

Fuel Pulse ATP Test Kit – Instructions For Submitting Fuel Samples

When you're doing microbial monitoring and analysis for your stored fuel, you want to make sure you're using the best practice methods that guarantee the most accurate and reliable results from the ATP microbial count testing conducted on those samples.

These instructions are provided to give guidelines on how to take samples, how to handle them properly, and how to submit them for testing using the Fuel Pulse ATP Test Kit materials.

Test Kit Contents

Your ATP Test Kit should contain the following:

- One (1) insulated shipping box
- Two (2) sample container bottles with lids
- Four (4) cold packs
- Two (2) absorbent padding materials
- Two (2) plastic holding bags
- Blank labels
- Shipping box with prepaid shipping label
- Shipping paperwork

Instructions for Submitting Samples

- 1. At least 24 hours before you intend to ship your sample(s), put the cold packs in a freezer. Be sure to freeze the packs flat (or they will not fit in the bag).**
2. Draw two fuel samples (one from approx. 18-inches from tank bottom, one from the middle of the tank) using the recommended sampling techniques detailed below. Put each sample in one of the included sample containers. Cap the containers tightly and seal the lids with electrical or duct tape if you have it.
3. Label each sample container with a sample ID#, your name (or your company name), and the date you pulled it.
4. Get your cold packs from the freezer. Place two (2) cold packs next to one of your filled and labeled sample containers. Wrap the bottle and cold packs in one of the absorbent padding materials and secure the bundle with duct or electrical tape. Repeat with the other bottle and cold packs.
5. Put the secured bundle in the plastic holding bag. Follow the instructions on the bag to securely close and seal the bag. Repeat with the other bundle.
6. Put both of the filled plastic holding bags in the enclosed shipping box. It will be a tight fit but that's what you want.
- 7. Fill out the enclosed paperwork and put it in the box.**
8. Seal up the box and drop the box off at your local UPS shipping office as soon as possible.

Recommendations & Guidelines: The Importance of Good Sampling Techniques

Good sampling techniques are essential, because it is impossible to have viable/accurate test results without a good sample. The test results are only as reliable as the quality of the sample. Remember that ATP testing is done on the sample itself, under the assumption that whatever results are generated are reflective of what's actually going on in the storage tank itself and the fuel therein. So, the object is to obtain samples that best reflect the state of the tank and its fuel.

Prequel Step: Gather Equipment Needed

Fuel sampler (sometimes called a Bacon Bomb), sounding tape or stick, water paste, sample containers, labels + Sharpie or ballpoint pen, sanitizing cleaner (>80% alcohol), cooler, ice. Check to make sure your fuel sampler is clean. **If there is any question of whether the sampler was cleaned before, clean it with your alcohol solution.**

Step 1: Take Tank and Fuel/Water Measurements

Put water-finding paste of the sounding tape/stick. Using the sounding tape or stick, take these measurements below (you may need to use these measurements to assist in taking your samples from the recommended places):

- Depth of the tank
- Height of water phase
- Height of fuel phase

Step 2: Draw, Contain and Label First Sample (at least 300 ml)

Label your sample container with a reference number and the date **BEFORE YOU PUT THE SAMPLE IN IT**. Take your first sample from the middle of your fuel tank (consult your earlier measurements). Decant the sample into the labeled sample container. Take a picture of the sample for documentation purposes.

Step 3: Draw, Contain and Label Second Sample (at least 300 ml)

Label your sample container with a reference number and the date **BEFORE YOU PUT THE SAMPLE IN IT**. Take your second sample from between 0-18 inches from bottom of the tank. This sample may capture a significant amount of water bottom phase, which may be useful for testing purposes (to confirm microbial presence in the fuel). Depending on the height of the water phase, this sample will likely also contain rag layer – the layer of biomass and slime produced by microbes at the fuel-water interface. A sample of rag layer is recommended for possible further testing. Decant the sample into your labeled sample container. Take a picture of the sample for documentation purposes.

Step 4: Clean the Sampler

Clean and dry your fuel sampler using your alcohol solution. This is essential to prevent cross contamination of fuel samples. Store as necessary.

Step 5: Store the Samples in Advance of Shipment

After the samples are labelled and sealed, put the fuel samples on ice in a cooler or other cold storage place, in advance of packaging for shipment to Bell Performance for analysis.

Summary

In the end, you'll want to end up with at least two samples of >300mL each: (1) a bottom phase fuel water that may contain water phase and rag layer + (2) a fuel sample from the middle of the storage tank. At least one of these samples should contain testable amounts of "rag layer", if present in the storage tank.

The Importance of Best-Practice Sample Handling

Proper handling of the samples is also crucial to accurate and viable test results. As soon as a fuel sample is drawn, its condition (and the condition of any microbial presence therein) starts to change. The longer the time gap between sampling and testing, or if the samples are mishandled in certain ways, the condition of the sample changes and diverges further away from the condition in the tank it came from.

The microbial content that was in the fuel when it was sampled may have increased due to various factors. Or it may have decreased. Microbial content may increase in a sample due to the sample being exposed to higher temperatures between the time when it was taken in the time it was tested. Or it could be due to the inadvertent addition of outside microbes because of cross-contamination from careless handling practices. A decrease in viable microbial content from time of sampling to time of testing can be due to too long of a time lapse, because the microbes in the sample have been taken out of their normal environment and may have been deprived of some of the elements which were in the storage tank that they needed.

Proper handling of samples ensures that the viability of the samples is not compromised in the time between when the samples are drawn and when ATP testing is executed. And this means that conclusions drawn from ATP testing on those samples are more accurate and reliable.

Recommendations: Best Practices for Handling Samples

Here's how you should handle your samples to be used for testing.

Best Practice: Use glass jars with lids for sample storage and transportation

- You may use plastic containers as an alternative, provided the plastic material is confirmed to be resistant to degradation to petroleum products

Best Practice: Put fuel samples on ice before transportation.

Best Practice: Handle them as little as possible.

Best Practice: Wear gloves when handling sample jars and lids to reduce chances of cross-contamination.

Best Practice: Transport the samples to their final destination for ATP testing as soon as possible, to reduce degradation of sample.

Transporting Your Samples for Testing

If the samples are in sealed containers, on ice in a cooler, they should remain viable for testing for 48-72 hours. Some samples remain viable for longer than that, but the more time passes, the less chance of this being true. Therefore, it is essential that you test your samples for ATP content as soon as possible. **Keep the samples on ice up until the point you are ready to ship them.**