

An overview of best practices of ship and shore tank sampling procedures – before during and after loading

Quality control

FAME and biodiesels are transported, sampled and measured in a similar way to petroleum diesel fuels. However as specifications for FAME have limits on alkali and alkali earth metals, sea water washing is not allowed. Shiptanks are rinsed with extensive fresh water to avoid sodium contamination.

High concentrations of water in FAME can lead to bacterial contamination issues, the formation of fatty acids and stability problems.

Therefore it is essential that shiptanks and shore tanks are fully free from water.

Ship tanks must be dried after each water cleaning and where dehumidified air is available this may be used for drying. The inspector should verify the above during his ship inspection.

The nature of the coating should be inspected during ship inspection as FAME can act as a solvent. Suitable coatings are zinc coating, stainless steel and bare steel.

Specific epoxy coatings should be inspected to check they are suitable for FAME.

If there is any doubt a wall wash test can be recommended to check for coating residues in the wall wash solvent.

Previous cargoes should be checked and pending of the type of product, washing procedures are required. Methanol and oxygenates are for example not acceptable without washing.

Samples are required during every stage of loading/discharging.

Shoretank, end of line sample, manifold sample, first foot sample and individual ship tank samples are required. Sampling procedures are described into ASTM D 4057 and ISO 3170.



Picture caption to come

The basis for accurate results produced by the laboratory starts with representative samples.

Shoretank sampling requires at minimum running, upper, middle and lower samples. Especially bottom samples should be visually inspected on presence of particles and free water.

Shoreline samples should be taken from the jetty head or end of shore line as close possible to the loading/discharging arms. These samples should be visually inspected for appearance and further tested for water content into laboratory. The samples should be bright & clear, free from sediments. Loading or discharging operations should wait for

results of water content before proceeding.

Ship's manifold samples should be taken at start of loading at visually inspected for appearance and tested for water content. Loading operations should wait for results of water content before further proceeding.

Foot samples should be visually examined and tested for water. Further loading operations should be waiting for water results before proceeding;

Ship's samples are taken from each shiptank at all levels. Testing in the laboratory is performed on a theoretical composite based on cargo figures.

All samples should not be



exposed to direct sunlight.

It is also advised that sample bottles should be flushed with nitrogen before sampling to reduce the risk for humidity contamination which can lead to increase of water content into the drawn samples.

Oversea vessels transporting FAME are inerted with a nitrogen blanket to eliminate humidity contamination (FAME is very hygroscopic) and oxygen during the voyage.

Typical oxygen content in the gaseous phase is 2.5% max oxygen and can be measured with oxygen meters into the gaseous phase.

These nitrogen blankets are maintained until discharge port is reached. ●

For more information:

This article was written by Kurt Tyssen, senior business development manager, Intertek, www.intertek.com