

RAW FIBER EXTRACTION

FIWE RAW FIBER EXTRACTOR



RAW FIBER EXTRACTION

Vegetables and derived products are made up of substances belonging to different categories:

- carbohydrates, proteins, fats, mineral salts;
- a non-digestible component consisting of polymers (lignin, cellulose, hemicellulose, pectin) called "fiber".

There are many reasons why it is very important to determine the fiber content including nutritional, economic and legal reasons.

The **FIWE 3** and **FIWE 6** are suitable for raw fiber determination, conventionally known as an indigestible residue. **Rapid analysis, reliable results and high reproducibility** are some of the most relevant benefits of these units which are ideal for the following applications:

- total raw fiber determination (according to Weende)
- neutral detergent fiber and acid detergent fiber determination (NDF and ADF according to Van Soest)
- acid detergent lignin determination (ADL according to Van Soest)
- different fractions of fiber (cellulose, hemicellulose and pectin)

Raw fiber determination is useful for nutritional, economic and legislative aspects. FIWE performs single or sequential extractions including boiling, rinsing and filtration.

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CRUCIBLE

Crucibles are consumables and their lifetime is closely tied to correct use and proper cleaning. The average lifetime is 20-30 analyses. Crucibles have class 2 porosity according to Jena's definition, with 45 μm (40 – 60 μm) (ASTM) holes, class C in the USA.

The correct use of crucibles in the muffle furnace for analyzing ashes and proper cleaning in accordance with the recommendations in the operating manual are crucial.

FIWE 6



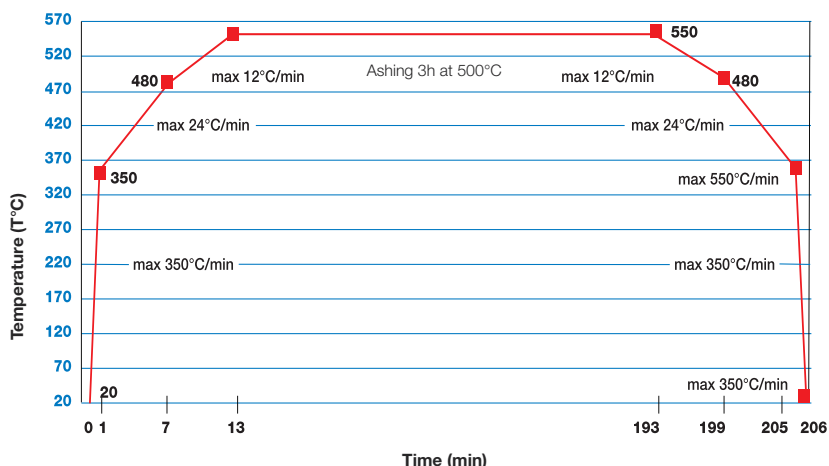
FIWE 3

TIPS FOR CRUCIBLE TREATMENT IN A MUFFLE FURNACE

The heating and cooling of glass crucibles for determining ash content requires special care in order to prevent breakages. Thermal shock can lead to breakage, particularly in stressed areas such as the junction between the crucible body and the filter disk. A temperature of 550 °C corresponds to the beginning of glass's plastic state and should not be exceeded.

Maximum rates recommended for heating and cooling glass crucibles are follows:

Heating °C	Cooling °C	Rate °C/min	Required time min
20 to 350	350 to 20	350	1
350 to 480	480 to 350	24	6
480 to 550	550 to 480	12	6



COEX COLD EXTRACTOR

In order to perform a reliable raw fiber determination test, the sample must have a low fat content (<1%). For those samples that exceed this value, **preliminary fat extraction** is required using acetone, hexane or petroleum. The **COEX** performs **rapid fat extraction directly in the same glass crucibles** that are used by the FIWE 3 and FIWE 6. A great benefit as the user can start raw fiber extraction **immediately** after completing fat extraction.

INSTRUMENT	POWER SUPPLY	CODE No
COEX	230 V / 50 Hz	F30520204
COEX	230 V / 60 Hz	F30530204
COEX	115 V / 60 Hz	F30540204

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GENERAL FEATURES AND PERFORMANCE

CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
TYPE OF EXTRACTION	Cold
REAGENT DISCHARGE	Peristaltic pump
POWER	120 W
DIMENSIONS (WxHxD)	730x300x380 mm (29.5x11.0x15.0 in)
WEIGHT	19 Kg (41.8 lb)

SUPPLIED WITH

Glass crucibles P2, 6 pcs/box	A00000140
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OPTIONAL ACCESSORIES

IQ/OQ manual COEX	A00000250
Glass crucible P0, 6 pcs/box	A00000138
Glass crucible P1, 6 pcs/box	A00000139
Glass crucible P2, 6 pcs/box	A00000140
Glass crucible P3, 6 pcs/box	A00000137

INSTRUMENT	POWER SUPPLY	CODE No
FIWE 3	230 V / 50 Hz	SA30520201
FIWE 3	230 V / 60 Hz	SA30530201
FIWE 3	115 V / 60 Hz	SA30540201
FIWE 6	230 V / 50 Hz	SA30520200
FIWE 6	230 V / 60 Hz	SA30530200
FIWE 6	115 V / 60 Hz	SA30540200

GENERAL FEATURES AND PERFORMANCE

CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
NUMBER OF SAMPLES	3 (FIWE 3) or 6 (FIWE 6)
DIGITAL TIMER	0 - 99 minutes with acoustic signal at the end of the cycle
TYPE OF EXTRACTIONS	Hot and cold
SAMPLE REMOVAL	Air pump
REAGENT DISCHARGE	Peristaltic pump
TEMPERATURE	Electronic regulation
REAGENTS AND COOLING WATER	Separated outlets
SAMPLES	Individually processed
SAMPLE QUANTITY	From 0.5 to 3 g
REPRODUCIBILITY (RSD)	± 1%
POWER	900 W (FIWE 3) or 1200 W (FIWE 6)
DIMENSIONS (WxHxD)	530x620x390 mm (20.9x24.4x15.4 in) (FIWE 3) 760x620x390 mm (29.5x24.4x15.4 in) (FIWE 6)
WEIGHT	35 Kg (77 lb) (FIWE 3) 46 Kg (101.2 lb) (FIWE 6)

SUPPLIED WITH

Heat shield (FIWE 3)	40000167
Heat shield (FIWE 6)	40000161
Glass crucible P2, 1 pcs/box (3 boxes with FIWE 3)	A00001140
Glass crucibles P2, 6 pcs/box (FIWE 6)	A00000140
Holder for 3 crucibles	40000166
Holder for 6 crucibles	40000160
PVC tube, 2 mt	10001086
2-place hot plate, RC2 type	F20700430 or F20710430
Reagent glass bottles	10001112
Pincer for crucibles	10000247
Inlet tube	10000280

OPTIONAL ACCESSORIES

Water spray device	A00001135
Vafion seal (Scharer method)	A00000099
IQ/OQ Manual FIWE	A00000074
Oat meal, 30g	A00000318
Glass crucible P0, 6 pcs/box	A00000138
Glass crucible P1, 6 pcs/box	A00000139
Glass crucible P2, 6 pcs/box	A00000140
Glass crucible P3, 6 pcs/box	A00000137

DIETARY FIBER EXTRACTION



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The procedure for determining dietary fiber exposes the sample to a series of enzymatic digestions that simulate the real digestive process which takes place in the human and animal digestive tract, calculating the undigested residue remaining at the end of the analysis. Generally speaking, dietary fiber analysis is carried out on foods intended for human consumption whereas raw fiber analysis is carried out on animal feeds or on raw materials of vegetable origin, e.g. cereals.

GDE

The **GDE** performs enzymatic digestion, a delicate phase where samples are immersed in a thermostatic water bath and stirred. **Continuous and constant sample mixing** is necessary in order to prevent the sample from overheating. The unit consists of an immersion heating head, a transparent tank and a VELP 6-place magnetic stirrer to ensure **excellent thermoregulation and precision**.

INSTRUMENT	POWER SUPPLY	CODE No
GDE	230 V / 50-60 Hz	SA30400209
GDE	115 V / 50-60 Hz	SA30410209



GENERAL FEATURES AND PERFORMANCE

TEMPERATURE RANGE	Ambient to 105 °C
POWER	900 W
DIMENSIONS (WxHxD)	413x295x410 mm (16.2x11.6x16.1 in)
WEIGHT	6.2 Kg (13.66 lb)

OPTIONAL ACCESSORIES	CODE No
Beaker, 400 ml	A0000999
Stirring bar, 6x35 mm	A0001056
Hollow balls 200 pcs/box	A0000241
IQ/OQ Manual for GDE	A0000249

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CSF 6

The **CSF 6** filtration unit carries out the final filtration and washing phase foreseen by the enzymatic method for dietary fiber determination. The CSF 6 used in combination with the GDE is suitable for the determination of total dietary fiber and **reduces the time required** compared to manual procedures considerably. The glass funnels facilitate the introduction of the digested sample and solvents into the instrument. The filtering and final washing stages are **speeded-up** thanks to the vacuum function.

Temperature: up to 550 °C

INSTRUMENT	POWER SUPPLY	CODE No
CSF 6	230 V / 50 Hz	F30420210
CSF 6	230 V / 60 Hz	F30430210
CSF 6	115 V / 60 Hz	F30440210



GENERAL FEATURES AND PERFORMANCE

CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
PERISTALTIC PUMP	High suction capacity
RESIDUES COLLECTING	Separate
COUNTERPRESSURE	Electronic setting
FILTRATION TIME	Shortening
POWER	220 W
DIMENSIONS (WxHxD)	750x420x380 mm (28.7x16.5x15.0 in)
WEIGHT	28 Kg (61.6 lb)

SUPPLIED WITH	CODE No
Glass crucibles P2, 6 pcs/box	A0000140

OPTIONAL ACCESSORIES	CODE No
IQ/OQ manual CSF6	A0000248