



# FAT EXTRACTION SYSTEM SX6

## Food Analysis

RELIABLE, PRECISE AND ECONOMIC  
SOLVENT EXTRACTION SYSTEM FOR AN  
EFFICIENT FAT EXTRACTION ANALYSIS

### Fat extraction system

Our fat extraction system is specially optimized to determine crude fat or other components soluble in organic solvents according to the universally known **Solvent extraction method**, including both **Randall** and **Twisselmann** methods.

Its flexibility to analyze a wide variety of samples ranging from food to environmental soil analysis makes our extractor suitable for multiple settings and applications. **SX-6 MP** is designed to guarantee accurate and precise results according to the international standardized methods such as **AOAC**, **ISO**, **AACC**, **DIN** and **EPA**



### MAIN FIELDS OF APPLICATION



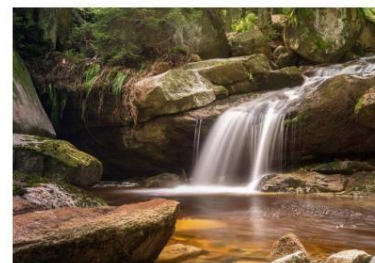
#### FOOD AND FEED INDUSTRY

Milk and dairy products, Cereals, Meat and derivatives, Fish and seafood, Chocolate and cocoa products, Oil and oil seeds, Dry fruits.



#### PHARMACEUTICAL INDUSTRY

Material design, Herbal medicine products, polymers R&D.



#### ENVIRONMENTAL ANALYSIS

Sewage water, Mineral oils, Lubricants, Soils.



#### TEXTILE ANALYSIS

Impurities detection, Cotton, Coating materials.



#### CHEMICAL ANALYSIS

Pesticides, Fertilizers, Refined chemicals.



#### COSMETICS

Lipid-based formulations, Formulas R&D, Vitamins.

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## FEATURES

### FAST EXTRACTIONS

SX-6 MP extractors are designed to follow the Randall method, a standardized method which is much faster than the traditional Soxhlet method.

### VERSATILE

The equipment allows independent programming of temperature and extraction times, facilitating the analysis of a wide range of analytes according to the specific needs of each sample.

### HIGHLY EFFICIENT

A powerful electric plate with armored resistance homogenously heats samples, allowing simultaneous analysis of six samples with identical conditions.

### LOW RESOURCES CONSUMPTION

The cooling water regulation system reduces the amount of cooling water consumption, an external recirculating cooler can also be connected. Smaller extraction cups lower the required quantity of solvents for extraction.

### QUALITY AND SAFETY GUARANTEE

Easy to clean and corrosion resistant external frame made of stainless steel grade AISI-304 with epoxy coating. A pressure switch protects the condensers from high pressure water. Different gaskets according to solvent used are also available.

## BENEFITS



Compatible with different methods and a wide variety of samples.



According to standardized analysis procedures.



Minimal care required during extraction phases.



Constant supervision of flow rate.



Equipment components resistant to several organic solvents.



Different gaskets included to use with different solvents.



Alarms and indicators for full analysis control.



Solvent recovery for future reuse.

### LIMITED SUPERVISION

SX-6 MP is a semiautomatic extractor, for each phase change the equipment makes an acoustic signal, warning the user that a change of samples position is required and thus the user does not need to continuously monitor the entire analysis.

### SOLVENT RECOVERY FOR FUTURE REUSE

After the extraction process is complete, SX-6 MP allows the recovery of most of the solvent. This solvent can be reused in subsequent tests, significantly reducing the cost of the analysis.

### TEMPERATURE CONTROL

Control of temperature by PID microprocessor and a Pt100 class A temperature probe, overtemperature safety control by an independent thermocouple.

### ACCORDING TO STANDARDIZED METHODS

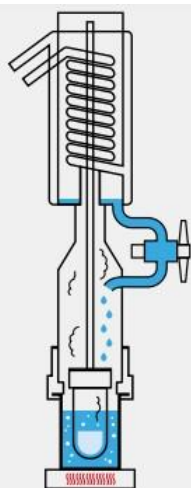
Fat content analysis with SX-6 MP extractors are performed in accordance to official methods described by international entities such as AOAC, AACC, ISO, EPA and DIN in order to guarantee accurate results.





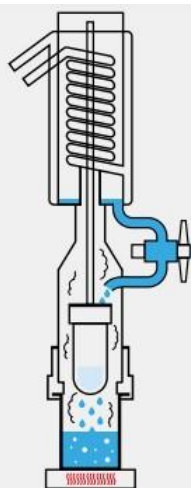
## Fat extraction system

### SX-6 MP'S WORKING PRINCIPLE ACCORDING TO THE RANDALL METHOD



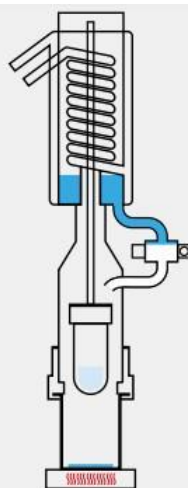
#### 1 BOILING PHASE

Firstly, the sample is immersed in hot solvent, where absorption of sample fat content by the solvent is continuous by both immersion and reflux.



#### 2 RINSING PHASE

Secondly, the sample is lifted from condensed solvent contact. In this step, absorption of sample fat content by the solvent is continuous only by reflux.



#### 3 RECOVERY PHASE

In the final step, the solvent tank valve is closed and the solvent is collected for future reuse. The fat content is deposited at the bottom of the reaction flask.

have some improved features have been developed. **Randall method**, suggested by Edward Randall in 1974, is an example of this improvement as it typically allows the reaction to be **four times faster and guarantees solvent recovery**. SX-6 MP extractors can be programmed with different extraction steps according to Randall analysis as seen on this page figure.

The traditional **Soxhlet method**, invented by Franz von Soxhlet in 1879, is the most popular method for fat extraction. It is a standard procedure that provides good analyte recovery, however the extraction procedure is long (it can last 18-24h) and uses a significant amount of solvent.

Soxhlet extraction consists in placing a previously dried sample inside a thimble made of cellulose and then it is loaded into the extractor, which is connected to a flask containing a solvent and a condenser. The solvent is heated and evaporated, the hot solvent vapor then

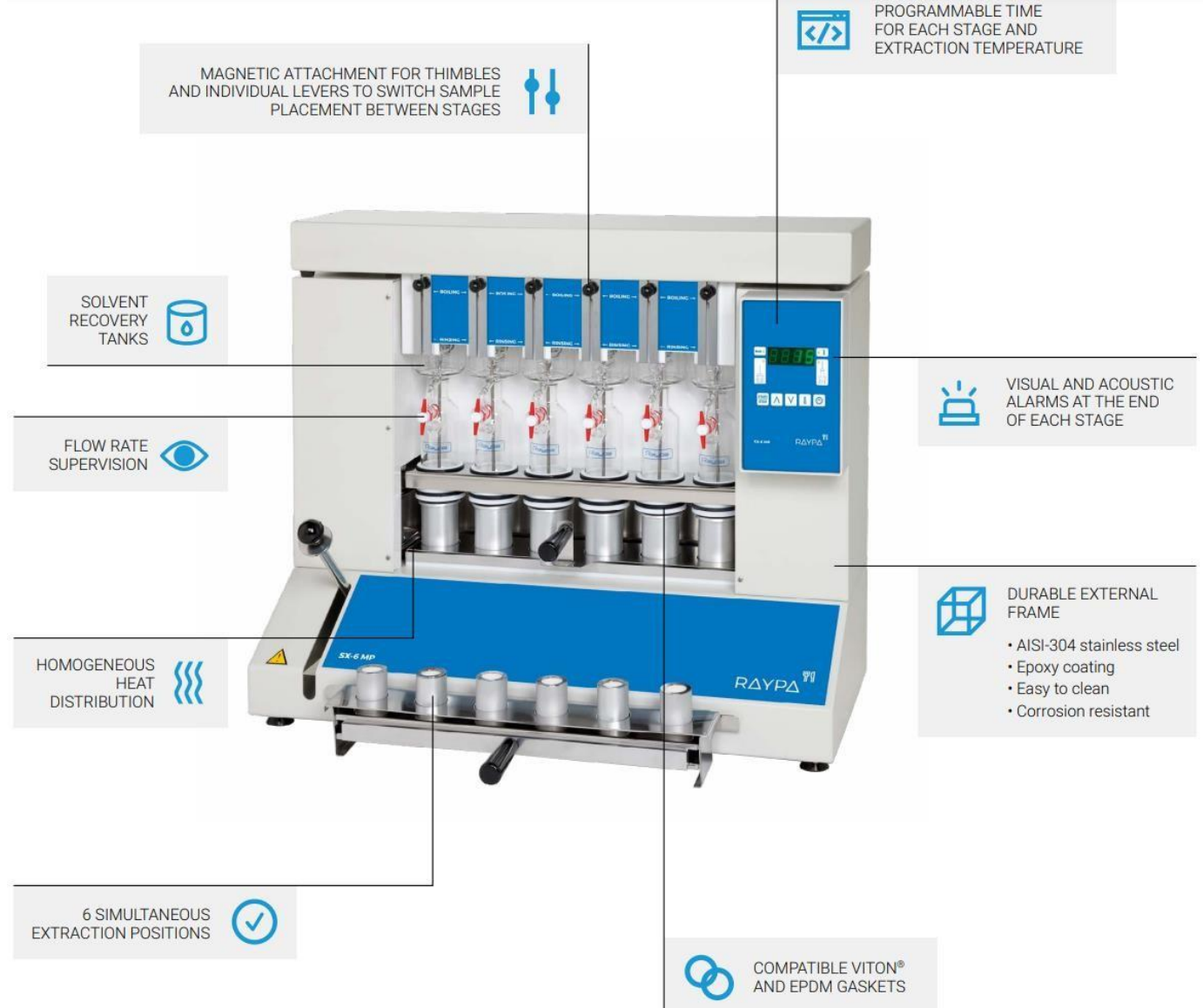
travels up to the condenser, where it cools and falls onto the sample in the thimble. The chamber containing the sample slowly fills with condensed solvent until, when almost full, it is emptied by a siphoning action back into the solvent flask. During each cycle, a portion of the soluble components in the solvent are extracted. This cycle is repeated several times until all analyte is separated from the sample.

In order to improve effectiveness of Soxhlet extraction, alternative methods that use the same extraction principle but

**Twisselmann extraction**, also known as continuous economic extraction requires only one extraction position, between boiling and rinsing. The solvent placed in the extraction cup is heated and evaporated, these vapors pass through the sample and reach the condensation chamber, once liquefied, the solvent falls onto sample and is collected again in the extraction cup. Thus, both vapor and liquid forms of solvent simultaneously and continuously extract all lipid content from the sample. After all analyte has been collected, solvent can also be recovered.



## MAIN FEATURES





## TECHNICAL SUMMARY OF SX-6 MP

	<b>General info</b>	Extractor general classification	Semiautomatic
		Extraction positions	6
		Standards compliance	AOAC, AACC, DIN, EPA, ISO
		Dimensions L x D x H mm	680 x 330 x 580
		Weight Kg	46
		Power W	1500
		Voltage V	230 V (115 V optional)
		Frequency Hz	50/60
		Electric protection grade	IP 65
	<b>Compatible standardized fat extraction methods based on Soxhlet</b>	Fat extraction according to Randall	✓
		Fat extraction according to Twisselmann	✓
	<b>Materials</b>	Seals	Viton® & EPDM
		Extraction thimbles	Cellulose
		Condensers flasks	Borosilicate 3.3
		Extraction vessels	Aluminum
		Extraction column support	Teflon®
		Connection tubing	Silicone
		External housing	AISI-304 stainless steel painted with epoxy resin
	<b>Display</b>	Screen type	LED
		Displays values of	Temperature plus boiling, rinsing and recovery times
	<b>Adjustable program parameters</b>	Temperature of heating plate °C	Ambient temp. +5 - 220
		Boiling time hours:minutes	00:00 - 99:59
		Rinsing time hours:minutes	00:00 - 99:59
		Recovery time hours:minutes	00:00 - 99:59
	<b>Performance</b>	Extraction speed at 230V drops/sec	3 to 5
		Sample capacity/batch units	6
		Sample capacity/day units	36
		Cooling water consumption L/min	4
		Solvent recovery %	Up to 95
		Sample fat content measuring range %	0,1 - 100
		Temperature accuracy	± 0,5
		Reproducibility %	± 1
	<b>Solvent and sample management</b>	Solvent volume per slot ml	50
		Individual solvent recovery tanks	✓
		Compatible Viton® and EPDM gaskets	✓
	<b>Alarms</b>	Acoustic alarms	✓
		Visual alarms	✓
		End of rinsing phase alarm	✓
		End of boiling phase alarm	✓
		End of extraction phase alarm	✓

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## Complete batch handling items included

25 CELLULOSE EXTRACTION THIMBLES	✓
12 EXTRACTION THIMBLE SUPPORTS	✓
12 ALUMINUM EXTRACTION VESSELS	✓
6 MAGNETIC ADAPTERS	✓
6 EPDM GASKETS	✓
6 VITON® GASKETS	✓
2 RACKS FOR EXTRACTION THIMBLES	✓
2 RACKS FOR EXTRACTION VESSELS	✓
1 ALIGNING RACK FOR EXTRACTION VESSELS	✓
1 TONG FOR AN INDIVIDUAL MANIPULATION OF EXTRACTION VESSELS	✓
1 TONG FOR A SIMULTANEOUS MANIPULATION OF 6 EXTRACTION VESSELS	✓
2 SILICONE TUBES 1,5M (Ø 8 X 14)	✓



## Accessories

### EXTRACTION THIMBLES SET

Reference	CD-2526
Dimensions Ø x H mm	Ø 26 x 60
Material	Cellulose
Quantity units	25



### EXTRACTION VESSEL SET

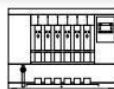
Reference	CEX
Dimensions Ø x H mm	Ø 51 x 59
Material	Aluminum
Quantity units	6





## TECHNICAL DATA

### Dimensions and performance



Reference	SX-6 MP
External dimensions L x D x H mm	680 x 330 x 580
Power W	1500
Voltage* V	230
Weight Kg	46
Reproducibility %	±1
Solvent recovery %	Up to 95
Temperature accuracy °C	± 0,5
Sample capacity	Batch units
	Day units
	6
	36

\*Also available with a voltage of 115 V.

### Regulations

Our SX-6 MP fat extraction system is designed to comply with the strictest international directives and standards, including the following:

- **EN-61010-1** Safety requirements for electrical equipment for measurement, control and laboratory use. **Part 1: General requirements.**
- **EN-61010-2-010 Part 2-010** Particular requirements for laboratory equipment for the heating of materials.
- **EN-61326** Electrical equipment for measurement, control and laboratory use. EMC Requirements.
- **2014/35/UE** Low voltage.
- **2014/30/UE** Electromagnetic compatibility.

### International standardized methods

SX-6 MP fat extractors are fabricated guaranteeing compliance with a variety of international standards such as AOAC, AACC, DIN, EPA and ISO.

### Main fields of application



FOOD AND FEED  
INDUSTRY



PHARMACEUTICAL  
INDUSTRY



ENVIRONMENTAL  
ANALYSIS



TEXTILE ANALYSIS



CHEMICAL ANALYSIS



COSMETICS

### Safety

- IP 65 electric protection grade.
- Temperature limiter.
- Pressure regulator to avoid overpressure.
- Error messages for maximum safety.
- Corrosion-resistant easy-to-clean external frame made of stainless steel.

### Warning

It is recommended to use the equipment inside a fumes hood at all times.

## When you work with BASTAK you receive;

- ✓ Free technical consultancy for tailor made solutions,
- ✓ High quality instruments with free webinars and on-line trainings,
- ✓ Fast delivery of instruments, spare parts and consumables,
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**You can find all Catalogues and Competitor Comparison Tables in this link:**

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**Sensitive  
Nutrition**



**High  
Efficiency**



**Monoblock  
Study Body**



**Standard  
Grinding**



**Personal  
Security**

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