CHLORINATED SOLVENTS - TAKING SAMPLES

DOC-2900-0011

Introduction

The definition of sampling is the process of taking, for analysis, a small specimen from the bulk material which is held in a container, tank or pipeline. Sampling should occur in such a way that the small quantity removed represents the physical and chemical properties of that bulk material, to be considered as homogeneous.

The main problem of obtaining a representative sample in the chemical industry is the selection of the appropriate sampling procedure. If the procedure is not reliable, multiple spot samples can be individually analysed or blended, before analysis, to give one homogeneous specimen.

In the chemical industry, liquids are sampled from process vessels, storage tanks, road tankers, rail tankers, ships, barges, pipelines, transfer lines, containers or drums.

Please consult our safety data sheet.

Scope

Methylene chloride, chloroform, carbon tetrachloride, perchloroethylene.

Safety

The person sampling must be aware of the hazards involved with the material being handled and the necessary precautions that need to be taken. Adequate personal safety equipment (gloves, goggles, respiratory equipment, etc) should be worn as specified in the safety data sheet.

Handling of chemicals should be accompanied by collective protective measures (clearly signalled showers and eye baths in the vicinity).

Safe access to and from the place where the sample is to be drawn should be guaranteed. The area should be adequately lit and vented.

The sampling procedure should not prejudice the security of the bulk material.

The flow rate of the sampling valve should be restricted, at some point, by using a flow orifice, which will secure the sampling.

Each time liquids are sampled there is a risk of spillage. It is necessary to trap spilt liquids, and to protect the person sampling, which can be done by using a splash guard.

The person sampling should re-close the sampling valve after the sample has been taken.

A written sampling procedure should be issued and should be explained to the person taking the sample.

After the sample bottle is closed, it should be cleaned of any product that was spilled.

Solvay Chemicals International SA
Rue de Ransbeek 310
B - 1120 Brussels
Brussels, RPM 0406804736
+32 2 264 21 11
www.solvaychemicals.com
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Sampling types

A spot sample is a sample taken either at a specific “point” within a tank i.e. the sample container should be kept at that level whilst it is being filled or at a specific place and time in a material flow.

Examples of spot samples are:

- a sample taken from the bottom with a special sampling device (bottom sample),
- a sample taken from the surface of the liquid (surface sample),
- a sample obtained at the midpoint of the bottom third portion (lower sample),
- a sample obtained at the midpoint of the middle of the tank (middle sample),
- a sample obtained from the midpoint of the upper portion of the tank (upper sample).

A running or all-levels sample is a sample taken by lowering the sampling device to the bottom then raising it back to the surface at regular intervals. The device needs to be 80% full as it emerges from the liquid.

A shoreline sample is a sample taken from the sampling valve on the pipeline. There are two types:

- the flow-proportional sample is obtained by using an automatic sampler from a pipeline at a proportional rate,
- the time-proportional sample is obtained at regular intervals during the period when the batch is transferred.

Blended samples are a collection of a number of different samples obtained.

Usual sampling procedure

The equipment, including all tools and containers used for sampling, should be compatible with the chemical being sampled. Dark glass bottles should be used to sample chlorinated solvents.

A clean and dry sample bottle, preferably with a wide neck and a tight (vented) cap, is suitable. The bottle should not be more than 80% full and should be sealed properly. The size of the sample should not be greater than necessary. For most analyses, a sample of 0,5 litres is sufficient.

Before sampling, the sample container should be clearly labelled with product name, date, reference and the associated risks (R and S sentences, etc, as stated in the safety data sheet).

Samples are usually taken from a predefined sampling point.

A different number of samples can also be collected from the top opening of the vessel: surface, bottom, upper, middle, lower, a running or all-levels sample. These different types of samples require the appropriate sampling equipment. Although a ladle can be used for skimming the surface and collecting a surface sample, more elaborate sampling equipment will be required for the other types of samples.

If a blended sample is needed from a storage tank, it is recommended that separate samples are taken at different depths.

Before a sample is taken from a sample valve, the sampling line should be properly flushed with the product being sampled.

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Sampling on pipeline during loading of a rail tanker

REFERENCES

ISO 3165 – Sampling of chemical products for industrial use – Safety in sampling
ISO 6206 – Chemical products for industrial use – Sampling - Vocabulary

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