

Gross alpha measurement from swipe samples

Alpha activity measurement from swipe samples

Surface contamination can be measured indirectly by analysing the activity of swipe samples. Indirect methods can be used only for break-away contamination. Swipes can be dry or moist. In the results calculations, the ratio of break-away contamination needs to be taken into account. Determination of the alpha activity of the swipe is made using liquid scintillation spectrometers.

Preparation of the samples

Put the swipe sample into the liquid scintillation vial, add 1 ml 1.0M HCl acid, close the cork and shake the sample carefully. After a few minutes, add 21 ml Ultima Gold AB liquid scintillation cocktail. Close the vial and shake the sample carefully.

Background sample

Clean swipes are put into the bottom of the liquid scintillation vial (20 ml) using tweezers. Add 1 ml 1.0M HCl and 21 ml Ultima Gold AB liquid scintillation cocktail. Shake the samples well. Check that the swipes are settling down in the bottom of the vial. Background samples are put at the beginning and end of the batch.

Washing the liquid scintillation vials before measurement

Liquid scintillation vials are washed using ultrasonic washing and Ba alcohol.

Measurement

In order to avoid luminescence, samples are stored for two days before measurement. Samples are measured using a liquid scintillation spectrometer e.g. Quantulus or Guardian. Measurement time: 1 hour (3600 seconds).

Calculation of the counting efficiency

Calculate counting efficiency using e.g. Am-241 standard.