Gerhardt
Analytical Systems

SOXTHERM – rapid extraction system for solid-liquid extractions

EXTRACTION FULLY AUTOMATIC

EFFICIENT

Extracts up to 24 samples simultaneously

FLEXIBLE

Easily upgradable for increasing numbers of samples

PRECISE

The highest analysis quality due to software controlled processes

TRANSPARENT

Complete, unbroken process control and documentation

RELIABLE

Meets the highest safety requirements

Scan the QR code
and watch our
SOXTHERM video.

AUTOMATIC RAPID EXTRACTION WITH

SOXTHERM

C. Gerhardt's innovative SOXTHERM rapid extraction system is the highest performed of all laboratory extraction systems available on the market. It is fast, very versatile, can be upgraded easily at any time and provides the best analysis results reliably and consistently. With SOXTHERM you can process up to 24 different samples simultaneously. The device runs fully automatically and can be operated without supervision with confidence. Just insert the extraction beaker and let it run: The time your presence is required is reduced to a minimum. The control software monitors and logs all processing and device data. Your advantage: The extraction processes in your laboratory are transparent, documented and traceable at all times.

„Fast. Versatile. Reliable. The compact rapid extraction system with variable upgrade options runs fully automatically. SOXTHERM provides consistently precise analysis results.“

EFFICIENT HIGH PERFORMER

+ SERIES EXTRACTION
The 2, 4 and 6-places models can be combined any way you like.
Up to four devices can be operated and monitored simultaneously by one control unit – regardless of the number of heating places.

+ COMFORTABLE OPERATION
Operation can be performed using a PC with the SOXTHERM Manager software or using the MULTISTAT control unit.

+ ECONOMICAL AND FAST
The 5-stage extraction process developed by C. Gerhardt is many times quicker than the conventional Soxhlet method. The solvent used can be almost completely reclaimed.

+ HIGH LEVEL OPERATIONAL SAFETY
The SOXTHERM extraction systems meet the highest safety requirements and ensure high levels of safety when handling solvents. All processing and safety parameters are monitored automatically and continuously.

+ EXTREMELY VERSATILE
SOXTHERM can be used in many areas of analysis, for fat content determination in food products and feedstuffs and for the preparation of samples in residue and environmental analysis.

+ VALID ANALYSIS QUALITY
SOXTHERM meets the requirements of national and international standards and specific extraction standards and provides precise extraction results with the highest level of validity.

THE SOXTHERM FAMILY
SOXTHERM units are available with
two, four or six heating places.

„The SOXTHERM rapid extraction system grows with its challenges. 4 devices and up to 24 samples can be operated simultaneously with one control unit.”

SERIES EXTRACTION

+ UPGRADABLE
You can easily upgrade the system at any time if the number of samples increases or new analysis tasks have to be performed.

+ COMBINABLE
All individual devices can be combined with each other, regardless of size. When combining four 6-place units, extraction of 24 samples can be controlled and processed simultaneously.

+ EASY TO OPERATE
You can select whether you use a PC with SOXTHERM Manager or the external MULTISTAT control unit for control.

+ PROGRAMMABLE PROCESSES
All process steps can be programmed by the user. All the processes can be saved and are thus accurately reproducible.

+ QUICK-START FUNCTION
The extraction units save the programme last used until it is overwritten by a new programme. That way an extraction can be started directly on the device by pushing the [Run] key.

SOXTHERM EXTRACTION SYSTEM

COMFORTABLE OPERATION

The extraction units are controlled either from a PC/laptop with SOXTHERM Manager control software or using the external MULTISTAT control unit.

CONTROL USING PC/LAPTOP SOXTHERM MANAGER

The software monitors all the central processing and device parameters, issues fault messages and stops extraction automatically in case of faults. It also has high-performance diagnosis and documentation functions (data logging) for quality assurance. Up to 4 units can be displayed and checked on the screen simultaneously.

- For each SOXTHERM unit a programme window and a status window is available.
- The programme window provides a quick overview of all functions and processes.
- The diagnosis function makes for an optimised extraction sequence.
- The logging functions provide numerous pieces of information, e.g. accurate operating instructions, the start time, operator name, total operating time etc.

EXTERNAL CONTROL UNIT MULTISTAT

Up to 4 individual devices with individual programme sequences can be controlled simultaneously by the control unit. MULTISTAT allows you to programme and save up to 20 different extraction methods. Start times for unsupervised extraction can be freely selected. The compact design of the control unit saves space in the laboratory.

„SOXTHERM extraction systems provide you with the highest degree of laboratory safety. All processes are controlled automatically with continuous and unbroken monitoring.”

ECONOMICAL AND FAST

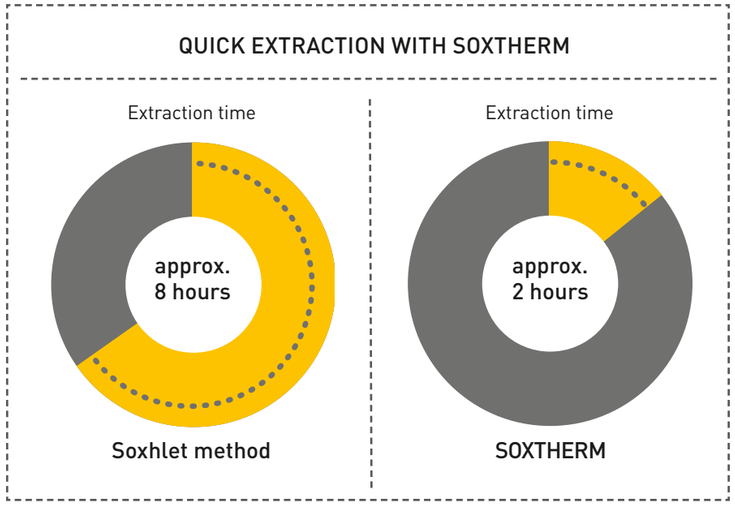
SOLVENT RECYCLING
A process developed by C. Gerhardt means that solvents can be reclaimed almost completely and re-used several times over.

REDUCED COOLING WATER CONSUMPTION
The cooling water regulation makes for low cooling water consumption. An external recirculating cooler can also be connected.

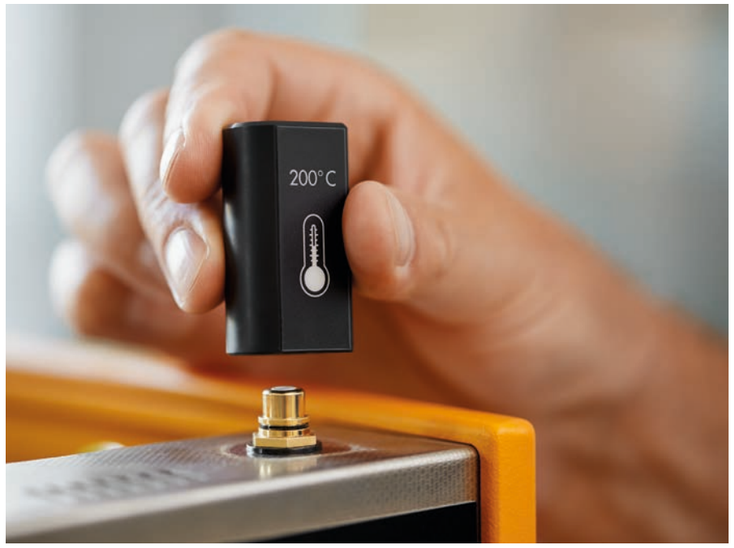
ONE CONTROL UNIT FOR 4 SYSTEMS
You can purchase one control unit and use it to monitor and control up to 4 extraction units.

FAST PROCESSING
The 5-stage extraction process developed by C. Gerhardt is much quicker than the conventional and tedious Soxhlet method.

LOW SOLVENT CONSUMPTION
The use of small extraction beakers reduces the required quantity of solvent significantly.



HIGH LEVEL OF OPERATIONAL SAFETY



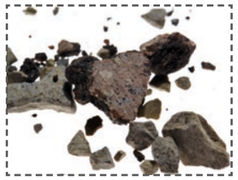
- Separate plug-in **limit temperature connectors** for 135 °C, 200 °C and 300 °C and the **programmed maximum temperature** make for double the safety. If the limit temperature is exceeded, the extraction is stopped automatically.
- **Central safety parameters**, such as temperature, compressed air, cooling water and the filling levels of the solvent tanks are monitored automatically.
- A **front window pane made of safety glass** protects the operator from contact with hot surfaces and solvents. The window pane closes and opens automatically at the start and end of the programme.
- All the moving **parts are controlled pneumatically.** Live components and cables are shielded hermetically from the solvent vapours. Electrical switching and break sparks cannot be generated.
- The **extraction beakers are** lifted off the heating bar automatically at the end of the **extraction process** in order to prevent the extract from burning.
- **Illuminated extraction beakers** made of glass make it possible to check the extraction process visually constantly.

„For C. Gerhardt the safety of employees in the laboratory is always the priority. SOXTHERM meets the highest requirements.“

SOXTHERM EXTRACTION SYSTEM

EXTREMELY VERSATILE

„SOXTHERM operates in line with international and national standards and specific extraction standards and thus meets all the requisite analysis qualities“.



USE OF DIFFERENT SAMPLE TYPES

- Possible sample weights depend on the size of the available thimbles (refer to product data sheet)
- Suitable for all common solvents
- 100 ml or 150 ml extraction beakers can be used
- Three different sizes of thimbles can be used

FAT DETERMINATION IN FOOD AND FEEDSTUFFS

With SOXTHERM extraction devices you can determine the fat content in food and feedstuffs easily, quickly and reliably. Example applications include numerous food products and feedstuffs.

Example areas of application:

- Milk and dairy products
- Cereals and cereal products
- Meat and meat products
- Chocolate and cocoa products
- Oil and oil seeds
- Fruits
- Feedstuffs
- Lipids in eggs and egg products
- Diet products
- and many more

PREPARATION OF SAMPLES IN RESIDUE AND ENVIRONMENTAL ANALYSIS

A growing area of application for SOXTHERM extraction devices is global residue and environmental analysis. In this area SOXTHERM is predominantly used for the preparation of samples. With the SOXTHERM extraction system contamination, e.g. in the soil and in water can be determined much quicker and more accurately than with conventional methods. Decisions relating to the environment and consumers can be made more quickly, more precisely and with a firmer foundation.

Example areas of application:

- Mineral oil in rock
- Oil and lubricants as per EPA method 9071A
- Pesticides
- Phenols (polychlorinated biphenyls)
- PCB
- Dioxines
- Softeners and additives in plastics and rubber
- Layers of fibres and textiles on woven fabrics
- Explosives in contaminated areas
- Coatings of fertilisers
- PAH (polycyclic aromatic hydrocarbons)
- EOX (extractable organic halogen compounds as per EPA method 3541)
- and many more

EXAMPLES OF APPLICATIONS

- Analysis of EOX – extractable organic halogen compounds using the EPA method 3541 in soils
  Solvent: n-Hexane
  Sample sizes: 10–50 g

- Analysis of fat covering on artificial fertilisers
  Solvent: Cyclohexane
  Sample size: 70 g

- Analysis of layers and accompanying substances of textiles
  Solvent: Acetone, petrol ether, methanol, dichloromethane
  Sample size: 5–15 g

- Analysis of softener content in PVC
  Solvent: Diethyl ether
  Sample size: 700 mg

- Analysis of the content of pesticides
  Solvent: Dichloromethane
  Sample size: 30–50 g

- Analysis of fat content in food
  Solvent: Petrol ether
  Sample sizes: 0.5–50 g (depending on fat content)

Application data sheets for various common extractions are available on request under application@gerhardt.de

VALID ANALYSIS QUALITY

Certified quality and the highest level of validity of analysis results are basic requirements for the services of analysis laboratories. With SOXTHERM you have the equipment which is a match for the high quality demands of modern laboratory technology.

TRANSPARENT DOCUMENTATION

With the SOXTHERM Manager control software you receive a high-performance analysis and documentation tool which records, analyses and stores all central processing and device data (data logging). This makes for continuous and verifiable documentation of your extraction processes.

ADHERENCE TO INTERNATIONAL STANDARDS

The applied methods are in line with the AOAC International Standards the test methods of the United States Environmental Protection Agency (EPA), for instance, and other national and international methods.

The high level of validity of the analysis results achieved with SOXTHERM has been confirmed in numerous ring tests.

TECHNICAL DATA

Extraction stations	2, 4 or 6 depending on the model
Sample weight	Variable, depending on the size of the available thimbles
Cooling water consumption	approx. 3 l/min
Cooling water pressure	1 – 6 bar
Rated voltage	230 VAC, 50–60 Hz
Rated power consumption	400 W, 800 W or 1200 W depending on the model
Dimensions (W x D x H) in mm	250, 405 or 565 x 410 x 580 mm depending on the model
Interfaces	2 x RS 485
Weight	28 kg, 36.5 kg or 43 kg depending on the model
Maximum temperature	300 °C
Extraction beaker	100 ml or 150 ml

ORDER DATA

For detailed technical data and ordering information on individual device types and on accessories and consumables please request our product data sheet.

SOXTHERM EXTRACTION SYSTEM

SERVICE AND MAINTENANCE

C. Gerhardt products are quality products for daily routine operation in the laboratory. We only use high quality materials with long service lives to provide you with maximum functionality and reliability.

Laboratory equipment is exposed to high load. Acid fumes, heat, solvents and high sample throughput leave traces on every device. Thus tubes, seals, pumps and glass parts have to be checked and cleaned regularly and, if necessary, replaced.

A maintenance and service agreement from C. Gerhardt maintains the serviceability and reliability of your SOXTHERM equipment.

SOXTHERM SCOPE OF MAINTENANCE

- General visual inspection and cleaning
- Replacement of parts relevant to maintenance
- Comprehensive work as per maintenance log
- Software update (if available)
- Hardware update (if available)
- Complete functional test
- Electrical check as per VDE 0701
- Documentation of the work performed
- Issue of a test sticker

OTHER SERVICES

- Repairs on-site or on the premises of C. Gerhardt
- Cost estimates
- Help by telephone or E-mail
- Individual solutions for your equipment pool

QUALIFICATION IQ/OQ/PQ

It goes without saying that we also perform the IQ/OQ/PQ in accordance with our manufacturer specifications.

Our authorized C. Gerhardt Partner is happy to develop an individual maintenance and service contract with you for equipment from our company.

Presented by:
HyXo Oy
PL 16 (Palokorvenkatu 2)
04261 Kerava
Puh. 010 417 4500
hyxo@hyxo.fi • www.hyxo.fi

C. Gerhardt – Quality made in Germany

STANDARD ANALYSES AUTOMATION

Completely automated laboratory analysis systems by C. Gerhardt are highly developed special equipment. They automate recurring analysis processes in accordance with national and international standards and norms. They continuously provide precise and reproducible analysis results quickly, at low cost, economically and highly efficiently.

An excerpt from our product range

COMPLETELY AUTOMATIC HYDROLYSIS
HYDROTHERM – automatic acid hydrolysis system for fat determination according to Weibull-Stoldt. When combined with SOXTHERM, HYDROTHERM is an ideal system solution for total fat determination.

COMPLETELY AUTOMATIC NITROGEN ANALYSIS
DUMATHERM – nitrogen/protein determination of solid and liquid samples according to the Dumas combustion method. A fast and convenient alternative to the classic Kjeldahl method for almost all sample matrices.

COMPLETELY AUTOMATIC CRUDE FIBRE EXTRACTION
FIBRETHERM – completely automated processing of the boiling and filtration processes for determining crude fibre, ADF and NDF.

COMPLETELY AUTOMATIC WATER STEAM DISTILLATION
VAPODEST – fast distillation system for Kjeldahl nitrogen/protein determination and water steam distillation as sample preparation for further analysis.

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Gerhardt Analytical Systems

C. Gerhardt GmbH & Co. KG
Cäsariusstraße 97 · 53639 Königswinter · Germany
Tel.: +49 (0) 2223 2999-0 · www.gerhardt.de

Our company is ZDH ZERT

C. Gerhardt focuses on sustainability:
this brochure has been published ecofriendly paper and printed with environmentally friendly inks.