

Aftermarket Part Quality: A Report on Parts that Fail CAPA's Certification Requirements

Study Dates: March 1999 – May 2003

Prepared By



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Summary

1,031 Aftermarket Part Numbers Tested 44% Failed CAPA Standards

During the period between March 1999 and May 2003, CAPA conducted vehicle test fits (VTF) of 1,031 aftermarket part numbers that were submitted for CAPA certification. **Nearly one-half (44%)** of these part numbers **failed** to meet CAPA standards for fit and appearance during their initial VTF.

The 458 part numbers in the study that failed CAPA's testing are representative of hundreds of thousands of parts available in the market that do **NOT** bear the CAPA seal. In addition, there are thousands of other part numbers that have not been submitted for certification. In a recent study, CAPA found that 5 out of 6 (83%) non-submitted parts, randomly selected from the marketplace failed to pass CAPA's certification standards. It is also important to know what standard a certification program applies. CAPA strongly believes that its method of actual product testing, as opposed to merely certifying the system of manufacturing, is critical to ensuring the quality of aftermarket parts.

Additionally, of the 458 part numbers that failed the CAPA VTF and were not CAPA certified, **30%** (136 part numbers) were approved by other programs at the time of testing. These 136 part numbers represent thousands of parts in the market that other programs assert are high quality parts.

A key component of CAPA's Quality Certification Program is the vehicle test fit process. For each vehicle test fit, CAPA takes precise measurements of the originally installed car company part, car company service part, and aftermarket parts submitted for CAPA certification. Detailed records are made of these measurements; and the fit and appearance quality of the parts are noted. The purpose of the vehicle test fit is to ensure that parts in the CAPA certification program are at least equivalent to the car company service parts being used by collision repairers.

Over time, the number of vehicle test fits performed continues to grow, as does the amount of data recorded from these test fits. In analyzing this data, clearly identifiable problems with aftermarket parts that fail CAPA's certification standards began to emerge.

Summary

This report contains an overall analysis of the quality of 1,031 aftermarket part numbers in systematic fit and appearance examinations. In particular, this report provides a perspective on the quality of aftermarket parts that do not meet CAPA's certification standards but are still available in today's market.

Visit the CAPA website at www.CAPACertified.org for more information on the program.

Background

As part of its comprehensive vehicle test fit process, the Certified Automotive Parts Association conducts a Vehicle Test Fit on every part number submitted for CAPA certification. Since the VTF Program began, 1,031 aftermarket part numbers have been through CAPA's extensive vehicle test fit. 44% (458 part numbers) did not meet CAPA standards for fit, finish and appearance. These part numbers were not CAPA certified, and may still be in the marketplace as non-certified parts.

All CAPA certified part numbers must meet rigorous quality standards before entering the program. Following are the steps a part must take before the CAPA Quality Seal may be applied, including detailed information on the Vehicle Test Fit (VTF) Program.

The Four Steps to CAPA Certification:

1. Each manufacturer must pass rigid performance and quality standards regarding critical quality control, facility and manufacturing processes.



Metal Composition Testing

2. Each individual part number must pass an extensive battery of tests (materials, corrosion, weld integrity, adhesives, strength, etc.) and a Vehicle Test Fit (see page 5).
3. Factories, part checking fixtures and parts are regularly re-inspected.
4. The market is constantly monitored for quality via random inspections of materials and vehicle fit, as well as CAPA's unique complaint program.



Material Strength Testing



Chemical Composition Testing

Background

CAPA's Vehicle Test Fit (VTF) Program:

- Each part number must pass a vehicle test fit before becoming CAPA certified.
- An undamaged vehicle is located and brought to the lab. The vehicle is inspected and detailed measurements taken to ensure it meets manufacturer specifications.
- A car company service part and CAPA candidate parts for the vehicle or application are acquired.
- Each part is installed on the vehicle and carefully measured. A comparative analysis is performed on gap and flush measurements, holes, bodylines, attachment points and ease of mounting.
- If any non-conformance is found between the part applying for certification and the service part, the manufacturer is issued a corrective action request [CAR]. Once the manufacturer has corrected the errors noted in the CAR, they may again present the part number for certification. The part number will not be certified until all defects are corrected and all other testing requirements fulfilled.
- Once the VTF is completed, regardless of the outcome, a full report with digital photographs is provided to the manufacturer via a secure website.
- The VTF Program is also used for random part tests and complaint investigations.



Vehicle must meet manufacturer specifications.



Each part is installed and precisely measured.

Results

CAPA's Vehicle Test Fit (VTF) Program: Common Fit and Appearance Problems

Since the inception of the VTF Program, CAPA technicians have observed common fit and appearance problems with non-certified parts. If a part number is to be CAPA certified, problems such as these must be corrected prior to certification.

Following are typical examples of common defects exposed by CAPA's Vehicle Test Fit Program. Unlike programs that only certify a part's manufacturing system, CAPA's Vehicle Test Fit Program can identify and correct these problems before the parts enter the market. Because manufacturers can choose to sell a part that has failed CAPA's certification standards (without the CAPA seal, of course), these parts with these defects may still reach the market.

1. COMMON HOOD DEFECTS ON NON-CERTIFIED PARTS:

- Strikers incorrectly positioned so that the hood cannot be closed.
- Hinges shaped so that hood can't be opened far enough to be able to insert the prop rod.
- Parts with missing seam sealer.

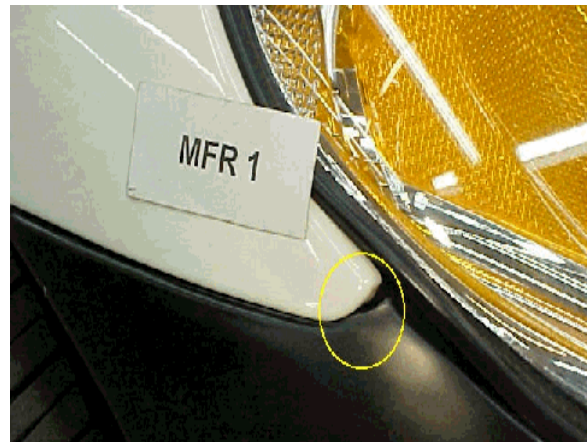
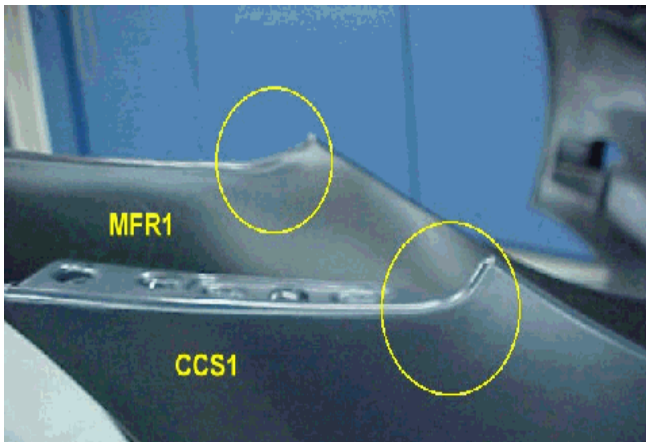


Faulty hinge prevents hood rod from safely engaging.

Results

2. COMMON BUMPER COVER DEFECTS ON NON-CERTIFIED PARTS:

- Upper corners of front bumper cover incorrectly shaped, creating a gap between the cover and the fender where there should be none.
- Mounting clips can't be installed due to non-uniform trimming and excess material.
- Mounting area construction unlike car company service part, resulting in assorted fit defects, plus difficult installation.
- Mounting holes in wrong locations.



The shape of the corner is different than the car company service part and car company original part, which causes a gap between the cover and the fender where there should be none.

Results

3. COMMON TAILGATE DEFECTS ON NON-CERTIFIED PARTS:

- Tailgate hinge bracket (passenger side) incorrectly shaped; parts could not be mounted.
- Latch lock mounting holes in wrong location; the locking mechanism could not be installed.
- Latching mechanisms that do not fully engage the latch lock; tailgate will not unlatch when closed.

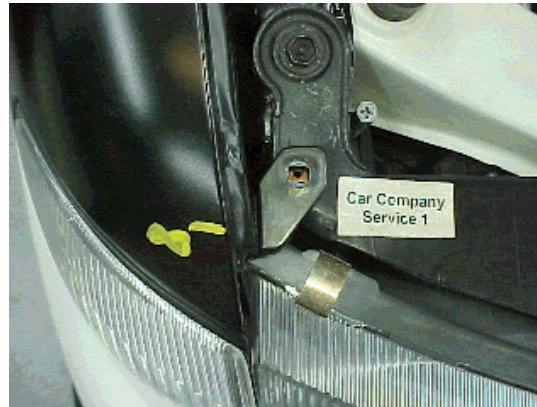


Faulty hinge bracket prevents tailgate from being installed.

Results

4. COMMON FENDER DEFECTS ON NON-CERTIFIED PARTS:

- Mounting weldments incorrectly positioned, which caused numerous gap and flush problems.
- Excess material cuts into front bumper cover.
- Incorrectly shaped critical areas create problems in fitting adjacent parts.



Non-certified AM fender incorrectly shaped/constructed. Corner lamp cannot be mounted.

These are typical problems commonly found in parts being presented to CAPA for certification. Parts such as these will not achieve CAPA certification until the problems have been corrected. Often, manufacturers will choose not to fix the problem and not resubmit the part to CAPA, and may continue to sell the part. Of course, these parts will not bear the CAPA seal or be listed or presented as CAPA certified. Finally, these are problems that have been noted on parts submitted for CAPA certification. Many, many parts are not submitted to CAPA for certification. The next section of the report provides some insight into the quality of those parts.

Results

Additional Problems Observed in Non-CAPA Certified Parts

While accurate usage data is difficult to obtain, a substantial number of potentially certifiable part numbers in the market have never been submitted to CAPA for certification. It is the choice of the manufacturer whether to present a part number for certification. While manufacturers may have a variety of reasons for not submitting a part number to be evaluated as functionally equivalent to the car company part it replaces, one possible reason is because the manufacturer has decided that the part would not comply with CAPA standards. In order to monitor the quality of CAPA parts in relation to potentially certifiable parts that do not bear the CAPA quality seal, CAPA performs random checks on non-certified parts.

As part of CAPA's examination of non-certified parts, samples are randomly purchased from the market and tested for fit and finish, as well as material properties such as the presence of galvanization.

Recently, CAPA randomly purchased 6 metal parts from the marketplace and after extensive testing discovered that 5 (83%) were made of non-galvanized material. They failed to meet CAPA's requirement that all steel parts be manufactured from double-sided galvanized material.

Other areas of deficiencies that would have led to non-CAPA certified parts failing to meet CAPA material tests, both plastic and metal, include: chemistry, outer skin thickness and fastener retention.

CAPA mandates a wide range of tests that must be passed prior to certification to ensure that CAPA certified parts will exhibit comparable performance characteristics. For example, if a bumper cover fails a CAPA test requirement designed to demonstrate that its thermal performance is comparable to the car company counterpart, the part could sag in hot weather. If a welded subassembly on a hood fails a CAPA test requirement for chemistry (it is not made of the same material as its car company counterpart), it could perform differently than the car company counterpart after installation.

A part number cannot become CAPA certified until it has passed the testing which demonstrates its comparability to the car company part.

Results

Legitimate part certification is critical to identifying acceptable parts in the market, because it is impossible to tell by mere observation

- If a part meets critical weld and adhesive requirements,
- If it is manufactured from the proper material,
- If the mounting brackets are in the proper place,
- If the hood latch is of the right strength,
- Or if it will even fit the vehicle.

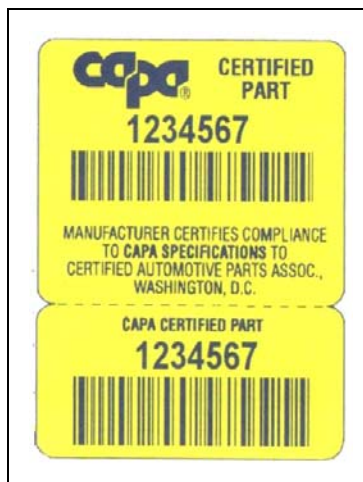
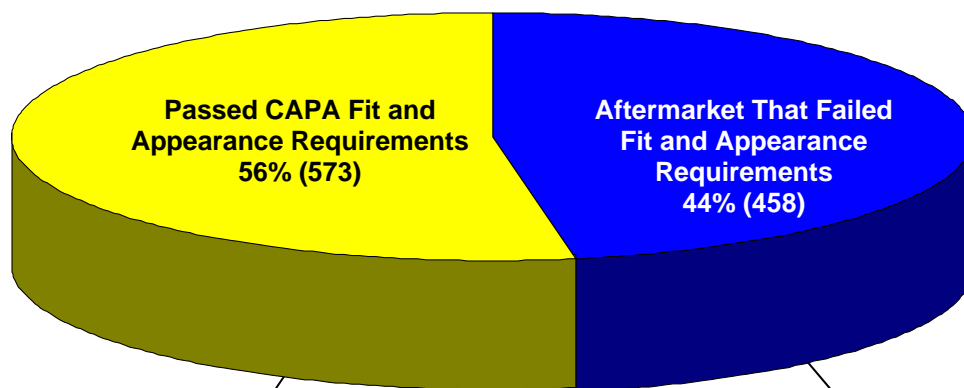
The CAPA certification program, with its established, mandatory tests and its unique Vehicle Test Fit Program, assures the market that the parts bearing the CAPA quality seal will meet the exacting demands of today's repairers and consumers.

Results

OVERALL AFTERMARKET QUALITY

RESULTS FROM VEHICLE TEST FITS OF AFTERMARKET PARTS SUBMITTED FOR CAPA CERTIFICATION (1,031 PART NUMBERS)*

**44% OF PART NUMBERS SUBMITTED TO CAPA FAIL
CERTIFICATION REQUIREMENTS***



**These parts numbers
can be certified.**

**These part numbers typically
remain in the market as
non-CAPA certified.**

**30% of these failed part
numbers are listed in other
approval programs.**

**You can only be assured of getting a quality part if you
Look for the CAPA Seal!**

**These figures are based on part numbers submitted to the program. Because many part numbers are not even submitted for CAPA certification, the true percentage of parts that fail to meet CAPA's certification standards is not known. However, in a recent study, CAPA found that 5 of 6 (83%) metal parts that had not been submitted to CAPA for certification randomly chosen from the market, failed CAPA's certification standards.*

Comparison of CAPA and Other Programs

There are other programs that use various methods to approve aftermarket parts. In reviewing the part numbers that failed to meet CAPA's standards, 30% were approved and accepted by other approval programs. It is therefore important to know what certification standards a certifier applies.

Some other programs are based on quality system registration requirements and do not include product certification in their approval requirements. CAPA strongly believes that approving a manufacturer's system alone does not assure product quality. Recently, the major car companies have acknowledged this concern as well and have integrated product certification aspects into their supplier requirements. That is why the CAPA program adheres to strict quality product certification standards in order to determine which parts can or cannot be certified. CAPA is the only part certification program in the industry today that certifies parts based on testing them after they are manufactured.

Ultimately, the most critical indication of the success of any such approach is the quality of the parts that are being presented to the market as certified.

Methodology

This report is the result of two different aspects of the CAPA program: CAPA's required vehicle test fit of each part presented for certification and CAPA's review of non-certified parts. These efforts are part of the regular work that CAPA does to ensure that the parts it certifies meet CAPA's rigorous standards.

Following is a detailed overview of how the two main criteria included in this report, fit and appearance, are evaluated.

Fit

For each test fit, the VTF Technician first takes detailed measurements of the factory installed part on the vehicle. Next, the technician installs both the car company service part and the aftermarket parts submitted for CAPA certification on the vehicle. The technician then adjusts the part to get the best possible fit. The technician will not modify a part to achieve an acceptable fit. In a collision repair shop, parts are regularly modified to fit. This is not part of the CAPA test fit process. The CAPA technician's goal is to determine whether or not the part has shortcomings that would make it undesirable in a collision repair situation.

The fit assessment includes the following:

FIT ASSESSMENT		
VTF Fit Evaluation Points	Evaluation Point Description	Potential Problems
Overall Fit to Adjacent Parts	Part shape, contour, length, style lines, etc. compatible to adjacent parts.	Non-complimentary Incorrect size Incorrect shape Incorrect position
Gap	The horizontal distance between two measurement points.	Inconsistent Tight Wide
Flush	The vertical distance between two measurement points.	High Low
Attachment Points	All brackets, fasteners, flanges, hinges, holes, striker-related components.	Incorrect position Incorrect size Incorrect construction

Methodology

Fit (continued)

An important aspect of CAPA's Vehicle Test Fit is the identification of critical fit points for the CAPA manufacturer. The critical points on each part submitted for a Vehicle Test Fit are marked, numbered and measured for gap and flush.

All sheet metal parts utilize checking fixtures in the factory to check critical features on the parts in a consistent and repeatable manner. The VTF measurement points of these parts correspond to the checking fixture measurement points. In addition, the Vehicle Test Fit identifies other critical points, such as mounting holes, and other crucial areas, such as the curve around a lamp or the cowl. This additional fit information helps the manufacturer in their efforts to produce a part that fits properly.

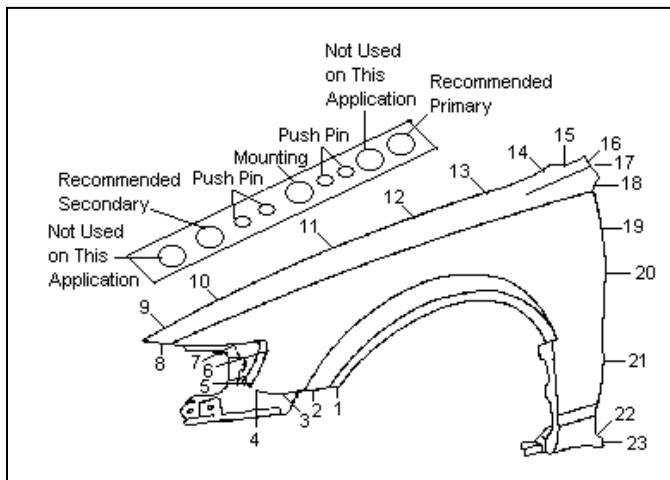


Diagram and corresponding photo of fender with checking fixture/VTF measurement points and mounting rail holes identified.

Methodology

Appearance

In addition to being evaluated for fit, both the car company service part and CAPA parts are evaluated for appearance quality.

APPEARANCE CRITERIA	
Item Checked	Potential Problems
Adhesive	Missing, lack of bond, or adhesive causing distortion to the Class "A" surface (pull down).
Burrs	Sharp teeth-like protrusions at the edge of the part.
Chips	Small areas where the EDP coat is missing; usually due to damage, i.e. caused by handling at the factory, warehouse or during shipping
Corner Radius	Rounded corners that do not match the car company service parts; corners lacking material creating a hole; sharp corners resulting from excess material or poor grinding operations. Opposite corners having differently shaped radii.
Dents or Bumps	Depression or protrusions on the Class "A" surface that can be seen or felt with the back of the fingernail.
Dirt or Foreign Matter	Small particles in the EDP coat Class "A" surface that can be felt with the back of the fingernail.
Excess Material	Extra material on the part that is not seen on the car company service parts which may affect the part fit to the vehicle. Seen as "flash" on plastic parts or in cowl areas, fender folds at door lines, mounting flanges, and hood corners.
Grind Marks	Cuts in the Class "A" surface that are present after EDP which can be felt with the back of the fingernail.
Metal Fold Lines	Visible fold line on the Class "A" surface caused by crimp operation on hoods.
Non-Uniform Coating Coverage	Inconsistencies in the EDP coating such as blisters, missing or thin EDP, or drip marks due to hanging that can be felt with the back of the fingernail.
Non-Uniform Trimming	Trimming inconsistencies on the Class "A" surface typically seen on plastic parts due to manual trim operations. Also can be seen on metal parts at mounting flange areas where trimming is inconsistent.
Orange Peel	Rippled or wavy EDP coating on the Class "A" surface that can be felt with the back of the fingernail.
Pits	Small porous holes in the EDP coat on the Class "A" surface.

Methodology

APPEARANCE CRITERIA	
Item Checked	Potential Problems
Rinse Residue	Visually detectable streaking marks or discoloration left after the EDP process.
Rolled Edges	Upward bulge typically seen along the crimped edge of the part or where metal forms a bodyline; observed at hood edges, fender-to-door line, fender cowl area, and top fender-to-hood edge.
Rough Surfaces	Inconsistencies on the Class "A" surface that can be seen or felt with the back of the fingernail; typical of poor EDP; surface feels gritty; can be a poorly reworked areas on part.
Scratches or Gouges	Marks on the Class "A" surface that can be felt with the back of the fingernail; most often caused by damage due to handling or debris in the stamping process.
Tool Marks	Markings left from the tool when it draws or shapes the material into the part.
Underside Metal Folds	Edges and corners not crimped in the same manner as the car company service parts. This applies to Class "B" and "C" surfaces on the part or the underside of parts.
Waviness/ Distortion/ Ripples	Visible variations on the Class "A" surface and formed edges such as bodylines, folds, or bends; includes edge roughness, edge contour, edge consistency, and edge radius.
Weld Burns or Missing Welds	Welds that burn through or distort the Class "A" surface; also welds that are missing.
Wet Mar	Smeared EDP coat due to packaging prior to coat being fully dry or cured.

Note: Class A surface areas are those that can be seen from an upright position when the part is installed on the vehicle and all mating components, such as hoods, doors, and trunk lids, are in the closed position.