
- Professional results



### Multimax™

A multi-purpose enamel for exterior or interior use on steel, wood, fiberglass and aluminum.

- Outstanding coverage
- Excellent filling properties
- Durable, fast drying finish
- Great adhesion
- Professional finish

**Dual-Mix™ Forever Warranty**

We know our products work great.  
And to prove it, our **DUAL-MIX**  
cartridges come with a  
lifetime warranty.



When used according to directions,  
**SEM Products** GUARANTEES to the  
purchaser that all **DUAL-MIX** products  
will perform to specifications forever.  
This warranty covers reasonable costs  
for labor, loss of use of the vehicle,  
parts and materials only and excludes  
consequential or incidental damages.







# DUAL-MIX™

## WE'VE BEEN RIVET BONDING ALUMINUM & STEEL FOR OVER A DECADE

### SOLUTION 1

#### 39747 MULTI-PURPOSE PANEL ADHESIVE

7 oz. Cartridge



A two-component epoxy for panel bonding any combination of steel, aluminum, SMC and fiberglass.

- Long working time
- Superior impact and peel strength
- Excellent corrosion resistance
- Glass beads for consistent bond line thickness

**Working Time:** 90 min  
**Set Time:** 4 hr  
**Cure Time:** 24 hr  
**Heat Cure Time:** 1 hr  
**Resin Base:** Epoxy

### SOLUTION 2

#### 39537 WELD-BOND ADHESIVE

7 oz. Cartridge



A non-sag, two-component acrylic adhesive system formulated to bond metal surfaces without the use of an external primer.

- Long working time
- Superior impact and peel strength
- Glass beads for consistent bond line thickness

**Working Time:** 1 hr  
**Set Time:** 3 hr  
**Cure Time:** 24 hr  
**Heat Cure Time:** 1 hr  
**Resin Base:** Acrylic



## DUAL-MIX FOREVER WARRANTY

COVERS PARTS & LABOR FOR LIFE  
AS IT HAS FOR OVER 25 YEARS



# RIVET BONDING PROCEDURE FOR ALUMINUM & STEEL SUBSTRATES

## TECHNICAL BULLETIN



Check local VOC regulations to ensure compliance of all products in your area.

**Rivet Bonding for Aluminum and Steel Substrates is a process that uses a combination of automotive structural rivets and adhesive to join two pieces of metal of similar or dissimilar composition.**

Stringent increases in CAFE (Corporate Average Fuel Economy) standards at the manufacturing level have become the driving force behind automobile makers' willingness to develop new steel and aluminum alloys for their vehicles. These high-strength, light-weight alloys have helped OEMs significantly lessen the weight of the vehicles, providing better fuel economy, while increasing safety for its passengers in the process. These new alloys have created challenges to repair facilities, such as whether the part could be welded with traditional methods or welded at all. The combination of rivets and SEM adhesives is a perfect fit for applications where welding is prohibited and provides outstanding strength and corrosion protection on substrates of similar or dissimilar composition.

SEM Products approves the use of two adhesives for use in rivet bonding procedures. Both products are covered under the **Dual-Mix Forever Warranty** for rivet bonding procedures.

## PRODUCTS APPROVED

Part	Product Name
39747	Multi-Purpose Panel Adhesive
39537	Weld-Bond Adhesive

**Multi-Purpose Panel Adhesive** and **Weld-Bond Adhesive** incorporate glass beads in the adhesive to control bondline thickness. Bondline thickness is a crucial component of rivet bonding procedures for the control of corrosion, such as galvanic corrosion between dissimilar metals.

SEM recommends full, non-structural panel replacements. However, there may be instances where an OEM recommends the use of rivets and adhesives to perform structural repairs. The procedure included within this document is to be used as a guideline for full, non-structural panel replacements and for structural replacements only if the manufacturer recommends it. Consulting VIN-specific repair procedures should always be the first step in the repair process.

## HANDLING

Special precautions must be taken when working with combinations of aluminum and steel to prevent corrosion.

1. Work areas and tools for aluminum and steel repair should be kept separate to avoid cross contamination of substrates.
2. Tools to be used for multiple substrates should be cleaned thoroughly between uses and inspected regularly.
3. Use proper air ventilation and curtains to control airborne particles.
4. Always use filtered, clean air from the compressor.



Check local VOC regulations to ensure compliance of all products in your area.

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## PREPARATION

1. Remove spot-welds by drilling with a spot-weld cutter; remove rivets by drilling or grinding.
2. Remove damaged panel and straighten bent flanges with a hammer and dolly.
3. Clean surfaces to be bonded with **SEM Solve** or **Zero VOC Surface Cleaner** per directions.
4. Grind mating flanges with a 36 grit grinding disc at low speed to maintain grinding marks, removing any adhesive or protective coating, such as paint, e-coat or galvanized coating.  
**Note:** Some manufacturers may recommend leaving the OEM e-coat on the surface of the new replacement panel. If this is the case, omit grinding with 36 grit in step 4 and instead, scuff with a red scuff pad.
5. Blow off and re-clean surfaces with **SEM Solve** or **Zero VOC Surface Cleaner** if necessary. Always use lint-free towels when cleaning surfaces to avoid lint and particle contamination.
6. Bonding surfaces should be clean, dry, and free of contamination. Dry-fit all panels before applying adhesive to ensure proper alignment and clearance.
7. While dry-fitting the panel, drill holes for replacement rivets or mark the location of self-piercing rivets per manufacturer instructions.

## MIXING

It is highly recommended that adhesives be dispensed through a static mixer. Once mixed, **Multi-Purpose Panel Adhesive** or **Weld-Bond Adhesive** should achieve a uniform color. Heat build-up during and after mixing is normal.

1. Place cartridge into a **Universal Manual Applicator** or **Universal Pneumatic Applicator**.
2. Remove cartridge tip. To maintain product quality, replace after use.
3. Equalize cartridge by dispensing product until both parts flow equally.
4. Install static mixer.
5. Cut tip to desired application size.
6. Dispense 2-3 inches of test material to make certain color is uniform prior to applying to job.

## STATIC MIXERS

Part	Product Name	Container
70011	Integral Nut Square Static Mixers	6 pack
70012	Integral Nut Square Static Mixers	50 pack

## APPLICATION

1. Apply a 3/8" – 1/2" bead of product to both bonding surfaces and tool with a spreader or acid brush covering all exposed bare metal. Use enough material to completely fill the joint when parts are clamped. To assure maximum bond strength, surfaces must be mated and riveted within the adhesive's working time.



Check local VOC regulations to ensure compliance of all products in your area.

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## WORKING TIME @ 70°F (21°C)

Product	Time
Multi-Purpose Panel Adhesive	90 minutes
Weld-Bond Adhesive	60 minutes

2. Clamp panel into place.
3. Install rivets per manufacturer recommendations.
4. Clamps may be removed after rivets have been installed.
5. Wipe away excess material squeezed out during clamping / riveting process.
6. Allow 4 hours dry time for **Multi-Purpose Panel Adhesive** and 3 hours dry time for **Weld-Bond Adhesive** before sanding and top coating with a two-component primer per manufacturers recommendations.

### Note:

Temperatures below 55°F (13°C) will slow the cure; above 85°F (29°C) will accelerate cure rate. To enhance cure time, heat to 120°-140°F (49°-60°C) for 1 hour.

## DAMPENING MATERIAL

When performing rivet bonding procedures, **39357 Flexible Urethane Foam**, **39997 Rigid Urethane Foam** and **39977 Panel Vibration Control Material** can be used to replace the OEM dampening material found between the panels and the structural members. Refer to product information for proper selection.

## SEAM SEALING

Wherever a seam sealer is needed, SEM recommends using either **39377 Seam Sealer**, **39477 Beige Seam Sealer** or **40377 Heavy Bodied Black Seam Sealer**.

## DUAL-MIX FOREVER WARRANTY

When used according to directions, SEM guarantees to the purchaser that all Dual-Mix products will perform to specifications forever. This warranty covers reasonable costs for labor, loss of use of the vehicle, parts and materials only, and excludes consequential or incidental damages.



Check local VOC regulations to ensure compliance of all products in your area.

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## RELATED PRODUCTS

<b>Part</b>	<b>Product Name</b>	<b>Container</b>
38371	SEM Solve	Gallon
38373	SEM Solve	20 oz. Aerosol
38374	SEM Solve	Square Quart
39357	Flexible Urethane Foam	7 oz. cartridge
39377	Seam Sealer	7 oz. cartridge
39477	Beige Seam Sealer	7 oz. cartridge
39977	Panel Vibration Control Material	7 oz. cartridge
39997	Rigid Urethane Foam	7 oz. cartridge
40377	Heavy Bodied Black Seam Sealer	7 oz. cartridge
40401	Zero VOC Surface Cleaner	Gallon
40404	Zero VOC Surface Cleaner	Quart
70011	Integral Nut Square Static Mixers	6 pack
70012	Integral Nut Square Static Mixers	50 pack
70039	Universal Pneumatic Applicator	N/A
71119	Universal Manual Applicator	N/A



# PANEL & RIVET BONDING (COSMETIC PANELS)

## STANDARD OPERATING PROCEDURE

1

### REMOVE PART



Remove spot welds with spot weld cutter. Remove rivets by drilling or grinding. Remove damaged panel and straighten bent flanges with a hammer and dolly.

2

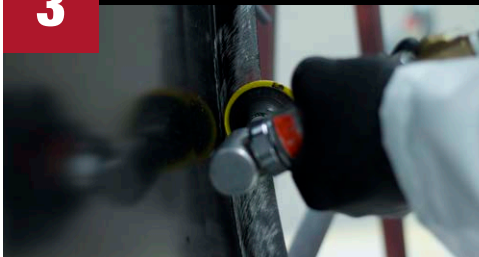
### DRY FIT



Dry fit all panels to ensure proper alignment. Drill holes for replacement rivets or mark locations of self-piercing rivets.

3

### PREP AND GRIND



Clean with **SEM Solve** or **XXX Universal Surface Cleaner**. Grind mating flanges with a 36 grit grinding disc at low speed for aggressive grind mark. Remove any adhesive or protective coatings.

ⓘ If rivet bonding, manufacturers may recommend leaving OEM e-coat on the surface of the new panel. If so, scuff with a red scuff pad.

4

### APPLY ADHESIVE



Apply 3/8" – 1/2" bead of **Dual-Mix™ Multi-Purpose Panel Adhesive** or **Dual-Mix Weld-Bond Adhesive** to both surfaces. Use enough material to completely fill the joint when parts are clamped. Tool with a spreader or acid brush. Cover all exposed bare metal.

ⓘ For smaller parts use **Dual-Mix™ Door Skin & SMC Adhesive**.

5

### (OPTION 1) PANEL BONDING



Clamp panel into place. Do not over clamp. Wipe away excess material.

ⓘ For maximum bond strength, surfaces must be mated during adhesive's working time.

### (OPTION 2) RIVET BONDING



Clamp panel in place. Install rivets per manufacturer's recommendations during adhesive's working time. Remove clamps after rivets have been installed. Wipe away excess material.

### PRODUCT LIST



#### PREP

Part	Product	Size
38371	SEM Solve	Gallon
38373	SEM Solve	20 oz. Aerosol
38374	SEM Solve	Square Quart
77771	XXX Universal Surface Cleaner	Gallon
77774	XXX Universal Surface Cleaner	Quart



#### ADHESIVE

Part	Product	Size
39337	Dual-Mix Door Skin & SMC Adhesive	7 oz. Cartridge
39537	Dual-Mix Weld-Bond Adhesive	7 oz. Cartridge
39747	Dual-Mix Multi-Purpose Panel Adhesive	7 oz. Cartridge