

# Extraction System B-811



# Efficient sample preparation for environmental analysis and pharmacy

The Büchi Extraction System B-811 has set a new standard in solid-liquid extraction procedures. Substantial user-friendliness, practical working sequences, and time savings together with the optimal suitability for demanding applications in environmental and pharmaceutical analysis are immediately obvious. Short analysis times and absolute reliability of the measured results go hand in hand.



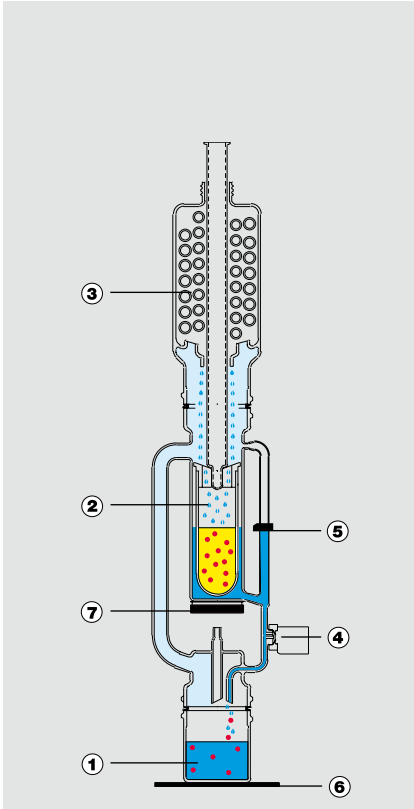
**In what respect is the Büchi Extraction System B-811 interesting to you?**

- Do you carry out solid-liquid extractions as sample preparation steps for the analysis of environmental samples, packaging materials or textiles?
- Do you use toxic or carcinogenic solvents and need a tight system?
- Do you wish to carry out extractions automatically, e.g. in overnight operations or when using semi-skilled personnel?
- Are you looking for an economic solution compared with expensive alternate methods?
- Do you wish to have a rapid operating system with a repertoire of predefined methods?



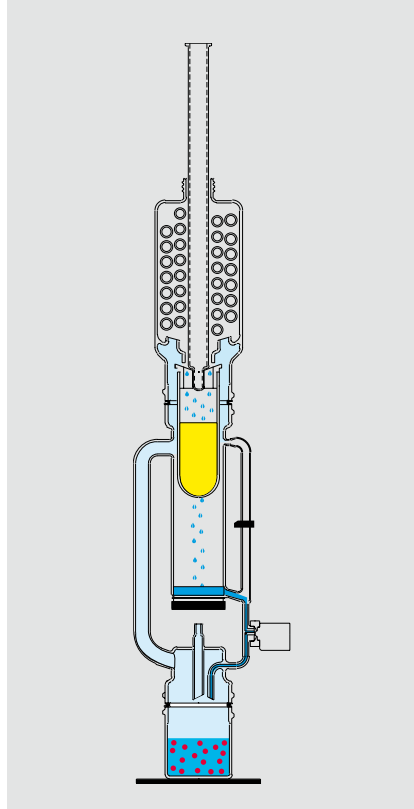
# The Extraction System B-811 functions reliably at every step

## 1<sup>st</sup> Step: Extraction



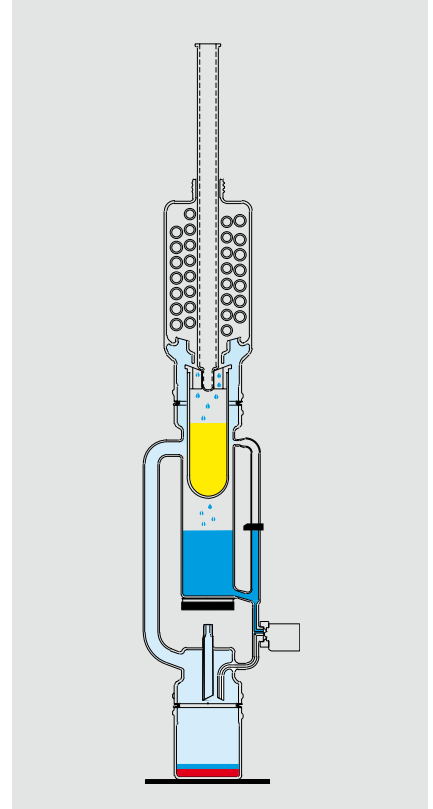
■ The sample is placed in the sample tube of the B-811. There is a choice of four different procedures for the extraction. (Details on page 4)

## 2<sup>nd</sup> Step: Rinsing



■ The valve is opened. The sample tube is lifted up automatically. The rinsing ensures the removal of all sample residues from the outer side of the sample tube and the inner side of the extraction chamber.

## 3<sup>rd</sup> Step: Drying



■ The valve is closed while the low-level heating remains on. The solvent evaporates, is condensed in the condenser, and collected in the empty extraction chamber. This allows the solvent to be removed almost completely in the shortest possible time. The now highly-concentrated extract is available for further analysis.

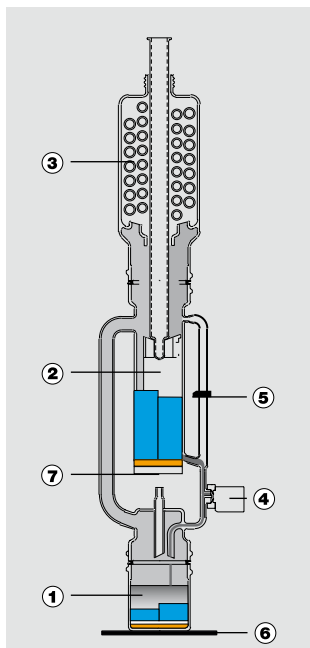
- ① Solvent cup
- ② Sample tube
- ③ Condenser
- ④ Glass valve
- ⑤ Optical sensor
- ⑥ Lower heater
- ⑦ Upper heater

- Sample
- Extract
- Sample residue
- Solvent
- Solvent vapor

# The repertoire of methods: Illustration and Comparison

Hot Extraction, Soxhlet Standard, Soxhlet Warm and Continuous Flow can be carried out with the B-811 without dismantling the equipment!

Hot Extraction



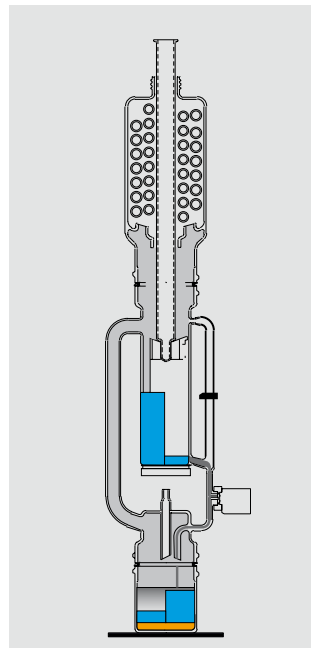
- The solvent is evaporated, condensed in the condenser and collected in the extraction vessel.

- As soon as the solvent level in the extraction vessel has reached the optical sensor, the upper-level heating source is switched on.

- As soon as the solvent level in the extraction chamber has reached the optical sensor, solvent is permitted to enter the beaker by briefly opening the valve.

- This ensures the solvent level in the extraction chamber remains constant with the result that the sample is contained in boiling solvent throughout the entire extraction period.

Soxhlet Standard

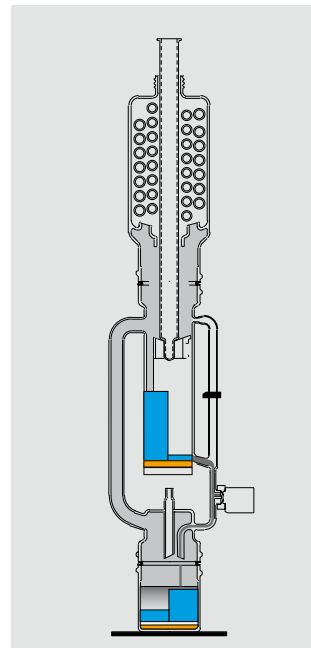


- The solvent is evaporated, condensed in the condenser where it flows into the sample tube.

- As soon as the solvent level reaches the optical sensor, the glass valve opens and the solvent containing the dissolved analyte flows back into the solvent cup.

- Since the sample is continually being extracted with fresh solvent, the analyte/solvent-exchange is optimal.

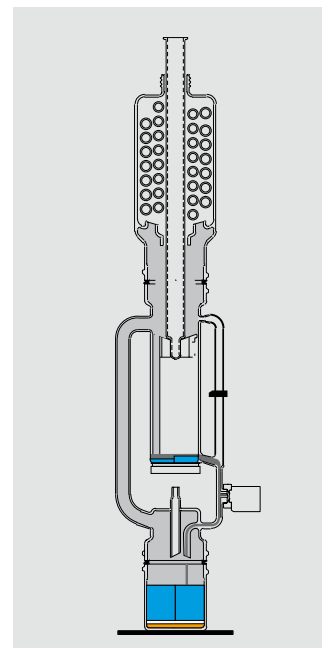
Soxhlet Warm



- The principle of the Soxhlet warm method is the same as those of the Soxhlet standard method except that the upper-level heating is activated.

- The solubility of the analytes is increased by heating the condensed solvent in the extraction chamber. This reduces the duration of the complete extraction process.

Continuous Flow



- The solvent is evaporated, condensed in the condenser where it flows into the sample tube.

- The glass valve is open so that the solvent does not accumulate in the extraction chamber but continuously flows back to the solvent cup.

- As a result any kind of enrichment of the analyte in the extract is avoided.

- ① Solvent cup
- ② Sample tube
- ③ Condenser
- ④ Glass valve
- ⑤ Optical sensor
- ⑥ Lower heater
- ⑦ Upper heater



# Technical innovations and advantages of the Extraction System B-811

## Automatic sequencing

The electronic unit controls the sequence of the three phases (extraction, rinsing, drying) of between one to four samples in parallel. No manual intervention is necessary after programming activity and the starting instructions have been completed.



## Quicker execution of the extraction process

Two built-in heating sources per extraction location and optimal heat transfer permit the use of high-boiling point solvents. Moreover, control by means of the optical sensor makes it possible for the user to optimize the exchange of the solvent from a timing point of view, to increase the material exchange (analyte/solvent) and, at the same time, to economize in solvent consumption.

## Better operating protection thanks to higher safety standards

Cooling water, level of solvent and heat source are directly monitored, the complete apparatus is specially produced to view complete tightness of joints while a protective shield provides an extra precaution.

## Sample-compatible drying

In the case of heat-sensitive samples, the extract can be concentrated in a protective mode and oxidation-sensitive samples can additionally be extracted and dried in an inert gas atmosphere.

## Sample purity is maintained at all times

All components in contact with the sample are inert so the possibility of contamination of the sample, or carry-over of additives to sealing membranes is eliminated.



*Several combinations of methods are available without dismantling the equipment due to five core elements: lower- and upper-level heating, glass valves, optical sensors, and inert-gas feed.*

# Best possible preparation for environmental and residue analysis



■ A variety of methods are available for each requirement: Hot Extraction, Soxhlet Standard and Soxhlet Warm together with continuous flow procedures.

■ Programmable in accordance with requirements: Up to 50 individual programs can be held in the memory.

■ Method tolerances: Selection of the appropriate heating level permits different solvents with boiling points of up to 150 °C can be used.

■ Reliable results: The four heating sources operate independently of one another so in the event of a malfunction, only the affected heat source is involved and all the others continue to operate. In this way, for example, the drying of sensitive or volatile substances can be interrupted without any need to break off the parallel activities.

■ Material-appropriate extraction: By use of the equipment variation B-811 LSV, substances which are present only in trace quantities can be concentrated to a quantity exceeding the detection limit by using a large amount of sample.

■ For the use of solvents with very low boiling points or in the case of high room temperatures the Büchi Recirculating Chiller B-740 with a cooling capacity of -10 °C to 40 °C is an ideal supplement. This external circulation chiller also saves potable water in the event of a lengthy trial series.

## Büchi supports you with the Application Data Bank

We will be pleased to provide further information about these and other applications. Numerous tips and items of information about novel applications can be found now in Best@Büchi's and regularly on the homepage [www.buchi.com](http://www.buchi.com).

**BUCHI**  
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Information Bulletin 22/2012  
Reference Methods

**Rapid extraction of PCB and PCDD/F from sewage sludge**

The content of toxins like polychlorinated biphenyl (PCB) and polychlorinated dibenzoparaffins and dibenzofurans (PCDD/F) in sewage sludge can be determined by extraction and subsequent analysis. The contents of PCB and PCDD/F extracted with the Extraction System B-811 are compared with those of other extraction procedures. This study demonstrates that the Büchi Extraction System B-811 accelerates the extraction process, an important detail in routine analyses.

[www.buchi.com](http://www.buchi.com)

## Set of 4 solvent cups



Order No. Standard 37276  
Order No. LSV Variation 38597

## Set of 4 glass sample tubes



Order No. Standard 37281  
Order No. LSV Variation 37563

## Upgrade Kit "LSV"



4 solvent cups  
4 extraction chambers  
4 condensation tubes  
4 sample holders  
4 glass sample tubes  
Order No. Standard 37910

## Set of 4 tube holders



① 43 × 123 mm  
Order No. Standard 37280  
② 33 × 94 mm  
Order No. Standard 37279  
③ 22 × 80 mm  
Order No. Standard 37278  
④ 25 × 100 mm  
Order No. Standard 37277

Cartridges for LSV variants on demand

## Citizen Printer



230 V, 50/60 Hz  
Order No. 38682  
115 V, 50/60 Hz  
Order No. 38689

## BÜCHI Recirculating Chiller B-740



800 W  
Order No. 37740  
1400 W  
Order No. 37741

## Sample holder PTFE

Order No. Standard 36559  
Order No. LSV Variation 37904

## Set of screw caps for nitrogen connection

Order No. 37368

## Extraction chamber

Order No. Standard 36710  
Order No. LSV Variation 37902

# Technical Data

	Extraction System B-811		Extraction System B-811 LSV Variation	
Mains Voltage	120 V	230 V	120 V	230 V
Frequency	50/60 Hz		50/60 Hz	
Capacity	1250 W		1250 W	
Volume of extraction vessel	120 ml		220 ml	
Length of condenser tube	312 mm		291 mm	
Diameter of sample holder	39 mm		49 mm	
Volume of glass sample thimble	150 ml		280 ml	
Volume of solvent beaker	150 ml		230 ml	
Cooling water consumption	60 l/hour		60 l/hour	
Max. water pressure	5 bar		5 bar	
Dimensions (B x H x D)	600 x 980 x 290 mm (with extended condenser holder) 600 x 830 x 290 mm (during operation)		600 x 980 x 290 mm (with extended condenser holder) 600 x 810 x 290 mm (during operation)	
Weight	32 kg		32.5 kg	
Interface	RS 232		RS 232	
Order No.	36681	36680	37901	37900

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