

**CAPA**

# Quality**Watch**

A Periodic Report on Non-CAPA Certified  
Aftermarket Replacement Parts

## **Report Number 3**

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## Introduction

The reason CAPA was created nearly 25 years ago remains as important today as it was then: It is virtually impossible to determine if a replacement part is comparable to its car company brand counterpart just by looking at it or depending on marketing programs. CAPA is an independent, third-party, standard setting, certification organization that both the repair industry and consumers can use to identify parts in the market that are *truly comparable* to car company brand parts.

The CAPA Quality Watch (CQW) is designed to enable the market to keep watch and raise awareness on the quality of non-CAPA Certified aftermarket parts. Clearly there is a demand for manufacturers to supply parts that do not meet CAPA's Standards, but it's possible that using those parts may carry some risk, particularly for those looking for aftermarket parts that are truly comparable alternatives to car company brand parts. This report identifies the potential risk associated with certain specific non-CAPA Certified aftermarket parts. An estimated 75-80% of the aftermarket parts used by collision repairers are CAPA *Certifiable*, but *not CAPA Certified*.

The CAPA Quality Watch identifies non-CAPA Certified aftermarket parts in the market and tests them to various CAPA requirements for their comparability to car company parts.

In order to make a general assessment of the quality of non-CAPA Certified aftermarket parts, this CAPA Quality Watch report discloses the results of the comparative testing of 47 non-CAPA Certified aftermarket cosmetic metal and plastic, structural metal, plastic and foam, and lighting parts to their car company brand counterparts.

CAPA tested the parts for compliance with CAPA Standards which determine an aftermarket part's comparability to its car company counterpart. Not every requirement of the CAPA Standards was tested.

All of the parts tested were purchased directly from the market from the same population of parts available to a collision shop when ordering these parts for repairs. The general criteria for part selection included parts for a variety of vehicles and parts available for immediate purchase. For hoods, parts with strikers were selected.

## Capa Quality Watch Report: Results

**Nearly 90% (41 out of 47) of the independently manufactured replacement parts purchased for this report failed to conform to the CAPA requirements for comparability to the car company brand part.**

### Test Parameters

#### **Test Methods**

CAPA Standards are based on the comparative testing of independently produced aftermarket parts and their car company brand service counterparts using nationally recognized test methods, including those from ASTM, AWS, and SAE.

For the cosmetic metal parts in this report, material thickness, chemical comparability, mechanical comparability (tensile and yield strength), welds (location and strength), presence of galvanization, and fastener and striker (hood) retention, and/or presence of hem sealant were tested.

For the cosmetic plastic parts in this report, material thickness, chemical comparability, and mechanical comparability (flexural strength, tensile strength, and impact) were tested. In addition, fastener and striker retention, striker and hinge hardness, and hinge weldment thickness were tested on the Chrysler Sebring Convertible 96-00 Hood.

For structural metal bumper parts in this report, material thickness, chemical comparability, mechanical comparability (tensile and yield strength, hardness) were tested. In some cases, CAPA Full Part Stress Test (FPST), CAPA Vehicle Test Fit (VTF), and/or full vehicle crash testing and/or coatings tests were performed as well.

For the structural plastic bumper part in this report, material thickness, chemical comparability, and mechanical comparability (flexural and/or tensile strength, Izod Impact, and/or cold impact) was tested. In some cases, CAPA Full Part Stress Test (FPST) and CAPA Vehicle Test Fit (VTF) were performed as well.

For the structural foam bumper parts in this report, material thickness, chemical comparability, and mechanical comparability (flexural strength, compression, and density) were tested. In some cases, CAPA Full Part Stress Test (FPST), CAPA Vehicle Test Fit (VTF), and/or full vehicle crash testing was performed as well.

This analysis included thirteen hoods, five fenders, two bumper covers, seven front bumpers, three rear bumpers, two bumper brackets, two bumper braces, four reinforcement bars, seven energy absorbers, and two headlamps. In all cases, both the aftermarket and the car company brand parts were tested and compared to each other.

## **Overview Of Results By Test Category**

### ***Galvanization***

Of the fifteen car company brand cosmetic metal parts, fourteen parts were galvanized. Only one of the non-CAPA Certified aftermarket parts was galvanized.

The presence or absence of galvanization is significant because there is a clear difference in the potential corrosion resistance and life expectancy between galvanized and non-galvanized parts. The galvanized car company brand parts could be expected to have superior corrosion resistance and a longer use life in comparison to the non-galvanized, non-CAPA Certified aftermarket parts. Remarkably, one of the car company brand parts, the Hyundai Sonata 99-01 Hood, was made of non-galvanized metal.

### ***Hood Reinforcement Plate***

Two of the car company brand hoods were designed using a reinforcement plate. This plate is located in the front of the hood between the striker and the outer skin. The non-CAPA Certified aftermarket parts were completely missing this critical reinforcement plate.

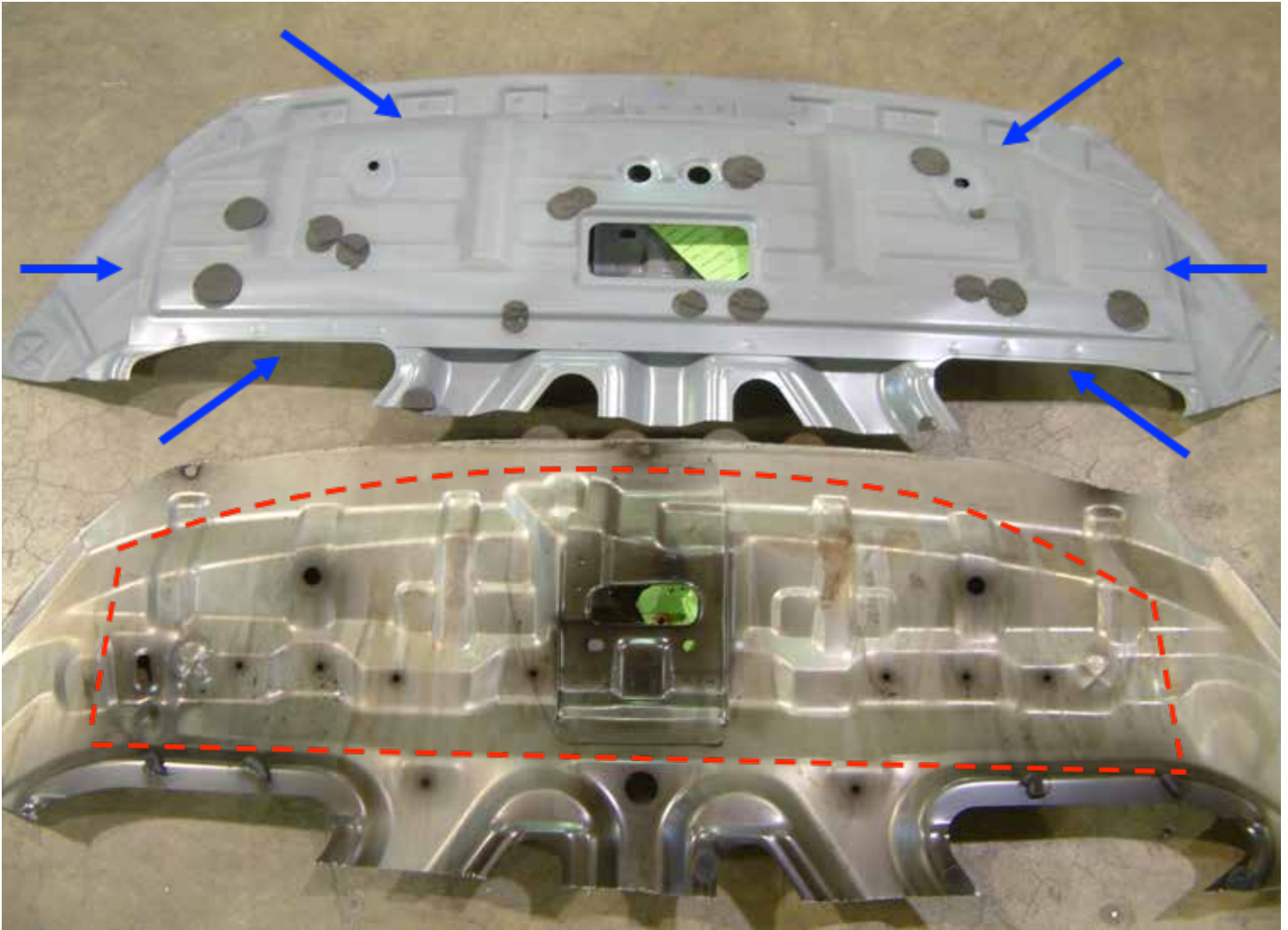
The reinforcement plate provides structure and support to the outer skin in the striker area. Because the reinforcement plate is located between the inner and outer skins of the hood, its presence or absence cannot be seen by simply looking at the hood. For an aftermarket part to meet CAPA requirements, all construction features of the car company service part must be present and tested for comparability to the car company brand part.

### ***Hood Hem Sealant***

One of the car company brand hoods was designed using a sealant in the hem. The hem sealant is located around the perimeter of the hood. The non-CAPA Certified aftermarket part was completely missing this sealant.

The hem sealant prohibits moisture from getting into the hem, which could then result in corrosion over time. For an aftermarket part to meet CAPA requirements, if the car company service part has a hem sealant, then the aftermarket part must also have a hem sealant.

**Figure 1: Missing Striker Reinforcement Plate**



These are portions of the inner skins of a car company brand (upper) and non-CAPA Certified aftermarket (lower) hood for the Kia Rio Sedan 03-05. The blue arrows indicate the perimeter of the striker reinforcement plate on the car company brand part. The non-CAPA Certified aftermarket part is missing the reinforcement plate entirely, as indicated by the red dotted line.

**Figure 2: Missing Striker Reinforcement Plate**



These are portions of the inner skins of a car company brand (upper) and non-CAPA Certified aftermarket (lower) hood for the Dodge Stratus Coupe 03-05. The blue arrows indicate the perimeter of the striker reinforcement plate on the car company brand part. The non-CAPA Certified aftermarket part is missing the reinforcement plate entirely; it should have been where the red dotted line is indicated. The striker plate cannot be seen on the finished part, which may explain way this manufacturer chose to leave it off.

## Strength and Impact Resistance

### ***Cosmetic Metal Aftermarket Parts***

Twelve of the sixteen non-CAPA Certified cosmetic metal aftermarket parts did not meet CAPA requirements for yield and/or tensile strengths when compared to the car company brand parts. The variations between the non-CAPA Certified aftermarket and car company brand parts were significant:

- In the case of the Toyota Celica 00-05 Hood, the yield strength was 40% less and the tensile strength was 20% less than the car company brand part.
- For the Dodge Stratus Coupe 03-05 Hood, the yield strength of the non-CAPA Certified aftermarket part was 38% less and tensile strength 15% less than the car company brand part.

These variations are significant because lower strength materials can result in lower dent resistance. These aftermarket parts did not meet CAPA requirements for comparability to the car company brand parts.

### ***Structural Metal Aftermarket Parts***

Eight of the eighteen non-CAPA Certified structural metal aftermarket parts did not meet CAPA requirements for comparability when compared to the car company brand parts. The variations between the non-CAPA Certified aftermarket and car company brand parts were significant.

- The yield strength of the Ford Fusion 06-09 Reinforcement Bar was 89% less and its tensile strength 80% less than the car company brand part. This extreme variation may be attributed to differences in alloys between the two parts: the non-CAPA Certified aftermarket part was manufactured of a low carbon steel and constructed differently than the car company brand part, which was made of an ultra-high strength steel.
- In the case of the Toyota Matrix 09-10 Reinforcement Bar, the non-CAPA Certified aftermarket part's yield strength was 76% less and its tensile strength 58% less than the car company brand part. This extreme variation may be attributed to differences in the aluminum between the two parts: the car company brand part was made of a 6000 series aluminum and the non-CAPA Certified aftermarket part was manufactured of a 7000 series aluminum, which is of much lower strength.



- In the case of the Nissan Maxima 09-11 Reinforcement Bar, the non-CAPA Certified aftermarket part's yield strength was 79% less and its tensile strength 78% less than the car company brand part. This extreme variation may be attributed to differences in alloys between the two parts: the non-CAPA Certified aftermarket part was manufactured of a low carbon steel and the car company brand part was made of an ultra-high strength steel.

The variations are significant because in addition to protecting the vehicle, bumper systems may also have an impact on the operation of some of the safety items in a vehicle. These aftermarket parts did meet CAPA requirements for comparability to the car company brand parts.

### ***Cosmetic Plastic Aftermarket Parts***

All four of the non-CAPA Certified cosmetic plastic aftermarket parts did not meet CAPA requirements for thickness, strength, and/or impact resistance.

- In the case of the Chrysler Sebring Convertible 99-00 Hood, the flexural strength of the non-CAPA Certified aftermarket part was 32% less and the tensile strength 33% less than the car company brand part.
- In the case of the Saturn S Series 96-99 Fender, the flexural strength of the non-CAPA Certified aftermarket part was 72% less and the tensile strength 66% less than the car company brand part. This extreme variation may be attributed to the difference in material used to make the parts: the non-CAPA Certified aftermarket part was made of PP (Polypropylene) and the Saturn part was made of PPE + PA (Polyphenylene Ether Blend + Polyamide).



**Figure 3:**  
***Non-CAPA Certified Aftermarket Part  
Saturn S Series 96-99 Fender***

The part is PP (Polypropylene). Even though it visually appears to be “the same” as the car company brand part, it is actually made of a completely different material.



**Figure 4:**  
***Car Company Brand Part  
Saturn S Series 96-99 Fender***

The part is made of PPE + PA (Polyphenylene Ether Blend + Polyamide).

### **Structural Plastic and Foam Aftermarket Parts**

All seven of the non-CAPA Certified structural plastic and foam aftermarket parts did not meet CAPA requirements for strength and impact resistance. Again, the variations between the non-CAPA Certified aftermarket and car company brand parts were significant:

- In the case of the Chevrolet Aveo 07-11 Energy Absorber, the non-CAPA Certified aftermarket part's flexural strength was 51% less, its compression was 59% less, and its density was 57% less than the car company brand part. These extreme variations may be attributed to the difference in material used to make the parts: the non-CAPA Certified aftermarket part was made of PS (Polystyrene) and the Chevrolet part was made of PP (Polypropylene).
  
- In the case of the Chevrolet Malibu 08-11 Energy Absorber, the non-CAPA Certified aftermarket part's tensile strength was 68% greater than the car company brand part. This extreme variation may be attributed to differences in plastic materials between the two parts: the non-CAPA Certified aftermarket part was manufactured of a polypropylene and polyethylene blend, and the car company brand part was made of "pure" polypropylene. The blend found in the non-CAPA Certified aftermarket part may be acting to increase the stiffness of the material. The blended material also caused the non-CAPA Certified aftermarket part to react in a brittle fashion upon impact.
  
- In the case of the Ford Fusion 06-09 plastic Energy Absorber, the non-CAPA Certified aftermarket part's flexural strength was 53% less than the car company brand part. This extreme variation may be attributed to the difference in material used to make the parts: the non-CAPA Certified aftermarket part was made of ABS (Acrylonitrile Butadiene Styrene) and the Ford part was made of PC/PBT (Polycarbonate / Polybutylene Terephthalate). To see how differently the non-CAPA Certified aftermarket and Ford energy absorbers performed during an impact test, visit the CAPA website at <http://www.CAPAcertified.org/crash/>. In this comparative test, the non-CAPA Certified part literally shattered upon impact. In addition, the non-CAPA Certified aftermarket part was falsely identified as being made of "PC+PBT."



**Figure 5:**  
***Accurate Material ID on Car Company Brand Part***

The material identification "PC/PBT" (Polycarbonate / Polybutylene Terephthalate) molded into the car company brand energy absorber for the Ford Fusion 06-09.



**Figure 6:**  
***Fraudulent Material Marking on Non-CAPA Certified Aftermarket Part***

The material identification, indicated by the red arrow, "PC+PBT" (Polycarbonate / Polybutylene Terephthalate) molded into the non-CAPA Certified aftermarket energy absorber for the Ford Fusion 06-09. The part is actually made of ABS (Acrylonitrile Butadiene Styrene).

For structural parts, an aftermarket part made of stronger material than the car company brand part may have a detrimental effect on the vehicle's safety systems, i.e. stronger does not necessarily mean better, particularly for a part that is intended to absorb energy in a collision. Of equal concern are those parts we found to be made of significantly weaker materials. None of these aftermarket parts met CAPA requirements for comparability to the car company brand parts.

### **Hood Strikers**

Ten car company brand hoods had striker bars that were heat treated, either by *through hardening* and/or *case hardening*. **None**<sup>1</sup> of the corresponding non-CAPA Certified aftermarket hoods had striker bars that were heat treated.

The proper (and comparable) heat treatment of striker bars is significant because it affects wear resistance. Over time, the non-CAPA Certified aftermarket hood strikers would likely demonstrate greater wear due to abrasion with the latches than the car company brand hood strikers.

■ In the case of the Kia Rio Sedan 03-05 Hood, the non-CAPA Certified aftermarket hood striker, which was not heat treated, broke during the retention test at a strength that was 21% less than the car company brand part.

CAPA requires that any hardening process used by the car company brand part must be used in the manufacture of the CAPA Certified part.

Four of the non-CAPA Certified aftermarket parts did not meet CAPA requirements for striker retention when compared to the car company brand parts. CAPA striker retention testing measures the strength of the attachment of the striker to the striker plate. The variations between the non-CAPA Certified aftermarket and car company brand parts were significant:

■ In the case of the Hyundai Sonata 99-00 Hood, the non-CAPA Certified aftermarket part's striker retention was 24% less than the car company brand part. CAPA requires the aftermarket part's striker retention to be comparable to that of the car company brand part.

■ In the case of the Chevrolet Tracker 99-04 Hood, the non-CAPA Certified aftermarket part's striker retention was 14% less than the car company brand part.

Once a part becomes certified, CAPA requires that one part per lot undergo, and pass, striker retention testing in order to maintain certification. This on-going requirement (via continuous testing and inspection) for full compliance is one of the many components of the CAPA program that makes it unique.

<sup>1</sup> Through hardening is a heat treating process where the entire diameter of the striker is hardened. Case hardening is a heat treating process where only the surface of the striker is hardened in preference to the core.

## **Welds**

### **Size**

The size of the spot welds in the striker areas of eleven hoods, one reinforcement bar, and one fender were tested. All of the non-CAPA Certified aftermarket parts failed to meet CAPA requirements for weld size when compared to the car company brand parts.

- In the case of the Nissan Maxima Reinforcement Bar, the non-CAPA Certified aftermarket part's welds were 25% smaller than the car company brand part.

This is significant because weld size equals weld strength: smaller welds mean weaker welds.

### **Missing**

Eight of the non-CAPA Certified aftermarket parts were missing welds, or had weld patterns that were different than the car company brand parts.

- In the case of the Ford Fusion 06-09 Reinforcement Bar, the non-CAPA Certified aftermarket part was missing 50% of the welds present on the car company brand part.
- In the case of the Hyundai Sonata 99-01 Hood, the non-CAPA Certified aftermarket parts used a different welding method than the car company brand part, i.e. the aftermarket part had arc/tack welds, and the car company brand part had spot welds.
- In the case of the Chevrolet Tracker 99-04 Hood, the non-CAPA Certified aftermarket part was missing 37% of the welds present on the car company brand part.

**Figure 7: Missing Welds**



These are the hood striker areas of a car company brand (upper) and non-CAPA Certified aftermarket (lower) hood for the Chevrolet Tracker 99-04. The numbered circles in red on the non-CAPA Certified aftermarket part indicate missing welds when compared to the car company brand part.

Missing welds indicate that the strength of the welded connections found on the aftermarket part will be less than that of the car company brand part. Changes in the weld pattern and weld method indicate that the aftermarket part will perform differently than the car company brand part because stress applied to the part will be transferred differently, which is particularly significant in the case of structural parts.

CAPA requires that size, strength, position, and method of welds on the aftermarket part match those of the car company brand part.

### ***Fastener Retention***

Twelve non-CAPA Certified aftermarket parts failed to meet CAPA requirements for fastener retention when compared to the car company brand parts.

- In the case of the Ford Focus 05-07 Hood, the average fastener retention of the non-CAPA Certified aftermarket part was 81% less than the car company brand part. The non-CAPA Certified aftermarket part used a different type of fastener than the car company brand part.
- In the case of the Toyota Celica 00-05 Hood, the average fastener retention of the non-CAPA Certified aftermarket part was 49% less than the car company brand part.
- In the case of the Chevrolet Silverado 99-07 Left and Right Bumper Brackets, the fastener retention of the non-CAPA Certified aftermarket parts were 53% and 56%, respectively, less than the car company brand parts.
- In the case of the Chrysler Sebring Convertible 96-00 Hood, the average fastener retention of the non-CAPA Certified aftermarket part was 48% less than the car company brand part. The non-CAPA Certified aftermarket part used a different type of fastener than the car company brand part.

Hinge fasteners with low retention strength may break during installation.



**Figure 8: Different Fastener Construction**



These are the hood hinge fasteners of a car company brand (right) and non-CAPA Certified aftermarket (left) hood for the Chrysler Sebring Convertible 96-00. The non-CAPA Certified aftermarket part uses projection weld nuts and the car company brand part uses extruded and threaded fasteners.

## FMVSS 108 Compliance – Photometric

While CAPA requires certified lighting parts to demonstrate initial and ongoing compliance to FMVSS 108, this is a CAPA certification requirement that is not based upon comparability to the car company brand part. To achieve certification, the CAPA part must comply with FMVSS 108 even if the car company brand part does not.

Both of the non-CAPA Certified aftermarket Nissan Quest 04-09 Headlamps failed to meet the requirements of FMVSS 108. The left headlamp failed the low beam, high beam and side marker photometric tests. The right headlamp failed the side marker test. The failures of both lamps on the side marker test indicate that there are significant design issues that caused it to fail several points by more than 75% below the photometric requirement.

Once a part becomes certified, CAPA requires verification of FMVSS 108 photometric compliance on every certified lot in order to maintain certification. This on-going requirement (via continuous testing and inspection) for compliance is one of the many important and unique components of the CAPA program.

## CONCLUSION

This analysis showed that nearly 90% (41 of 47) of the non-CAPA Certified aftermarket parts failed to meet CAPA's requirements for comparability to the car company brand counterparts or FMVSS 108 compliance.

Four of five aftermarket parts used by collision repairers are not CAPA Certified and thus have not demonstrated compliance with the CAPA Standards. Given that the vast majority of aftermarket parts are **not** CAPA Certified, this analysis indicates that the industry's complaints about the quality of the majority of the aftermarket parts used every day may be well founded. This means that consumers **may** get aftermarket parts that are not comparable to their car company brand counterparts.

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
1	Buick Century 97-05 Hood	Outer skin non-galvanized; failed to match thickness and yield strength of car company brand part.  Striker not heat treated; failed to match car company brand part.  Failed to match welds of car company brand part: smaller welds.
2	Chevrolet Aveo Sedan 07-11 Energy Absorber	Failed to match material composition, flexural strength, compression and density of car company brand part.
3	Chevrolet Malibu 08-11 Energy Absorber	Failed to match material composition, thickness, tensile strength, Izod Impact and cold impact of car company brand part.
4	Chevrolet Silverado 1500/2500 Classic 99-07	None observed.
5	Chevrolet Silverado 1500/2500 Classic 99-07	None observed.
6	Chevrolet Silverado 1500/2500 Classic 99-07 Bumper Bracket L	Failed to match thickness of car company brand part.  Failed to match fastener shape and retention of car company brand part.

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
7	Chevrolet Silverado 1500/2500 Classic 99-07	Failed to match thickness of car company brand part.  Failed to match fastener shape and retention of car company brand part.
8	Chevrolet Silverado Fleetside, Base/LS/LS Hybrid/LT 99-07 Rear Bumper	Failed to match hardness of car company brand part.  Failed CAPA Vehicle Test Fit (VTF).
9	Chevrolet Silverado Fleetside, Base/LS/LS Hybrid/LT 99-07 Rear Bumper	Failed CAPA Vehicle Test Fit (VTF).
10	Chevrolet Silverado Base/LS/LS Hybrid (Classic) 1500/2500 03-07 Front Bumper	None observed.
11	Chevrolet Silverado 1500/2500 Series; Base/LS/LS Hybrid, Chrome 03-07	Failed to match tensile and yield strength of car company brand part.  Failed to match Full Part Stress Test performance of car company brand part.  Failed CAPA Vehicle Test Fit (VTF).
12	Chevrolet Silverado 1500/2500 Series, Painted 03-07 Front Bumper	None observed.

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
13	Chevrolet Tracker 99-04 Hood	<p>Outer skin non-galvanized.</p> <p>Failed to match striker retention of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller and missing welds.</p> <p>Failed to match fastener retention of car company brand part.</p>
14	Chrysler Pacifica 04-08 Energy Absorber	<p>Failed to match hardness of car company brand part.</p> <p>Failed to match thickness and compression of car company brand part.</p>
15	Chrysler Sebring Convertible 04-06 Front Bumper Cover	<p>Failed to match thickness of car company brand part.</p> <p>Failed to match cold impact of car company brand part.</p>
16	Chrysler Sebring Convertible 96-00 Hood	<p>Failed to match flexural strength and tensile strength of car company brand part.</p> <p>Failed to match striker hardness of car company brand part.</p> <p>Striker weldment non-galvanized.</p> <p>Failed to match hinge fasteners of car company brand part; failed to match fastener retention of car company brand part; failed to</p>
17	Chevrolet Sebring Sedan/Convertible 01-06 Hood	<p>Outer skin non-galvanized; failed to match yield strength of the car company brand part.</p> <p>Failed to match welds (striker weldment) of car company brand part: smaller welds.</p> <p>Striker not heat treated; failed to match car company brand part.</p> <p>Failed to match fastener retention of car company brand part.</p>

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
18	Dodge Caravan 05-07 Energy Absorber	Failed to match thickness, flexural strength and flexural modulus of car company brand part.
19	Dodge Dakota 04-04 Fender L	Outer skin non-galvanized.  Failed to match thickness of the car company brand part.  Included an additional fastener not found on the car company brand part.
20	Chrysler Sebring Convertible 04-06 Front Bumper Cover	None observed.
21	Dodge Stratus Coupe 03-05 Hood	Missing striker area reinforcement weldment.  Failed to match striker diameter of car company brand part.  Outer skin: Non-galvanized; failed to match thickness, tensile and yield strength of car company brand part.  Failed to match welds of car company brand part: smaller and missing welds.  Failed to match fastener retention of car company brand part. match hinge weldment thickness of car company brand part.
22	Ford Focus 05-07 Hood	Outer skin non-galvanized; failed to match yield strength of the car Outer skin non-galvanized; failed to match yield strength of car company brand part.  Failed to match welds of car company brand part: smaller welds.  Failed to match hinge weldment construction of car company brand part; failed to match hinge fasteners of car company brand part; failed to match fastener retention of car company brand part.

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
23	Ford Fusion 06-09 Energy Absorber	<p>Failed to match material composition, flexural strength, and Izod Impact of car company brand part.</p> <p>Failed to match Full Part Stress Test performance of car company brand part.</p> <p>Failed CAPA Vehicle Test Fit (VTF).</p>
24	Ford Fusion 06-09 Reinforcement Bar	<p>Failed to match thickness, material composition, tensile and yield strength of car company brand part.</p> <p>Failed to match welds of car company brand part: missing welds.</p> <p>Failed to match Full Part Stress Test performance of car company brand part.</p> <p>Failed CAPA Vehicle Test Fit (VTF).</p>
25	Ford Pickup F150, New Style, with Fog Lamps 04-05	<p>Failed to match thickness, hardness, yield and tensile strength of car company brand part.</p> <p>Failed CAPA Vehicle Test Fit (VTF).</p> <p>Failed to match Full Part Stress Test performance of car company brand part.</p> <p>Failed to match Full Vehicle Crash Test performance of car company brand part.</p>
26	Ford Pickup F150, New Style, with Fog Lamps 04-05	<p>Failed to match thickness, tensile and yield strength of car company brand part.</p> <p>Failed CAPA Vehicle Test Fit (VTF).</p>
27	Ford Pickup, F150, New Style to 08/08/05, w/o Rear Object Sensors	<p>Failed to match thickness of car company brand part.</p> <p>Failed CAPA Vehicle Test Fit (VTF).</p>
28	Ford Pickup F250/F350 Super Duty 05-07 Front Bumper	None observed.

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
29	Honda Civic Coupe/Sedan (USA) 96-00	Failed to match thickness, flexural strength, compression, heat aged compression, and density of car company brand part.
30	Hyundai Sonata 99-01 Hood	<p>Outer skin non-galvanized; failed to match tensile and yield strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part; failed to match striker retention of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller and missing welds; different weld method.</p> <p>Failed to match fastener retention of car company brand part.</p>
31	Kia Rio Sedan 03-05 Hood	<p>Missing striker area reinforcement weldment.</p> <p>Outer skin non-galvanized; failed to match tensile and yield strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part striker; failed to match striker retention of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller and missing welds.</p> <p>Failed to match fastener retention of car company brand part.</p>
32	Kia Sorento 03-09 Hood	<p>Outer skin non-galvanized; failed to match tensile and yield strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part.</p> <p>Failed to match welds of car company brand part: smaller welds; different weld pattern.</p> <p>Failed to match fastener retention of car company brand part.</p>
33	Mercury Sable 00-05 Fender L	<p>Non-galvanized.</p> <p>Failed to match thickness and tensile strength of car company brand part.</p>



NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
34	Nissan Maxima 09-11 Reinforcement Bar	<p>Failed to match material composition, tensile and yield strength of car company brand part.</p> <p>Failed to match material composition, thickness, and hardness (weldment) of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller welds.</p> <p>Failed to match fastener retention of car company brand part.</p>
35	Nissan Quest 04-09 Headlamp L	Nonconforming to FMVSS 108.
36	Nissan Quest 04-09 Headlamp R	Nonconforming to FMVSS 108.
37	Saturn S Series Sedan/Wagon 96-99 Fender L	Failed to match material composition, thickness, flexural strength, tensile strength; Gardner Impact; and thermal properties of car company brand part.
38	Subaru Forester L model 01-02 Front Bumper Cover	<p>Failed to match thickness of car company brand part.</p> <p>Failed to match Gardner Impact and cold impact of car company brand part.</p>
39	Toyota Avalon 00-04 Fender L	<p>Non-galvanized.</p> <p>Failed to match welds of car company brand part: smaller welds.</p> <p>Failed to match fastener retention of car company brand part.</p>

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
40	Toyota Avalon 00-04 Hood	<p>Outer skin failed to match tensile and yield strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part striker; failed to match striker retention of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller welds; different weld pattern.</p>
41	Toyota Camry, USA 07-09 Energy Absorber	<p>Failed to match flexural strength and compression of car company brand part.</p>
42	Toyota Camry, USA 07-11 Reinforcement Bar	<p>Failed to match thickness of car company brand part.</p> <p>Failed to match Full Part Stress Test performance of car company brand part.</p> <p>Failed to match Full Vehicle Crash Test performance of car company brand part.</p>
43	Toyota Celica 00-05 Hood	<p>Failed to match thickness, yield and tensile strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part.</p> <p>Failed to match welds (striker weldment) of car company brand part: smaller welds; different pattern and number of welds; different weld method.</p> <p>Failed to match fastener retention of car company brand part.</p>
44	Toyota Matrix 09-10 Hood	<p>Outer skin non-galvanized; failed to match tensile and yield strength of car company brand part.</p> <p>Striker not heat treated; failed to match car company brand part.</p> <p>Failed to match weld of car company brand part: smaller welds.</p> <p>Failed to match fastener retention of car company brand part.</p>

NO.	Non-CAPA Certified Aftermarket Part	Quality Issues
40	Toyota Matrix 09-10 Reinforcement Bar	Failed to match material composition, thickness, yield and tensile strength of car company brand part.
41	Volkswagen New Beetle 06-10 Hood	<p>Outer skin non-galvanized; failed to match tensile strength of the car company brand part.</p> <p>Failed to match striker hardness of car company brand part.</p> <p>Failed to match welds of car company brand part: smaller welds.</p> <p>Failed to match hem sealant of car company brand part: no sealant.</p>
42	Volvo S80 99-06 Fender L	<p>Non-galvanized.</p> <p>Failed to match hole pattern of car company brand part.</p>

## Glossary

Term	Definition
<b>ASTM</b>	ASTM International. Formerly American Society for Testing and Materials. <a href="http://www.astm.org">www.astm.org</a>
<b>AWS</b>	American Welding Society <a href="http://www.aws.org">www.aws.org</a>
<b>Compression</b>	The deflection or deformation resulting from the application of a load.
<b>Density</b>	The mass per unit volume of a material.
<b>FMVSS 108</b>	Federal Motor Vehicle Safety Standard 108 for lamps, reflective devices, and associated equipment. Administered by NHTSA, the National Highway Traffic Safety Administration.
<b>Flexural Strength</b>	A material's ability to resist deformation under a bending load.
<b>Galvanization</b>	A zinc coating applied to a base metal such as steel to inhibit the corrosion of the base metal.
<b>Izod Impact</b>	A test method used to measure the impact resistance of plastics.
<b>Photometric</b>	Related to the measurement of the intensity of light.
<b>SAE</b>	SAE International. Formerly Society of Automotive Engineers. <a href="http://www.sae.org">www.sae.org</a>
<b>Tensile Strength</b>	The stress observed for a material under tension. The maximum stress achieved under tension is often referred to as the Tensile Strength or Ultimate Tensile Strength.
<b>Yield Strength</b>	The stress at which permanent deformation occurs.