

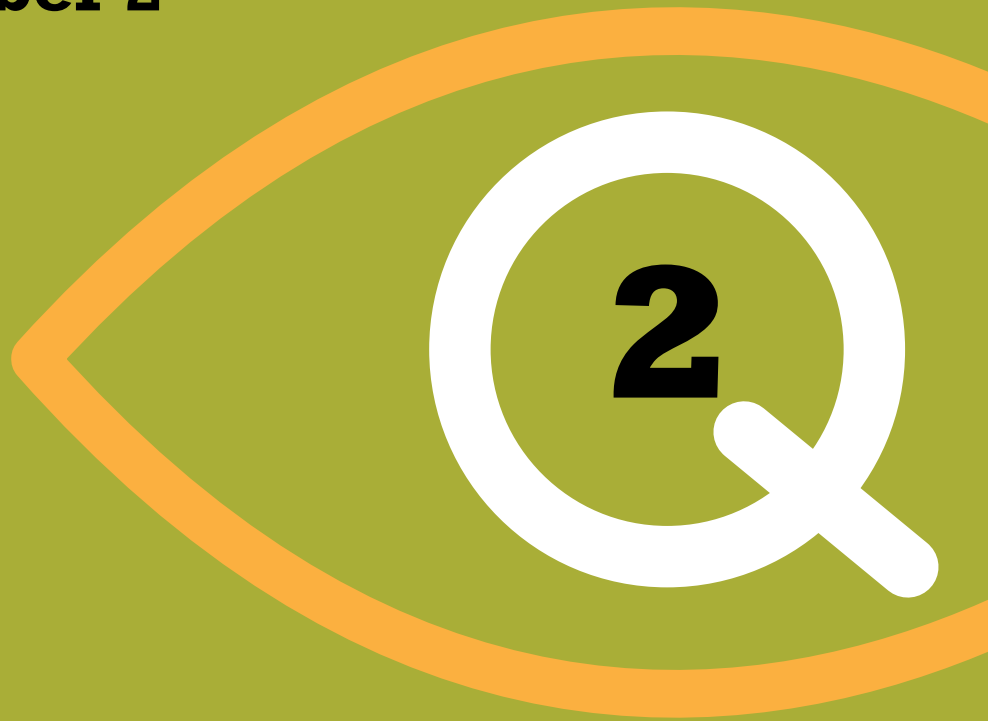
CAPA

Quality**Watch**

A Periodic Report on Non-CAPA Certified
Aftermarket Replacement Parts

Report Number 2

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Table of Contents

CAPA Quality Watch Report 2: Results 3

Test Parameters 3

Overview of Results by Test Category 4

Galvanization 4

Hood Reinforcement Plate 4

Strength and Impact Resistance 6

Hood Strikers 8

Welds 8

Fastener Retention 10

FMVSS 108 Compliance – Photometric 11

Conclusion 11

Glossary 12

Report Number 2 Results

Nearly 95% (14 out of 15) 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, or FMVSS 108 compliance.

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 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 the 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 coatings tests were performed.

For the structural foam bumper part in this report, material thickness, chemical comparability, and mechanical comparability (flexural strength, compression, and density) was tested.

For the lighting parts in this report, FMVSS 108 photometric testing was performed. Photometric fixtures were designed and fabricated to hold the lamps in their proper in-vehicle orientation.

Test Samples:

This analysis included three hoods, two fenders, one bumper cover, two bumper brackets, one front bumper, three rear bumpers, one energy absorber, 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

Failure to Galvanize

Of the three car company brand cosmetic metal parts, all were galvanized. None of the non-CAPA Certified aftermarket parts were galvanized. Combining these results with those in CAPA Quality Watch Report #1, 8 of the 8 metal parts examined were made of non-galvanized material.

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.

Missing Hood Reinforcement Plates

One of the car company brand hoods was 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 part was completely missing this critical reinforcement plate. This same problem was uncovered with another part in CAPA Quality Watch Report #1.

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.

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 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.

Inadequate Strength and Impact Resistance

One of the three non-CAPA Certified **cosmetic metal aftermarket parts** did not meet CAPA requirements for thickness, yield and tensile strengths when compared to the car company brand part. In the case of the Dodge Stratus Coupe 03-05 Hood, the outer skin thickness of the non-CAPA Certified aftermarket part was 11% less than the car company brand part. 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 thinner and lower strength materials can result in lower dent resistance. This aftermarket part did not meet CAPA requirements for comparability to the car company brand part.

All three 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 2: 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 3: Car Company Brand Part**Saturn S Series 96-99 Fender**

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

One of the six non-CAPA Certified **structural metal aftermarket parts** did not meet CAPA requirements for hardness when compared to the car company brand part. For the Chevrolet Silverado Fleetside 99-07 Rear Bumper, the hardness of the non-CAPA Certified aftermarket part was 12% less than the car company brand part.

The non-CAPA Certified **structural foam aftermarket part** did not meet CAPA requirements for strength, compression, and density. 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).

Improper Hood Strikers

One of the three car company brand hoods, the Chrysler Sebring Convertible 96-00, had a striker bar that was heat treated, by through hardening and case hardening. The striker on the corresponding non-CAPA Certified aftermarket hood was not 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 striker would likely demonstrate greater wear due to abrasion with the latch than the car company brand hood striker.

In addition, one of the three non-CAPA Certified aftermarket parts did not meet CAPA requirements for striker retention when compared to the car company brand part. CAPA striker retention testing measures the strength of the attachment of the striker to the striker plate. 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. CAPA requires the aftermarket part's striker retention to be comparable to that of the car company brand part. In addition, 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 important and unique components of the CAPA program.

Missing Welds

The size of the spot welds in the striker areas of two of the hoods were tested. Both of the non-CAPA Certified aftermarket parts did not meet CAPA requirements for weld size when compared to the car company brand parts. This is significant because weld size equals weld strength: smaller welds mean weaker welds.

Two of the non-CAPA Certified aftermarket parts were missing welds when compared to the car company brand parts. 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. 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.

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

¹ 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.

Two of the non-CAPA Certified aftermarket parts were missing welds when compared to the car company brand parts. 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. 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.

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

Figure 4: 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.

Weak Fastener Retention

Fastener retention was tested on the hood hinge areas. All three of the non-CAPA Certified aftermarket parts failed to meet CAPA requirements for fastener retention 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 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. 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.

Figure 5: 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 95% (14 of 15) 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.

Overview: Non-CAPA Certified Aftermarket Parts in CQW #2

| No. | Non-CAPA Certified Aftermarket Part | Quality Issues |
|------------|---|--|
| 1 | Chevrolet Aveo Sedan 07-11 Energy Absorber | Failed to match material composition, flexural strength, compression and density of car company brand part. |
| 2 | Chevrolet Tracker 99-04 Hood | Outer skin non-galvanized. Failed to match striker retention 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. |
| 3 | 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. |
| 4 | Chevrolet Silverado 1500/2500 Classic 99-07 Bumper Bracket R | Failed to match thickness of car company brand part. Failed to match fastener shape and retention of car company brand part. |
| 5 | 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). |
| 6 | Chevrolet Silverado Fleetside, Base/LS/LS Hybrid/LT 99-07 Rear Bumper | Failed CAPA Vehicle Test Fit (VTF). |

| No. | Non-CAPA Certified Aftermarket Part | Quality Issues |
|-----|--|--|
| 7 | Chevrolet Silverado Base/LS/LS Hybrid (Classic) 1500/2500 03-07 Front Bumper | None observed. |
| 8 | Chrysler Sebring Convertible 04-06 Front Bumper Cover | Failed to match thickness of car company brand part. Failed to match cold impact of car company brand part. |
| 9 | Chrysler Sebring Convertible 96-00 Hood | Failed to match flexural strength and tensile strength of car company brand part. Failed to match striker hardness of car company brand part. Striker weldment non-galvanized. Failed to match hinge fasteners of car company brand part; failed to match fastener retention of car company brand part; failed to match hinge weldment thickness of car company brand part. |
| 10 | Dodge Dakota 04-04 Fender L | Outer skin non-galvanized. Failed to match thickness of the car company brand part. Missing striker area reinforcement weldment. Failed to match striker diameter of car company brand part. |
| 11 | Dodge Stratus Coupe 03-05 Hood | 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. |

| No. | Non-CAPA Certified Aftermarket Part | Quality Issues |
|------------|---|---|
| 12 | Ford Pickup, F150, New Style to 08/08/05, w/o Rear Object Sensors 04-06 Rear Bumper | Failed to match thickness of car company brand part. Failed CAPA Vehicle Test Fit (VTF). |
| 13 | Nissan Quest 04-09 Headlamp L | Nonconforming to FMVSS 108. |
| 14 | Nissan Quest 04-09 Headlamp R | Nonconforming to FMVSS 108. |
| 15 | 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. |

Glossary

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