

DUAL-MIX

PRODUCT INFORMATION AND STANDARD OPERATING PROCEDURES

ADHESIVES

PLASTIC REPAIR

SEALERS

SOUND DAMPENING





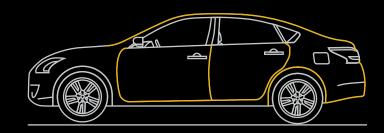
PARTS & LABOR WARRANTY
FOR LIFE
SEE DETAILS ON BACK COVER



OEM TESTED.
OEM TRUSTED.
OEM RECOMMENDED.
FOREVER WARRANTED.

Urethanes, acrylics and epoxies for large and small applications.

- Roof Skins
- Door Skins
- Applique Panels
- Quarter Panels



39757

Structural Impact Resistant Adhesive (SIRA)

A two-component epoxy for bonding structural and non-structural components where specified by the vehicle manufacturer.

- Superior impact and peel strength
- Excellent corrosion resistance
- Minimized down times with multiple heat cure options
- Spacer beads for consistent bond line thickness







Working Time: 60 Min Clamp Time: 8 Hr Cure Time: 48 Hr Heat Clamp Time: 15 Min Heat Cure Time: 30 Min Resin Base: Epoxy Additional heat options available on TDS

39747

Multi-Purpose Panel Adhesive

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

- · Long working time
- Exceptional impact and peel strength
- Excellent corrosion resistance
- Spacer beads for consistent bond line thickness
- · Non-sag formula







Working Time: 90 Min Clamp Time: 4 Hr Cure Time: 24 Hr Heat Cure Time: 1 Hr Resin Base: Epoxy

39337

Door Skin & SMC Adhesive

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

- · Non-sag formula
- Excellent corrosion protection
- Bonds multiple substrates
- Long shelf life







Working Time: 30 Min Clamp Time: 2 Hr Cure Time: 24 Hr Heat Cure Time: 1 Hr Resin Base: Epoxy

39537

Weld-Bond Adhesive

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

- Exceptional impact and peel strength
- Spacer beads for consistent bond line thickness
- Long working time







Working Time: 1 Hr Clamp Time: 3 Hr Cure Time: 24 Hr Heat Cure Time: 1 Hr Resin Base: Acrylic

39897

Patch Panel Adhesive

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

- Exceptional impact and peel strength
- Non-sag formula
- · Quick cure time
- Excellent corrosion resistance





Working Time: 10 Min Clamp Time: 20 Min Cure Time: 30 Min Heat Cure Time: 15 Min Resin Base: Acrylic 40207 (7 OZ.) 40202 (1.7 OZ.)

Quick Set 20

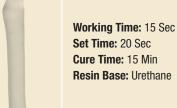
A fast, two-component, opaque, urethane adhesive designed for automotive plastic repair and bonding most small plastic, metal and aluminum parts.

sandable • Bonds multiple

· High strength and

- substrates
- Non-sag formula fills gaps
- Colorless
- · Super fast setting





40507 (7 OZ.) 40502 (1.7 OZ.)

Quick Set 50

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

- · High strength and sandable
- Bonds multiple substrates
- · Non-sag formula fills gaps







Working Time: 45 Sec Set Time: 50 Sec Cure Time: 15 Min Resin Base: Urethane

41807

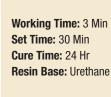
Quick Set 180

A general purpose, black adhesive designed for repairing and bonding most plastic, steel, aluminum, glass, SMC and fiberglass parts.

- · High strength and sandable
- Bonds multiple substrates
- Non-sag formula fills gaps
- Extended 3 minute working time



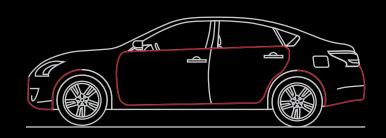




PLASTIC REPAIR

For repairing flexible, semi-rigid & rigid plastics with ease.

- Bumper Covers
- Interior Plastics
- Molded Body Panels



39847

Multi-Plastic Repair Material

A two-component epoxy for fast repairs on virtually all plastic bumper covers.

- No adhesion promoter required
- Exceptional sanding and feather edging
- · Remains flexible
- · Does not shrink or pinhole
- Excellent leveling and sag resistance







Working Time: 7 Min Sand Time: 15 Min Top Coat Time: 20 Min Cure Time: 1 Hr

39767

Problem Plastic Repair Material

A two-component, epoxy-based filler for repairing olefin-based plastics and similar rigid and semi-rigid substrates.

No adhesion promoter required

- Superior adhesion
- Excellent sanding and feather edging
- · Does not shrink or pinhole
- Zero VOC



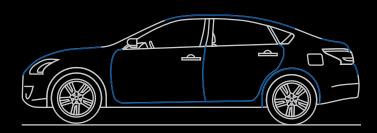




Working Time: 5 Min Sand Time: 15 Min Top Coat Time: 20 Min Cure Time: 1 Hr

Flexible sealers that restore OEM appearance while preventing corrosion.

- Roof Skins
- Door Skins
- Strut Towers
- Floor Pans
- Fender Wells
- Body Pans / Trunk Areas



39377

Seam Sealer

A two-component, gray, epoxy sealer for sealing 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
- Duplicates 0EM sealers







Working Time: 10 Min Set Time: 15 Min Top Coat Time: 0 Min Cure Time: 1 Hr

* Paintable immediately with most solvent based paint systems.

39477

Beige Seam Sealer

A two-component epoxy for sealing 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
- Duplicates 0EM sealers







Working Time: 10 Min Set Time: 15 Min Top Coat Time: 0 Min Cure Time: 1 Hr

* Paintable immediately with most solvent based paint systems.

40377

Heavy Bodied Black Seam Sealer

A high viscosity, two-component epoxy for use on interior or exterior seams, joints and voids.

- Direct to metal
- Paintable immediately*
- Holds tool marks during working time
- Non-sag formula
- Excellent adhesion









Working Time: 10 Min Set Time: 15 Min Top Coat Time: 0 Min Cure Time: 1 Hr

* Paintable immediately with most solvent based paint systems.

40477

Heavy Bodied White Seam Sealer

A high viscosity, two-component epoxy for use on interior or exterior seams, joints and voids.

- Direct to metal
- Paintable immediately*
- Holds tool marks during working time
- · Non-sag formula
- · Excellent adhesion









Working Time: 10 Min Set Time: 15 Min Top Coat Time: 0 Min Cure Time: 1 Hr

* Paintable immediately with most solvent based paint systems.

39387

Self Leveling Seam Sealer

A two-component, epoxy-based, flowable sealer for use on drip rails, roof and trunk seams.

- Direct to metal on non-flexing roof skins
- Excellent self leveling properties
- Flows into crevices
- Will not shrink, harden or crack
- · Permanently flexible







Working Time: 10 Min Set Time: 15 Min Top Coat Time: 30 Min Cure Time: 1 Hr 39777

High-Build Self Leveling Seam Sealer

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

- Direct to metal on non-flexing roof skins
- Will not shrink, harden or crack
- Permanently flexible





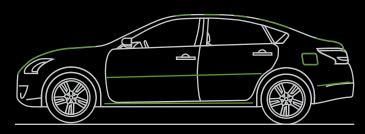


Working Time: 10 Min Set Time: 15 Min Top Coat Time: 30 Min Cure Time: 1 Hr

SOUND DAMPENING

Reduces noise and vibrations and matches OEM textures.

- Roof Bows
- Hoods
- Door Intrusion Beams
- Rocker Panels / Floor Pans
- Quarter Panels
- Body Pans / Trunk Areas
- Deck Lids
- Filler Necks



39977

Panel Vibration Control Material

A two-component epoxy and urethane blend for reducing noise and vibration on roof, quarter and door skins.

- Excellent sag resistance
- Reduces noise and vibration
- Protects against corrosion
- Superior flexibility







Working Time: 1 Hr Set Time: 1 Hr Cure Time: 1 Hr

39357

Flexible Urethane Foam

A two-component, urethane, expanding flexible foam that stops vibration and dampens sound in most voids.

- Excellent sound dampening qualities
- Stops panel flutter
- 10x volume expansion
- Does not require moisture to cure
- Will not distort panels
- Resists shrinking







Working Time: 15 Sec Set Time: 2 Min Top Coat Time: 15 Min

39997

Rigid Urethane Foam

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

- Meets UL 94HB flammability tests
- Restores crash parts to OEM condition
- Superior expansion
- Reinforces weak panels
- Fast cure







Working Time: 45 Sec Set Time: 5 Min Top Coat Time: 15 Min

40977

Sound & Seal Sprayable Coating

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

- Will not shrink, harden or crack
- Remains flexible
- Excellent adhesion to properly prepped surfaces
- · Paintable in 30 min







Working Time: 10 Min Set Time: 15 Min Top Coat Time: 30 Min Cure Time: 1 Hr

PLASTIC REPAIR STANDARD OPERATING PROCEDURE



Clean front and back with Scuff & Clean and gray scuff pad. Rinse with water and dry with clean, lint-free cloth. Clean front and back with SEM Solve, Plastic & Leather Prep or XXX Universal Surface Cleaner. Wipe clean in one direction with dry, lint-free cloth.



On front side, sand repair area with P80 grit. Dish out damage with P36 grit disc at a low RPM. On back side, grind repair area with P36 grit disc at a low RPM. Blow off surfaces. Re-clean if necessary.

- i Paint does not need to be stripped from the repair if it has good adhesion.
- ! Do not grind too fast and cause plastic to melt
- (Optional) Apply XXX Adhesion Promoter to all prepped surfaces.



Mask front side of repair to prevent repair material from flowing through. Apply **Plastic Repair Contouring Tape** (mesh only) to back side. Apply **Dual-Mix™ Multi-Plastic Repair Material** or **Dual-Mix Problem Plastic Repair Material** and cover mesh tape. Spread material firmly. Allow to set.



Remove tape from front. Fill front with **Dual-Mix Multi-Plastic Repair Material** or **Dual-Mix Problem Plastic Repair Material**. Spread material firmly and build up higher than panel to allow for sanding.



Sand with P80 grit. Finish with P180 grit. If needed, use a skim coat of **Bumper Bite™ Flexible Glaze**, then sand with P180 − P320 grit.

(i) Refer to **Plastic Refinishing SOP** for refinishing steps.

PRODUCT LIST



PREP

Part	Product	Size
38398	Scuff & Clean	16 oz. Tube
38373	SEM Solve	20 oz. Aerosol
77774	XXX Universal Surface Cleaner	Quart
77723	XXX Adhesion Promoter	16 oz. Aerosol



REINFORCE AND FILL

Part	Product	Size
70007	Plastic Repair Contouring Tape	15' Roll
39767	Dual-Mix Problem Plastic Repair Material	7 oz. Cartridge
39847	Dual-Mix Multi-Plastic Repair Material	7 oz. Cartridge



SAND AND SKIM

Part	Product	Size
40482	Bumper Bite Flexible Glaze	16 oz. Tube

(i) CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.

PLASTIC REFINISHING STANDARD OPERATING PROCEDURE



i) If damage is present, refer to **Plastic Repair Standard Operating** Procedure first.

Clean with Scuff & Clean and a gray scuff pad. Rinse with water and dry with clean, lint-free cloth. Clean with SEM Solve, Plastic & Leather Prep or XXX Universal Surface Cleaner. Wipe clean in one direction with clean, lint-free cloth. Prime as per instructons.

Apply Guide Coat Black or Premium Powder Guide Coat to dried primer. Sand with P320 – P400 grit. Finish sanding with P600 grit.



Apply Texture Coating or Chip Guard as per instructions.



Apply **Bumper Coater™** or **Factory Pack™** as per instructions.

PRODUCT LIST



PREP

Part	Product	Size
38398	Scuff & Clean	16 oz. Tube
38373	SEM Solve	20 oz. Aerosol



HIGH-BUILD PRIMER AEROSOLS

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

PRODUCT LIST



GUIDE COAT

Part	Product	Size
38253	Premium Powder Guide Coat	16 oz. Aerosol



TEXTURE

Part	Product	Size
39853	Texture Coating	20 oz. Aerosol
39793	Heavy Texture Chip Guard	20 oz. Aerosol
39803	Clear Chip Guard	20 oz. Aerosol
39813	Satin Black Chip Guard	20 oz. Aerosol



PAINT

Part	Product	Size
39101	Bumper Coater - Black	Gallon
39104	Bumper Coater - Black	Quart
39101-LV	Low VOC Bumper Coater Black	Gallon
39104-LV	Low VOC Bumper Coater Black	Quart
	Bumper Coater - 17 Colors	16 oz. Aerosol
	Factory Pack - 40 Colors	16 oz. Aerosol

(i) CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.



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.



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



Clean with SEM Solve or XXX Universal Surface Cleaner. Grind mating flanges with a P36 grit grinding disc at low speed for aggressive grind mark. Remove any adhesive or protective coatings.

ightharpoonup in the state of t recommend leaving OEM e-coat on the surface of the new panel. If so. scuff with a red scuff pad.



Apply 3/8" - 1/2" bead of **Dual-Mix**TM 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.

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



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

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



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
38373	SEM Solve	20 oz. Aerosol
77774	XXX Universal Surface Cleaner	Ouart



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	

(i) CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.

2K SEAM SEALING STANDARD OPERATING PROCEDURE



Clean with **SEM Solve** or **XXX Universal Surface Cleaner**. Wipe clean in one direction with dry, lint-free cloth.

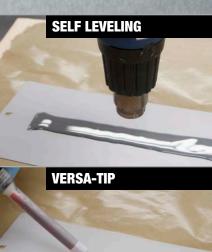
Bare Metal Surfaces: Sand with P80 grit. Blow off and tack clean to remove lint and dust. Re-clean with SEM Solve or XXX Universal Surface Cleaner.

Primed Surfaces: Sand primed surfaces with P400 grit or a gray scuff pad. Blow off and tack clean to remove lint and dust. Re-clean with SEM Solve or XXX Universal Surface Cleaner.



Apply **SEM 2K Seam Sealer**. Immediately smooth or tool **Seam Sealer** to match OEM texture.

- i SEM 2K seam sealers can be applied direct-to-metal, over epoxy primer or 2K urethane primer.
- Always apply over a primer when filling drip rails.



Use Self Leveling Seam Sealer or High-Build Self Leveling Seam Sealer for applications where a flowable sealer is needed.

- (i) Keep tip submerged to minimize air bubbles.
- A heat gun can be used immediately after application to remove any air bubbles that become entrapped. With a steady motion, sweep the heat gun across surface at a distance of 2" 6".

Use a **Versa-Tip** for applications where a wider bead is needed.

i Versa-Tips can be cut to the desired bead width and are compatable with both standard and self leveling SEM 2K Seam Sealers.

PRODUCT LIST



PREP

Part Product		Size
38373	SEM Solve	20 oz. Aerosol
77774	XXX Universal Surface Cleaner	Ouart



APPLY

Part	Product	Size
39377	Dual-Mix™ Seam Sealer (Gray)	7 oz. Cartridge
39477	Dual-Mix Beige Seam Sealer	7 oz. Cartridge
40377	Dual-Mix Heavy Bodied Black Seam Sealer	7 oz. Cartridge
40477	Dual-Mix Heavy Bodied White Seam Sealer	7 oz. Cartridge
39387	Dual-Mix Self Leveling Seam Sealer (Gray)	7 oz. Cartridge
39777	Dual-Mix High-Build Self Leveling Seam Sealer (Gray)	7 oz. Cartridge
70070	Versa-Tip	6 Pack

CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.

SPRAYABLE SOUND DAMPENING STANDARD OPERATING PROCEDURE



Clean with **SEM Solve** or **XXX Universal** Surface Cleaner. Wipe clean in one direction with clean, lint-free cloth.



Sand primer with P180 grit. Sand bare metal with P80 grit. Blow off and tack clean. Re-clean with SEM Solve or XXX Universal Surface Cleaner. Wipe clean in one direction with clean, lint-free cloth.



Place **Dual-Mix™ Sound & Seal** Sprayable Coating into Universal **Pneumatic Applicator.** Equalize cartridge until sides dispense equally. Attach Quick Spray System to cartridge.

Do not cut static mixer tip.



Apply to necessary areas, duplicating existing texture in one coat.

- 1 Do not apply over self etching primer.
- (i) To acheive various textures, modify the air pressure, spray distance and spray tip.

PRODUCT LIST



PREP

	Part	Product	Size
	38373	SEM Solve	20 oz. Aerosol
	77774	XXX Universal Surface Cleaner	Quart



APPLY

Part	Product	Size
40977	Dual-Mix Sound & Seal	7 oz. Cartridge
	Sprayable Coating	



EQUIPMENT

Part	Product
70039	Universal Pneumatic Applicator
70100	Quick Spray System Starter Kit

ADDITIONAL 2K SOUND DAMPENING PRODUCTS



DUAL-MIX CARTRIDGES

Part	Product	Size
39357	Flexible Urethane Foam	7 oz. Cartridge
39977	Panel Vibration Control Material	7 oz. Cartridge
39997	Rigid Urethane Foam	7 oz. Cartridge

CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.

PLASTIC TAB REPAIR STANDARD OPERATING PROCEDURE



Clean front and back with Scuff & Clean and gray scuff pad. Rinse with water and dry with clean, lint-free cloth. Clean front and back with **SEM Solve**, **Plastic** & Leather Prep or XXX Universal Surface Cleaner. Wipe clean in one direction with dry. lint-free cloth.

PRODUCT LIST



GRIND & ADHESION
PROMOTER



Grind repair on both sides at low RPM or by hand with P36 grit disc. Drill 1/8" holes in repair area to help "lock in" the repair material. Blow off surface.

- 1 Do not grind too fast and cause plastic to melt.
- (i) For TPO, EPDM, PP and similar plastics, apply Adhesion Promoter as per instructions.

Cut enough Plastic Repair Contouring Tape to fold around both sides of the tab. Use permanent marker to trace a good tab for a template.

PREP

Part	Product	Size
38398	Scuff & Clean	16 oz. Tube
38373	SEM Solve	20 oz. Aerosol
77723	XXX Adhesion Promoter	16 oz. Aerosol



CREATE TEMPLATE (OPTIONAL)



Apply **Dual-Mix™ Quick Set Adhesive** to the mesh side of tape. While wet, fold the tape around torn or missing tab. After cool down, remove Plastic Repair Contouring Tape release film.

APPLICATION

Part	Product	Size
70007	Plastic Repair Contouring Tape	15' Roll
40202	Dual-Mix Quick Set 20	1.7 oz. Cartridge
40207	Dual-Mix Quick Set 20	7 oz. Cartridge
40502	Dual-Mix Quick Set 50	1.7 oz. Cartridge
40507	Dual-Mix Quick Set 50	7 oz. Cartridge
41807	Dual-Mix Quick Set 180	7 oz. Cartridge



Grind the tab back to its original shape and size. Re-drill the bolt hole.



CHECK LOCAL VOC REGULATIONS TO ENSURE COMPLIANCE OF ALL PRODUCTS IN YOUR AREA. ALWAYS WEAR OSHA REQUIRED (PPE) PERSONAL PROTECTION EQUIPMENT TO ENSURE YOUR SAFETY.

QUICK SPRAY SYSTEM (FOR DUPLICATING OEM TEXTURES)

Our **Quick Spray System** allows users to duplicate OEM seam sealer textures while utilizing the 2K technology of **SEM Seam Sealers**.

NOTE

70039 Universal Pneumatic Applicator is not included in the **70100** kit. Only use the **Quick Spray System** with specified SEM products.

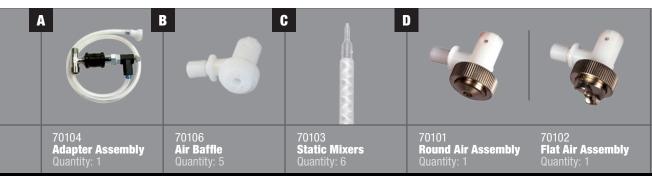
USE ONLY WITH

- 39377 Seam Sealer
- 39477 Beige Seam Sealer
- 40377 Heavy Bodied Black Seam Sealer
- 40477 Heavy Bodied White Seam Sealer
- 40977 Sound & Seal Sprayable Coating

USE FOR

Trunks, Doors, Wheel Wells, Etc.





1.7 OZ. ACCESSORIES (40202 QUICK SET 20 & 40502 QUICK SET 50)

70019 **1.7 oz Manual Applicator**

This is an easy loading applicator for dispensing 1.7 oz. **Dual-Mix** cartridges. Material is dispensed quickly and consistently.



70020 (6 Pack) 70021 (50 Pack) **1.7 oz. Turbo Mixers** These mixers ensure proper mix ratios for 1.7 oz. **Dual-Mix** cartridges.



7 OZ. APPLICATORS & ACCESSORIES

71119 Universal Manual Applicator A sturdy applicator for DIYers and pros alike. It dispenses material quickly and consistently and it's easy to use because of its ergonomic design. It accepts 2:1 and 1:1 cartridges.



70039
Universal
Pneumatic
Applicator

This applicator is a must-have in body shops. It delivers material quickly and consistently. The lightweight and balanced design means less fatigue for the technician. It accepts 2:1 and 1:1 cartridges.



70011 (6 Pack) 70012 (50 Pack) Integral Nut Square Static Mixers The Integral Nut Square Static Mixers ensure proper mix ratios for the 7 oz. Dual-Mix™ cartridges.



70070 (6 Pack) **Versa-Tip**



Versa-Tips allow you to duplicate OEM sealers. Cut them to dispense product from 0.5" – 1.5" wide.

70103 (6 Pack) Quick Spray System Static Mixers Quick Spray System Static Mixers ensure proper mix ratios. Use with the Quick Spray System.

BUILT BETTER IN THE USA PACKED BY EMPLOYEE OWNER JAMES QUERY WE ARE AMERICAN MANUFACTURING The employee owners of SEM engineer best in class products to reduce repair times, steps, and waste in the collision center. From intelligent product design to technical support, the "built better" promise is engrained in our DNA. SEM



39757

- OEM recommended
- **Dual-Mix** Forever Warranty
- Superior impact and peel strength

SEM

- Excellent corrosion resistance
- Minimized down times with multiple heat cure options
- 60 minute working time
- Spacer beads for consistent bond line thickness
- Rivet and weld bonding compatible

