



# Quaker Knowledge Network

## Samples

### Skill Builder

#### Overview

At some point in time it becomes necessary to take a sample of a fluid for some type of analysis. However, not all fluids should be sampled in the same manner. Some fluids need to be sent within a certain time frame or the results will be altered when received. For example, samples older than seven days cannot be tested for micro-organisms. Other fluids are acceptable no matter the travel time. The reason for taking the sample can be just as important as the results of that sample. Knowing how to take the sample becomes important to the results. There are also **SAFETY & LEGAL** issues associated with shipping a sample that you, as the shipper, are responsible for. The shipper should assist you with the regulations.

#### Definition

One definition for the term "sample" is "a representative part or a single item from a larger whole group presented for inspection or shown as evidence of quality." A second definition is "a part of a statistical population whose properties are studied to gain information about the whole." Both of these definitions strike at the essence of the reason for taking a sample. The sample should be representative of the entire volume.

#### Routine Samples

Some processes require routine analysis in order for those involved to be sure that the fluid in question meets certain specifications and remains within the "fit for use" category. However, everyone involved should be familiar with the process to know that the types of analyses being conducted will provide sufficient information about the fluid for the process. Each metalworking fluid tends to focus on specific parameters.

Most water soluble metal removal fluids (i.e. coolants) and metal deformation fluids (i.e. drawing and stamping fluids) focus on the following:

1. Some method of concentration (acid split, refractometer, titration, etc.)
2. The pH of the fluid
3. Percent tramp oil and percent suspended solids via centrifuge
4. Microbiological levels for bacteria and fungus (both mold and yeast)

These are the basics for these types of fluids. Some customers request other parameters like chlorides, sulfates, hardness, conductivity, etc.

#### Non-Routine Samples

Most situations for non-routine samples usually involve trouble shooting. Before taking any samples you should confirm with the appropriate Quaker Associate if the sample is warranted and, if it is, how much sample should be obtained. Non-routine testing can consist of any number of tests. The tests will dictate the quantity of sample required. It is always better to send too much sample rather than not enough.

Recognize that some tests are destructive (i.e. a portion of the sample is consumed in the analysis) and some are not. For example, a foam test requires 1500 milliliters to run the test but the fluid can be used after the test is completed. Except for refractometer, all concentration control tests are destructive. Please contact your Quaker Associate to determine the volume of the sample.



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#### Fluid Analysis Requirements

ISO regulations require that before any fluid analysis work can be done, a Fluid Analysis Customer Profile (FACP) must be completed. The FACP provides the necessary details of the customer, the product and the analyses requested. It also provides other important details like how the final report is to be sent and to whom it is sent. Most customers these days request information via e-mail. One very important aspect of samples sent to Quaker is proper identification. Each and every single sample must be properly identified with the following details:

- Customer's site name
- Customer's location by city & state
- Complete name of product; please, no abbreviations!
- Date the sample was taken
- System identification or source of sample
- What testing is required; the standard Quaker label indicates:
  1. Microbiological only
  2. Microbiological and Fluid Analysis
  3. Fluid Analysis only
  4. Other (you need to identify what the "other" is. Are there other tests required or another lab that the sample should go to?)

Quaker's pre-addressed Fluid Analysis labels contain all of the information above. Improperly labelled samples cannot be analyzed because of ISO and safety issues.

#### Taking the Samples

The first part of taking a sample is to make sure you have the proper container. Plastic is typically the best material to utilize as it resists breakage during shipping. Glass should

never be used and metal would be the last choice. If you don't have fresh, clean bottles with screw caps, you can buy something simple in many pharmacies and some hardware stores. Another choice is spring water in a small bottle with a screw cap. If you are forced to utilize some other beverage bottle, please make sure it is rinsed clean with fresh water or with the fluid you are sampling.

Regardless of the container you are using, you should always rinse the container with the fluid in question 2-3 times. This guarantees that anything in the container is now removed. This is particularly important for fluid power samples where the particle size analysis can be impacted by minute pieces of dirt and debris.

Bottles for water-soluble samples (coolants, drawing & stamping fluids, etc.) that may contain micro-organisms should never be 100% filled. This will cut off the oxygen and will kill any bacteria or fungi that may be present. The test results will provide a "negative" for growth and provide a false sense of security. You should only fill these bottles to about 90% capacity. Samples should never be taken from a static condition. Fluid samples should be taken either at a fluid application hose where the fluid is running or from a filter tank that has good agitation. The agitation should be enough to make sure that the fluid is mixing well. The container should be rinsed several times with the fluid to make sure there are no contaminants in the container. Remember, the purpose of the sample is to represent the bulk of the fluid.

After the sample has been acquired, the bottle should be wiped down to make sure it is dry. The completed label should be applied next with emphasis on making sure it is filled out correctly and applied to a clean, dry surface. The lid should be taped on with the tape starting on the bottle and then wrapped clockwise around the cap. This guarantees that the lid will not come undone and cause a leak. Electrical tape seems to work the best with most types of plastic containers.



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Before the sample is shipped, it should be placed into some form of sealable baggie. This further insures that if it leaks, it will not damage the shipping package. The United States Postal Service and other shipping companies can levy heavy fines for leaky packages! It is also a good practice to package your shipment with bubble packs, vermiculite, wadded paper or something similar to cushion the shipment from damage. The last thing to go into the box should be correspondence indicating what the samples are, to whom the samples are being sent, and contact information regarding who should receive the results. A telephone number is also critical so that, if there are any questions, the receiver can contact the shipper. This documentation should also be placed in a baggie of some sort so that it is protected from possible leaks. You should also send an e-mail to the Quaker Associate who is to receive the sample(s).

### Getting it There

Quaker's United States Laboratories receive somewhere between 8,000-10,000 samples/year. There are different functions within the laboratories and samples can get misplaced or lost if not properly labelled. Each and every single container should be labelled as if it is being sent to Quaker all by itself. IMPROPERLY LABELED SAMPLES CANNOT BE ANALYZED.

Please remember that it is the responsibility of the person sending the sample to properly label and package the material. In today's environment, with extra caution exhibited toward possible acts of terrorism, leaking samples shipping to a "chemical company" would draw attention. The Safety, Health and Environmental (SHE) department will be happy to assist anyone with the classification of a sample that needs to be shipped. Please call 610-832-4304 for assistance.

### Summary

The next time you are required to obtain a sample please think about the issues stated in this Skill Builder. Obtaining the sample, filling the container and sending the sample

properly can be just as important as the analysis of that sample. Doing this properly should guarantee that the sample will arrive undamaged and will receive whatever analysis is required in a timely fashion.

**Contact Quaker at [info@quakerchem.com](mailto:info@quakerchem.com)**