



Benzene line: equipment, laboratory setup and staff training

BENZENE LINE - Equipment for Carbon Dating

Benzene line serves for Radiocarbon analyses applicable for: Radiocarbon Dating, Estimation of Environment Impact of Nuclear Installation, Estimation of bio-based percentage (%) in production, fuel and raw materials.

Benzene production

Benzene sample could be prepared according to traditional approaches based on charcoal or carbon dioxide. Modern approach based on vacuum pyrolysis simplify procedures obtaining of lithium carbide and rises chemical yield allowing processing of even small samples. Modern Radiocarbon analyses involve variety of kind of materials for analyses, which could be processed in benzene line using of vacuum pyrolysis in one or two steps depending on sample material(s) and matrices analyzed. Mass of sample material and approach of its processing should be considered depending on availability of organics in it and reactivity of organic.

General LSC technology

We recommend and offer long durability Teflon vials for optimal use of modern LS spectrometry for measuring radiocarbon C-14 in benzene, having excellent technical performances: high counting efficiency, low background and low benzene leakages.

Contact us: benzeneline@gmail.com

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Application - benzene synthesis for radiocarbon analyses

Radiocarbon Dating

Benzene line technology is applicable in Radiocarbon Dating producing benzene directly on base of different sample materials: wood, charcoal, bone, peat, soil, shell, carbonate. It is suitable for processing of carbon dioxide or methane samples as well. It includes all equipment required for processing of sample Carbon: Carbide - Acetylene - Benzene, including production, capture, purification and conditioning.

Estimation of Impact of Nuclear Installation

Systematical changes and temporal variations or radiocarbon in air cause corresponding's in annual plants and annual growth in trees (tree rings). Tissues of plant and animal obtain their C-14 concentration depending of food pathway and sources impacting on air, water and soil. Both plant and animal tissue samples, air, water and soil samples could be transformed into benzene using benzene line for radiocarbon measurement by liquid scintillation counting (LSC).

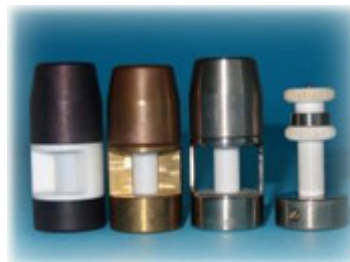
Estimation of bio-based percentage of fuel and raw materials

Fraction of Bio-based in fuel (bio-diesel and waste fuel), plastic and raw materials could be determined by C-14 measurement. It is promising approach comparing to one based on mass calculation for each fraction corresponding to mixture.



Benzene production

Benzene line



Teflon vials

Radiocarbon Dating



Impact of NPP Installation



Estimation of Bio-based

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Benzene Line or Conventional Carbon Dating Equipment is Chemical Laboratory Equipment Set used for Samples Preparation for Liquid Scintillation Counting of ¹⁴C. Setting up a radiocarbon laboratory

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