

# Technical Information

## *Fuel Consumption Recommendations*



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# Volumetric Fuel Consumption Test Procedure for Individual and Commercial Fleet Fuel Consumption Verification

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Fuel consumption data is best accumulated and most accurate when comparing apples with apples. Most individuals understand the process of totalizing fuel usage by dividing total miles driven, by gallons of fuel consumed. However, most individuals do not understand the ramifications of diversity of load on vehicle fuel use and fuel use loss. As such, if one truly desires to identify the actual fuel consumption of their vehicle, then a few simple processes can and will help them acquire accurate information.

Although some suggestions identified in this protocol are obvious, others may appear to be foreign and baseless in relevancy when compiling pertinent information relative to actual fuel consumed. Laboratory studies have proven repeatedly that environmental elements such as wind and wind direction, inclement weather (rain/snow), barometric pressure, ambient temperature, etc., adversely affects actual fuel consumption data. As important, vehicle maintenance and equipment conditions such as tire pressure, air filter cleanliness, engine oil viscosity, gasoline or diesel BTU content, fuel supplier, vehicle weight and loaded test weight (number of people or baggage in the car at the time of the evaluation), engine tune-up standards, dragging disc or drum brakes, etc., also detrimentally affect important fuel data compilation.

Laboratory testing utilizing EPA procedures such as the H.F.E.T. (Highway Fuel Economy Test), F.T.P. (Federal Test Procedure), CMB (Carbon Mass Balance test procedure) and others utilize hand picked equipment, which are thoroughly scrutinized to minimize the affects, outlined previously in this document, of environmental, fuel and mechanical conditions on overall collected fuel data. Ultimately, the data collected utilizing the aforementioned procedures produces data with a high level of confidence, which more clearly documents the advantages of using a product such as Xtreme Fuel Treatment.

Since it is not always possible to conduct the laboratory test procedures identified previously in this document, it is however possible to conduct a meaningful fuel consumption test by minimizing potential test errors before conducting a fuel consumption analysis. Fuel consumption testing requires a dedicated effort to ensure that the data being accumulated is accurate. The following cursory setup process will best help to fundamentally improve the test procedure that you are about to initiate. Failure to follow these minimal, yet necessary, steps will impede your ability to collect accurate, reliable and repeatable data.

- Always use the same grade of fuel from the same supplier. Do not mix fuel suppliers during the course of the evaluation since specific gravity or fuel energy can differ significantly.
- Identify sound, mechanical equipment, that will not require maintenance or mechanical work during the course of the evaluation (oil changed, new air filter, tuned or current overhead, using minimal amounts of oil, injectors repaired, etc.). Maintenance work performed on the primary fuel system during the course of the evaluation renders the test data unreliable.
- Conduct your test under the same operating circumstances and time frames for each test segment (same time of day, same traffic conditions, same vehicle loading, same weather conditions, etc.) Do not perform the baseline (untreated) test during inclement conditions and the catalyst treated segment during dry conditions. This scenario will manifest an artificial increase or decrease in fuel usage and render the evaluation unreliable.
- Always make sure tire pressure is checked and identical for all test segments of the evaluation.
- In many cases, time and distance are not always equal. Determine the amount of time that it generally takes to

travel your fuel consumption test route (Drive consistently and customarily through your predetermined route at least 3 to 5 times to accurately determine baseline (without catalyst) fuel consumption and overall drive time of your selected route). If your time differential is more than + or – 2%, the differential in time will once again affect overall fuel consumption. Document the results for each tank full of fuel by dividing miles accumulated by the actual fuel consumed in gallons. Record the data so that it can be accurately included as part of the totalized final results.

- When filling the fuel tank, set the fuel delivery lock on the fuel nozzle to the same lock level each time. Do not alternately fill the fuel tank at a slow fuel flow rate during one filling process; then a fast fuel flow rate during a subsequent filling process. This will help to ensure that you dispense equal amounts of fuel each time you fill the fuel tank. When the fuel nozzle clicks off; you are finished filling the fuel tank (do not top off the tank). The very best way to do a test is only put in the same amount of gallons each time, (example you have a 20 gallon tank but during your test period only add 18 gallons each time for both the base line and treated segment). Treat the fuel tank with Xtreme Fuel Treatment catalyst (treated segment only) and begin testing. There is some question to whether all click offs of nozzles are the same, there are three different manufactures of nozzles, two of them will click off when the tank is full the third may have a variance, that is why it is important to fill to a certain number of gallons each time. Also, make sure you fill your tank at the same time of day either early morning or late afternoon, fuel can expand even in underground fuel storage tanks during summer months. The key is try to duplicate the way you fill your tank each time during the baseline and treated segments.
- Accurately account for accumulated miles to the tenth of a mile. Re-set the mileage trip meter each time you fill the fuel tank. For over the road trucks, the ECM (Electronic Control Module) should be re-set post baseline (without catalyst) data so that the data being collected is for the catalyst treated segment of your evaluation only.
- Operate the mechanically sound test equipment with catalyst treated fuel for the minimum recommended manufacturers' (Syntek Global) time intervals of 6,000 miles (over-the-road), or 300 hours (off-road equipment). Do not deviate from the recommended time intervals due to the evolving affects of catalytic stabilization of the combustion chamber.
- Add the Xtreme Fuel Treatment catalyst to the fuel tank and drive consistently and customarily throughout all segments of the treated evaluation (be careful not to change your driving habits). Document the results for each tank full of fuel by dividing miles accumulated by the actual fuel consumed in gallons. Record the data so that it can be accurately included as part of the totalized final results. It is very important to know that idle time can effect fuel mileage as well as using the air conditioners in summer months. Do not do baseline without air conditioning and treated segments with air conditioning, again, this can affect performance. There is also a difference between winter blend fuels and summer blend fuels, make sure all fuels are the same.
- At the conclusion of the evaluation, compare the documented baseline fuel consumption data with the treated fuel consumption data. To determine fuel consumption change in percentage use the following calculation:

Treated data – Baseline data =; then, divide by Baseline data

Example: 19.7 mpg (treated) – 18.5 mpg (baseline) = 1.2 mpg; / 18.7 mpg (baseline) = .06486% or 6.5%