

BÜCHI Syncore® Analyst **Water Quality - Determination of Polycyclic Aromatic Hydrocarbons (PAH) after liquid-liquid extraction**

Abstract

- Method of the analysis: MF EM ISO 17993, NF EN ISO 9377-2
- Analyzed substance(s): Fluoroanthene, Benzo(b)fluoroanthene, Benzo(k)fluoroanthene, Benzo(a)pyrene, Benzo(g,h,l)perylene, Indeno(1,2,3-cd)pyrene *)
- Matrix: Different water samples (waste water, drinking water)
- Sample preparation: Liquid-Liquid Extraction with Cyclohexane, spiking, concentration to 1ml, Solvent exchange to Acetonitrile/Water (78:22)
- Analysis: HPLC with fluoro-meter

Customer

Laboratoires d'Etudes et d'Analyses Mairie du Havre, Quai Frissard, 76070 Le Havre, France; Mme N. Lebourg,

System

♦ Syncore Analyst:	Format R-4 <input type="checkbox"/> R-6 <input checked="" type="checkbox"/> R-12 <input type="checkbox"/> <input checked="" type="checkbox"/>	Residual volume: 0.3ml <input type="checkbox"/> 1ml <input type="checkbox"/> 3ml
	Metall Rack <input checked="" type="checkbox"/> Crystal Rack <input type="checkbox"/> Flushback Module <input checked="" type="checkbox"/>	Glass assembly: S <input checked="" type="checkbox"/> C <input type="checkbox"/>
♦ Vacuum Source	Typ: BÜCHI V-503	
♦ Vacuum Controller	Typ: BÜCHI B-721	
♦ Cooling Source	Tab water <input type="checkbox"/> Chiller <input checked="" type="checkbox"/> Typ: Huber (RM6 Lauda)	

Evaporation parameter

♦ Solvent	Cyclohexane	
♦ Format	6	
♦ Start volume	100ml	
♦ Temperature of Rack	40°C	
♦ Cooling Temperature	Condenser:	5°C
	Flushback Module	5°C
	Residual volume:	7°C
♦ Velocity of flow of the cooling water (if applicable)	Condenser:	-
	Flushback Module:	-
	Residual volume:	-
♦ Temperature of the receiving flask	20°C	

Evaporation parameter (continued)

♦ Vacuum profile	normal pressure to 150 mbar: 30min 150 to 120 mbar: 30min
♦ Vortex speed	300 rpm
♦ Eccentricity of the system	4.5 mm
♦ Meantime of concentration process	60 min

Resultate

Number of tested samples: 3

Number of blanks: 0

Recovery rates of the substances:

Substance	Without Flushback Module		With Flushback Module	
	Average [%]	Standard deviation [±%]	Average [%]	Standard deviation [±%]
Fluoroanthene	67.0	6.3	94.2	3.6
Benzo(b)fluoroanthene	93.1	0.9	97.2	4.0
Benzo(k)fluoroanthene	91.8	0.6	95.8	3.5
Benzo(a)pyrene	93.5	1.6	97.2	4.1
Benzo(g,h,l)perylene	92.2	3.0	97.0	4.4
Indeno(1,2,3-cd)pyrene	96.3	1.8	100.0	1.0

Blind : 0

Remarks, evaluation

*) see http://europa.eu.int/comm/environment/water/water-framework/priority_substances.htm

The system is convenient to use and save time. The more volatile the substances are, the better the effect of the Flushback Module.

The time of the concentration to 3ml could be improved with other evaporation parameters as well as by adding some drops of propylene glycol in between the rack and the heating plate for better energy transfer.