

## Area of Usage | Hydrolysis and Extraction

## Area of Usage

HYDROTHERM is working according to a variety of national and international regulations regarding the extraction process and observes all those required methods. HYDROTHERM can be used for many analytical procedures. Please contact us for applications according to your needs.

## Fat Determination

Almost all food contains fat. Using HYDROTHERM, the acid hydrolysis for the classical fat determination in the food- and feed analysis can be done easily, fast and reliably.

- Milk and dairy products, e.g. L01.00-20 §64 LFGB
- Cereal and cereal products
- Meat and meat products, e.g. L06.00-6 oder L07.00-6 §64 LFGB
- Chocolate and cocoa products
- Oil and oil seeds
- Bread and bakery products e.g. L17.00-4 §64 LFGB
- Fruits
- Fat in feed
- Lipids in eggs and egg products
- Fat in dietary products and many more features



## Hydrolysis and Extraction coming from one single source

## HYDROTHERM und SOXTHERM

Tedious and expensive fat determination is a thing of the past. Using HYDROTHERM prior to the automatic SOXTHERM fat extraction system makes the fat determination really easy. The time-consuming hydrolysis procedure is followed by the automated extraction using the SOXTHERM rapid extraction system which has been used successfully for decades.

The user has the option of a 2-, 4- or 6-place extraction system. The operation is done using a PC with SOXTHERM Manager or using an external controller MULTISTAT.

Further product information is available in our brochure SOX-THERM. Or contact our product specialists at C.Gerhardt or at our dealer in your country.



## Technical data

Technical data HYDROTHERM	
<b>Hotplates</b>	6 (3 modules with 2 hotplates each)
<b>Initial sample weight</b>	1 - 10 g
<b>Cooling water connection</b>	3/4" threath
<b>Cooling water pressure</b>	0,5 - 10 bar
<b>Cooling water consumption</b>	ca. 5 l/min
<b>Nominal voltage</b>	230 VAC <sup>1)</sup> , 50-60 Hz
<b>Nominal consumption</b>	2100 W
<b>Current consumption</b>	max. 9,1 Ampere
<b>Interfaces</b>	2 x RS 485 1 x CAN-Bus
<b>Dimensions (W x D x H)</b>	closed 870 x 480 x 880 mm, open 870 x 600 x 960 mm
<b>Weight</b>	ca. 75 kg
<b>Order No.</b>	13-0027
<b>Type</b>	HT 6
<b>Delivery</b>	- Hydrolysis unit HYDROTHERM - Set of tubings contains all in- and outlet tubings required - Set of filters - CD-ROM with HYDROTHERM-Manager <sup>2)</sup>
<b>Set of tanks</b>	optional

1) other voltages on request

2) PC is not included in the delivery

## System requirements for using HYDROTHERM-Manager

- Operating system Microsoft Windows 98, XP or Vista

Since 1846  
over 160 years  
C. Gerhardt



EN ISO  
9001:2000



All stages from research & development to shipment have undergone a constant quality control under EN ISO 9001:2000.

Your dealer

Technical details correct as from 04/2009

Later modifications possible.

## C. Gerhardt

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## Hydrolysis System

**HYDROTHERM - Automatic Hydrolysis System**

**Gerhardt is the first company worldwide to present such a system**

With the launch of the HYDROTHERM, Gerhardt is the only manufacturer worldwide, to offer this unique system for the automated acid hydrolysis prior to the classic fat determination acc. to Weibull-Stoldt. Based on the classical method, the digestion with hydrochloric acid is followed by the filtration using a folded filter. The automated analysis is patent-registered and will open new ways for the fat analysis.

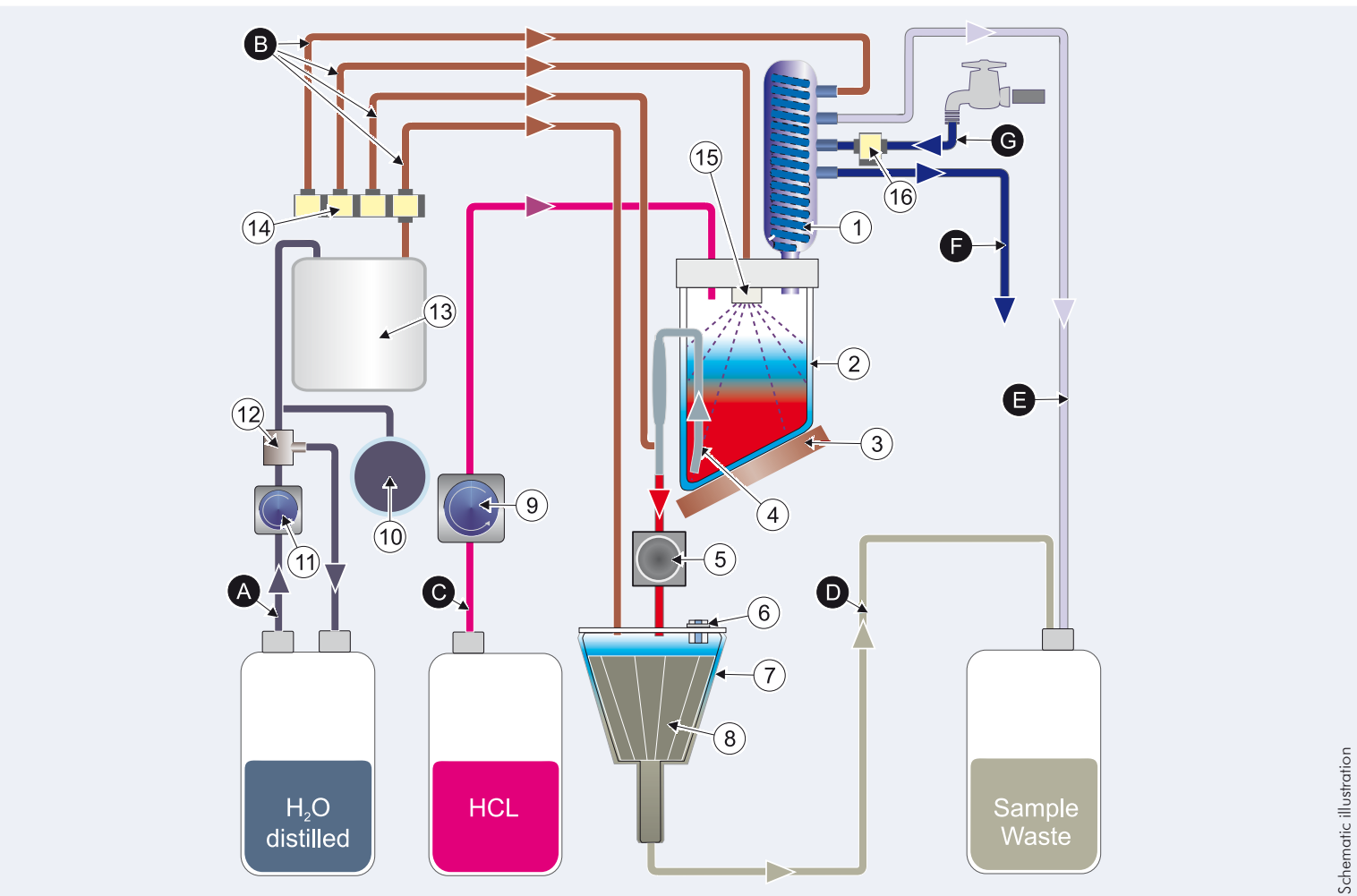
The construction of the instrument as well as the sensor technology used, has put the main emphasis on the operational safety. Handling hot acids or acid fumes is avoided completely. The instrument can be operated without an exhaust system. State-of-the-art control engineering ensures reproducibility of the process. The presence of the user is reduced to a minimum.



**The Principle**

**Analysis**

The matrix is digested in a digestion tube which are at optimal size. After adding the sample as well as inserting the filter, the instrument is closed and the analysis is started. Upon dosing a defined amount of hydrochloric acid, the digestion program is initiated under controlled conditions. Thanks to an integrated cleaning system, samples, with excessive foaming can be rinsed off the walls. When the digestion is completed, the sample is diluted and filtered quantitatively using the humid filter. The digestion tube is rinsed with hot water till all fat particles are carried over and the filter is pH-neutral. The filter is then taken out of the system, dried and put into an extraction thimble for the fat extraction.



- |  |                                       |                            |
|--|---------------------------------------|----------------------------|
| 1 Condenser                            | 11 Diaphragm pump for distilled water | A Distilled water addition |
| 2 Digestion vessel                     | 12 Overpressure release               | B Hot water addition       |
| 3 Hotplate                             | 13 Hot water generator                | C Hydrochloric acid        |
| 4 Sample transfer device               | 14 Valve system                       | D Sample drainage          |
| 5 Pinch valve                          | - condenser rinsing                   | E Air ventilation          |
| 6 Level sensor funnel                  | - digestion vessel rinsing            | F Cooling water outlet     |
| 7 Funnel                               | - sample transfer by off-loader       | G Cooling water inlet      |
| 8 Folded filter                        | - filter wetting                      |                            |
| 9 Diaphragm pump for hydrochloric acid | 15 Shower                             |                            |
| 10 Surge tank                          | 16 Cooling water valve                |                            |

**HYDROTHERM at a glance**

Overview HYDROTHERM

- Initial sample weight** 1-10 g, depending on the sample type
- Number of samples** max. 6 samples simultaneously (or 3 x 2 samples independently of each other)
- Analysis time** about 2 hours for a complete analysis

- Filter** Folded filter
  - compatible with classical extraction instruments
  - preparing of the filter not necessary
  - cleaning of the filter at the end of the analysis is not necessary

- Automated process** Entire hydrolysis procedure is automated
  - dosing of the acid
  - temperature / energy control
  - filtering of sample
  - dilution with hot water
  - preparation of hot water (no access to hot tap water required)
  - neutralization of filter
  - rinsing of digestion tube
  - presence of lab technician not required between the working steps

- Operation** using a PC with controlling software HYDROTHERM-Manager
  - programming of pump capacity, heating phase and cooling phase
  - display of status
  - visual and acoustic display of error messages
  - individual methods can be programmed (Method library)
  - calibration is possible (pumps, valves, hotplates...)
  - table of data
  - selection of language

**+ Safe**  
 ■ The design assures ultimate safety while handling chemicals

**+ Volatile**  
 ■ Digestion for the fat determination in food

**+ Saving costs**  
 ■ Especially for labs with a high sample throughput, the savings are tremendous thanks to the high grade of automatization. The presence of the lab technician is reduced to a minimum, thus saving labour costs

■ Built-in hot water generator supplies up to 6 positions simultaneously

■ Digestion for the fat determination in food

■ No fume cupboard required

■ Sample preparation for Soxhlet, Soxtherm as well as other extraction systems

■ Chemical residue is put directly into the tank for sample residue

■ 3 modules with 2 hotplates each – can be controlled and monitored independently

■ Visual and acoustic error messages

■ Initial weights of samples from 1g to 10g

**HYDROTHERM-Manager**

**Modern operation software**

For the daily operation, the method can be started directly at the instrument. The software HYDROTHERM-Manager is used to develop methods as well as for the documentation of the procedure. There is a total of 6 positions which are divided into 3 modules with 2 digestion positions. Each module can be started individually.

The HYDROTHERM-Manager is ergonomically designed and provides the user with ample possibilities for settings and documentations. It is extremely easy to develop methods and to monitor the analysis:

- overview of all functions and procedures, extremely easy to operate
- Compilation of any number of methods for the different types of samples
- all three modules are presented on one monitor
- manual intervention during the extraction procedure is possible
- table of data for documentation of e.g. methods, users, comments and many more features

\* PC is not included in the delivery

Schematic illustration