

Emissions and Fuel Economy Effects  
of the  
Platinum Gasaver,  
a Retrofit Device

July 1991

NOTICE

Technical Reports do not necessarily represent final EPA decisions or positions. They are intended to present technical analysis of issues using data which are currently available. The purpose in the release of such reports is to facilitate the exchange of technical information and to inform the public of technical development which may form the basis for a final EPA decision, position or regulatory action.

Test and Evaluation Branch  
Emission Control Technology Division  
Office of Mobile Sources  
U.S. Environmental Protection Agency

## 1.0 ABSTRACT

This report describes the Environmental Protection Agency's (EPA) testing of the "Platinum Gasaver" as part of its evaluation under Section 511 of the Motor Vehicle Information and Cost Savings Act (MVICSA). This evaluation was conducted at the request of the Federal Trade Commission (FTC) to verify the claims for large -- greater than 20 percent -- fuel economy benefits.

The Platinum Gasaver is a vapor air bleed device. It is installed with a "T" connector in the Positive Crankcase Ventilation (PCV) line between the PCV valve and the carburetor base or induction system. The device consists of a liquid reservoir, proprietary liquids, an orifice, and connecting tubing. During vehicle operation, engine manifold vacuum is used to draw air into the bottle where it bubbles through the solution, through the controlling orifice, through the "T" in the PCV line, and by this means is claimed to transport a very small part of the "platinum concentrate" to the engine where it is claimed to enhance the engine combustion process.

The device is claimed to improve fuel economy, reduce emissions, raise the octane of gasoline, and extend engine life. Only the fuel economy and emission claims for the device were evaluated in this test program.

Three typical vehicles were tested at EPA's Motor Vehicle Emission Laboratory. The basic test sequence included 2,000 miles of mileage accumulation, replicate Federal Test Procedures (FTP) and replicate Highway Fuel Economy Tests (HFET). This test sequence was conducted both without and with the Platinum Gasaver installed.

The overall conclusion from these tests is that the Platinum Gasaver did not significantly change vehicle emissions or fuel economy for either the FTP or HFET. The device clearly did not produce the large -- greater than 20 percent -- fuel economy benefits claimed by the manufacturer. Therefore, users of the device would not be expected to realize either an emission or fuel economy benefit. Vehicle operation and performance were unchanged by the device.

EPA previously evaluated the Platinum Gasaver at the request of a marketer of the device but did not conduct confirmatory tests since the applicant did not conduct the required screening tests following the established test protocols for this voluntary program.

## 2.0 BACKGROUND

Under Section 511 of MVICSA, EPA is required to evaluate devices which are claimed to improve fuel economy for the effect of the device on both emissions and fuel economy. The results of these evaluations are published in the Federal Register.<sup>1</sup>

EPA receives information about many systems which appear to offer a potential for reduction in emissions and/or an improvement in the fuel economy in conventional engines and vehicles. EPA's Emission Control Technology Division is interested in evaluating all such systems because of the obvious benefits to the Nation. EPA invites developers of such systems to submit information on the principle of operation together with available test data. In those cases where the system shows promise in the screening tests at an approved independent laboratory, confirmatory tests are run at the applicant's expense at the EPA Motor Vehicle Emission Laboratory in Ann Arbor, Michigan. Most Section 511 evaluations were conducted at the request of the applicants.

Under the MVICSA, EPA is also required to evaluate devices "at the request of the FTC when it has reason to believe that fuel economy representation made for a retrofit device being marketed may be inadequate."<sup>2</sup> This test program was initiated at the request of the FTC to determine if the fuel economy claims for the "Platinum Gasaver" device are representative. The results of such test projects are set forth in a series of test and evaluation reports, of which this is one.

The conclusions drawn from the EPA evaluation tests are necessarily of limited applicability. A complete evaluation of the effectiveness of a device in achieving performance improvements on the many different types of vehicles that are in actual use requires a larger sample of test vehicles than is economically feasible in the evaluation of test projects

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<sup>1</sup> The Section 511 evaluation report, of which this testing is part, is given in "Second EPA Evaluation of the Platinum Gasaver Device Under Section 511 of the Motor Vehicle Information and Cost Savings Act, EPA-AA-TEB-511-91-2. This document is available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

<sup>2</sup> 40 CFR Part 610, paragraph 610.12(a)

conducted by EPA. The conclusions from the EPA evaluation tests can be considered to be quantitatively valid only for the specific test cars used; however, it is reasonable to extrapolate the results from the EPA test to other types of vehicles in a directional manner; i.e., to suggest that similar results are likely to be achieved on other types of vehicles.

### 3.0 INTRODUCTION

The Platinum Gasaver is a vapor air bleed device which is installed with a "T" connector in the PCV line between the PCV valve and the carburetor base or induction system. The device consists of a liquid reservoir, proprietary liquids, an orifice, and connecting tubing to the PCV line. The plastic bottle reservoir contains the Gasaver solution to which the user adds the Gasaver concentrate containing the "platinum concentrate". During vehicle operation, engine manifold vacuum is used to draw air into the bottle where it bubbles through the solution, through the controlling orifice, through the "T" in the PCV line, and by this means is claimed to transport a very small part of the "platinum concentrate" to the engine where it is claimed to enhance the engine combustion process.

The device is claimed to improve fuel economy, reduce emissions, raise the octane of gasoline, and extend engine life. Only the fuel economy and emission claims for the device were evaluated in this test program.

EPA previously evaluated the Platinum Gasaver at the request of Pegusus Enterprises, a marketeer of the device, but did not conduct confirmatory tests since:

"The applicant did not submit any valid data to support the claims for increased fuel economy and lower emissions. The applicant was advised by letter on several occasions of EPA's requirement that applicant's submit valid test data following proper EPA test procedures. Based on the information provided by the applicant, there was no technical basis to support any claims for a fuel economy improvement or emission reduction with the Platinum Gasaver."<sup>3</sup>

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<sup>3</sup> "EPA Evaluation of the Platinum Gasaver Device under Section 511 of the Motor Vehicle Information and Cost Savings Act," EPA-AA-TEB-511-81-14 or PB 81-226706. This document is available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

#### 4.0 PURPOSE OF THE TEST PROGRAM

The purpose of the EPA test program was to conduct a controlled technical evaluation of the device to determine if the Platinum Gasaver met its advertised claims. Exhaust emissions, fuel economy, installation, and safety were to be specifically evaluated. The other claims -- increased octane and extended engine life -- were not evaluated.

#### 5.0 TEST PLAN

A test plan was developed by EPA (Appendix A). The FTC notified National Fuelsaver Corporation, the manufacturer of the Platinum Gasaver, of the intent to evaluate the device and sent the company a copy of the test plan. The manufacturer declined to participate in this test effort.<sup>4</sup>

The EPA test program consisted of the checkout of the test vehicles, mileage accumulation without the device<sup>5</sup>, replicate baseline tests, device installation, mileage accumulation with the device, and replicate device tests. The purpose of the vehicle checkout was to ensure each vehicle was representative of a properly-tuned vehicle and would provide a reasonable reference test condition. Installation was to be done per the instructions supplied with the product. (Appendix B.)

The vehicles were to be tested using the FTP and HFET. The FTP is the official EPA test procedure for determining the exhaust emissions of a vehicle. The results of both of these tests are also used to determine the fuel economy of a vehicle. The FTP is described in the Federal Register (40 CFR Part 86; July 1, 1990) and the HFET is described in the Federal Register (40 CFR Part 600; July 1, 1990). The vehicles were not tested for evaporative emissions.

Claims for the Platinum Gasaver not specifically addressed were the increased octane and extended engine life. The reason for not using specific procedures to evaluate these claims is that several of these are in large part subjective and procedures for their evaluation are neither well defined nor routinely used by EPA to evaluate devices. Others require extensive vehicle mileage or engine (out of vehicle) operation.

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<sup>4</sup> Letter dated June 19, 1989 from William I. Cowin of Freidman and Atherton (Counselors at Law for National Fuelsaver Corporation) to the FTC.

<sup>5</sup> Mileage accumulation consisted of 2,000 miles of driving over a prescribed route of city and highway mileage. The same 150-mile route was used for all mileage accumulation.

Three typical production vehicles were used; a Chevrolet Celebrity with a four-cylinder engine, a Ford Taurus with a six-cylinder engine, and a Dodge Van with an eight-cylinder engine. All vehicles were equipped with automatic transmissions. A more detailed description of each vehicle is provided in Appendix C.

5.1 CONDUCT OF TESTING

The testing (including mileage accumulation) was conducted by EPA. All tests were performed by the EPA at its Motor Vehicle Emission Laboratory in Ann Arbor. In general, the testing proceeded as planned.

Test Results - Installation

There were no problems encountered in installing the device on each vehicle. The instructions were generally clear. Only simple tools and minimal mechanical skills were needed for installation. Installation was performed by EPA technicians and required approximately one hour per vehicle. The installation on the Chevrolet Celebrity was slightly more complicated since the PCV line was metal rather than rubber; and therefore required cutting the metal tubing and installing reducer fittings to adapt to the small line of the device.

Test Results - Fuel Economy and Emissions

The test results for each vehicle are summarized below. Emission levels are given in grams/mile while fuel economy is given in miles per gallon. The individual test results for each vehicle are given in Appendix D.

Summary of EPA Test Results

	FTP				HFET			
	HC	CO	NOx	MPG	HC	CO	NOx	MPG
<b>Chevrolet Celebrity</b>								
Baseline	.13	2.36	.49	25.9	.04	.67	.27	41.0
Platinum Gasaver	.12	2.17	.60	26.3	.04	.74	.37	41.9
<b>Ford Taurus</b>								
Baseline	.25	4.26	1.17	21.5	.02	.48	.91	36.8
Platinum Gasaver	.31	5.73	1.06	22.0	.03	.65	.92	37.5
<b>Dodge Van</b>								
Baseline	.44	6.03	1.81	14.0	.12	.28	3.03	20.2
Platinum Gasaver	.39	5.24	1.83	14.2	.11	.26	3.03	20.1

These data were analyzed for statistical significance using the student "t" test<sup>6</sup> technique to determine if the differences observed were real or due solely to chance. This analysis showed that for the FTP tests the HC, CO, and NOx differences were not statistically significant at the 95% confidence level. For the HFET this analysis showed a very small decrease in HC emissions for one vehicle and a very small increase in NOx emissions for another vehicle. Although the similar analysis indicated that the very small changes noted in fuel economy might be statistically significant for one vehicle on the FTP (but not for the HFET on any vehicle), these data do not demonstrate that the device has a beneficial impact on fuel economy or emissions. EPA believes that the statistical significance of this fuel economy change is attributable solely to the unusually low test variability (less than 1%) noted during EPA's testing of the device rather than an effect of the device. The fuel economy test variability normally experienced at EPA and other test facilities (greater than 2% for even rigorously controlled correlation programs), would have resulted in EPA concluding that there was no fuel economy benefit. Clearly, the Platinum Gasaver did not produce the large -- greater than 20 percent -- fuel economy benefits claimed by the manufacturer. For this reason EPA believes that real fuel economy benefits are unlikely to be realized in actual driving when using the Platinum Gasaver. Vehicle operation and performance were unchanged by the device.

In addition, because all three test vehicles had relatively low odometer readings (less than 20,000 miles), it is unlikely that the fuel economy of the vehicles was fully stabilized. For this reason the mileage accumulation that occurred between the baseline testing and device testing would

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<sup>6</sup> The student "t" test is a standard statistical method that provides a powerful technique for analyzing experimental data involving quantitative measurements especially for small numbers of tests (i.e. 30 tests or less on each vehicle). The method allows confidence levels to be attached to the estimates of the effects of the independent variable (i.e., device effect). To minimize test costs for the screening tests conducted by applicants at independent laboratories, only hot start LA-4 (bags 1 and 2 of the FTP) are required and the data are screened at an 80 percent confidence level. For confirmatory tests conducted at EPA, the data are screened at a 95 percent confidence levels. Note: At a 50 percent confidence level, there is an equal probability that the device does or does not have an effect.

tend to increase the fuel economy of the vehicles and thus tend to bias the test results in favor of the device. EPA recognizes this complicating aspect of mileage accumulation but has had to design Section 511 device evaluation test programs without this factor since test programs designed to factor out the mileage effects would be several times larger and the test costs would escalate for the applicant. Other EPA test programs do have adjustments for vehicle mileage.

Thus, EPA concluded that the Platinum Gasaver has no emission or fuel economy benefit (or penalty) for either the FTP or HFET. Therefore, users of the device would not be expected to realize either an emission or fuel economy benefit.



## Appendix A

### Test Plan for EPA Testing of the Platinum Gasaver

#### Test Plan

The following is the test plan which will be used by the EPA in collecting data on the fuel economy and emission effects of the Platinum Gasaver device of National Fuelsaver Corporation (a retrofit device under Section 511 of the Motor Vehicle Information and Cost Savings Act). This testing is being conducted at the request of the FTC.

1. Representative vehicles will be identified and obtained by the EPA. Representativeness will be based upon the applicability of Platinum Gasaver as detailed in the manufacturer's literature; i.e., 1989 year or older, domestic, gasoline fueled and for engine size and manufacturer; i.e., small, medium, large engines from different manufacturers.
2. Vehicles will each be checked and adjusted to ensure that they are operating in accordance with vehicle manufacturer's specifications.
3. The test fuel will be commercial unleaded summer-grade gasoline from EPA storage facilities. This fuel is routinely used by EPA and its specifications are known.
4. All mileage accumulation will be with this same commercial unleaded summer-grade gasoline.
5. Baseline mileage accumulation. Each vehicle will accumulate 2,000 miles on an established road route using commercial unleaded summer-grade fuel. The vehicle will then be baseline tested.
6. Baseline tests. Duplicate, valid Federal Test Procedure (FTP) and Highway Fuel Economy Test (HFET) procedures will be performed on each test vehicle after baseline mileage accumulation. Basic vehicle driveability will be noted.
7. The Platinum Gasaver device will then be installed in accordance with the written installation instructions provided with the device.
8. The installations will be performed by EPA personnel. The vehicles may be checked, as necessary, for correct operation prior to initiation of these device tests.

9. Device Mileage Accumulation. Each vehicle will undergo mileage accumulation on the road sufficient to bring the total mileage with the device to 2,000 miles (commercial unleaded summer-grade fuel). For each vehicle, the mileage accumulation procedure will be the same as that used prior to baseline testing.

10. Device Tests. After mileage accumulation, the testing sequence performed for the baseline test will be repeated with the Platinum Gasaver installed.

11. Data Analysis. Test results will be analyzed to determine if there is a statistically significant difference between the data sets (vehicles without and with Platinum Gasaver).

12. Additional testing may be undertaken by EPA to further investigate items noted during the course of the test program.

## Platinum Gasaver Detailed In-House Test Plan

### I. Introduction

Comparative exhaust emission and fuel economy data are to be obtained on late model vehicles both without and with the Platinum Gasaver. All mileage accumulation will be done using commercial unleaded summer-grade gasoline from EPA storage facilities as needed.

### II. Test Vehicles

Three vehicles will be tested.

### III. Required Testing

#### A. Vehicle Prep

Prior to start of testing, each vehicle is to be tuned to manufacturer's specifications and parts replaced as required to ensure proper operation of the vehicle for 5,000 miles.

#### Parts

Air filter	check
Distributor cap	check
Fuel filter	check
Ignition wires	check
Oil	change use the same 10W30 oil in all test vehicles
Oil filter	change, use OEM
PCV filter	check
PCV valve	check
Rotor	check
Spark plugs	check
Tires	check

#### Adjustments (if adjustable)

Air/fuel mixture  
Choke  
Curb idle  
Fast idle  
Ignition timing

#### Checks

#### Compression

Record all items adjusted/checked/replaced. Record manufacturer's specifications and measured values for all items as appropriate.

B. Test Schedule

All vehicles will be tested using the same test schedule:

1. Check tire pressure set for road.
2. Drain and pressure check fuel system. Then refuel with commercial unleaded summer-grade gasoline from EPA fuel supply.
3. 2,000 miles of mileage accumulation on an established road route using commercial unleaded summer-grade gasoline from the EPA storage facilities.
4. Drain and refuel (approximately 3 gallons).
5. Sun analyzer vehicle specification check.
6. Set tire pressure for dyno.
7. Drain and refuel to 40% fill for prep.
8. LA-4 prep.
9. Overnight soak
10. Drain and 40% fill with chilled fuel. Heat build with no evaps. Then FTP and HFET tests with commercial unleaded summer-grade gasoline.
11. Repeat steps 7 to 10.
12. Remove test tires from vehicle and store.
13. Install Platinum Gasaver per manufacturer's written instruction.
14. Mileage accumulation to 2,000 miles with Platinum Gasaver using commercial unleaded summer-grade gasoline from EPA supplies. For each vehicle, the mileage accumulation route with the device will be the same as that used prior to baseline testing.
15. Install test tires.
16. Drain and refuel (approximately 3 gallons).
17. Sun analyzer vehicle specification check.
18. Duplicate FTP and HFET tests with the Platinum Gasaver installed (steps 7 to 10 completed twice).

C. General

The same driver and dynamometer should be used to test a given vehicle whenever possible. Driveability should be evaluated on the road and during testing. Written driveability comments are needed. To ensure only the proper fuel is used, the vehicles should be equipped with locking gas caps. Mileage accumulation will be performed by EPA drivers using an established road route. All fuel will be from EPA supplies.

**TABLE OF CONTENTS**

Contents of GASAVER KIT	3
Installation Instructions	4
Metering device replaces catalytic converter <i>(excerpt from DESIGN NEWS)</i>	6
Homogeneous Catalysis of Gasoline Combustion By Platinum and Rhenium <i>(presentation to the American Chemical Society)</i>	8
Excerpts from Mobil research referred to on page 15	20
Fleet Tests Data	21 & 22

**NATIONAL FUELSAVER CORP.**

PACKING CONTENTS and INSTALLATION INSTRUCTIONS

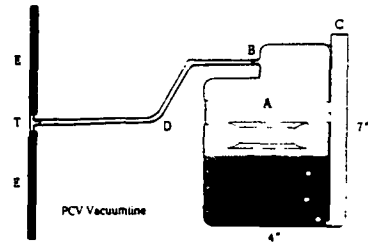
For a vehicle getting at least 9 miles per gallon.

*Do NOT pour the GASAVER concentrate into the GASAVER instrument without following the instructions below.*

*If your vehicle is under warranty, check with your dealer that this will not jeopardize the warranty.*

- 1 GASAVER Instrument, filled with GASAVER Solution
- 1 Plastic "T" Connector
- 3 Vials of GASAVER Concentrate (Each vial contains enough platinum for 6,000 miles of driving.)
- 1 Plastic Self-locking Releasable Strap

- A. GASAVER Instrument
- B. Horizontal Opening
- C. Vertical Opening
- D. GASAVER tubing
- E. PCV Rubber Vacuum line of vehicle
- T. "T" Connector



1. Horizontal opening "B" appears to be closed. IT IS NOT. We have gone to great expense to create an opening there equal to 1/200 inch. Do not disturb.
2. Locate the PCV rubber vacuum line going from the PCV valve to the base of the carburetor. Cut that vacuum line at a convenient spot and insert the two larger legs of the plastic "T" into the ends of the tube created by cutting it.
3. Connect one end of the GASAVER tubing "D" to the third leg of the "T".
4. Remove BOTH black caps from the GASAVER instrument and throw them away. YOU MUST REMOVE THE CAP COVERING OPENING "C" AS WELL AS THE CAP AT "B".
5. Find a safe and convenient location for the GASAVER instrument "A" under the hood of your car. Keep it away from the hot parts of the engine and exhaust, and avoid sharp corners that might puncture the instrument. Usually there is a suitable spot behind a headlight next to a canister, windshield washer container, or battery. (Do NOT attach to a warm or hot part of the car such as the radiator or radiator overflow tank.)
6. Secure the GASAVER instrument "A" using the self-locking strap provided for this purpose. Make sure that the instrument's horizontal opening "B" faces the "T" (point "T") in the vacuum line "E" to which the GASAVER tubing "D" has been attached.
7. Attach second end of GASAVER tubing to Horizontal opening "B" on GASAVER instrument. making the GASAVER tubing "D" as short and as straight as possible.

8. TURN ON ENGINE. After about 30 seconds you should see bubbling in the GASAVER Instrument. A bubbling rate of 20 to 30 bubbles in 10 seconds is correct. If otherwise contact your supplier.
9. With your engine still running, slowly and carefully pour one (1) of the vials of GASAVER concentrate into the GASAVER instrument "A" through the vertical opening "C".
10. Your PLATINUM GASAVER is now fully operational, although it may take from 200 to 1,800 miles for it to become fully effective. Even though NONE of the GASAVER solution in the instrument is consumed during the normal course of driving, the platinum is used up every 6,000 miles. It is necessary, therefore, to add one (1) of the vials of the GASAVER concentrate to the instrument each 6,000 miles of driving, to keep this PLATINUM GASAVER process effective and operational.

(Vertical opening "C" does not have to be covered. However, if you wish to cover it with nylon stocking material, you may. Just make sure that the bubbling rate remains 20 to 30 bubbles each 10 seconds.)

Appendix C

Test Vehicle Description

<u>Make/Model</u>	<u>Chevrolet Celebrity</u>	<u>Ford Taurus</u>	<u>Dodge Van</u>
Model Year	1988	1988	1987
Vehicle ID	1G1AW5IR6J6164308	1FABP50U5JG281067	2B4HB21T8HK 266892
Type	Four-door sedan	Four-door sedan	B250 Van Wagon
Initial Odom.	13423 miles	12149 miles	5320 miles
Engine Family	2.5L/I-4 J1G25V5TPG4	3.0L/V-6 JFM3.0V5FEGX	5.2L/V-8 HCR52T2BBF8
Fuel Metering	Fuel injected	Fuel injected	2 venturi
Evaporative Family	JAD-1C	AFU	HCRTJ
Emission Control System	EGR 3-way catalyst Closed-Loop	EGR 3-way catalyst Closed-Loop	EGR Oxidation Catalyst  Air pump
Transmission	Automatic Lockup-3 speed	Automatic Lockup-4 speed	Automatic Lockup-3 speed
Tires	P185/75R14	P205/70R14	P225/75R15
Test Parameters			
Inertia Weigh	3,000	3,500	5,000
hp @ 50 mph	6.3	6.6	16.1

Appendix D

Test Results

1988 Chevrolet Celebrity, 2.5 liter, 4 cylinder

FTP					HFET				
Emissions in Grams/Mile					Emissions in Grams/Mile				
Test No.	HC	CO	NOx	MPG	Test No.	HC	CO	NOx	MPG
Baseline									
# 1	.14	2.28	.45	26.1	# 1	.04	.61	.27	40.9
# 2	.11	2.43	.52	25.8	# 2	.05	.74	.28	41.2
Platinum Gasaver									
# 1	.12	2.42	.63	26.1	# 1	.05	.91	.39	41.7
# 2	.12	1.92	.56	26.4	# 2	.04	.57	.35	42.0

1988 Ford Taurus, 3.0 liter, 6 cylinder

FTP					HFET				
Emissions in Grams/Mile					Emissions in Grams/Mile				
Test No.	HC	CO	NOx	MPG	Test No.	HC	CO	NOx	MPG
Baseline									
# 1	.25	4.71	1.15	21.4	# 1	.02	.51	.89	36.5
# 2	.25	3.81	1.19	21.5	# 2	.02	.45	.93	37.1
Platinum Gasaver									
# 1	.27	5.78	1.09	22.1	# 1	.02	.43	.92	37.6
# 2	.34	5.68	1.04	21.9	# 2	.03	.87	.92	37.3

1987 Dodge Van, 5.2 liter, V-8

FTP					HFET				
Emissions in Grams/Mile					Emissions in Grams/Mile				
Test No.	HC	CO	NOx	MPG	Test No.	HC	CO	NOx	MPG
Baseline									
# 1	.40	5.89	1.93	14.0	# 1	.12	.22	3.12	19.9
# 2	.47	6.17	1.70	13.9	# 2	.12	.34	2.94	20.3
Platinum Gasaver									
# 1	.40	4.79	1.88	14.2	# 1	.11	.25	2.95	20.0
# 2	.39	5.69	1.78	14.2	# 2	.11	.28	3.11	20.1