Application Short Note HYDROTHERM/SOXTHERM
Total Fat in Mashed Potatoes

1 Aim of the Experiment (e.g. Fat content, PCB determination, Sample preparation for…)

Determination of Total Fat according to Weibull – Stoldt method including hydrochloric acid hydrolysis, followed by an extraction with petroleum ether using SOXTHERM.

2 Which method is applied (e.g. DIN, DEV, ISO, §35, AOAC, customer method …)

Governmental Collection of Methods for Food Analysis according to § 64 LFGB (earlier § 35):

L 17.00-4 Bestimmung des Gesamtfettgehaltes in Brot einschließlich Kleingebäck aus Brotteigen, Mai 1982 (Bread and baked products)

3 Sample preparation

The sample can be weighted in directly after mixing it well with a spatula.

3-5 boiling stones are put into each extraction beaker. The beakers are dried for about 1 h in a drying oven at 103°C. After cooling down to room temperature in the desiccator, the beakers are weight out with a precision of +/- 0,1 mg.



Potato Flakes for the production of mashed potatoes

4 Chemicals

15 % HCl (Hydrotherm)

Petroleum Ether 40/60

5 Required Instruments and used Software Versions

HYDROTHERM Manager Version:	V 2.3 CTR 121/121	SOXTHERM Manager Version:	2.99.0.450 beta
Serial No.	1765 130013	Firmware Version:	1.4
		Serial No.	8465 160067

6 Settings and parameters HYDROTHERM: Best Practice 150

Parameters	Setting	Unit	Comment
Fill levels			
HCl amount	**150 ***	ml	Normally 100 ml
H_2O amount / dilution	50	ml	
Heating Cooling phases			
Heat up phase	12	min	
Boiling phase I	20	min	50 % power
Boiling phase II	30	min	70 % power
Cool down phase - duration	15	min	
Filter moisture			
Number of moisture cycles	3		
Moisture amount per cycle	30	ml	

Filter-Phase			
Filter wait time	5	s	
Rinsing cycles	20		
Pipe opening time	200	ms	
Sample rinse time	10	s	
Sample shower - amount	30	ml	
Cooling shower - amount	30	ml	
Filter shower - amount	50	ml	

The amount of hydrochloric acid is increased to 150 ml because this type of sample will absorb a part of the acid.

7 Type of instrument and supply SOXTHERM

Size of extraction beakers	**X** Macro ☐ Micro
Type of seal	Viton
Extraction thimbles	**33 x 80 mm, Cellulose**
Holder for thimbles, type and size	Standard holder for extraction thimbles Ø 33 mm, 13-0062
Boiling stones	Yes, 13-0047
Connection for compressed air or compressor	Compressed air
Water connection or recirculating cooler	Recirculating cooler

8 Programm Parameters SOXTHERM

Program step – [Parameter]	**Comment: Method Fat**
T-classification [°C]	200
Extraction Temperature [°C]	150
Reduction Interval [min]	4,0
Reduction Pulse [s]	1
Hot Extraction [h/min]	0 h 30 min
Evaporation A [x intervall]	5 x
Rinsing time [h/min]	1 h
Evaporation B [x intervall]	3 x
Evaporation C [min]	---

9 Example Results

Type of sample	**Amount of sample [g]**	**Fat Content [%]**
Mashed Potatoes	10,2433	0,73
Mashed Potatoes	15,0144	0,71
Mashed Potatoes	10,4127	0,71
Mashed Potatoes	15,5715	0,69
Results average % Fat (sd)		**0,71 (0,014)**