

FAT EXTRACTION



RANDALL HOT SOLVENT EXTRACTION

Solvent extraction is used to determine the quantity of various components (e.g. Fat) contained in agricultural, industrial or environmental samples.

Soxhlet extraction, is one of the most widely used analytical technique which performs extraction with cold solvent. Adaptation of Soxhlet have been introduced over time, reducing extraction time by increasing the temperature of the solvent as with the Randall technique.

The solvent extractors of VELP Scientifica operate a solid-liquid extraction process that removes soluble components from solid samples using a liquid solvent according to the Randall technique, offering significant benefits in term of time saving and solvent recovery.

This method is performed in 3 main steps: Immersion, Washing and Recovery although other two intermediate steps, Removing and Cooling, can be added (with the SER 158) in order to maximize the performance.

Hot solvent extraction works in accordance with national and international standards and can be used in various industries and analytical fields.

THE SER SERIES

The fully automatic SER 158 and the semi-automatic SER 148 guarantee safe operations and low solvent consumption for all sort of hot solvent extractions. The VELP extractors come with 3 or 6 positions.

The automatic and semi-automatic SER are fully equipped, versatile and with a complete range of accessories providing total flexibility in all fields of application.

Solvent extraction with the SER series can be performed not only for Fat extraction (crude and total) in food and non-food samples but also for sample preparation for additional test such as Hydrocarbons from soil, Oil in sludge, Paraffin in wood chips, and many more.

| APPLICATIONS: | MAIN INDUSTRIES: |
|---|--------------------------------------|
| FAT DETERMINATION (CRUDE AND TOTAL) | FOOD AND FEED |
| OIL/FAT CONTENT DETERMINATION | ENVIRONMENTAL, TEXTILE, PULP & PAPER |
| SAMPLE PREPARATION FOR THE EXTRACTION OF POLLUTANTS AND CONTAMINATED ELEMENTS | PLASTIC & PETROLEUM, ENVIRONMENTAL |



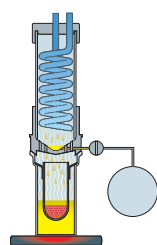
GLP Good Laboratory Practice
AOAC • ISO • EPA • APHA • UNI

SOXHLET TECHNIQUE

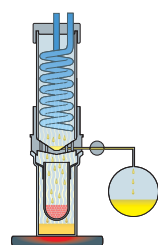


The solubilization of extractable components is performed by a cold solvent dropping from a reflux condenser. Consequently a complete extraction lasts many hours.

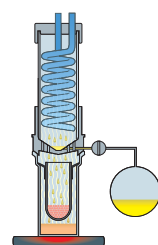
SER 158 FULLY AUTOMATIC EXTRACTION PROCESS



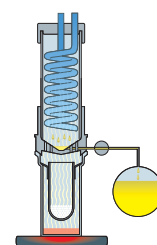
IMMERSION
The sample is immersed into boiling solvent



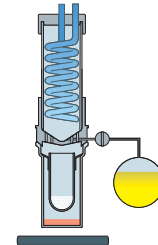
REMOVING*
Solvent volume is reduced



WASHING
The solvent flows through the thimble



RECOVERY
Solvent is recovered



COOLING*
Prevention of extracted matter overheating

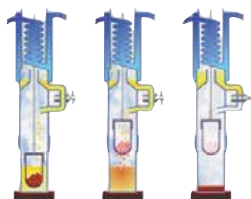
*Performed only with the SER 158.

SER 148 SOLVENT EXTRACTOR

The **SER 148/3** and **SER 148/6** can be used to separate a substance or a group of elements (e.g. fat) from solid and semi-solid samples according to the **Randall technique** (consisting of Immersion, Washing and solvent Recovery).

The SER 148 Series is a semi-automatic solution with no compromises on **operator safety (IP55)** and **solvent consumption** also guaranteeing a **limited cost per analysis**.

Robust design and large install base make the SER 148 Series the reliable choice for any laboratory aiming at reducing the time per analysis compared to the traditional Soxhlet method. As for the automatic version, the main field of application is the determination of the content of soluble products such as fats, detergents, plasticizers and pesticides in food, animal feeds, detergents, rubber and plastic formulas, pharmaceutical products, soil.



RANDALL TECHNIQUE

The first phase of extraction is performed by immersing a sample - containing thimble in boiling solvent followed by a washing with cold refluxing solvent. The fast solubilization achieved by the hot solvent results in a sharp reduction of extraction time.

CONSUMABLES

CODE No

| | |
|--|----------|
| Extraction thimbles 33x80 mm, 25 pcs/box | A0000295 |
|--|----------|



SUPPLIED WITH

CODE No

| | |
|--------------------------------------|-----------|
| Extraction Cups SER 148/3 | A00001141 |
| Extraction Cups SER 148/6 | A00000142 |
| Extraction Thimbles 33x80, 25pcs/box | A00000295 |
| Inlet Tube | 10000280 |
| Heat Shield SER 148/3 | 40000210 |
| Heat Shield SER 148/6 | 40000220 |
| Viton seal SER 148 3pcs/box | A00000307 |
| Butyl seal SER 148 3pcs/box | A00000308 |

OPTIONAL ACCESSORIES

CODE No

| | |
|--|-----------|
| Printer | A00001009 |
| Serial cable | A00000011 |
| Thimble weighing cup | A00001146 |
| Vafion seal SER 148 3pcs/box | A00000061 |
| IQ/OQ SER 148 Manual | A00000073 |
| Handling device for extraction cup (for SER 148/6) | A00001145 |
| Pincer for weighing cups (for SER 148/6) | A00001147 |
| Thimbles stand (6 places) | A00001149 |
| Extraction thimbles holder | A00001142 |
| Crucible holder HU6 for SER148 | A00000309 |
| Glass fiber thimbles 33x80, 25pcs/box | A00000313 |
| Oat meal, 30g | A00000318 |

INSTRUMENT

POWER SUPPLY

CODE No

| | | |
|-----------|------------------|-----------|
| SER 148/3 | 230 V / 50-60 Hz | F30300240 |
| SER 148/3 | 115 V / 50-60 Hz | F30310240 |
| SER 148/6 | 230 V / 50-60 Hz | F30300242 |
| SER 148/6 | 115 V / 50-60 Hz | F30310242 |

SER 148/6

SER 148/3



GENERAL FEATURES AND PERFORMANCE

| | |
|------------------------------------|--|
| CONSTRUCTION MATERIAL | Epoxy painted stainless steel structure |
| MAX VOLUME EXTRACTION CUP | 150 ml |
| DISPLAY | Working temperature / settable parameters |
| WORKING TEMPERATURE | From 100 to 260 °C |
| IMMERSION, WASHING & RECOVERY TIME | From 0 to 999 minutes |
| SAMPLE QUANTITY | From 0.5 to 15 g (generally 2-3 g) |
| SOLVENT RECOVERY | From 50 to 75% |
| REPRODUCIBILITY (RSD) | ≤ 1% |
| INTERFACE | RS232 |
| POWER | 500 W (SER 148/3) or 950 W (SER 148/6) |
| DIMENSIONS (WxHxD) | 480x620x390 mm (18.9x24.4x15.4 in) (SER 148/3) 700x620x390 mm (27.6x24.4x15.4 in) (SER 148/6) |
| WEIGHT | 30 Kg (66 lb) (SER 148/3) 40 Kg (88 lb) (SER 148/6) |