

Notes on the Forms for the Total Microwave Digestion in the Working Group Soil Science

The microwaves of the working groups soil science and agronomy (MarsXpress) have an inner and an outer ring. In general, both rings can be occupied by 40 places. However, since this entails an enormous space requirement under the fume hood and an increase in time required, you usually only work with the outer ring (24 places). There are separate forms for the inner (microwave no. 1 to 16) and the outer ring (microwave no. 17 to 40) for the common digestion methods. The forms are available electronically and hence can be filled in electronically (except for weigh-in and date sections) and printed.

The client fills in the blanks Project/experiment and Client, ticks the elements to be determined and clarifies whether the extracting agent volume, weigh-in and final volume remain by default respectively which final volume is selected (expected element concentration). The person who carries out the weighing-in (client or lab assistant) fills in the other blanks. The blank Date of ICP measurement is filled in by the lab assistant on the day of measurement. The date (e.g. 1 month after ICP measurement) or a comment (e.g. ask client) can be filled in in the blank Date of extraction. The given blank values are the minimum blank values. If required, more can be inserted. Care has to be taken that two blank values or empty vessels are not behind one another. Short and logical ICP numbers should be chosen to facilitate the sample input at the ICP-OES, e.g. consecutive numbers ascending from at 1. The column *Comment* can be used to fill in irregularities with single samples (if needed). If several microwave digestions are necessary for a sample series, this can be entered as page x of y at the end of the page. Otherwise, page 1/1 is entered. The form is copied after the measurement at the ICP-OES. The client keeps one sheet, the other remains with the samples until the disposal.

Handbook on the selection of methods for digestion and determination of total P in environmental samples

	Aqua ı	egia	dig	estic	on fo	r so	oil an	d se	edime	nt			
Order no.:		Proj	iect/e	exper	rimer	nt:			Client	t:			
				-									
Data of wo	ich in:	Dat	e of e	ovtro	ction				Date	of IC	'D		
Date of we	ign-in.	Dat		exua	CUUI				meas			:	
Extracting ml: HCl	agent in 6	Wei	gh-ir	n: ≤ (0.5 g	l			Date	of di	spos	al:	
HNO3	2	Volu	ume:	100	L00 ml								
Elements to determined			AI	Ca	Cd	Cu	Fe	к	Mg	Mn	Ni	Ρ	Zn
tick													
Lab no.	Parallel		row.	W	eigh- in g	ICP no.			nmei	nt			
B1			1		-								
			2										
			3										
			4										
			5 6										
			6 7										
			8										
B2			9		-		B2)					
			_ LO										
			L1										
			12										
			13										
			14										
			15										
	16												

	Aqua ı	egia	dige	estio	on fo	r so	oil an	d se	edime	nt			
Order no.:		Proj	iect/e	expei	rimer	nt:			Client	t:			
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date meas			:	
Extracting ml: HCl HNO ₃	agent in 6 2		gh-in ume:			ļ			Date	of di	spos	al:	
Elements t determined tick			AI	Ca	Ca Cd Cu Fe			к	Mg	Mn	Ni	Ρ	Zn
Lab no.	Parallel		row.	W	eigh· in g	-in	ICP r	10.	Comment				
B1			L7		-								
			18										
			19										
			20										
			21										
			22										
			23 24			_							
			24 25										
			25 26										
			27										
			28										
B2			29		_		B2)					
			30				52	-					
			31										
			32										
			33										
			34										
			35										
			36										
			37										
			38										
			39										
		4	10										

Total digestion for plants and peat with HNO_3 and H_2O_2

Order no.: Project/experiment: Client:													
Order no.:		Proj	ject/e	exper	rimer	nt:			Client	:			
Date of we	igh-in:	Dat	e of e	extra	ction	1:			Date				
									meas	uren	hent	•	
Extracting ml: HNO ₃ H ₂ O ₂ (Volu		20 n	nl (5	0 or	ix. 0.5 100 m)		Date	of di	spos	al:	
Elements t determined tick			Al Ca Cd Cu Fe I					К	Mg	Mn	Ni	Ρ	Zn
Lab no.	Parallel	-	Microw. Weigh-in no. in g						. Comment				
B1			1		-								
			2										
			3										
			4										
			5										
			6										
			7	_									
			8										
B2			9	_	-								
			10										
			11										
			12 13										
			13 14										
			14 15										
		16											

Use plastic vessels in trace element analysis (see notes in the laboratory manuals)!

Total digestion for plants and peat with HNO_3 and H_2O_2

Order no.:		Proj	ect/e	expe	rimer	nt:			Client	t:					
Date of we	igh-in:	Date	e of e	extra	ction	1:			Date meas			:			
Extracting ml: HNO ₃ H ₂ O ₂ (5		me:	20 r	nl (5	0 or	ax. 0.5 100 m		Date	of di	spos	al:			
Elements t determined	o be		AI	Ca	Cd	Cu		К	Mg	Mn	Ni	Р	Zn		
tick	1														
Lab no.	Parallel		Microw. Weigh-in no. in g ICP no.							Comment					
B1		1	L7		-		B1								
		1	18												
		1	19												
			20												
			21												
			22												
			23												
			24												
			25												
			26												
			27												
B2			28		_		B2)							
DZ			29 30		-		DZ	•							
			30 31												
		1	32												
			33												
			34												
			35												
			36												
			37												
			38												
		3	39												
		2	10												

Use plastic vessels in trace element analysis (see notes in the laboratory manuals)!

Total digestion for plants, fish or mounting resin with HNO₃

Order no.: Project/experiment: Client:														
Order no.:		Proj	ject/e	expei	rimer	nt:			Client	:				
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date meas			:		
Extracting 10 ml HNC			gh-ir ume:			5 g			Date	of di	lisposal:			
Elements t determined tick			AI	Ca	Cd	Cu	Fe	К	Mg	Mn	Ni	Ρ	Zn	
Lab no.	Parallel		row. 10.	W	eigh- in g	-in	ICP no.		Comment					
B1			1		-									
			2											
			3											
			4											
			5											
			6											
			7											
			8											
B2			9		-									
			10											
		-	11											
			12 13											
			14											
			15											
	16													

Use plastic vessels in trace element analysis (see notes in the laboratory manuals)!

Total digestion for plants, fish or mounting resin with HNO₃

Order no.: Project/experiment: Client:															
Order no.:		Proj	iect/e	expe	rimer	nt:			Client	t:					
Date of we	igh-in:	Date	e of e	extra	ctior	1:			Date meas			:			
Extracting 10 ml HNO			gh-in ume:			5 g			Date	of di	ispos	al:			
Elements to determined			AI	Ca	Cd	Cu	Fe	к	Mg	Mn	Ni	Р	Zn		
tick		1													
Lab no.	Parallel		row.	W	eigh in g	-in	ICP ı	10.	Comment						
B1		1	17 - B1												
		1	18												
		1	19												
		2	20												
		2	21												
			22												
			23												
			24												
			25												
		-	26												
			27												
			28												
B2			29		-		B2	-							
			30												
			31												
			32												
			33 34												
			34 35												
			35 36												
			37 37												
			38												
			39												
			10												

Use plastic vessels in trace element analysis (see notes in the laboratory manuals)!

Tota	al digesti	on fo	or an	imal	cha	rcoa	al wi	th F	INO₃ a	and	H ₂ O	2	
Note: Use	microwave	prog	gram	bone	e cha	ır wi	th lor	ng d	igestio	n tin	ne!		
Order no.:		Proj	ject/e	exper	rimer	nt:			Client	t:			
		1											
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date	of IC	P		
									meas	uren	nent	:	
Extracting		Wei	gh-ir	n: 0.0)3<	0.1	g		Date	of di	spos	al:	
ml: HNO ₃	5												
		Volu	ume:	50 r	50 ml								
Elements to determined			Al	Ca	Cd	Cu	Fe	K	Mg	Mn	Ni	Ρ	Zn
tick													
		Mic	row.	W	Weigh-in					~			
Lab no.	Parallel	r	10.		in g		ICP no.			nmei	nt		
B1			1		-								
			2										
			3										
			4										
			5										
			6 7										
			8										
B2			9		-		B2						
			10										
		11											
			12										
			13										
			14										
			15										
			16										

	Total digestion for animal charcoal with HNO3 and H2O2ote: Use microwave program bone char with long digestion time!oter no.:Project/experiment:Client:														
	microwave						th lon	ig d			ne!				
Order no.:		Proj	ect/e	exper	rimer	nt:			Client	:					
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date	of IC	P				
									meas	uren	nent	:			
Extracting	agent in	Wai	gh-ir	O (13 ~	· ∩ 1			Date	of di	cnoc	باد			
ml: HNO ₃	agent in 5	wei	gn-n	1. 0.0	//	. 0.1	LY		Date	or ui	spus	ai.			
-	30 %) 3	Volu	ume:	50 r	nl										
Elements t	o be		AI	Ca	Cd	Cu	Fe	К	Mg	Mn	Ni	Р	Zn		
determined	d:			Cu	Cu	Cu	TC.		ing	1.111	111	•	211		
tick															
Lab no.	Parallel		row.						Comment						
B1			10. L7		in g		B1								
DI			L7 L8												
			19												
			20												
			21												
		2	22												
		2	23												
		-	24												
			25												
			26												
			27												
			28				<u>с</u> о о								
B2			29		-		B2								
			30 31												
			32												
			33												
			34												
			35												
			36												
			37												
			38												
			39												
		4	10												

	e total di											H ₂	02		
Note: Use	microwave		-				th lor	ıg d			ne!				
Order no.:		Proj	ject/e	exper	rimer	nt:			Client	t:					
		1													
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date	of IC	P				
	-								meas	uren	nent	:			
Extracting	agent in	fors	single	e-KK-	parti	cles	14 n	nm	Date	of di	spos	al:			
ml: HNO ₃	-		gh-ir		•						•				
H ₂ O ₂ (30 %) 1	Volu	ume:	20	or 50) ml	nl								
Elements t			AI	Ca	Cd	Cu	Fe	к	Mg	Mn	Ni	Р	Zn		
determined	1:		7.11	Cu	Cu	Cu	TC.		iig			•	211		
tick															
Lab no.	Parallel	-	row.	W	eigh-	-ın	ICP r	no.		Con	nmei	nt			
B1			no. 1		in g	B1									
DI			2		-		DI								
			2												
			4												
			5												
			6												
			7												
			8												
B2			9		-		B2								
			10												
		11													
			12												
			13												
			14												
			15												
			16												

	e total dig	_										H ₂	02
Note: Use							th lor	ıg d			ne!		
Order no.:		Proj	ject/e	exper	rimer	nt:			Client	:			
Date of we	igh-in:	Dat	e of e	extra	ction	:			Date	of IC	P		
									meas	uren	nent	:	
	o a contrin	for	منصمام			مامم	1 4		Data	م د ما:			
Extracting ml: HNO ₃			_		-		14 n	nm	Date	or u	spos	dl:	
H ₂ O ₂ (30 %) 1		gh-in ume:										
Elements t determined			AI	Ca	Ca Cd Cu Fe			K	Mg	Mn	Ni	Ρ	Zn
tick													
Lab no.	Parallel		row.	W	eigh in g	-in	ICP r	۱o.	Comment				
B1			17		-								
		18											
		-	19										
		-	20										
		2	21										
			22										
			23										
			24										
		2	25										
		2	26										
			27										
			28				_						
B2			29		-		B2						
			30										
			31										
			32										
			33										
			34 35										
			35 36										
			36 37										
			37 38										
			39										
			10										