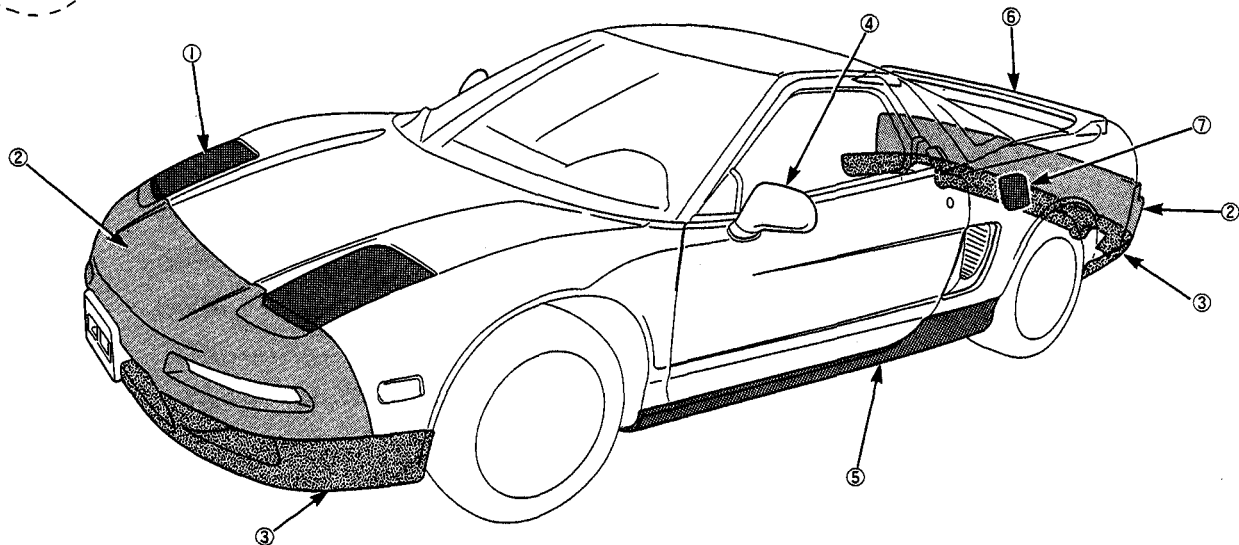


Types and Materials of Exterior Resin Parts

NOTE: A standard symbol is stamped on the side under of each resin part to shown the type of material used.

Example:



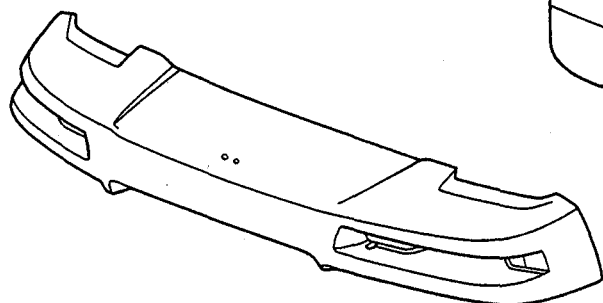
No.	Part Name	Material	Repair procedures
①	Headlight Lid	PA6/PPE-M (Polyamide/Polyphenyen ether)	see page 9-22
②	Front and Rear Bumpers	PBT-P (Polybutylene terephthalate)	see page 9-3
③	Front and Rear Skirts	PP (Polypropylene)	see page 9-13
④	Door Mirror Housing	ABS (Acrylonitrile butadiene styrene)	see page 9-26
⑤	Side Sill Panel	PA6/PPE-M (Polyamide/Polyphenylene ether)	see page 9-22
⑥	Trunk Lid Spoiler	UP-G (Polyster unsaturated thermoset)	see page 9-22
⑦	Fuel Lid	PA6/PPE-M (Polyamide/Polyphenylene ether)	see page 9-22

Front and Rear Bumpers

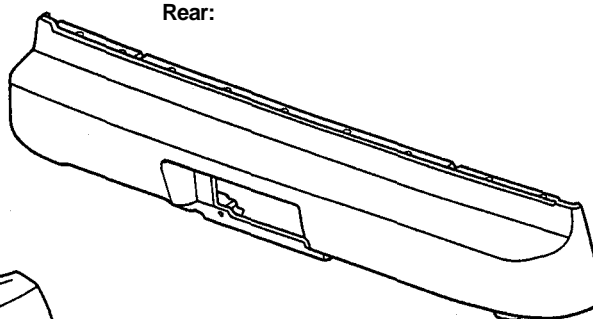
General

The front and rear bumpers are made of Polybutylene terephthalate and can be repaired if the damage or deformation is minor. This manual offers the standard practice for repairing the bumpers, which are similar to those of other resins such as polypropylene (PP) and urethane. When repair is necessary, be sure to follow the instructions described in this manual. Use of paints other than those specified in this manual, such as acrylic lacquers, may damage the bumpers.

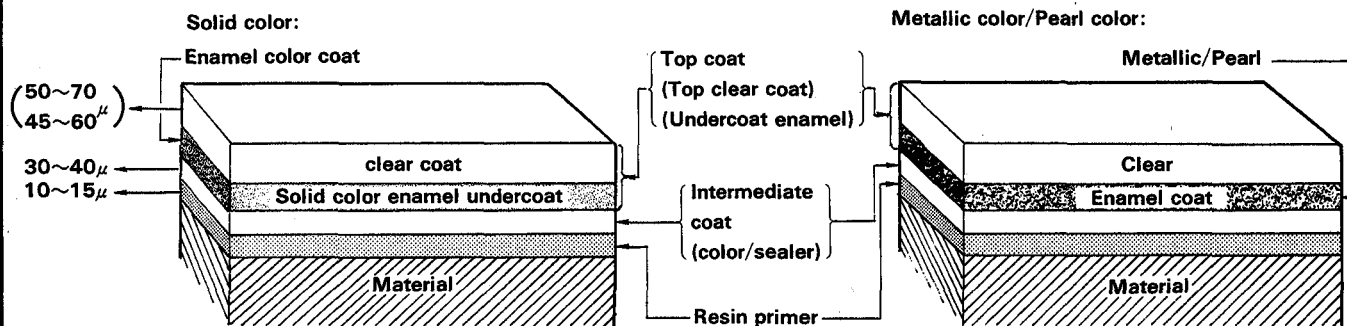
Front:



Rear:



Sectional View of Paint Coats



Front and Rear Bumpers

Mass Production Coating Table (Reference)

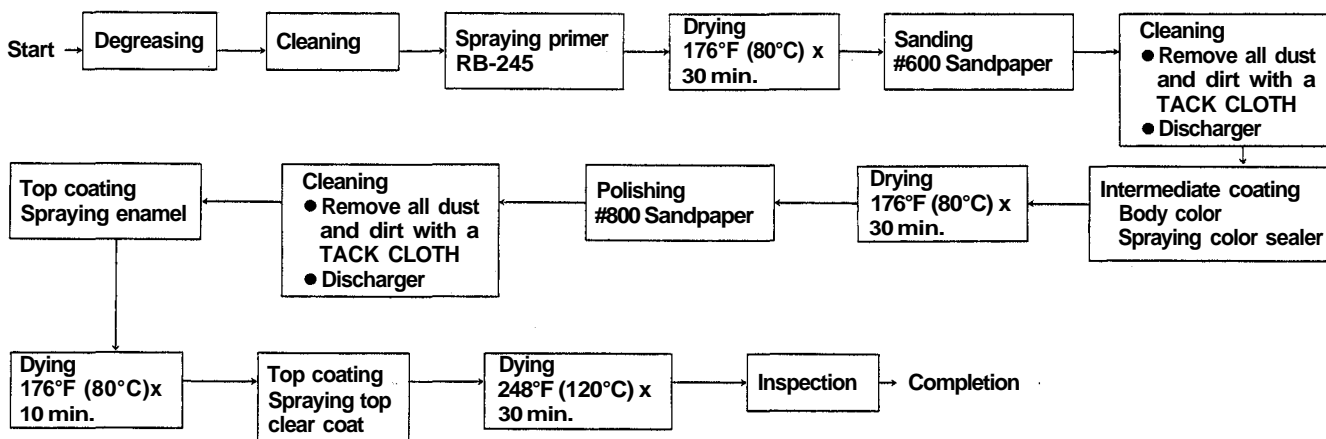
Paint name	Type	Make	Main Component	Hardener	Solvent (Thinner)	Mixing Ratio			Application
						A	B	C	
Resin Primer	Polyester Urethane	N.B.C	RB-245	R-230 (Special)	T-868 (Special)	100	3	150	Baked: 176°F (80°C) X30 min.
Intermediate coat (Color sealer)	Acrylic polyester	↑	Soflex KP-30	KP-30 (Special)	KP-30 (Special)	100	19.4	19	↑
Top coat Metallic enamel	Urethane	↑	Soflex WT-330 X-2	-	-	100	-	-	Spraying enamel base ↓
Top coat (Metallic) Top clear coat	↑	↑	Soflex 500HX-2	500HX-2 (Special)	500HX-2 (Special)	100	15	15	Baked: 176°F (80°C) X10 min. ↓
Top coat Undercoat enamel	↑	↑	Soflex WT-300 X-2	-	-	100	-	-	Spraying top coat clear ↓
Top coat (Solid) Top clear coat	↑	↑	Soflex 500HX-2	500HX-2 (Special)	500HX-2 (Special)	100	15	15	Baked: 248°F (120°C) X30 min.

NOTE: Mixing ratio
A: Main component
B: Hardener
C: Thinner

For top coats to be applied to solid and metallic enamel base, use the same paints specified for the aluminum body (water soluble enamel) having the following properties:

- Ability to harden at high temperature 248°F (120°C)
- To be flexible enough at low temperature -77°F (-25°C) and free of harmful effects on resin base
- Resistance to abrasion or wear

Processes:



Repair Materials and Tools (Example)

Vise-grips and clamps

- To hold parts being serviced.

Sander:

Removal of paint caking and filler sanding.

- Air sander, Double action sander
- Pad (Rubber and wooden)
- Sandpapers (#60,80,180,280,400,600 and 800)

Adhesive, cement and filler:

To even out irregular surface

- Epoxy resin body filler
(BOND QUICK MENDER 3M8016)

Protectors:

- Respirator and dust mask
- Rubber gloves, safety goggles

Masking tape: 19 mm (3/4")

Others:

- Rag or shop towel, Cutter,

Paints: (Reference)

The paints used for repair should be flexible enough at low temperature -77°F (-25°C) yet not harm the resin base to which they are applied. They should also offer reasonable resistance to abrasion and wear.

NOTE:

- Do not use acrylic lacquer paints (air-dried type).
- Be sure to use the paints listed below or equivalent.

1. Guide coat (Primer and Primer surfacer)

- UPS-300 flex primer + N0308 flex hardener (R-M)
- Plastoflex primer, Autocryl filler + Elast-o-Activ (Akzo)
- 1020R primer surfacer + 805R flexible additive (DuPont)

2. Intermediate coat

Use top coat (Solid, metallic or pearl) enamel base.

3. Top coat

- Super ponacle + N0308 flex hardener (R-M)
- Autocryl, Auto base + Elast-o-Activ Auto clear/ Autoclear MS + Elast-o-Activ (Akzo)
- Super Centari + 805R softener + AK210 hardener (DuPont)

Front and Rear Bumpers

Paint Mixing Application

1. Primer or primer surfacer provides good support for the filler and surfacer, and is applied to the surface of the bumper face. Use a spray gun only to apply the primer or primer surfacer.

NOTE:

- Mix the paint, hardener and thinner in the correct ratio.
- Follow the paint manufacturer's instructions.

⚠ WARNING

- Most paints contain substances that are harmful if inhaled or swallowed. Read the paint label before opening the container. Spray paint only in a well ventilated area.
- Cover spilled paint with sand, or wipe it up at once.
- Wear an approved respirator, gloves, eye protection and appropriate clothing when painting. Avoid contact with skin.
- If paint gets in your mouth or on your skin, rinse or wash thoroughly with water. If paint gets in your eyes, flush with water and get prompt medical attention.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

2. Designated color of top coat
The paint is either 2-or 3-liquid type. Mix the pigment, additive and hardener in the correct ratio.

- Top coats for solid and metallic enamel base, and top coat clear.
- Mix the additive into the pigment in the correct ratio.
- Mix the hardener into the mixture of additive and pigment (3-liquid type).

NOTE:

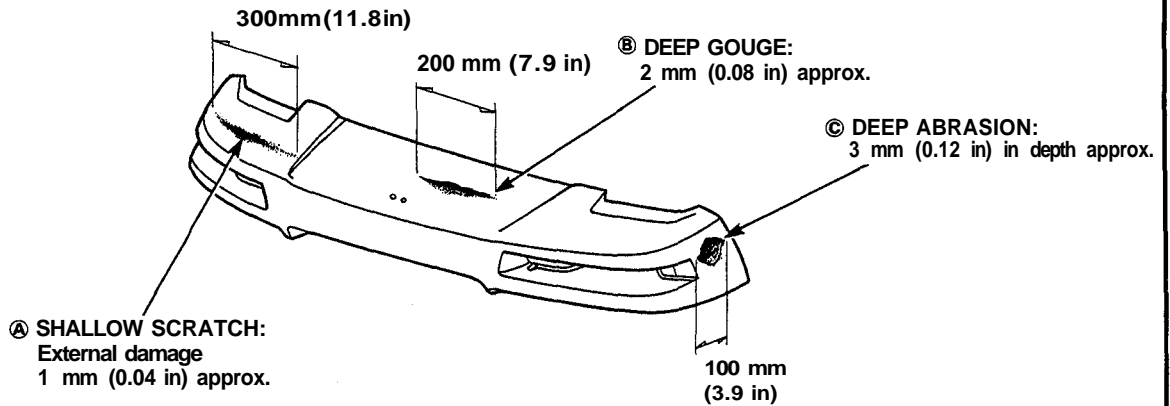
- Follow the paint manufacturer's instructions.
- Excessive additive will retard hardening.
- After mixing, dilute with the specified thinner to attain viscosity for spraying.

Mixing of pigment, additive, hardener and thinner:

Paint name	Mixing ratio (Reference)				
	Enamel undercoat	Top clear coat	Additive	Hardener	Thinner
Super centari (Du Pont)	100	100	10	55	20-30%
Super ponacle (R-M)	100	100	—	50 33 50	
Auto cryl, Auto base (Akzo)	100	100	AB*10 AC*30	50	AB*: 100% AC*: 30%

NOTE: Follow the manufacturer's instruction.
AB*: Auto base
AC*: Auto cryl

Repair Procedures



Work steps	Damage		B	C	Repaint/ Replacement part
	To base material	External damage			
1. Sanding	↑		↑		
2. Degreasing/Cleaning (Damaged areas)	▨		↑		
3. Applying filler			↑		
4. Drying filler			↑		
5. Sanding filler			↑		
6. Degreasing/Cleaning	▨		↑		
7. Spraying primer/primer surfacer			↑		
8. Drying primer			↑		
9. Applying spot putty			▨		
10. Drying/Sanding			↑		
11. Intermediate coating	↓	↑	↓	↑	↑
12. Drying/Sanding		▨	↓	▨	▨
13. Masking		↓	↓	↓	↓
14. Surface discharging					
15. Top coating					
16. Drying top coat					
17. Polishing/Buffering					

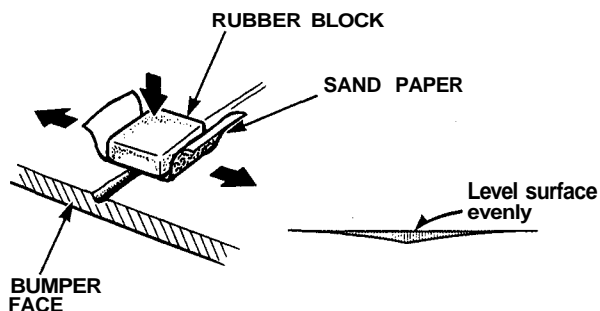
NOTE: (▨) Indicates steps which may be required according to the degree of damage.

Front and Rear Bumpers

Refinishing Procedures

1. Sanding damaged area

NOTE: Use a rubber block and sandpaper until surface is flat and smooth.
Sand evenly.



Shallow scratch (External damage):

Wet sand the damaged section with #600 - #1200 sandpaper.

Damage to base material:

Wet sand the damaged section with #600 sandpaper.

Deep scratches, when applying filler:

- Level and finish burrs and other irregularities with #180 sandpaper.
- Wet sand the damaged section with #280 sandpaper.

Repaint or paint replacement part

Wet sand the top coat or intermediate coat (gray) surface flat and smooth with #600 - #800 sandpaper.

2. Degreasing/Cleaning

⚠ WARNING

- Do not use high air pressure; use only an approved, 210kPa (2.1 kg/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Wipe off all lint and other foreign particles from the surface with a tack cloth.

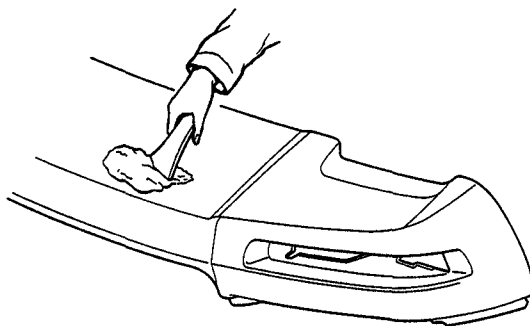
NOTE: Be sure to use a tack cloth to clean the surface as dust and dirt are electrostatically drawn to the surface.

3. Applying filler

- Degrease surfaces thoroughly with wax and grease remover.
- Thoroughly mix the filler and hardener.

NOTE:

- Mix the filler and hardener in the proper ratio.
- Follow the filler manufacturer's instructions.



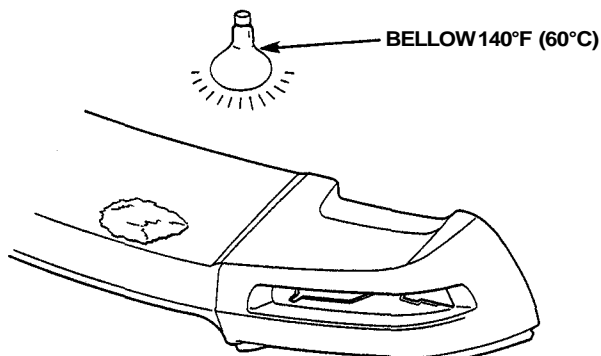
4. Drying filler

Air dry to 5 minutes, then heat to 140°F (60°C) for 10-20 minutes with a dryer.

⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to burn. Do not touch parts being dried.

NOTE: Use care when heating to prevent deformation.

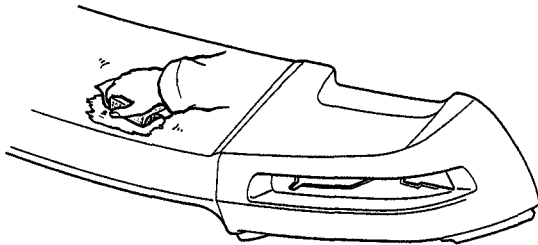


5. Sanding filler

- Sand with double action sander and #180 or #240 sandpaper until the surface is flat and smooth.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

- Use a rubber or wooden block back plate when the surface is to be wet or dry sanded by hand, with #280 sandpaper.
- Wet sand with #400-#600 to where primer and primer surfacer are to be applied.



6. Degreasing/Cleaning

- Clean with wax and grease remover and blow with compressed air.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210kPa (2.1 kg/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Wipe off all lint and other foreign particles from the surface with a tack cloth.

NOTE: Be sure to use a tack cloth to clean the surface as dust and dirt are electrostatically drawn to the surface.

7. Spraying primer and primer surfacer

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store in safe place, and keep it away from sparks, flames or cigarettes.
- Pour the necessary amount of primer or primer surfacer into a beaker.
- Add hardener and thinner to the primer or primer surfacer in the correct ratio.

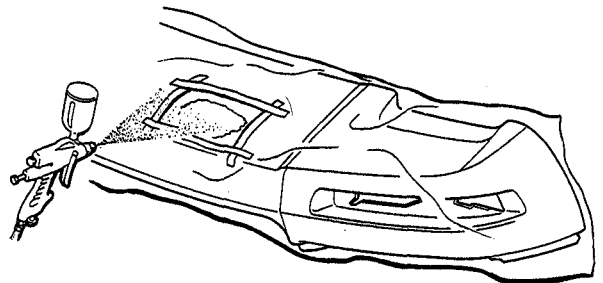
NOTE:

- Before pouring, stir contents thoroughly.
- Follow the primer/primer surfacer manufacturer's instructions.
- Fill the cup with primer/primer surfacer adjust nozzle and pressure, and test spray pattern.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210kPa (2.1 kg/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Spray primer or primer surfacer as required.

NOTE: Avoid heavy application of primer/primer surfacer at one time. Allow each coat to flash-off before applying another coat.



(cont'd)