

Čapek, Ladislav; Orna, Jiří; Slaviček, Karel; Všianský, Dalibor

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MEDIEVAL WHITE FINE-GRAINED KAOLINITIC CERAMICS IN THE CZECH LANDS IN FINDS FROM PILSEN AND ČESKÉ BUDĚJOVICE

LADISLAV ČAPEK – JIŘÍ ORNA – KAREL SLAVÍČEK – DALIBOR VŠIANSKÝ

Abstract: In Czech and Central European archaeological literature, miniature vessels made of whitish, fine-grained clay and sometimes decorated with red paint and lead glaze have long been of interest. They are considered imports, the provenance of which is assumed to be west of our borders. They are found abundantly in medieval towns, rural households, aristocratic residences, and monasteries during the 13th and 14th centuries, mostly as solitary finds. Discussions are also taking place concerning their functions. They are thought to have served as vessels for spices, ointments, fragrant essences, or mostly as children's toys, as they often appear in ceramic assemblages together with small ceramic figures. The specific group of this ceramic ware is referred to as *weiße feine Irdenware* in German literature, and is characterized by the high content of kaolin or kaolinitic clays in the ceramic mass, traces of wheel throwing and high firing temperatures in the oxidizing atmosphere. The aim of the paper is to analyse the vessels' technology and morphology and solve the issues of their provenance, dating, and function. The aim is also to explain the possible ways in which these vessels made their way into a range of urban, aristocratic, and rural households. Special attention in two case studies is focused on white ceramics from Pilsen and České Budějovice, which has not yet been evaluated in the literature; this includes a petrographic analysis, which indicates a different origin of these products.

Key words: white fine-grained ceramics – High and Late Middle Ages – dating – technology – function – petrographic analysis – Czech lands.

Středověká bílá, jemně zrnitá kaolinitická keramika v českých zemích se zřetelem k nálezům z Plzně a Českých Budějovic

Abstrakt: V české, ale i středoevropské archeologické literatuře již delší dobu budí pozornost miniaturní nádoby vyrobené z bělavé, jemně plavené hlíny, místy zdobené červeným malováním nebo olovnatými polevami, které jsou obecně považovány za importy, jejichž provenience je předpokládána na západ od našich hranic. Nacházíme je v řadě městských, hradních a překvapivě hojně i ve vesnických souborech středověké keramiky 13. až 14. století, a to většinou jako solitérní nálezy. Diskuse se vedly a stále vedou nad jejich funkcí. Jsou považovány za schránky na koření, masti, vonné esence a nejčastěji za dětské hračky, neboť často vystupují v keramických souborech společně s drobnými figurálními plastikami. Tato specifická skupina keramiky je v německé literatuře označovaná jako bílá, jemně plavená keramika – *weiße feine Irdenware*, pro niž je charakteristický vysoký obsah kaolinu či kaolinitických hlín v keramické hmotě, stopy vytáčení a tvrdý výpal v oxidační atmosféře. Cílem příspěvku je rozbor technologie a tvarové charakteristiky nádobek na základě známých příkladů shromážděných na území Čech, Moravy a Slezska nastínit dosavadní diskuse týkající se otázk původu, datování a funkce jak v domáci, tak zahraniční literatuře. Snahou je také vysvětlit možné cesty, jakými se tyto nádoby dostaly do sortimentu městských, hradních a vesnických domácností. Zvláštní pozornost je věnována miniaturním nádobkám z bílé keramiky z Plzně a Českých Budějovic, které dosud nebyly v literatuře náležitě zhodnoceny. Proveden byl také menší petrografický rozbor bílé keramiky, jehož výsledky ukazují na odlišný původ výrobků.

Klíčová slova: bílá jemně plavená keramika – vrcholný a pozdní středověk – datování – technologie – funkce – petrografická analýza – české země.

1 Introduction

In research into medieval sites of towns, villages, and aristocratic residences, we sporadically find small shards of incomplete or complete miniature vessels made of white fine-grained clay with traces of red paint or glaze among ceramics of domestic origin. In archaeological literature, they are considered imports, the provenance of which is generally sought west of our borders, regardless of the specific production sites or areas. The oldest examples of miniature vessels date from the first half of the 13th century and they disappeared from ceramic assemblages during the

14th century. In addition to these, ceramic bells made of identical white clay and also small figures sometimes appear together, but also separately.

The paper deals with the evaluation of hitherto known and published examples of miniature vessels including their geographical distribution in the territory of Bohemia, Moravia, and Silesia. Special attention is paid to examples from Pilsen and České Budějovice, which have not yet been studied in detail. Selected shards of these white ceramics have been subjected to petrographic analysis, which builds upon the few similarly studied examples.

The paper also addresses the issues of the vessels' technology, morphology, and decoration, which indicate considerable variability of ceramic forms. A separate chapter is the question of provenance. Miniature vessels made of white, fine-grained kaolinitic clay are widespread in the area of central and north-eastern Germany (especially in the Saxon-Thuringian region), where their local production is assumed. The function of vessels in the sphere of everyday life and the cultural and social context that led to their spread in Czech territory during the 13th century is also discussed.

2 Distribution of white fine-grained ceramics in the Czech lands

In the Czech lands (Bohemia, Moravia, and Silesia), miniature vessels made of white fine-grained clay are relatively widespread as solitary specimens and are found only exceptionally in large sets (Tab. 1). The distributional map shows the hitherto known published examples and reflects the considerably uneven state of research (Fig. 1). However, it can be assumed that this ware has not yet been recognized in the museum's collections due to the fact that these finds are usually small fragments of pottery and difficult to identify. The classification of some examples among "white fine-grained ceramics or white ware" can be problematic, as many vessels lack a more detailed description of the technology and morphology in the literature. Only a certain available range of these products could be assessed and evaluated macroscopically.

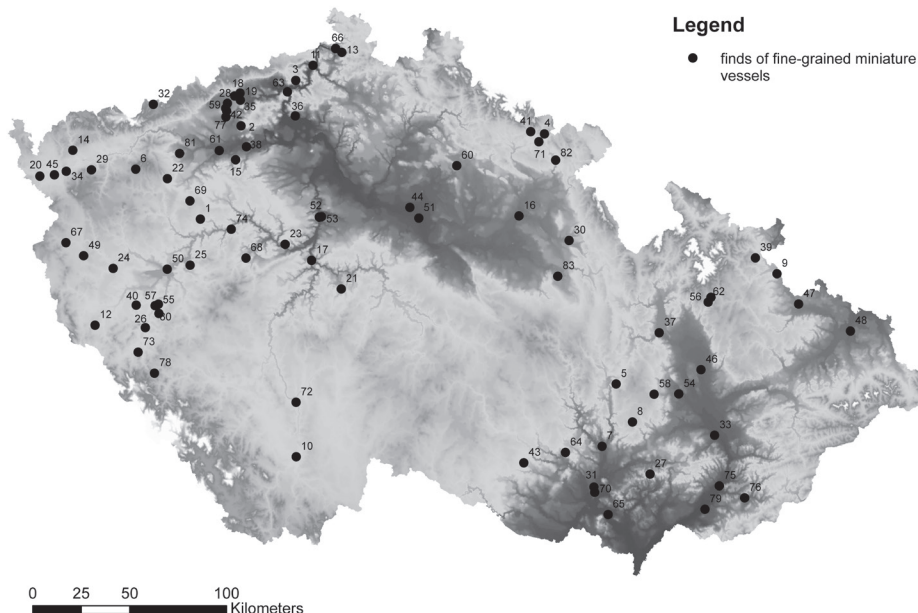


Fig. 1. Map of distribution of white fine-grained miniature vessels in Bohemia, Moravia, and Silesia, the site numbers correspond to the numbers in the table 1. Created by L. Čapek.

Obr. 1. Distribuční mapa bílé, jemně plavené keramiky na území Čech, Moravy a Slezska, čísla lokalit korespondují s čísly v tab. 1. Vytvořil L. Čapek.

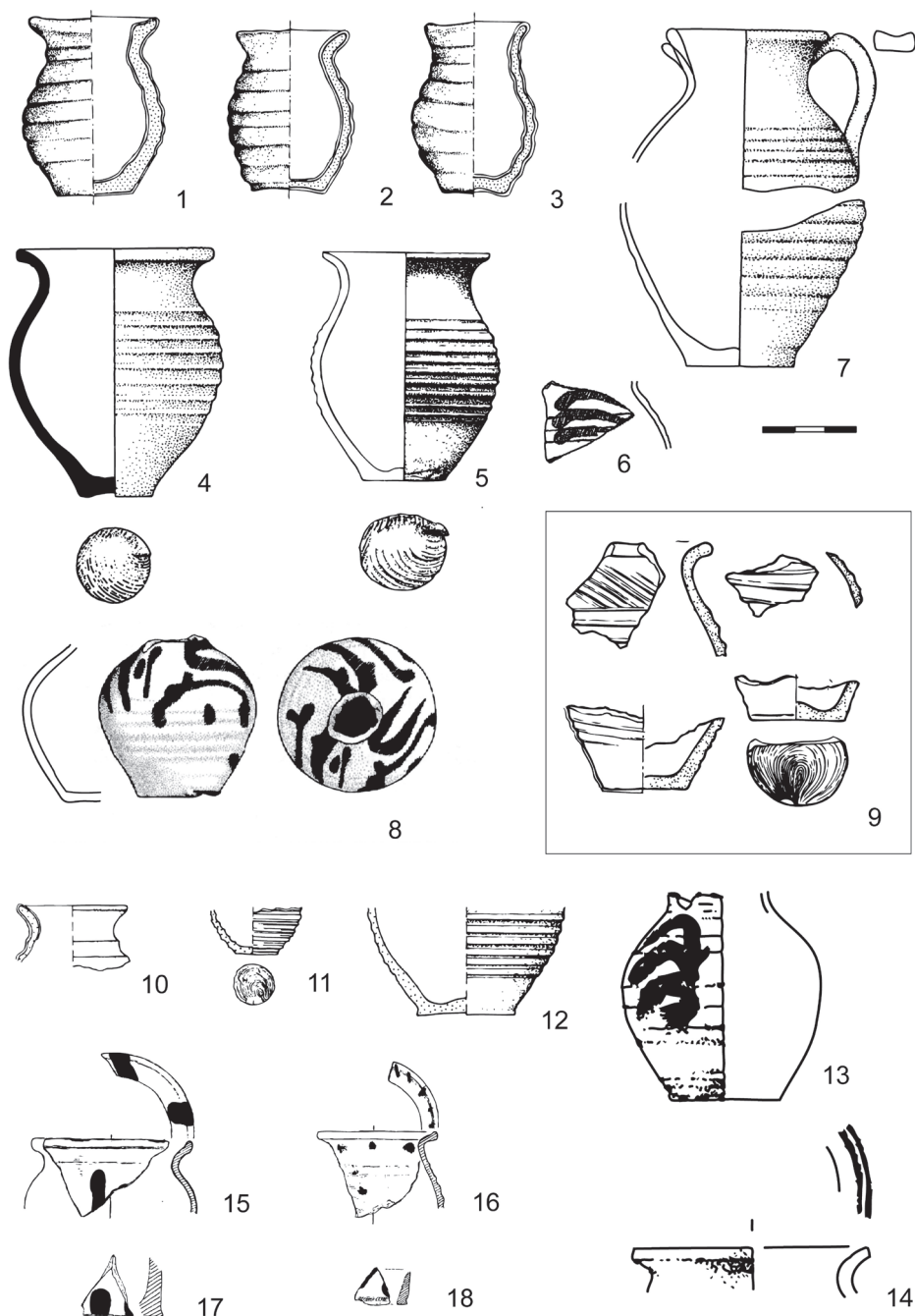


Fig. 2. White fine-grained ceramics from north-western Bohemia. 1–9 – Most; 10 – Hořany; 11 – Bedřichův Světec; 12 – Souš; 13–14 – court “Hrnčíře”; cadastre Jenišův Újezd; 15 – Litoměřice; 16 – Střekov; 17 – Šaunštejn; 18 – Falkenštejn.

Obr. 2. Bílá jemně plavená keramika ze severozápadních Čech. 1–9 – Most; 10 – Hořany; 11 – Bedřichův Světec; 12 – Souš; 13–14 – dvůr Hrnčíře, katastr Jenišův Újezd; 15 – Litoměřice; 16 – Střekov; 17 – Šaunštejn; 18 – Falkenštejn.

Tab. 1. List of medieval sites (in alphabetical order) with finds of fine-grained white miniature vessels. Abbreviations in the table: cad. – cadastral; DMV – deserted medieval village; feat. – feature; frag. – fragment; min. – miniature; decor. – decoration RD – red painted decoration; G – glaze; Gr – grooves; MGr – multiple grooves; base cut. – cutting base from the wheel; w. throw. – wheel throwing. Compiled by L. Čapek.

Tab. 1. Seznam středověkých lokalit (v abecedním pořadí) s nálezem jemně plavených bílých miniaturních nádobek. Zkratky v tabulce: cad. – katastr; DMV – zaniklá středověká vesnice; feat. – objekt; min. – miniaturní; decor. – výzdoba; RD – červené malování; G – glazura; Gr – ryté rýhy; MGr – vícenásobná šroubovice; base cut. – odříznutí dna od kruhu; w. throw. – vytáčení. Seřadil L. Čapek.

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
1	Angerbach, cad. Kozlany	castle	trench III layer 3	1× frag. of bell 1× body part of bell	RP	coiling	before first half of the 14th c. first half of the 13th c.	DURDÍK 2004, 235, Tab. XXIV; DURDÍK 2007, 94 KLAPŠTĚ 1994, 97, fig. 54:5
2	Bedřichův Světec	manor house (court)		1× frag. of base of min. vessel	MGr			
3	Blansko, cad. Blansko	castle	older excavation	1× neck of jug/bottle	incised decor., RP		after 1400	ZÁPOTOCKÝ 1978, 228–229; ZÁPOTOCKÝ 1979, 167
4	Bolkov	castle		1× frag. of min. vessel				JANSA 2006, 24, Tab. 17:1–2
5	Boskovice Komenského Street	town	feat. 16 layer 2	1× upper part of bottle/jug 1× bell		base cut.	later 14th c.	PROCHÁZKA 1995, 122–123, Abb. 67, 10
6	Bražec – Kostelní Horka	fortified manor		2× frag. of min. vessel			13th–14th c. horizon A	KOLEJÁKOVÁ 2018, 36, 46
7	Brno Mečová Street No. 2	town	well No. 20 layer 2	1× min. jug with handle 1× min. jug	MGr, G		first half of the 14th c.	PROCHÁZKA 1994, 331, 343, fig. 4:3–4; PROCHÁZKA 1995, 114, Abb. 2:4–5 PROCHÁZKA–PEŠKA 2007, 209
Brno Mečová Street No. 2		town	well No. 20 layer 5	1× min. pot with two handles			first half of the 14th c.	PROCHÁZKA 1994, 331, 334, fig. 5:2; PROCHÁZKA 1995, 114, Abb. 2:9
Brno Dominikánská Street No. 15		town	feat. No. 38 layer 7	× frag. of min. vessels	RP (1x)		14th/15th c.	PROCHÁZKA 1994, 331
Brno Veselá Street		town		8× bell		w. throw. / base cut.	14th c.	https://www.archaiaabno.org/home_cs/?acc=za-pisnicek&blog_id=737&blog_date=2016-09-20blog_archive_date=201609
Brno Velký Špalíček		town		× bell			14th c.	https://www.archaiaabno.org/home_cs/?acc=za-pisnicek&blog_id=737&blog_date=2016-09-20blog_archive_date=201609
Brno Rašínova Street		town		× bell			14th c.	https://www.archaiaabno.org/home_cs/?acc=za-pisnicek&blog_id=737&blog_date=2016-09-20blog_archive_date=201609
Brno Freedom Square No. 17		town	sunken dwelling No. 2 layer 303	1× frag. of min. vessels (jug?) 1× frag.	RP, G		after 1260	PROCHÁZKA–PEŠKA 2007, 211–212, fig. 29:3, 229

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
	Brno Dominikánská Street No. 11–19/13	town	feat. 26 – cesspit	1× bell			end of the 13th – first half of 14th c. horizon III	PROCHÁZKA 1991, 238, 243, Abb. 3-7 PROCHÁZKA–PEŠKA 2007, 229
	Brno Koblišná Street No. 3	town	feat. No. 3 cesspit No. 503	1× min. pot with two handles	G		end of the 13th – first half of 14th c. horizon III	PROCHÁZKA 1991, 238–239, Abb. 2: 17 PROCHÁZKA–PEŠKA 2007, 229
	Brno Kozlí/Koblišná Street	town	cesspit No. 26	1× min. pot without handles	G	base cut.	VS 2.1 and VS 2.2	PROCHÁZKA 1994, 331
	Brno Rašínova Street	town	cesspit No. context 5543	1× min. vessel	RP	base cut.	VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, k. č. 04, fig. 50:1
	Brno Dominikánská Street No. 3	town	cesspit context 076	4× merged min. vessels	G		VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, k. č. 05, fig. 50:2
	Brno Dominikánská Street No. 7	town	cesspit context 028	1× min. vessel (pot)	MGr		VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, kat. č. 14, fig. 50:9
	Brno Dominikánská Street No. 7	town	cesspit context 046	3× min. vessels (1× jug with handle, 1× base of min. vessel, 1× frag. of base)	G, MGr	base cut.	VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, k. č. 09, 50:4–6
	Brno Dominikánská Street No. 7	town	context 025	1× bell			VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 99–100, k. č. 11, fig. 52:3
	Brno Mečová Street No. 2	town	cesspit context 053	1× min. jug with stirrup handle 1× bell	G		VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, k. č. 12, fig. 50:7 SEDLÁČKOVÁ 2020, 100, k. č. 12, fig. 52:4
	Brno Mečová Street No. 4	town	cesspit context 052	1× min. vessel (bottom part)? 2× bell	G		VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 95, k. č. 06, fig. 50:3; SEDLÁČKOVÁ 2020, 99, k. č. 06, fig. 52:1–2
	Brno Orlí	town	context 051	1× bell			VS 2.1 and VS 2.2	SEDLÁČKOVÁ 2020, 100, k. č. 13
8	Bystřec	DMV	sunken dwelling in farmstead XII – top backfill	1× min. jug		coiling	before half of the 13th c.	BELCREDI 2006, 92–93, 99, 334, Tab. XXVI.2; Tab. XXVII.4
	Bystřec	DMV	farmstead XV	1× min. jug with stirrup handle	G		half of the 13th c.	BELCREDI 2006, 334, Tab. XXVI.3; Tab. XXVII.4, 6
9	Cvilín	castle		× frag. of bottles and min. vessels	G			ŠIKULOVÁ 1985, 230–232; TYMONOVÁ 2010, 65–66, fig. 1.5–6
10	České Budějovice town hall	town	feat. No. 1/4 layer 4038	4× fig. min. vessels (3× body, 1× rim of bowl)			last third of the 13th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice town hall	town	layer 5003	1× fig. of bell 1× fig. of body	RP		13th/14th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice town hall	town	feat. No. 6/6 layer 6012	1× handle of min. vessel			last third of 13th c.	ČAPEK–MILITKÝ et al. 2016, 217

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
	České Budějovice town hall	town	layer 15008	1× frag. of jug	RP		residual	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice town hall	town	layer 7001	1× min. vessel (rim of bowl)			residual	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice town hall	town	layer 18009	1× min. vessel (bowl)			residual	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice town hall	town	layer 5014	1× handle of min. vessel			residual	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice	town	layer 6009	1× frag. of body			first half of the 14th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice	town	layer 21008	1× min. vessel (bowl)			first half of the 14th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice	town	layer 4037	1× bottom of min. vessel			first half of the 14th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice	town	feat. No. 4/18 layer 18005	1× knob of pot-lit			13th/14th c.	ČAPEK–MILITKÝ et al. 2016, 217
	České Budějovice Hroznová Street, No. 26	town	context 4029	8× frag. of min. vessels (2× rim of jugs)			2nd half of the 15th c. phase 3	KOCINA 2016, 121, 132, 143–144
	České Budějovice Hroznová Street, No. 26	town	feat. No. 6/6 layer 6023	4× frag. of min. vessels (1× rim of pot, 1× rim of bowl)	G		mid-14th c.	KOCINA 2016, 121, 132, 143–144
	České Budějovice Radniční No. 11	town	timber dwelling layer 9002	1× rim of min. vessel (jug?)			first half of the 14th c.	unpublished
	České Budějovice Radniční No. 11	town	layer 5012	1× base of min. vessel 1× rim of vessel	G	w. throw.	last third of 13th c.	unpublished
	České Budějovice Mariánské Square	town-suburb		more than 40× frag. of min. vessels + 3× bells		w. throw./ base cut.	2nd half of the 14th- first half of the 15th c.	MILITKÝ 1995; unpublished
11	Děčín site C1 „Frauenwiese“	deserted town	older excavation	1× min. pot			2nd and 3rd quarter of the 13th c. phase 2a	ZÁPOTOCKÝ 1978, 228; ZÁPOTOCKÝ 1979, 194, fig. 90.8
	Děčín Mariánská louka	deserted town	feat. No. 18 – sunken dwelling	1× min. pot			2nd half of the 13th c.	VELÍMSKÝ 1991, 19, fig. 9.2
	Děčín Mariánská louka	deserted town	feat. 17 – sunken dwelling	1× pot with handle	RP		13th/14th c.	VELÍMSKÝ 1991, 24, fig. 16.2
12	Domazlice Hotejší suburb No. 31	town	fill of pottery kiln	2× frag. of bells	RP	w. throw. / imprint of potter's wheel	around 1400	DURDÍK–MATOUŠEK–PROCHÁZKA 1982, 309, fig. 1.3–4
	Domazlice under Dlouhá hora		surface collection	1× knob of bell				ORNA 2002, 182–183, fig. 2

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
13	Falkenstein, cad. Jetřichovice	castle	older excavation	1× bottom part of min. vessel	RP		1st and 2nd third of the 14th c. phase 2a/b	ZÁPOTOCKÝ 1978, 228; ZÁPOTOCKÝ 1979, 200, fig. 96,26
14	Hartenberg	castle		1× min. jug, 2× frag. of jug			2nd half of the 14th c.	KAREL–KNOLL–KLSÁK 2007, 281, pozn. 41
15	Hořany 6B	village	feat. No. 5	1× rim (pot?), × frag. of min. vessels	G		first half of the 13th c.	KLAPŠTĚ 1994, 97, fig. 58,20
16	Hradec Králové site VII, No. 143–144	town	layer No. 36	1× min. pot	G		after half of the 13th c. 2nd and 3rd horizon	RICHTER–VOKOLEK 1995, 69, Tab. 112:30
	Hradec Králové, site VI, castle	town	layer above the rampart	1× min. pot	RP?		after half of the 13th c. 2nd and 3rd horizon	RICHTER–VOKOLEK 1995, 69, Tab. 81:43
17	Hradištko near Davle	deserted town	feat. 10/5 – sunken dwelling	1× pot/jug?	RP, MGr		2nd half of the 13th c.	RICHTER 1982, 82–83, fig. 60
	Hradištko near Davle	deserted town	feat. No. 10/3 – sunken dwelling	1× rim and mouth of jug	RP, MGr		2nd half of the 13th c.	RICHTER 1961, 575, fig. 3; RICHTER 1982, 129–130, fig. 92,5.
	Hradištko near Davle	deserted town	feat. IV	1× rim of min. vessel	G, MGr		2nd half of the 13th c.	RICHTER 1961, 575, fig. 5; RICHTER 1982, 130, fig. 92,8
	Hradištko near Davle	deserted town	feat. 12/1 – sunken dwelling	1× base of beaker	RP		2nd half of the 13th c.	RICHTER 1982, 89, 69:3
18	Hrdlovka	DMV	around the farmstead	more than 40 frag. of fine-grained ceramics	RP, G (?)		2nd quarter of the 13th c. phase E2	MEDUNA 2011, 123, 125, fig. 46; MEDUNA ed. 2012, 129, fig. 12
	Hrdlovka	DMV	rubbish pit No. 220–221/ 93	1× min. vessel (base)	MGr, G		2nd quarter of the 13th c. phase E2	MEDUNA 2011, 125, fig. 46; MEDUNA ed. 2012, 167, anne× 7
	Hrdlovka	DMV	farmstead P61	3× frag. of fine-grained ceramics			2nd quarter of the 13th c. phase E2	MEDUNA ed. 2012, 129
19	Hrnčite, cad. Jenišův Újezd	deserted court	trench of farm building	2× min. vessels (1× bottle with broken rim, 1× rim of pot)	RP, MGr		first half of the 13th c.	MEDUNA 2002, 155, fig. 3:11,17
20	Chleb Dominikánská Street	town	cesspit	1× min. vessel (base)		base cut.	first quarter of the 14th c.	NOVÁČEK–RAZÍM–EBEL 2004, 68
21	Chvojen	fortified manor		2× min. vessels	RP, stamped decor.?		2nd half of the 12th–13th c.	SEBESTA 2002, 41, fig. 6:9
22	Jeleň, hilltop Orlík	fortified manor		10× frag. of min. vessel (pot with handle)	RP, wavy line		2nd half of the 14th – early 14th c.	HEJNA 1983, 382, fig. 11
23	Karlštejn	castle	context No. 5017	1× frag. of upper part of min. vessel	MGr	w. throw.	14th–15th c.	PEKSA 2019, 150, fig. 17:a
24	Kladruhy	monastery		× frag. of fine-grained ceramics				KASPAR 2000, 325
25	Kokot	DMV		1× frag. of min. vessel (base)			14th c.	NOVÁČEK et al. 2010, 314
26	Kokšín, dis. Klatovy	village		1× min. vessel with four-lobed mouth		base cut.	13th c. (14th c. ?)	BURAČINSKA 2008, 98
								KLAPŠTĚ 1998, Abb. 2

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
27	Konivky	DMV/ fortified manor	layout 6 basement of manor – sector II	2× min. vase 2× frag. of min. vessel (money-box?)	MGr, G		13th/14th c.	MĚCHUROVÁ 1997, 64, Tab. XL:13–14 Tab. XL:6
	Konivky	DMV/ fortified manor	layout 6	1× frag. of min. bottle	MGr		13th/14th c.	MĚCHUROVÁ 1997, 64, Tab. XL:8
		fortified manor	basement of manor – sector I					
	Konivky	DMV/ fortified manor	layout 6 basement of manor – sector III	1× base of min. bottle		base cut.	13th/14th c.	MĚCHUROVÁ 1997, 64, Tab. XL:4
	Konivky	DMV/ fortified manor	eastern part of manor	1× upper part of min. vessel			13th/14th c.	MĚCHUROVÁ 1997, 64, Tab. XL:1
28	Kopisty 12a	village		1× rim of min. vessel	G		first half of the 13th c.	KLÁPŠTĚ 1994, 97
29	Kostelec nad Orlicí	town		1× min. jug with coin hoard	RP		4th quarter of the 15th c.	RADOMĚRSKÝ–RICHTER 1985, 138–139, No. 156
30	Church of Saint Nicolas (Krudum)	church		× frag. of ceramics (Pfiffentont)	slip			KLŠAK 2006, XXVIII
31	Koválov	fortified manor (motte)		more than 2 of min. vessels			first half of the 14th c. older phase III	UNGER 1994, 44; UNGER 1999, 40; MĚŘIN- SKÝ–UNGER 1987, 9, tab. 36:5–6
32	Kremsiger cad. Přisecnice	minig site	trench 3/2014, context 3003	1× rim and upper part of min. pot	MGr		2nd half of the 13th c. – early 14th c.	DERNER 2018, 277, fig. 212:4, 279
	Kremsiger cad. Přisecnice	minig site	trench 1/2014, context 1002 C	1× bottom part and base of min. vessel	G	w. throw.	2nd half of the 13th c. – early 14th c.	DERNER 2018, 277, fig. 212:5, 279
	Kremsiger cad. Přisecnice	minig site	trench 1/2014, context 1002 C	2× bottom and base of min. vessel, 1× rim of min. pot + 3 conjoinable frag.	MGr, RP	w. throw./ base cut.	2nd half of the 13th c. – early 14th c.	DERNER 2018, 277, fig. 212:1, 279, fig. 212:3
	Kremsiger cad. Přisecnice	minig site	trench 1/2014 context 1002 D	1× bottom part of min. vessel			2nd half of the 13th c. – early 14th c.	DERNER 2018, 277, fig. 212:6, 279
	Kremsiger, cad. Přisecnice Site Starý zámek II	minig site	trench 1/2017; context 1011	1× rim of min. vessel (pot)			2nd half of the 13th c. – early 14th c.	DERNER 2018, 172, 175, fig. 96:1
33	Kroměříž	town		6× min. vessels (4× base, 1× rim and neck of bottom)	G		3rd third of the 13th c. horizon of town foundation	CHYBOVÁ 2009, 72
	Kroměříž Miličovo Square	town	before pottery kiln	1× min. pot-lid 1× min. jug with spout			1300 – 2nd half of the 14th c.	CHYBOVÁ 2009, 134
34	Kynšperk n. Ohří – Kolová	deserted town	area B	1× frag. of min. vessel		w. throw.	2nd third of the 13th c.	VELÍMSKÝ 1992, 122, 129, Abb. 10:18

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
35	Libkovice	village		more than 6× frag. of min. vessels				unpublished
36	Litoměřice Kapucinské square No. 227	town		1× frag. of min. pot	RP		2nd third of the 14th c. older section of phase 2b	ZÁPOTOCKÝ 1978, 228–229
37	Loštice	townlet		1× min. bottle	MGr		2nd half of the 14th c.	GOŠ 2007, 72, fig. 26:8
38	Louny Jateční Street	town	sunken dwelling?	1× min. vessel	RP	base cut.	half of the 13th c.	PEKSA 2019, 151, fig. 20
39	Luginsland	castle		3× frag. of min. vessels (bottom) 1× pot-lid with handle	MGr, G	base cut.	2nd third of the 13th c.	KOURLIL–PLAČEK 1985, 121, fig. 16:18; KOURIL–ŘIL–PRIX–WIHODA 2000, 267, 553; KOURIL–WIHODA 2003, 94
40	Merklin	village	pit in pottery workshop	2× bell			first half of the 17th c.	ORNA 2002, 182
41	Mladé Buky	fortified manor	feat. No. 1	2× min. vessels (base)			first half of the 14th c. phase 1	WOLF 2004, 579, 584, fig. 9: 14–15; WOLF 2005, 65, tab. 33: 14–15
42	Most	town	well No. 1/80	4× different min. vessels (1× pot, 2× base)	MGr, G	base cut.	around 1300	KLAPŠTĚ 1983, 453, 458, fig. 6:E
	Most, No. 226	town	feat. No. 12	2× min. vessels (jug)	MGr, G		before 1238	KLAPŠTĚ–MUK 1988, 217, fig. 1: 17–18
	Most, No. 226	town	soil horizon in trench No. 4 and 7	1× min. vessels (jug)	MG, G		before 1238	KLAPŠTĚ–MUK 1988, 217, fig. 1/II: 1–2
	Most, No. 226	town	well No. 35	1× rim of jug?				
	Most, No. 226	town	well No. 35	1× min. vessel (pot)	MGr RP	base cut.	2nd half of the 13th c.– early 14th c.	KLAPŠTĚ et al. 2002, 21, tab. 123:4 tab. 123:5
	Most, No. 226	town	cesspit No. 46	1× min. vessel (pot)	MG	w. throw./ base cut.	around mid-14th c.	KLAPŠTĚ et al. 2002, 21, tab. 144:3
	Most, No. 226	town	cesspit No. 75	1× min. vessel (bottle)	RP		around mid-14th c.	KLAPŠTĚ et al. 2002, 21, tab. 166:8
	Most, No. 226	town	cesspit No. 47	1× min. ug (2 frag.)	MGr, G		around 1300	KLAPŠTĚ et al. 2002, 22, tab. 153:2, 3
	Most, No. 226	town	cesspit No. 46	1× frag. of min. vessel	MGr, RP		around mid-14th c.	KLAPŠTĚ et al. 2002, 351, tab. 145:8
	Most – minorite monastery	town – monastery	feat. 1	1× bottle (broken rim)	RD	base cut.	2nd third of the 13th c.	KLAPŠTĚ–MUK–BUBENÍK 2010, 456, fig. 19:6
43	Mstěnice	DMV	farmstead XI	1× bell				NEKUDA–NEKUDA 1997, 88, fig. 141:b
44	Nymburk	town		1× min. vessel	RP			communication L. Sedláčková
45	Obilná (Kornau)	village	rectangular pit (sunken dwelling?)	1× min. pot	Incised decor., wavy line		13th c.	ŠEBESTA 1980, 173, 175, Tab. 1:15
46	Olomouc Pekafská Street No. 3–7	town		1× frag. of jug with two handles	G		at the latest to mid- -14th c.	BLÁHA 1998, 149–150, fig. 8:4
	Olomouc Uzka Street	town	sunken dwelling No. 17/78	1× min. vessel (pot)	RP, MGr		around 1300	BLÁHA 1999, 197, fig. 6:6

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
47	Opava Mezi trhy No. 3	town	cesspit	1× bell and heart	RP	w. throw./ base cut.	13th–15th c.	KRÁL 1975, 387, fig. 1:2
	Opava minorite monastery	town – monastery		4× complete min. vessels (mostly bottles) + approx 160 frag.		G (x?)	13th c.	ŠIKULOVÁ 1985, 232
	Opava Janáček Garden	town	pit No. 2 and 3	× min. vessels			14th c.	ŠIKULOVÁ 1985, 232
	Opava Lazebnická Street 1928	town	cesspit	× min. vessels			14th c.	ŠIKULOVÁ 1985, 232
	Opava Mezi trhy 1961	town	cesspit	× min. vessels			14th c.	ŠIKULOVÁ 1985, 232
	Opava Jaktátské suburb	town/ suburb	pit No. 3	× min. vessels			14th c.	ŠIKULOVÁ 1985, 232
	Opava Pekařská No. 13	town	sunken dwelling context 643	1× min. vessel (pot)	RP, MGr		2nd half of the 13th – first half of the 14th c.	KIECON–ZEZULA 2005, 28, fig. 6:17
	Opava Dolní square, in front of No. 22–21	town	feat. No. 55/04–542	1× rim of jug 1× base		base cut.	mid-13th c.	ZEZULA–KIECON–KOLÁŘ 2007, 123–124, fig. 4:25, 26
	Opava Country house	town		1× min. beaker (dose)	G		?	KOUŘIL–WIHODA 2003, 93–94, fig. 10:2
	Opava Mezi trhy	town		1× min. bottle	MGr, G		?	KOUŘIL–WIHODA 2003, 93–94, fig. 10:3
	Opava Lázeňská Street	town		1× min. bottle	MGr, G		?	KOUŘIL–WIHODA 2003, 93–94, fig. 10:4
	Opava unknown site	town		1× min. bottle	MGr, G		?	KOUŘIL–WIHODA 2003, 93–94, fig. 10:5
	Opava Kotlářská	town		1× min. bottle	MGr, G		?	KOUŘIL–WIHODA 2003, 93–94, fig. 10:6
48	Moravská Ostrava	town	pavement context 132	2× min. vessels (1× rim)	G		last quarter of the 13th c.	ZEZULA et al. 2009, 549, 559, fig. 8:5–6
49	Ostrov, cad. Bor na Tachovsku	DMV		1× frag. of Pfeiffenton ware			2nd half- end of the 13th c.	POSTRNECKÁ–WASKOVÁ 2008, 80
50	Plzeň Dřevěná Street 6	town	cesspit No. 6	1× min. pot with handle	RP, Gr		2nd half of the 14th c.	unpublished
	Plzeň Františkánská Street 1	town	cesspit No. 1	1× min. jug with broken off handle			2nd half of the 14th c.	unpublished
	Plzeň Republic Square 1	town	cesspit No. 1	1× min. jug with broken off handle			2nd half of the 14th c.	unpublished
	Plzeň Riegrova Street 3	town	cesspit No. 3	1× min. goblet with four lobbed mouth		base cut.	mid-14th c.	unpublished

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
	Plzeň Solní Street No. 1	town	cesspit No. 1	1× min. jug with spout			2nd half of the 14th c.	unpublished
	Plzeň Františkánská Street 5	town	cesspit No. 4	1× min. bell			2nd half of the 14th c.	unpublished
	Plzeň Republic Square 41	town	cesspit No. 1	1× min. bell	RP		2nd half of the 14th c.	unpublished
	Plzeň Sedláčkova Street No. 187	town	pit No. 158 layer 124	1× min. jug with handle+ × frg. of min. vessels			end of the 14th c. phase 3	NOVÁČEK 2000, 17, 29, fig. 27: 51; fig. 12: 1–2
	Plzeň Sedláčkova Street	town	layer 4001 and 4102	1× min. jug with handle, 1× bottom of min. vessel			after mid-14th c.	ŠIROKÝ–KAISER–KOČÁR–NOVÁKOVÁ 2007, 101–102, fig. 16: 3–4; fig. 12: 5–6
	Plzeň Bezručova Street No. 156	town		1× frg. of min. vessel				ŠIROKÝ 2000, 69
	Plzeň Bezručova Street No. 184	town		1× frg. of min. vessel			before mid-14th c.	BLAŽKOVÁ 2006, 24; ŠIROKÝ–KOČÁR–MA- LINA 2002
	Plzeň Republic Square No. 235	town		1× bottom of min. vessel				VYDRA 2002, 39
	Plzeň Prešovská Street No. 196 and 318–319	town		1× frg. of min. vessel				ŠIROKÝ 2001, 48
	Plzeň Perlová Street No. 66–67	town	cesspits	× frg. of min. vessels				KOČÁR et al. 2005, 25–26, 30
	Plzeň minority monastery	town-mo- nastery		1× frg. of rim with four lobbed mouth	RP			unpublished
51	Poděbrady	town		1× min. vessel	RP			communication with L. Sedláčková
52	Praha – Malá Strana, Vlašská Street No. 355/III	town		× frag. of min. vessel 2× frag. of base	RP		13th/14th c.	HAVRDA–MATEJKOVÁ 2014, 30
	Praha – Malá Strana Lichtenštejn palace	town		× min. vessels (jugs, bottles, dose)	MGr, RP		13th c.	ČIHÁKOVÁ–ZAVŘEL 1993 HENTSCH 2010, 31, 80
53	Praha – Nové Town Petrská Street			× min. vessels	G		first half of the 13th c.	BUREŠ–KAŠPAR–ŠPAČEK–VÁŘKA 1997, 11; VÁŘKA 2009, 154
	Praha – Nové Town, Truhlářská Street No. 1518/II	town		× min. vessels (jugs)			early 15th c.	HAVRDA–MATEJKOVÁ 2014, 43
54	Prostějov Žižka square	town	sector A–BI	1× pot with coin hoard	MGr		1270–1278	ČIŽMÁŘ–ŠMID 2000, 82, fig. 3:6
55	Prešice	townlet	feat. No. 3/06	1× rim of bowl			14th c.	ČAPEK–MENSÍK–NETOLICKÝ–VLADAR– HRUBA 2017, 82

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
56	Rýmařov Bezručova ulice	town	area between feat. IX A and IX B	1× min. biconical vessel 1× bell	G RP		around 1250 phase II	GOŠ-KAREL 2005, 454, fig. 2:12 GOŠ-NOVÁK-KAREL 1985, 215–216, fig. 6:6; GOŠ-KAREL 2005, 454–455, fig. 1:9 GOŠ-NOVÁK-KAREL 1985, 215–216, fig. 6:5
	Rýmařov Bezručova Street	town	feat. No. IX A	1× min. vessel (pot) 1× rim and upper part 1× rim of pot	MGr	w. throw./ base cut.	around 1250 phase II	GOŠ-NOVÁK-KAREL 1985, 215–216, fig. 6:3 KAREL 1996, 81–82, A.1; GOŠ-KAREL 2005, 454, fig. 2:4 GOŠ-NOVÁK-KAREL 1985, 215–216, fig. 6:4
	Rýmařov	town	pit No. XV/feat. No. IX A ?	1× bottle 1× min. vessel (rim)	RP		2nd half of the 13th c. phase III	GOŠ-NOVÁK-KAREL 1985, 215–216, fig. 10:10; KAREL 1996, 81–82, A.5; GOŠ-NOVÁK-KAREL, 454, fig. 2:5 KAREL 1996, 81–82, A.7
	Rýmařov – castle	town		1× min. jug with handle 1× frag. of bulge of min. vessel	RP		first half of the 14th c.	GOŠ-KAREL 2005, 454, fig. 2:2; KAREL 1996, 81–82, A.2 GOŠ-KAREL 2005, 454, fig. 2:1
	Rýmařov	town	feat. No. CXXIX	1× bell	RP		first half of the 14th c.	KAREL 1996, 81–82, A.4; GOŠ-KAREL 2005, 454–455, fig. 1:8
	Rýmařov	town		1× bell	RP		first half of the 14th c.	GOŠ-KAREL 2005, 455, fig. 1:10
	Rýmařov – Burgert farm	town		1× min. bowl or pot-lid	RP		2nd half of the 13th c. phase II	KAREL 1996, 81–82, A.6; GOŠ-KAREL 2005, 454, fig. 2:6
	Rýmařov – Hrádek	town – ironworks		4× min. vessels (1× jug with handle, 2× base, 1× rim)	RP			KAREL 1996, 81–82, A.2, B.5, 8, C.5
57	Skála near Přetice	castle	trench 1 layer 1 layer 2	1× frag. of min. vessel 1× frag. of upper part of min. vessel	MGr		13th c.	Zelenka 2013, 123; fig. 3:34, 125:5:15, 130; MARÍK 2013, 35
58	Smilovo Hradisko	castle		8× min. vessels (jugs) 4× min. vessels 3× handles	G, RP RP	base cut.	2nd half of the 13th c.	BLEKTA 1934, 14, Tab.II:19–24 NEKUDA-REICHTERTOVA 1968, 253, fig. 11:1–4, 255
59	Souš 22B	village		1× base of min. vessel	MGr			KLAPŠTĚ 1994, 97, fig. 56:24
60	Staré Místo near Jičín	village		2× min. vessels (1× base)	MGr	w. throw./ base cut.	after mid-13th c.	MATEJKOVÁ-NOVÁK 2014, 339, fig. 9.
61	Stekník	village	feat. 4 a 5	1 zl. min. vessel (jug?)	RP		2nd half of the 14th c.	PEKSA 2019, 153, fig. 30
62	Strálek	castle	destruction layer	1× min. pot	RP		before 1320	KAREL 1996, 81–82, C.1; GOŠ-KAREL 2005, 454, fig. 2:7
63	Studýň near Zbýšov	DMV	surface collection	1× frag. of base of min. vessel	RP	base cut.	13th c.	MĚŘINSKÝ 1977, 68
64	Střešov, cad. Ústí n. Labem	castle	surface collection	3× frag. of min. vessels			after 1300	ZÁPOTOCKÝ 1978, 228–229; ZÁPOTOCKÝ 1979, 169
65	Šakvice	village						UNGER 1981, 78

ID	Site	Type of site	Context	Description	Decoration	Traces of technology	Dating	References
66	Šauenštejn, cad. Vysoká Lípa	castle	surface collection	1× frag. of bottom part of min. vessel	RP		2nd to 4th phase	ZÁPOTOCKÝ 1978, 228; ZÁPOTOCKÝ 1979, 208–209, fig. 96:58
67	Tachov	town	layer 52 (trench IV)	1× min. vessel			mid-13th c.	NOVÁČEK–RAZÍM–EBEL 2004, 65–66
68	Tihava I, cad. Kotopeky	fortified manor	older excavation	1× pot	RP, MGr		1st stratigraphic phase	
69	Tlasky	fortified manor		1× min. pot with handle + other frag.	RP, MGr		end of the 13th–early 14th c.	NOVÁK–VÁŘEKA 2013, 493–494; http://www.cesonline.cz/ar1-ces/cs/detail-ces_us_cat-psb0001409-9-Archeologicka/NECHVÁTAL–RADOMĚRSKÝ 1963, 10–11, fig. 8.
70	Topolany, k. ú. Vranovice	village		1× frag. of min. vessel with spout (jug)	G		2nd half of the 13th c. – early 14th c.	UNGER–MICHNA 1980, 22, fig. 3:14; UNGER 1984, 293, fig. 4:4
71	Trutnov Farská Street	town		2× min. vessels			first half – 3rd third of the 14th c.	WOLF 2005, 111, tab. 37: 5–6
72	Týn nad Vltavou at Saint Giles	town	sunken dwelling – bottom layer 184	1× min. pot			2nd half of the 13th c.	BRÍCHÁČEK 1992, 32, 37, fig. 5:6
73	Týnec u Janovic nad Úhlavou	fortified manor		1× rim of min. jug			13th–14th c.	BAČOVÁ 2009, 88–89
74	Týřov	castle	surface collection	1× upper part of bell 1× frag. of bell with hole	RP RP	w. throw./ base cut. w. throw.	15th c.	DURDÍK 1977, 94, fig. 1:1 DURDÍK–MATĚJKOVÁ–PROCHÁZKA 1982, 308–309, obr. 1:1
75	Uherské Hradiště Olakarova	town	feat. 11	1× min. vessel (pot)	RP, G		after mid- 13th c.	PROCHÁZKA 1984, 435, 439, fig. 3:14
76	Uherský Brod areál pivovaru	town		1× bell	incised decor., RP	w. throw./ base cut.	13th–15th c.	KRÁL 1975, 387, fig. 1:1
77	Velebudice 25a	court in village		× frag. of min. vessels			first half of the 13th c.	KLAPŠTĚ 1994, 97
78	Velhartice	castle		1× frag. of bulge of min. vessel			early 14th c.	NOVÁČEK 1996, 287–288
79	Veselí nad Moravou	castle	layer 2131/1	1× min. vessel	G, MGr			SEDLÁČKOVÁ 2015, 208, 378, fig. 18:6, fig. B24
80	Vicov, k. ú. Přestice	DMV	layer 252/3	1× frag. of bulge of min. vessel	G			SEDLÁČKOVÁ 2015, 208, 378, fig. 18:4, fig. B27
81	Vitčice	village		1× frag. of rim of jug			horizon RS4–VSI phase 1 12th/13th c.	PÍČKA–TĚTOUR 2005, 190
82	Vizmburk?	castle	production feat. (kiln?)	1× frag. of min. vessel	MGr		2nd half of the 13th c. – first half of the 14th c.	PEKSA 2019, 154
83	Vysoké Mýto	town	well č. 1	1× min. vessel 1× bottom of vessel	G MGr, RP	base cut.		KOŠTÁL 2013, 68 ŠMEJDA 1999, 173–174, fig. 5:2

Miniature vessels with red painted decoration or traces of lead glaze were first registered during the long-term research into the deserted townlet of Hradištko (Sekanka) near Davle (Richter 1961, 574–575; 1982, Figs. 62, 69:2–3). The list of other examples from Prague's medieval assemblages was published by J. Čiháková in her dissertation (Draganová 1978, 36–42) and by M. Zápotocký in his work devoted to pottery from the medieval sites of the North Bohemian Elbe region (Zápotocký 1978, 234; 1979, Tab. 38:2, 90:8, 96:26, 58). A significant amount of white miniature vessels was found during rescue excavations in north-western Bohemia in the town of Most during the 1970s and 1980s (Klápště 1983, 458, Abb. 6:E; Klápště–Muk 1988, 217, Figs. 16:17–18; Klápště et al. 2002, 21, Tab. 121:4, 144:3; Klápště–Muk–Bubeník 2010, 457–458, Fig. 19:6) and villages in the hinterland, where the oldest examples are dated to the first third of the 13th century – Fig. 2 (Klápště 1994, 97, Figs. 54:5, 56:24; 58:20; Meduna 2002, 155, Figs. 3:11, 17; 2012, 129, 167; Peksa 2019, 151, 153–154; Figs. 20, 30). For the first time, attention was drawn to their possible connection with finds of miniature vessels in central and north-eastern Germany (Klápště et al. 2002, 21).

During the 1980s, 1990s and the first two decades of the 21st century, other identified finds from archaeological excavations in Central, West, South, and East Bohemia were added. The miniature vessels and bells are usually dated to the 13th–14th centuries and appeared more in unglazed than in glazed variations (Fig. 3). Miniature vessels are found in the urban (Velímský 1992, 122, 129, Abb. 10:18; Břicháček 1992, 32, 37, Fig. 5:6; Richter–Vokolek 1995, 69, Tab. 81:43 and Tab. 112:30; Figs. 4:7–8; Nováček 1996, 103; Bureš–Kašpar–Špaček–Vařeka 1997, 7; Šmejda 1999, 173–174, Fig. 5:2; Šebesta 2002, 41, Fig. 6/9; Nováček–Razím–Ebel 2004, 65–66, 68; Wolf 2005, 111, Tab. 37:5–6; Vařeka 2009, 154; Havrda–Matějková 2014, 30, 39; Čapek–Menšík–Netolický–Vladař 2017, 82), and rural milieu (Klápště 1998, Abb. 2; Pícka–Tetour 2005, 190; Buračinská 2008, 98; Postránecká–Wasková 2008, 80; Matějková–Novák 2014, 332, 344). They were also found in secular and ecclesial contexts, i.e. fortified manors (Nechvátal–Radoměský 1963, 10–11, Fig. 8; Hejna 1983, 382, Fig. 11; Kolečková 2018, 36, 46), aristocratic residences (Nováček 1996a, 287–288; Kašpar 2000, 325; Wolf 2004, 584, Figs. 9:14–15; 2005, 65, Tab. 33:14–15; Jansa 2006, 24, Tab. 17:1–2; Karel–Knoll–Klsák 2007, 281, note 41; Bačová 2009, 88–89; Zelenka 2013, 123; Figs. 3:34, 125, Figs. 5:15, 130; Košťál 2013, 68) and monastery (Nováček et al. 2010, 315). On exception, they were also unearthed on mining sites (Derner 2018, 277, Figs. 212:1–6), and one miniature vessel was even found as part of a coin hoard (Radoměský–Richter 1985, 138, No. 156). Finds of ceramic bells were also included among the same ceramic ware (Fig. 6; Durdík 1977, 94–95, Fig. 1:1; Durdík–Matoušek–Procházka 1982, 308–309, Figs. 1:3–4, 2; Durdík 2004, 235, Tab. XXIV; 2007, 94; Orna 2002, 182–183, Fig. 2).

In Moravia, the largest number of finds comes from South Moravia (especially Brno) thanks to a number of rescue archaeological excavations (Fig. 4). Miniature vessels made of fine-grained clay¹ appear there in both glazed and unglazed variations together with the finds of ceramic bells from the last third of the 13th century to the first half of the 14th century – horizon VS.2.1 and from the mid-14th century to the first quarter of the 15th century – horizon VS.2.2 (Procházka 1991, 239, Abb. 2:17, 243, Abb. 4:7; 1994, 331, 343, Figs. 4:3–4, 344, Fig. 5:3; 1995, 114, 116, Figs. 2:4–5, 9; Procházka–Peška 2007, 209, 211, Figs. 29:3, 229; Sedláčková 2020, 95, Fig. 50). Furthermore, miniature vessels were found in deserted villages in southern and south-eastern Moravia (Měřínský 1977, 68; Unger–Michna 1980, 22, Fig. 3:14; Unger 1981, 78; 1984, 293, Fig. 4:4; 1994, 44; Měchurová 1997, 64–65, Tab. XL:1–6; Tab. XLI:13, 14; Belcredi 2006, 334–335), in several towns (Chybová 2009, 72; Procházka 1984, 435, 429, Fig. 3:14), and in castles (Sedláčková 2015, 208, Fig. B24, probably B27). Other examples were identified in Central Moravia in towns (Procházka 1995, 120, 123, Abb. 7:7–8; Bláha 1998, 149–150, Fig. 8:4; 1999, 197,

¹ The finds of the miniature vessels from Brno correspond to fabric 511 referred to as “fine white ceramics” without visible inclusions, or glazed fabrics 500 and 512.

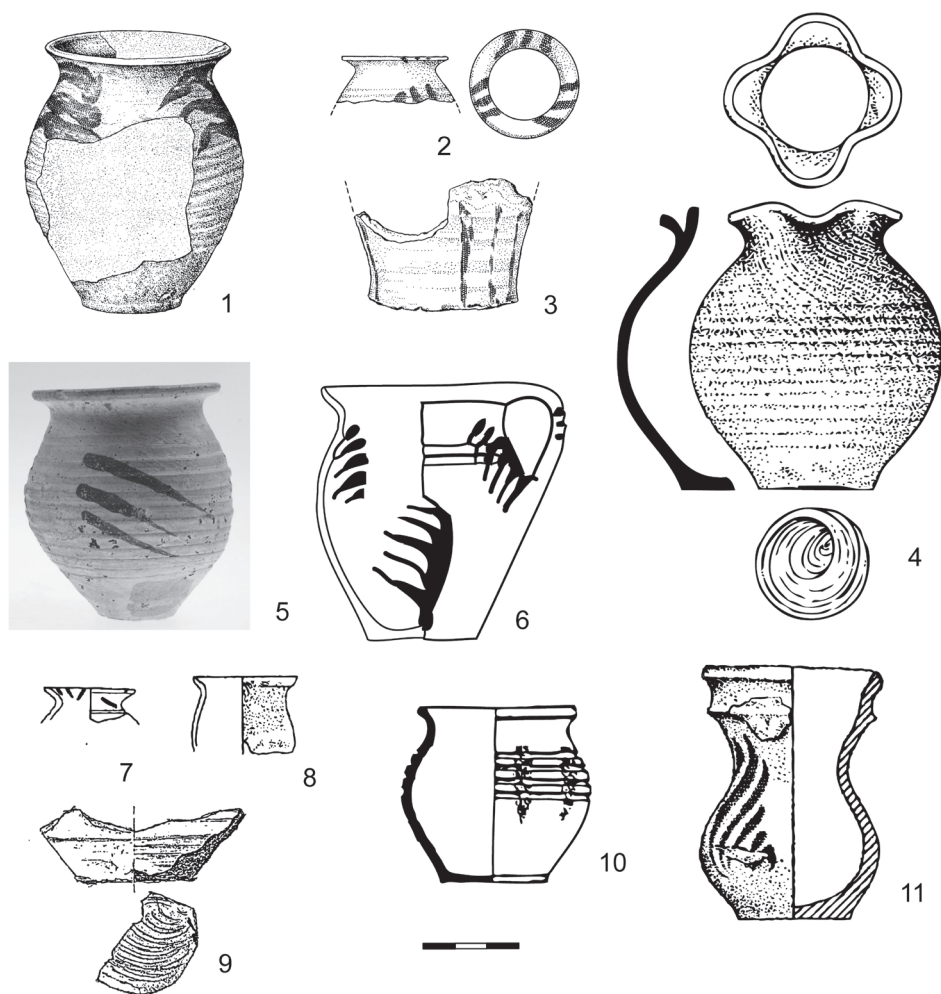


Fig. 3. White fine-grained ceramics from Bohemia. 1–3 – Hradištko near Davle; 4 – Kokšín; 5 – Tihava-Kotopeky; 6 – Tlestky; 7–8 – Hradec Králové; 9 – Cheb; 10 – Vysoké Mýto; 11 – Kostelec nad Orlicí.

Obr. 3. Bílá jemně plavená keramika z Čech. 1–3 – Hradištko u Davle; 4 – Kokšín; 5 – Tihava-Kotopeky; 6 – Tlestky; 7–8 – Hradec Králové; 9 – Cheb; 10 – Vysoké Mýto; 11 – Kostelec nad Orlicí.

Fig. 6:6), villages (Goš 2007, 72, Fig. 26:8), and castles (Blekta 1934, 14; Nekuda–Reichertová 1968, 253, Figs. 111:1–4, 255; Šlězár 1999, 45, 59–64).

In Silesia, glazed or unglazed miniature vessels (Fig. 5) were first registered during the 1980s in Opava by V. Šikulová (1985) and Rýmařov by V. Goš (Goš–Novák–Karel 1985, 215–216, Fig. 6:3, Fig. 10:10; Goš–Karel 1992, 228; Karel 1996, 81–82, Fig. A–C; Goš–Karel 2005, 455, Figs. 2:1–2, 4–5). The oldest vessels appear around the mid-13th century. In addition to urban contexts (Kiecoń–Zezula 2005, 28, Fig. 6:17; Zezula–Kiecoń–Kolář 2007, 124, Figs. 4:25–26; Marethová–Skalická–Veselá–Zezula 2012, 32–53; Procházka–Hložek 2013, 240; Zezula et al. 2009, 559), they are also abundant in castles in Silesia on the Czech–Polish border

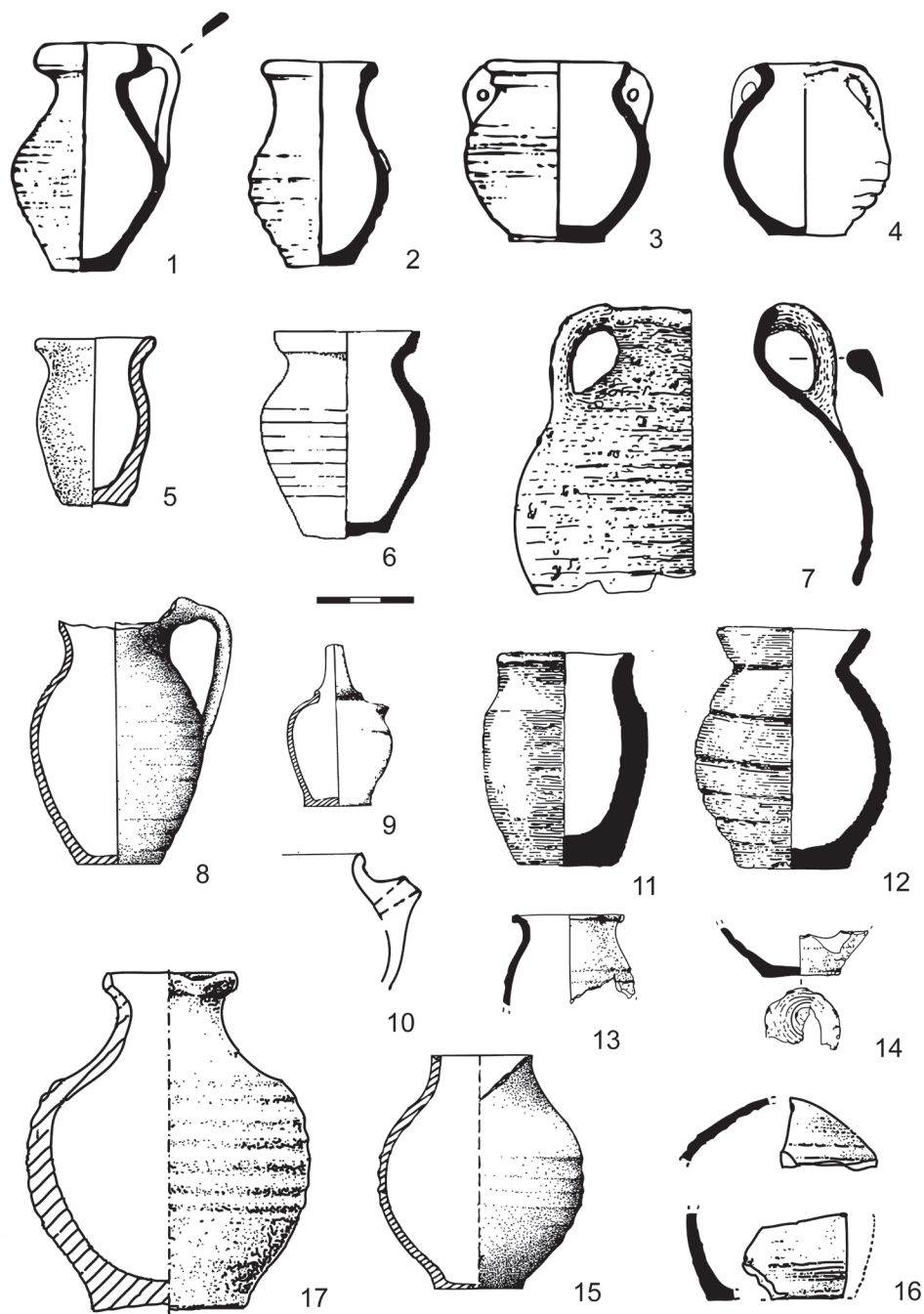


Fig. 4. White fine-grained ceramics from southern and central Moravia. 1–4 – Brno; 5 – Uherské Hradiště; 6 – Prostějov; 7 – Olomouc; 8–9 – Bystřec; 10 – Teplany/Topolany; 11–16 – Konůvky; 17 – Loštice.

Obr. 4. Bílá jemně plavená keramika z jižní a střední Moravy. 1–4 – Brno; 5 – Uherské Hradiště; 6 – Prostějov; 7 – Olomouc; 8–9 – Bystřec; 10 – Teplany/Topolany; 11–16 – Konůvky; 17 – Loštice.

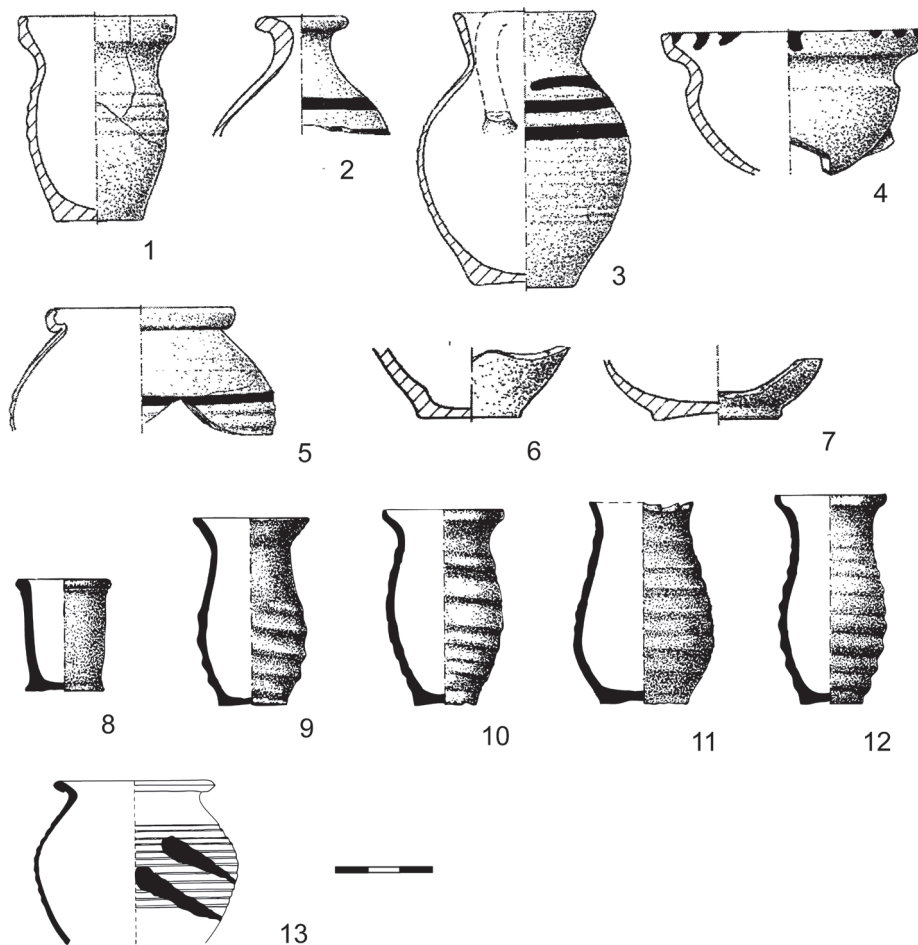


Fig. 5. White fine-grained ceramics from northern Moravia (Silesia). 1–2 – Rýmařov; 3 – Rýmařov – castle; 4 – Rýmařov – Burgert's farm; 5–7 – Strálek Castle; 8–13 – Opava.

Obr. 5. Bílá jemně plavená keramika ze severní Moravy (Slezsko): 1–2 – Rýmařov; 3 – Rýmařov – hrad; 4 – Rýmařov – Burgertův statek; 5–7 – hrad Strálek; 8–13 – Opava.

(Kouřil–Prix–Wihoda 2000, 267; Kouřil–Wihoda 2003, 93–94, Figs. 10:2–6; Goš–Karel 2005, 455, Figs. 2:7–9, 11; Tymonová 2010, 65; Kartousová 2016, 5, Figs. 1:5–7).

Several finds of ceramic bells made of white fine-grained ceramics also come from Moravia and Silesia – Fig. 6 (Král 1975, 387–389, Figs. 1:1–2; Goš–Novák–Karel 1985, 215, Fig. 6:6; Goš–Karel 2005, 455–456, Figs. 1:8–10; Procházka 1991, Abb. 14:7; Procházka–Peška 2007, 229; Sedláčková 2020, 99–100, Fig. 52). They were mostly found in urban contexts and relatively rarely in village households (e.g. Nekuda–Nekuda 1997, 88, Fig. 141).

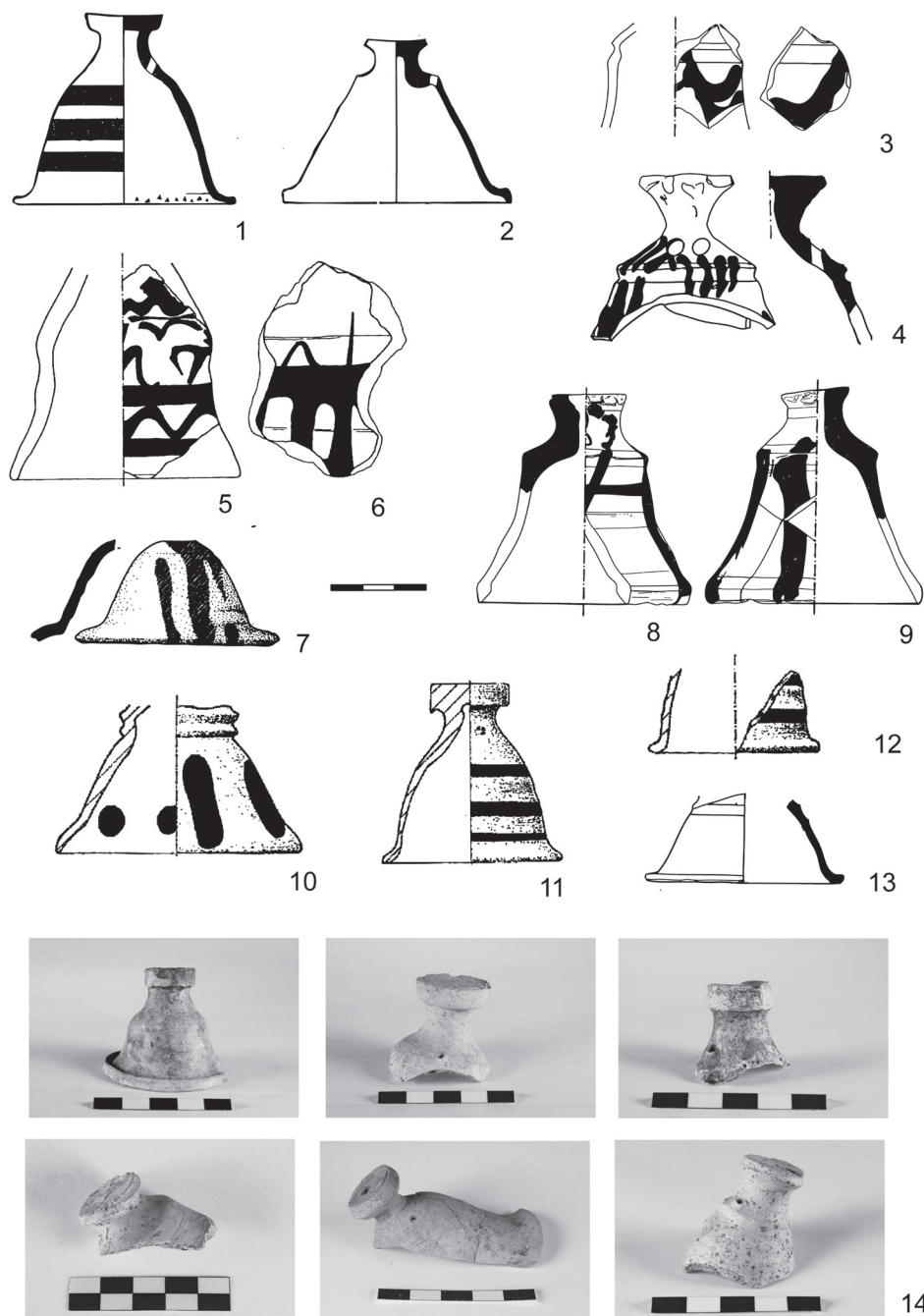


Fig. 6. Ceramic bells made of white fine-grained ceramics: 1 – Uherský Brod – brewery; 2 – Opava – Mezi trhy; 3–4 – Týřov; 5–6 – Angerbach; 7 – Most; 8–9 – Domažlice – Hořejší Suburb; 10–12 – Rýmařov; 13 – Brno – Dominikánská Street; 14 – Brno – Veselá Street, Besední Street, Janáček Cultural Centre. Photo by Archaia Brno.

Obr. 6. Keramické zvonky z bílé jemně plavené keramiky. 1 – Uherský Brod – pivovar; 2 – Opava – Mezi trhy; 3–4 – Týřov; 5–6 – Angerbach; 7 – Most; 8–9 – Domažlice – Hořejší předměstí; 10–12 – Rýmařov; 13 – Brno – Dominikánská ulice; 14 – Brno – Veselá ulice, Besední ulice, Janáčkovu kulturní centrum. Foto Archaia Brno.

3 The technology of miniature vessels

A common feature of miniature vessels is their ceramic mass, which is made of fine-grained clay of a creamy whitish to chalky color and sometimes in shades of light gray, beige, yellowish or pinkish. Only fine-grained macroscopic inclusions are grains of quartz up to approx. 1 mm, which appear in the ceramic mass, indicating the careful sorting of the ceramic raw material by the process of precise clay preparation via levigation.² The white shard is very compact and solid. The structure of the ceramic raw material was macroscopically studied in detail in Germany. R. Kluttig-Altmann distinguishes two wares of ceramics, namely with inclusions of fine to very fine-grained sand – *Einfache weiße Irdenware*, and fine-grained ceramics without visible inclusions – *Feine weiße Irdenware* (Kluttig-Altmann 2006, 222). J. Beutmann and H. Kenzler also distinguish two groups of medieval white wares on the basis of the presence of red paint, namely *Feine Weiße Irdenware mit oder, ohne rote Bemalung* and *Grobe Weiße Irdenware mit oder, ohne rote Bemalung* – the second group is characterized by 15–20 % sandy inclusions with a grain size of about 1 mm and a grey core of shard (Beutmann 1997, 24–26; Kenzler 2001, 106; Beutmann–Kenzler 2006, 485–486). In German literature, these types of ceramics are assumed to have been made of well-sorted kaolinitic clay, but petrographic analyses that would confirm the actual content of kaolinites in the ceramic matrix have not yet been fully performed.

In Bohemia, three shards (samples nos. 72, 73, and 74) of fine-grained white ceramics from Most – house No. 226 were subjected to chemical, mineralogical, and X-ray diffraction analysis. The chemical composition did not differ in proportion to the iron oxide content. All samples contained potassium feldspar according to the predominant K₂O content over Na₂O. Quartz was identified by X-ray diffractometry from other mineralogical inclusions; the presence of mica (muscovite and biotite) was identified in shards No. 73 and 74, and calcite was identified in shard No. 74. The calculated mineralogical composition of the shards showed a high content of kaolinite (above 70 %), which could have come from modified kaolinitic clay raw materials or from raw kaolines (Hanykýř–Maryška–Brůček 2002, 50).

Using ceramic micropetrography with a polarizing microscope, one thin-section of white fine-grained kaolinitic fabric No. 181 from the Veselí nad Moravou castle was also studied. The shard came from a miniature lead-glazed vessel. Sample No. 16 taken from a shard of this fabric was very fine-grained with a larger proportion of non-plastic components. Under the polarizing microscope, it was possible to detect rock inclusions with a predominance of micritic limestone. Quartz and muscovite predominated among the mineral fragments; alkaline feldspars, plagioclase, and biotite were represented to a lesser extent. The matrix itself was homogeneous and light grey with a structure arranged in parallel. It was postulated that the predominant raw material was clay minerals such as kaolinites (Petřík–Slaviček–Sedláčková 2015, 108–109). The shard sample was also analyzed for chemical composition using an electron scanning (raster) microscope in combination with energy-dispersive X-ray microanalysis (SEM-EDX). The composition was characterized by a silica content of 65.8 % and an alumina content of 26.5 %. Calcium oxide was also documented to a lesser extent (2.8 %). The contents of other oxides of iron, potassium, magnesium, and titanium were around 1 % (Petřík–Slaviček–Sedláčková 2015, 108, tab. 6).

Miniature vessels of whitish clay were also tested using chemical methods in Poland. Polish examples were characterized by a high kaolin content in the ceramic mass, low content of iron oxides, and a relatively high content of alumina (above 20 %). The silica content was around 65 %. In addition, the vessels had a small content of oxides of potassium, magnesium, calcium, sodium, titanium, and others (Auch–Trzecieczki 2007, 139).

Miniature vessels were made by wheel throwing from one piece of carefully prepared clay on a rapidly rotating potter's wheel (Beutmann–Kenzler 2006, 486). Traces of wheel throwing are mainly evidenced by the characteristic concentric radiating loops of wire marks left by cutting

2 Wet levigation can be expected, during heavy inclusions and organic impurities were sorted (Karel 1996, 82; cf. Quinn 2013, 154–155).

the pot from the wheel (in the case of ceramic bells on a knob), as well as a very thin wall with inner rings and modeling grooves, which reach a maximum thickness of 3 mm (cf. Karel 1996, 82). Only a few examples were probably made by coiling (e.g. a jug from the deserted village of Bystřec – Belcredi 2006, 334).

The outer surface of the products is usually smooth or slightly rough. The ceramics were fired hard in an oxidizing atmosphere; the firing can be considered to be of very high quality, almost to the limit of sintering the ceramic shards, and it is not possible to macroscopically observe inclusions and pores in the structure of the ceramic mass (cf. Karel 1996, 82). The firing atmosphere according to the modification of mullite found in one of the samples of the shard from Most corresponded to about 1000 to 1050 °C (Hanykýř–Maryška–Brůček 2002, 49–50). The firing temperature of sample No. 16 from the Veselí nad Moravou was lower in the range of 800–900°C (Petřík–Slaviček–Sedláčková 2015, 109).

Some miniature vessels have traces of lead glaze on the outer surface, most often in light green, yellow-green, yellow-brown, or in rare cases red-brown. The color of the glaze is influenced by the amount of iron or alkali inclusions, but also the firing atmosphere (cf. Richter 1982, 94). Analysis of several miniature vessels from Silesia showed the presence of lead glazes of PbO and PbO₂ on the surface, which were formed by melting at low firing temperatures. The color of the glaze was influenced by different firing conditions – in the semi-reducing atmosphere, the products acquired a rather greenish color; during oxidation firing, the color was orange (Kouřil–Wihoda 2003, 94).

The lead glaze on the vessels had a primarily decorative function. The glaze is often scratched, and in some places it extends over the rim. In some specimens, it is even baked, which indicates a glaze failure during the firing process (cf. Stephan–Hoffmann 2016, 206). In some products, the glaze is chipped. The glazed specimens represent the oldest exemplars of lead-glazed pottery in the Czech lands, appearing as early as the 13th century next to small vessels made of white fine-grained clay, with which they appear together in ceramic assemblages or at the same dated horizons (Richter 1961, 574–575; Šikulová 1985, 232; Procházka–Hložek 2013, 237–239).

From a technological point of view, miniature vessels made of fine-grained whitish clay represent high-quality medieval pottery. In assemblages from pottery workshops in Saxony (e.g. Brandis), Lower Saxony (Einbeck, Coppengrave), or Swabia (Remshalden-Buoch), they appear alongside cooking pottery and together with small ceramic figures (Stephan 1981, 42–45; Gross 1991, 82; Heege 1993; 1997, 97, 103; Stephan–Hoffmann 2016, 205–208). Moreover, in the cities of Zwickau (Saxony), Nuremberg (Bavaria), and Świdnica (Silesia), they were also found together with ceramic figures (Kenzler 2001, 106–196; Beutmann–Kenzler 2006, 492–493; Stephan–Hoffmann 2016, 207–208; Karst 2009; Grönke–Weinlich 2003, 217–229). The production of anthropomorphic and zoomorphic figures and therefore also miniature vessels was performed by specialists, who are documented in the 15th-century production centers in the Rhineland (Cologne, Frankfurt) and the Netherlands (Utrecht, Kampen) in written sources under names such as *Bilddrucker*, *Beelddrucker*, *Bilderbäcker*, *Bildermacher* or *heiligenbakker* (Stephan 1981, 42–43; Neu-Kock 1993, 18–22; Borkowski 2004, 207).

The common occurrence of miniature vessels with ceramic figures is also documented in Bohemia, for example, in the Petrská district, Truhlářská Street No. 1518 and on Republic Square in Prague's Old Town, where their local production is expected (Kašpar–Žegklitz 2009, 79–83; Havrda–Matějková 2014, 43; Juřinová 2015). The production of miniature vessels without specifying whether they were made of whitish clay is also documented in Prague in the Lesser Town in Vlašská Street No. 355, in the context of a pottery workshop producing red painted ceramics (Matějková–Havrda 2014, 30). Pottery workshops specializing in the production of small figures with religious themes often used the same white fine-grained kaolinitic clay (cf. Cymbalak–Hladíková–Trachtová 2016). Another pottery workshop of miniature vessels and clay figures was revealed in Kroměříž on Miličovo Square (Chybová 2009, 124, 131). However, their

production is dated to the younger period of the 14th–15th century, when imported miniature vessels gradually disappeared from the pottery assemblages.

4 Forms of miniature vessels and their decoration

Small vessels with a height of less than 10 cm and rim diameter of less than 4 cm are generally considered miniature forms. Among them appear small pots, jars, cups, mugs, bottles, jugs, goblets, and on rare occasion nursing jugs and bowls. We can also assign to them some glazed aquamaniles characterized by a white shard. In their classification, a designation based on their shape is used, which may not correspond to the function of these vessels (cf. Beutmann–Kenzler 2006, 486). We can distinguish several main types of vessels based on the morphology of their forms. An overview of the types of miniature vessels represented in the Czech lands and Saxony is shown in the tables (Figs. 7 and 8).

The spectrum of miniature ceramic forms is very diverse in the Czech lands – there is no formal standardization that appears in some products, especially small bottles and jugs from Saxony (Stephan–Hoffmann 2016, 207). Thus far, it has not been possible to identify two identical forms in our territory, which would indicate that they were made in one pottery workshop. The apparent formal similarity is shown by small pots or jugs/bottles from Most and bottles from Opava decorated with multiple grooves (Figs. 2:1–3; Figs. 6:9–10, 12), which are also similar to Saxon examples.

Small ovoid-shaped or S-shaped pots are the most frequently represented; pots without handles or with a small side handle and on rare occasion with two handles are also appeared (see two small pots from Brno – Figs. 4:3–4 and Olomouc – Fig. 4:7). Furthermore, small forms of jugs are represented, which are also fitted with a side handle and thus differ from bottles that lack the handle and have a significantly narrowed neck (Fig. 4:17; Fig. 5:2). Small bottles are difficult to distinguish from small goblets because of the similar shape of the body. There are also rare occurrences of vessels with four-lobed mouths (Figs. 3:4) and bell-shaped bowls (Fig. 5:4). Among the vessels, we lack in the Czech lands jugs with a tubular spout and stirrup handle (in German *Bügelkannen*), which, for example, appear in Saxony, but there are also relatively rare (Hoffmann 1997, 32, Abb. 1–2; Beutmann–Kenzler 2006, 486, Abb. 1:21–22). The assemblages from the Czech lands also lack the forms of lids which appear in Saxony (Schwabenicky 1990, Abb. 6:2; Kenzler 2001, 105, Abb. 80:18) and clay spindle whorls made of fine-grained clay, which are decorated with red paint as well (Beutmann–Kenzler 2006, 488, Figs. 2:1–6).

There are several examples of ceramic bells (Fig. 6) with a typical hole for hanging the heart, which is most often located under the knob or on the upper part of the body (cf. Kenzler 2001, 106; Beutmann–Kenzler 2006, 488). The shape of the heart of the bell has not yet been ascertained archaeologically, nor do we know the material of which it was made.

In the late Middle Ages, small clay figures (horses, dolls, Madonnas) were also made of the same ceramic ware, as were clay balls, which, however, were not the subject of our assessment (Schneiderwinklová 2014, 191, Figs. 4.1–46; Čapek–Militký et al. 2016, 224–225, Fig. 91:4). In the modern age, the production of pipes made of kaolinitic clays expanded, thanks to which this group of white ceramics has been given the name *Pfeiffenton* – clay pipe (cf. Standke 2003, 99–104; Beutmann–Kenzler 2006, 492; Vyšohlíd 2009, 968).

The typical decoration, which appears on vessels from the beginning of their expansion, is red paint (most often in the form of fine strokes of lines, wavy lines and half-curly). These are usually short brushstrokes that cover the upper part of the body (cf. Beutmann–Kenzler 2006, 486), and in exceptional cases the entire surface (e.g. a jug from Kostelec nad Orlicí – Fig. 3:11). Another extended decoration are the multiple grooves that cover most of the body's surface (Karel 1996, 82). The glaze, which often has a yellow-green or red-brown color, is considered to be a decoration and lacks functional attributes (for more details, see Chapter 3). However, not all products made of white ceramics were decorated.

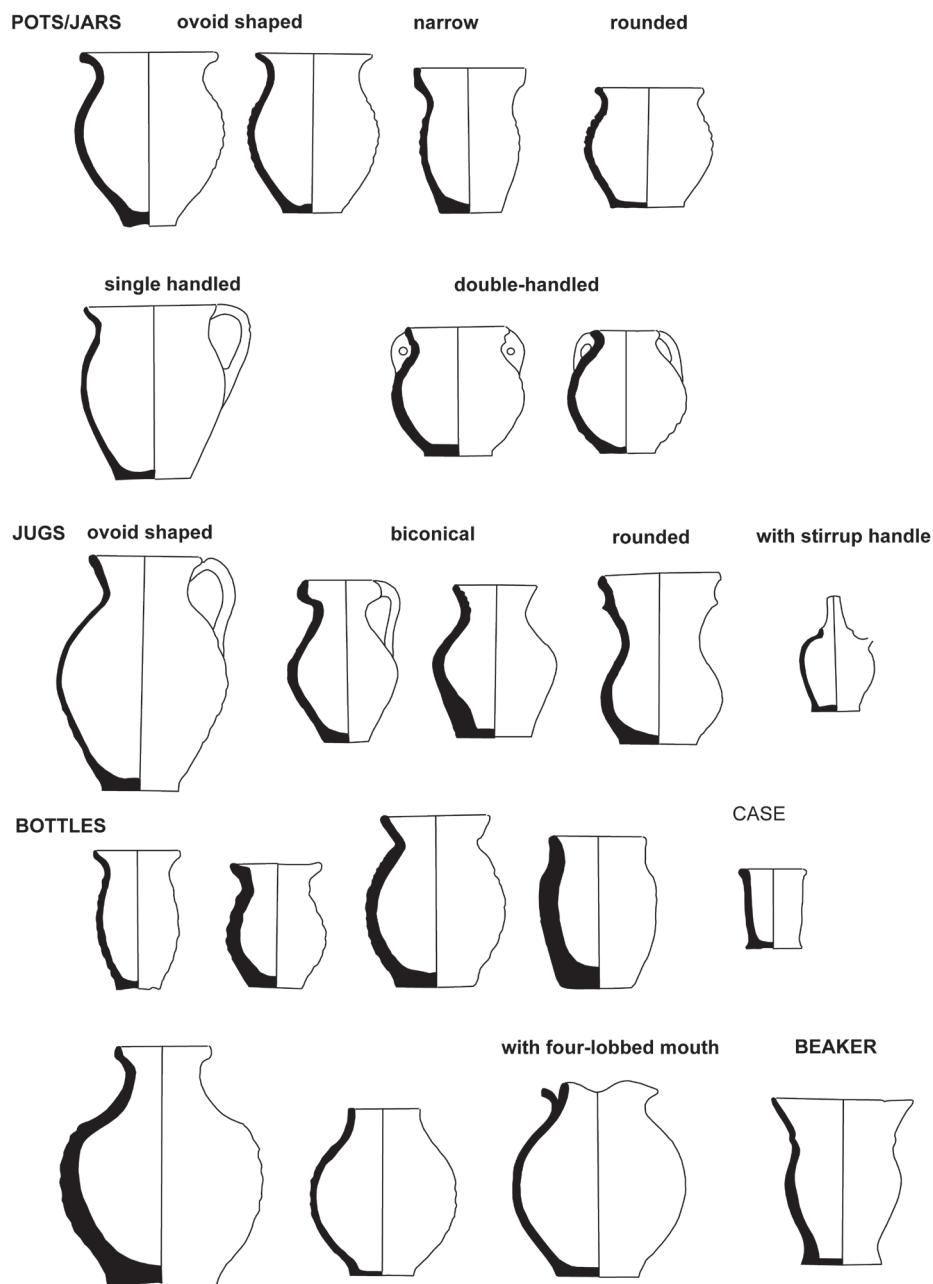


Fig. 7. Forms of miniature vessels in the Czech lands. Created by L. Čapek.
Obr. 7. Tvary miniaturních nádobek v Českých zemích. Vytvořil L. Čapek.

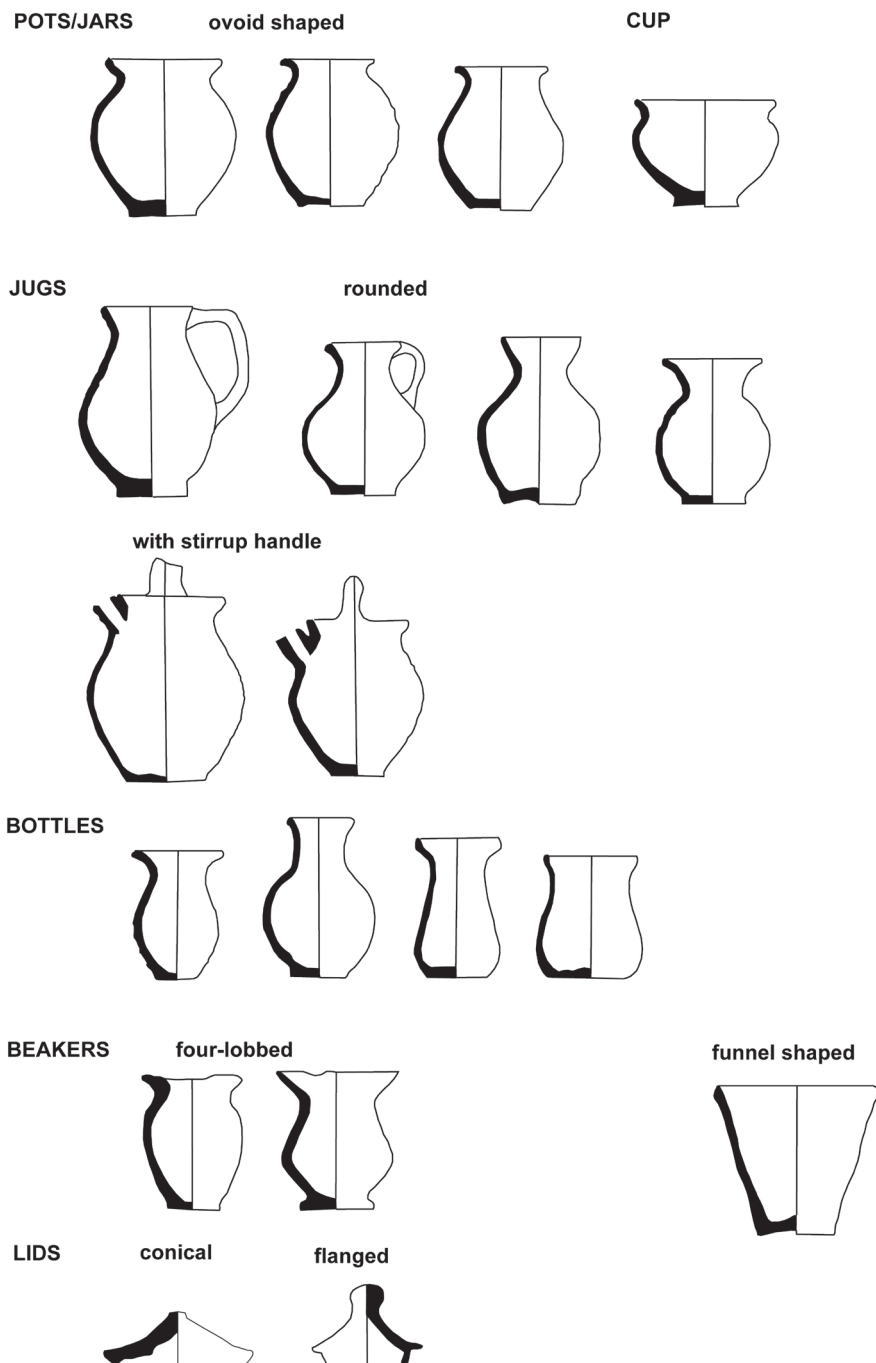


Fig. 8. Forms of miniature vessels in Saxony, Germany. After Beutmann–Kenzler 2006; Stephan–Hoffmann 2016 created by L. Čapek.
Obr. 8. Tvary miniaturních nádob v Sasku, Německo. Podle Beutmann–Kenzler 2006; Stephan–Hoffmann 2016 vytvořil L. Čapek.

5 The provenance of miniature vessels

Due to the qualitative and technological difference of traditional late early medieval pottery (Late Hillfort period), white fine-grained ceramic items from the Czech lands are considered long-distance imports. However, the question of the origin of miniature vessels has not yet been reliably resolved (Klápště 1983, 458). Their significant distribution is documented in north-western Bohemia even before the expansion of the High Middle Age “colonization ceramics”, which in north-western and north-eastern Bohemia in the second half of the 13th century was represented by hard oxidation-fired ceramics with red paint (Klápště 1994, 97; cf. Gabriel–Smetana 1991, 128–133; Klápště 1998). On the contrary, in western Bohemia in the Pilsen region, white ceramics occurred together with hard reduction-fired pottery in the 14th century (Orna et al. 2011, 13).

Miniature vessels are abundant on the German side of the Ore Mountains in Saxony, where this group of white ceramics with red painted decoration (referred to as “*weiße Miniaturgefäße mit roter Bemalung*” or “*weiße feine Irdenware mit roter Bemalung*”) is dated to the period from the late 12th century to the first half of the 14th century (Fig. 8; Hoffmann 1997, 32–40, Abb. 1–2; Beutmann–Kenzler 2006, 485–492, Abb. 1, 3; Kenzler 2001, 105; Krabath 2012, 65). Similar to this group are miniature lead-glazed vessels (*Miniaturgefäße mit Bleiglasur*), which are mostly made of the same white or yellow fine-grained ceramics and dated to the same horizon (Stephan–Hoffmann 2016, 206–297, Figs. 6:1–10, Fig. 8; Dirks 1994, 229–237). Miniature vessels in neighboring Brandenburg (cf. Beutmann 1999, 229) and Lower Saxony – Northern Hesse (cf. Grote 1976, 261; Stephan 1982, 91) are similarly dated. In German literature, the designation of these products as so-called *Pfaffeifenton* has not appeared for a long time – it is reserved for clay figures from the 14th and 15th centuries made of fine-grained kaolinitic clay.

In the wider territorial context, these forms of miniature vessels, especially in the areas of north-western Europe, belong to a range of forms of high-quality ceramics, the production of which is first documented in Belgium and the Netherlands (in the Máza river valley) as early as the 11th century, where they are marked as Andenne-type goods and imitations of them according to the local production center (Bruijn 1960, 139–188; Borremans–Warginaire 1966, 86–187; Verhaeghe 1968, 203; van Es–Verwers 2009, 191–192). They appeared in the German lands at the beginning of the 12th century (Madsen–Stilke 2001, 539–612). Earlier, some German researchers assumed the import of white ceramics from pottery workshops in Scandinavia and England (cf. Schütte 1982, 207). Today, local production in Germany is expected. In addition to Saxony, where the area of their greatest distribution is documented (Fig. 9), white ceramics have been reported in central Germany, Thuringia (Timpel 1990, Taf. 3, 19, 20), northern Hesse, Swabia (Lobbedey 1968, 40–42; Stephan 1986, 21, Abb. 13–17), Schleswig-Holstein (Lüttke 1985, 54–59), and North Rhine-Westphalia (Gross 1991, 83; Essling–Wintzer–Bergmann–Silent 2015, 98–103).

The expansion of miniature vessels from the west into the territory of Central Europe may have occurred in connection with wandering potters, who transferred their production and technology to other areas outside their traditional distribution (Stephan–Hoffmann 2016, 207). A pottery workshop specializing in the production of miniature vessels with lead glaze together with clay figures was documented, e.g. in Epterode near Großalmerode in northern Hesse as early as 1180 and 1250 (Stephan 1986, 21–23, Abb. 13–17; Stephan–Hoffmann 2016, 207). As a by-product of the pottery craft, miniature vessels have been documented in pottery workshops in Coppengrave (Stephan 1981), Einbeck (Heege 1993), and the Duingen area (Stephan 2012) in Lower Saxony. In addition to these items, pottery workshops also produced common cooking vessels.

The largest number of miniature vessels comes from Saxony. The relationship between Saxony white fine-grained ceramics and fine Pingsdorf-type ware in the Rhineland – so-called *Pingsdorfer Feinware* – was previously discussed in literature (Hoffmann 1997, 33–34; Schwaibenicky 1990, 70). The white ceramics with red painted decoration occurred in the 12th–13th centuries in southern Germany in Swabia, especially in the Neckar area and around Esslingen (Gross 1991, 80–81, Taf. 191:1–5; 2012, 161–163, Taf. 11:2). Products imitating Pingsdorf-type wares have

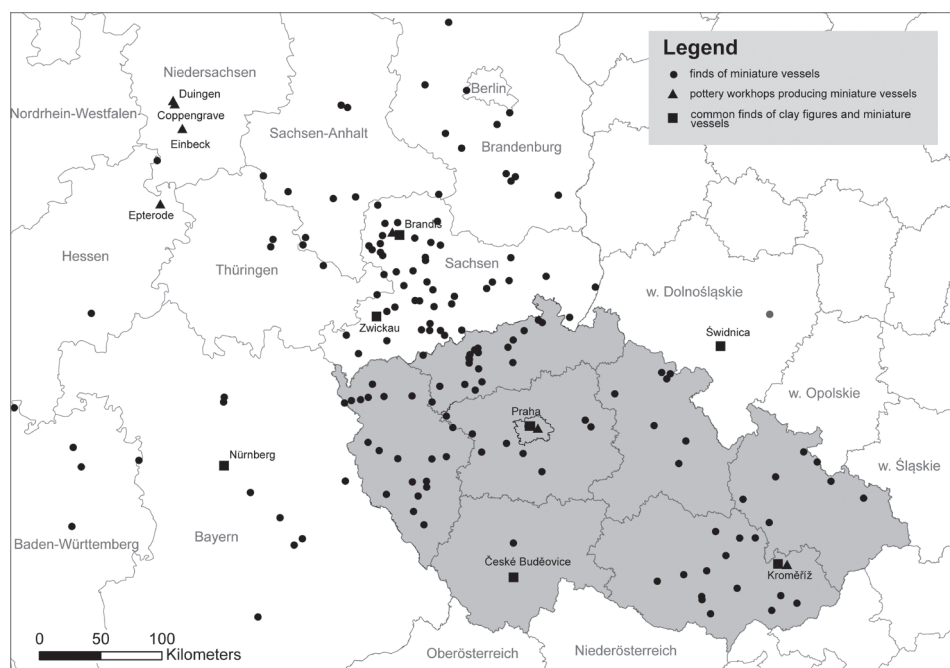


Fig. 9. Distribution of miniature white vessels in Germany from the 12th to the 14th century. According to Beutmann–Ken­zler 2006, Abb. 3, extended and modified by L. Čápek.

Obr. 9. Distribuce miniaturních nádobek v Německu ve 12. a 14. století. Podle Beutmann–Ken­zler 2006, Abb. 3, rozšířil a upravil L. Čápek.

been referred to as “*Keramik Pingsdorfer Art*” (Lobbedey 1968, 73; Westphalen 1995, 175; cf. Kraft 1996, 164; Biermann 1999, 237). The direct link between the Pindsdorf pottery and Saxon white ceramics has previously been rejected by Y. Hoffmann and J. Beutmann, who envisaged more production sites, one of which could have been located in Saxony due to the high distribution of these products (Hoffmann 1997, 40–41; Beutmann–Ken­zler 2006, 485, 492–493). In Saxony, with the exception of one pottery workshop in the townlet of Brandis, there is no directly documented production site of miniature vessels (Stephan–Hoffmann 2016). Production in Saxony is also supported by the occurrence of high-quality kaolinitic clay deposits, which were used in the 14th and 15th centuries for the production of Waldenburg stoneware (Scheidemantel–Schifer 2005, 289–297). Only petrographic analysis could prove the provenance of Saxon production, but there are very still few comparative analyzed samples (Henker–Schifer 2013, 159).

Miniature vessels also appear rarely in other areas of Central Europe. Their finds were identified in Austria dated to the 12th/13th–14th/15th century, where, in addition to the finds from Vienna, they have not yet received much attention (Felgenhauer–Schmiedt 1981, 112–125; Felgenhauer–Schmiedt 1993, 220; cf. Kaltenberger 2009, 196). However, according to published examples, miniature vessels made of “*fine whiteware*” with red paint appear in the minority and are considered imports further east of the Bavarian regions. Their origin from Bohemia is not excluded either (cf. Felgenhauer–Schmiedt 1981, 122, 124).

Miniature white fine-grained vessels were also documented in Poland, where they often appear in variants with lead-glaze (so-called *szkliwione miniatURY z białej gliny*). Unfortunately, they have not yet received much attention in Poland, although finds have been documented in Gdańsk (Lepówna 1982, 114–122), Wrocław (Niegoda 1999, 175, Ryc. 29 and 30; Gomułka 2018, 1044–1045), Świdnica (Karst 2009, 269–279) and Warsaw (Auch–Trzecieczki 2007). Lead-glazed miniature

vessels probably entered Poland through trade and close economic contacts with the Hanseatic cities of northern Europe. Their origin was also previously assumed in western Russia, i.e. Kievan Rus (Dzieduszycki 1980, 75–76; Lepówna 1982, 115; Auch–Trzecieczki 2007, 146–147). Polish researcher B. Lepówna pointed to similarity of white kaolinite vessels with Andenne type of wares from Belgium in the area of Meuse river, which was partially demonstrated by petrographic analysis (Lepówna 1982, 115). In Poland, especially in Silesia, however, the domestic tradition of the production of lead-glazed ceramics, which also produced miniature vessels, was documented already in the 11th and 12th centuries (cf. Rzeźnik–Stoksik 2011). Furthermore, these vessels often appear together with small ceramic figures. For example, a set of small figures (centaurs), miniature vessels (pots, jugs, bowls), and bells made of fine-grained ceramics dating to the 13th century comes from the Dominican monastery in Świdnica, Lower Silesia (Karst 2009).

Miniature vessels that appeared in north-western Bohemia before the mid-13th century are related to Saxon examples and could be evidence of a distributional network between market town centers crossing the Ore Mountains. The origin of white ceramics (inaccurately referred to as Pfeifenton) in western Bohemia remains an unresolved issue, as there are no clear links to neighboring Bavarian, Upper Palatinate, and Upper Franconian pottery production. Generally speaking, however, the production of late medieval pottery in these countries has been little explored.

Pottery made of fine-grained clay with red painted decoration appeared in the Upper Frankish area in the 10th–12th centuries, but did not apply more significantly to miniature forms. The local white vessels contain a larger amount of coarser inclusions, and there are significant traces of coiling. They are considered traditionally to be products imitating Pingsdorf wares imported from the Lower Rhine region (Losert 1993, 35–37). Only one production site from the 13th century with finds of fine-grained miniature vessels was documented in Kipfendorf in Upper Franconia (Hauser 1984, Abb. 40:C1, Abb. 41:A).

Several miniature vessels with or without red paint were discovered, for example, in Regensburg (Danheimer 1973, 43, Taf. 6, 10), where a depot of three small vessels (jugs) with coins dated to the year 1387 was also found. These vessels probably came from the nearby pottery suburb of Prebrunn (Mittelstraß 2012, 154–156, Abb. 47:a-c).

The unknown area of provenance has led to discussions on the local origin of white ceramics imitating foreign imports in Western Bohemia. An imitation of white ceramics (fabric PM216) appeared in medieval ceramics in Pilsen, but it has a coarser surface and is characterized by submicroscopic inclusions of mica and a reddish color (Nováček 2000, 209).

Due to the number of finds of white ceramics in Bohemia, Moravia and Silesia, their early imitation in local pottery cannot be ruled out (cf. Šmejda 1999, 174). The fact that some variants of miniature vessels could be made of local kaolinitic clay was confirmed by their occurrence in the pottery workshop in Loštice in northern Moravia. In general, however, the local products decorated with red paint are dated to the second half of the 14th century and are assigned to the second phase of north-Moravian pottery (Goš 2007, 57, 77, 99).

In Bohemia and, to a lesser extent, in Moravia, there are deposits of kaolinitic clay that were used in the 19th century for the production of modern white earthenware (whiteware) and later porcelain (Fig. 9). Kaolin deposits (mined in the past or still mined) are located in north-western Bohemia near Karlovy Vary, Kadaň, and Podbořany and also in the Cheb Basin (Fig. 10). For example, local deposits were used for the production of stoneware bottles for mineral water at the end of the 18th and 19th century (Vyšohlíd 2014, 438). The well-known deposits of kaolinitic clays are located north of Pilsen near Kaznějov and Horní Bříza. In southern Bohemia, kaolinitic clay deposits were located near České Budějovice, or in the Třeboň Basin (Cílek 1990, 91–92; Novák 2002, 95–96). In Moravia, deposits of kaolinitic clays occur in a wide area from Jesenice, through Šumperk, Loštice and also extend to Olomouc region. In northern Moravia, kaolinite deposits are also found in the Opava region (Karel 1996, 81–82). It cannot be ruled out that some deposits were used in the Middle Ages. The distribution of fine-grained ceramics made from kaolinitic clays overlaps often with the areas of occurrence of known kaolin deposits.

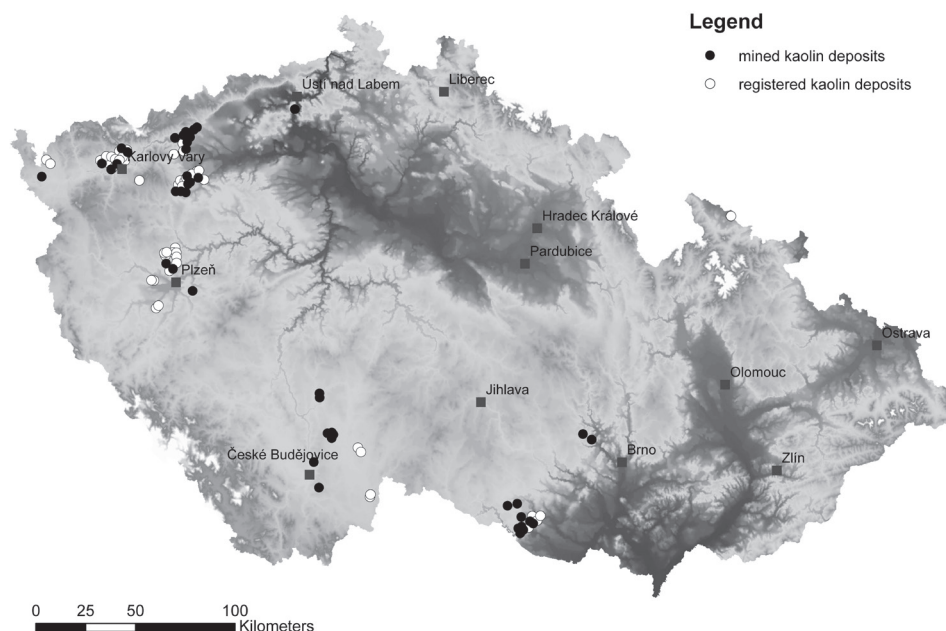


Fig. 10. Registered and mined kaolin deposits in the Czech Republic. 1 – Karlovy Vary; 2 – Kadaň; 3 – Podbořany; 4 – Plzeň; 5 – Znojmo; 6 – Cheb Basin; 7 – Třeboň Basin; 8 – Vidnava. According to the Raw Material Source of the Czech Republic 2018, 205; edited by L. Čápek.

Obr. 10. Evidovaná a vytěžená ložiska kaolinu v České Republice. 1 – Karlovy Vary; 2 – Kadaň; 3 – Podbořany; 4 – Plzeň; 5 – Znojmo; 6 – Chebská pánev; 7 – Třeboňská pánev; 8 – Vidnava. Podle Surovinové zdroje České republiky 2018, 205; upravil L. Čápek.

Other finds rarely documented in other regions of Bohemia and Moravia can be considered imports that entered the urban or other social context in connection with trade or as parts of gifts. Unfortunately, the trading network and contacts between the production and consumption centers cannot be fully reconstructed on the basis of these solitary finds. These products as imported goods do not appear in written sources (trading transactions, trade tariffs). However, there is no doubt that these products could have been found among the commonly available range of goods due to their widespread distribution in various social environments.

As part of the study of this group of ceramics, it is also necessary to mention the late medieval and early modern ceramics of the “white shard”, which appears in central and southern Slovakia, as well as in Hungary and Poland from the 14th to 16th/17th centuries. Its distribution overlaps with the occurrence of white clays, i.e. clays enriched in kaolinitic components. This ceramic is characterized by a white shard, regardless of whether the ceramic was fired in reduction or oxidation atmosphere. The surface color is beige, cream, yellowish or light grey (Hoššo 1983, 223–224, 227, Fig. 6; Holl 1966, 20–21; Takács 1996, 149, 174; Bis 2014, 49–55). The relationship of this group of ceramics to older miniature white fineware vessels is unclear. The “white shard” pottery is widespread on almost all common forms of kitchen and tablewares and also appears in miniature form.

6 Dating of miniature vessels

In Western Europe (Belgium, the Netherlands), the early dating of miniature vessels is sought in the 11th century. These products appear in Germany in the 12th century and are documented in Saxony as early as the first half of the 12th century (Beutman–Hoffmann 2006, 491). The oldest

Saxon finds are fragments of miniature vessels from the 3rd phase (1080–1120) of Wiprecht's castle in Groitsch (Hoffmann 1997, 36, Abb. 1:3–4), while the later examples come from the mining site Treppenhauer near Sachsenburg and are dated to first half of the 14th century (Schwabenicky 1990, 70; Hoffmann 1997, 36, Abb. 1:6–7; Kenzler 2008, 285; Schwabenicky 2009, 132).

Finds from the late early medieval settlement in Hrdlovka and the oldest location horizons of the town of Most are important for dating the beginnings of miniature vessels, as this is done based on horizontal and vertical stratigraphy. The rescue excavation of the early medieval village of Hrdlovka revealed more than 40 fragments belonging to the Late Hillfort period – phase E2 (final phase of the settlement's existence before its abandonment), which is dated to the second quarter of the 13th century (Meduna 2012, 129). Vessels from rural settlements in Bedřichův Světec, Souš, Hořany, and Velebudice in the vicinity of Most are dated similarly (Klápště 1994, 96). Miniature vessels from the town of Most, which come from the contexts *post quem* 1227–1238 after the first location of the medieval city, can be dated to the same horizon. They appear together with the ceramic group A, which represents the ceramics of the late early medieval tradition (Klápště 1983, 458; Klápště–Muk 1988, 216–216). Within the sequence of Most ceramics, they belong to the first and second settlement phase, and thus in assemblages with a significant occurrence of late early medieval and gradually emerging younger late medieval pottery. The white miniature vessels disappeared from the evidence in the 3rd settlement phase in the first half of the 14th century (Klápště et al. 2002, 15). From the assessment of miniature vessels, an important finding in Most shows that white fine-grained ceramics spread to Bohemia even before the foundation of most royal towns in the 13th century, and their occurrence precedes the emergence of high medieval “colonization” ceramics, which in north-western Bohemia is represented by oxidation-fired ceramics with red paint (Gabriel–Smetana 1981; Klápště 1998).

Examples that have been found in short-term settled sites can also serve as additional support for dating. In this case, it is necessary to draw attention to the finds of miniature vessels that were discovered in the sunken dwellings of the deserted townlet of Hradištko (Sekanka) near Davle, which is assumed to have been abandoned in the final third of the 13th century – *post quem* 1278 (Richter 1982, 238).

In Moravia and Silesia, miniature vessels are dated stratigraphically to the second half of the 13th century. Exceptions are vessels from Opava, which appear in parallel with the oldest lead-glazed ceramics of the first half of the 13th century (Šikulová 1985, 232). In Rýmařov, their occurrence begins in the 2nd settlement phase dating to the second half of the 13th century – they appear in the fills of dwellings together with oxidation-fired ceramics with red paint (Goš–Karel–Novák 1985, 215). In Brno, the finds of miniature vessels fall into the horizon of VS 2.1 dated from the final third of the 13th century to the mid-14th century. They are known from the backfills of several wood-clay sunken dwellings and cesspits (Procházka–Peška 2007, 229).

The unique finds of coin hoards serve as support for dating miniature vessels. At the rescue archaeological excavation on Žižka Square in Prostějov, a small pot-shaped vessel (Fig. 4:6) containing a depot of 17 silver bracteates minted in the years 1270–1278 was discovered (Čížmář–Šmíd 2000, 82). Another older find from 1942 was made in the town quarry in Kostelec nad Orlicí, where a small jug was revealed (Fig 3:11) with a hoard of Prague groschen and other small coins dated to the last quarter of the 15th century (Radoměský–Richter 1976, 138). In the second case, it cannot be ruled out that an older vessel could have been used as a coin depot, as the jug which bears traces of red painted decorations and the “okruží” collared rim can be dated to the 14th century.

Ceramic bells appear as early as the second half of the 13th century. Probably the oldest specimens come from the castles of Angerbach and Týřov and the medieval town of Most, and all of them are decorated with red paint. The occurrence of bells in the 14th and 15th centuries is the most common (Durdík–Matoušek–Procházka 1982, 311). They continue to appear until the modern age, as evidenced by the youngest finds from Merklín, where two bells were discovered in the context of a pottery workshop from the mid-17th century (Orna 2002, 184; Preusz 2017, 35,

Fig. 5:1). The bells can be considered as a separate group, the dating of which is wider than in the case of miniature vessels (cf. Beutmann–Kenzler 2006, 490–491).

7 The function of miniature vessels

Determining the function of miniature vessels is problematic and has yet to be reliably explained. Traces of usage have yet to be found on them, such as traces of sooty deposits or remains of organic residues that would partially explain their function (Beutmann–Kenzler 2006, 493). Czech literature contains interpretations of miniature vessels as boxes for salt (imitation of white color?), ointments, fragrant essences, or spices (Klápště 1994, 97; Měchurová 1997, 64; Kouřil–Wihoda 2003, 94; Tymonová 2010, 65), and they are interpreted similarly in Germany (cf. Schirmer 1939, 45–46; Stoll 1977, 411; Schütte 1982, 207; Stephan 1986a, 229; Stephan–Hoffmann 2016, 208). Miniature vessels for drinking expensive liquids such as wine with a volume of around 0.2 l are also considered (Kenzler 2001, 106; Beutmann–Kenzler 2006, 493; cf. Koch 1979, 48). Miniature vessels may have also served as a sovereign and decorative object (Sedláčková 2020, 97). Secondly, they could be used as boxes for various valuables and coins (in this context, a jug from Kostelec nad Orlicí and a pot from Prostějov with a coin hoard can be mentioned).

Another probable interpretation refers to them as imitations of genuine ceramics, which were used for children's games or as children's utensils (Stephan 1981, 43–44; Oexle 1993, 392–395; Willemsen 1997, 409; Kirsch 2000, 146–148; Goš–Karel 2005, 454). This interpretation is offered due to their frequent co-occurrence with small ceramic zoomorphic and anthropomorphic figures of horses, dolls, and others – documented, for example, in a pottery workshop in the Saxonian townlet of Brandis (Stephan–Hoffmann 2016), in assemblages from Nuremberg (Grönke–Weinlich 2003, 217–229), Zwickau (Kenzler 2001, 106–196), or Świdnica (Karst 2009). J. Klápště considers them to be children's toys, as the finds of bells, clay figures and rattles were closely connected with miniature vessels from Most (Klápště et al. 2002, 21). There is also an opinion that they held a secondary function as foundation offerings in connection with their unique finds in “special” contexts. Their use as “foundation offerings” is archaeologically documented beneath the floor of a sunken dwelling house in Clausthal-Zellerfeld, or in the foundations of a fireplace in Salzwedel (Beutmann–Kenzler 2006, 493–494). Miniature vessels also appear in the sacral context, where they may have served as liturgical objects, relic boxes or reliquaries (Madsen 1991, 431–432; Kirsch 1994, 13, 62; Biermann 1999, 240). For example, the find of six glazed miniature vessels in the church of St. Gothard in Hildesheim is interpreted in this manner (Keller 1975, 113). We also encounter them in Bohemia and Moravia sporadically in sacral buildings – for example in the Minorite monasteries in Most (Klápště–Muk–Bubeník 2010, 457–458) and Pilsen (unpublished) or in the Benedictine monastery in Kladruba (Nováček et al. 2010, 315). In the Dominican monastery in Opava, several miniature vessels were deposited beneath the foundations of the fireplace (Šikulová 1985, 232).

The function of ceramic bells has been discussed previously in literature (Král 1975; Durdík 1977; Durdík–Matoušek–Procházka 1982; Orna 2002). Their function is determined primarily by the characteristic hole for hanging the heart. Small bells could be so-called table bells, which had a place in the daily life of burgher households when calling for banquets or as a signal for service staff (Orna 2002, 183–184; Beutmann–Kenzler 2006, 494). It is also impossible to exclude their function in hunting by catching rabbit game in nets with hanging bells as is depicted in a well-known iconographic source – the Dresden manuscript of the Hunting Book by Gaston Phébus of Foix, dated to around 1400, a fact which J. Král has pointed out in the past (Král 1975, 387–389). This interpretation was promoted by T. Durdík during the evaluation of ceramic bells from the castles of Angerbach and Týřov (Durdík 1977).

Another possible use of bells as signaling devices is evidenced by the manuscript of Hilarius Litoměřický from 1467, which describes the third Hussite siege of Pilsen in 1433 and 1434. Hilarius states that “(...) *Hussites besieging Pilsen built nine bastions between the walls...the*

fortification was connected by bells hung on planks, and whoever moved the fence, the bells rang and betrayed everyone (...) (Soukup 1925, 321).

8 Social context and its interpretation

In German literature, miniature vessels are sometimes considered to be “objects” associated with a higher social context (cf. Beutmann–Kenzler 2006, 494). In Bohemia and Moravia, we encounter them most often in the urban context (however, their number is undoubtedly influenced by the amount of archaeological research in towns). They also appear in fortified aristocratic residences and in the monastic environment. The fact that they were commonly available to rural communities is evidenced by a number of finds from village households (Fig. 11; cf. Klápště 1994, 96). For example, more than 40 fragments of fine-grained ceramics come from the late early medieval village of Hrdlovka (Meduna 2012, 129). The distribution of ceramics shows that it was not a socially exclusive type of good that would be tied to a certain social environment.

Due to numerous finds of white ceramics at the beginning of the town’s foundation, their distribution is associated with contacts with foreign environments (Klápště et al. 2002, 21). Miniature fine-grained vessels decorated with red paint and lead glaze were a foreign element in traditional domestic ceramic production. The products differed not only in size, but also in the production of a potter’s wheel with traces of wheel throwing, hard firing atmosphere and, of course, whitish color and decoration. It is very difficult to reconstruct the ways in which these products not only entered the range of towns and castles, but also village households. It can be assumed that some of the products could have been transferred there by newcomers settling in the towns and villages during the 13th century as part of their mobile ceramic inventories. However, their expansion is a better indication of the well-developed market places and relations between geographically distant foreign production and trade centers. The production of white ceramics in the 13th century has not yet been proven in the territory of Bohemia, Moravia, and Silesia. It was not until the second half of the 14th century that there was certain evidence of local production, which is archaeologically documented, for example, in Prague (Havrdá–Matějková 2014, 43) and Loštice in northern Moravia (Goš 2007, 57, 77, 99), or efforts to imitate these products.

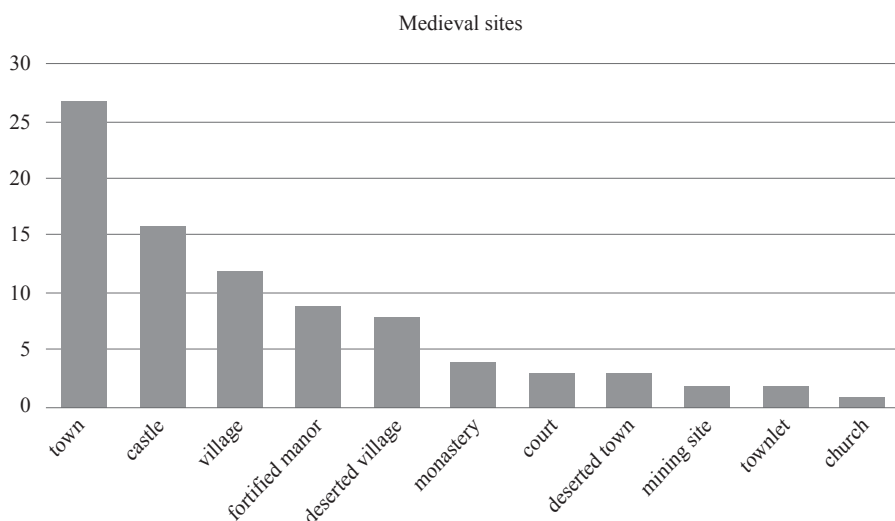


Fig. 11. Representation of medieval sites with finds of miniature vessels. Created by L. Čapek.

Obr. 11. Zastoupení středověkých lokalit s nálezmi miniaturních nádobek. Vytvořil L. Čapek.

9 Case study – “Pfeifenton” type ceramics from Pilsen

The exhibition entitled “Views into the Past of the Pilsen Region – History of the Museum of West Bohemia in Pilsen” presents five miniature vessels and two ceramic bells, which were made of fine-grained clay without visible macroscopic inclusions. All these vessels were found in the fills of cesspits excavated during the remediation of the Pilsen underground, which occurred from 1967 to 1994. Specifically, the following vessels were found: Republic Square No. 290, 237, 6, Františkánská Street No. 119, 120, and Dřevěná street No. 103 (Fig. 10; Orna 2002, 182; Nováček et al. 2014, 160, Fig. 75; Orna et al. 2011 – catalogue).

In regard to entire shapes, a small spherical pot with a handle was found, which has indistinct traces of red paint on the body in the form of long drops (Fig. 12:1), and also two jugs with broken handles (Fig. 12:3 and Fig. 12:4). One, probably a goblet with a four-lobed mouth and traces of base cutting from the wheel was found (Fig. 12:5), and finally a small vessel with a small side spout (Fig. 12:2), which was interpreted as a lamp (Orna et al. 2011, 67). However, it was probably a small nursing jug for feeding children with milk, which is known from several archaeological finds. An example is the small jug from Budětice, which is similar in form but made of different ceramic fabrics (Durdík 1973, 339–340, Fig. 1).

*Catalogue of miniature vessels from Pilsen*³

Small pot / Inv. No. HA 13518

Site: Plzeň No. 103, Dřevěná Street 6, cesspit 6

Dimensions: h.: 63 mm; d. of rim: 65 mm; d. of base: 42 mm; vol.: 120 ml

Type of rim: 11.03; decoration: 1.1.2; type of base: 1; handle: yes; type of handle: 1.2.1

Firing: oxidation; fabric: PM209

Date: 2nd half of the 14th century

Small jug / Inv. No. HA 20516

Site: Plzeň No. 120, Františkánská Street 1, cesspit 1

Dimensions: h.: 73 mm; d. of rim: 42 mm; d. of base: 37 mm; vol.: 60 ml

Type of rim: 10.10; decoration: no; base: 6; handle: yes (broken off); spout: yes

Firing: oxidation; fabric: PM209

Date: 2nd half of the 14th century

Small jug / Inv. No. HA 20782

Site: Plzeň No. 6, Republic Square 1, cesspit 1

Dimensions: h.: 80 mm; d. of rim: 53 mm; d. of base: 33 mm; vol.: 130 ml

Type of rim: 10.2; base: 1; handle: yes (broken off); spout: yes

Firing: oxidation; fabric: PM209

Date: 2nd half of the 14th century

Small goblet with four lobbed mouth / Inv. No. HA 19366

Site: Plzeň No. 207, Riegrova Street 3, cesspit 3

Dimensions: h.: 82 cm; d. of rim: 70 mm; d. of base: 44 mm; vol.: 130 ml

Type of rim: 2.2.2.1; decoration: 2.1.2.1; base: 3

Firing: oxidation; fabric: PM209

Date: mid-14th century

3 Explanations: v. – vessel height, d. – rim/base diameter, vol. – volume; types of rims and decoration according to Orna et al. 2011.

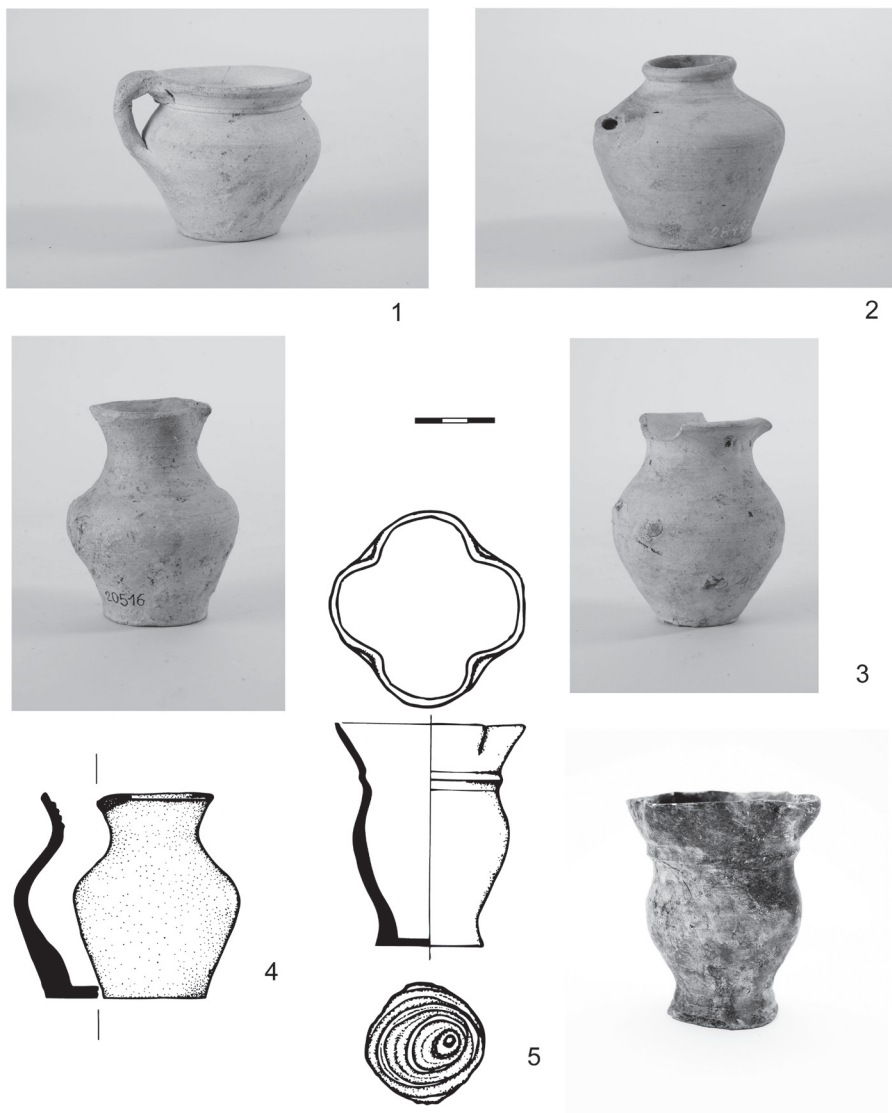


Fig. 12. Miniature vessels of white ceramics of the Pfeifenton type from Pilsen. 1 – Dřevěná Street No. 103/6; 2 – Solní Street No. 237/1; 3 – Republic Square No. 6/1; 4 – Františkánská Street No. 120/1; 5 – Riegrova Street No. 207/3. Photo by Museum of West Bohemia.

Obr. 12. Miniaturní nádoby z bělavé hmoty typu Pfeifenton z Plzně. 1 – Dřevěná čp. 103/6; 2 – Solní čp. 237/1; 3 – náměstí Republiky čp. 6/1; 4 – Františkánská čp. 120/1; 5 – Riegrova čp. 207/3. Foto Západočeské muzeum v Plzni.

Small jug with spout / Inv. No. HA 28497

Site: Plzeň No. 237, Solní Street 1, cesspit 1

Dimensions: h.: 67 mm; d. of rim: 35 mm, d. of base: 47 mm, vol.: 110 ml

Type of rim: 13.04; type of base: 1

Firing: oxidation; fabric PM209

Date: 2nd half of the 14th century

In addition to the miniature vessels, two ceramic bells also come from Pilsen (Orna 2002, 182). The first bell, which was restored from several fragments, was found in the fill of cesspit No. 4 on town plot No. 119 in Františkanská Street 5 (Fig. 13:1). It was made of fine-grained clay. Fine modeling throwing rings are visible on the inner surface of the thin wall and traces of cutting off from the wheel are visible on the upper surface of the deformed knob. In the upper part of the body beneath the neck is an opening for hanging the heart. The bell was fired hard in an oxidizing atmosphere.

The second bell was found in the backfill of the cesspit on Republic Square No. 290 (Fig. 13:2). The bell was made of fine-grained and hard-fired clay. Modeling rings are preserved on a smooth surface after wheel throwing. The bell has an indented target knob with traces of cutting off from the wheel. The hole for hanging the heart is situated in the upper part of the body under the neck of the bell. The fragment is decorated with red paint in the form of strips of zigzags covering the body in the vertical direction.

Bell / Inv. No. HA 19364

Site: Pilsen No. 119, Františkanská Street 5, cesspit 4

Dimensions: h.: 66 mm; circuit p.: 74 mm; knob height: 30 mm

Firing: oxidisation; fabric PM209

Date: 2nd half of the 14th century

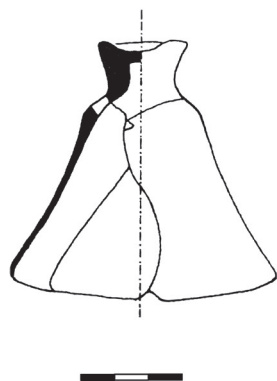
Bell / Inv. No. HA 16205

Site: Plzeň No. 290, Republic Square 41, cesspit 1

Dimensions: h.: 70 mm, knob p. 26 mm

Firing: oxidisation; fabric PM209

Date: 2nd half of the 14th century



1



2

Fig. 13. Ceramic bells made of white grained Pfeifenton-type ceramics from Pilsen. 1 – Františkanská Street No. 119/4; 2 – Republic Square No. 290/1. Photo by Museum of West Bohemia.

Obr. 13. Keramické zvonky z bílé, jemně plavené keramiky typu Pfeifenton z Plzně. 1 – Františkanská čp. 119/4; 2 – náměstí Republiky čp. 290/1. Foto Západočeské muzeum v Plzni.

It was not until the 1990s that these miniature vessels and bells were classified as white, fine-grained ceramics of the “Pfeiffentonware” type (abbreviated as Pfeifenton) and designated as a separate ceramic fabric PM209⁴.

Another fragment of the Pfeifenton-type ceramic was discovered during the excavation of town plots and public spaces (Fig. 14). A fragment of a miniature jug with a handle (Figs. 15:1–2) and several atypical shards were discovered in Sedláčkova Street No. 187 (Nováček 2000, 17, 29, Fig. 27:51). Other specimens come from excavations in line trenches from the same street – specifically, this is an uncomplete, miniature jug with a handle (Fig. 15:5) and the lower part of the vessel (Fig. 15:6) with traces of wire marks on the base (Široký–Kaiser–Kočár–Nováková 2007, 101–102, Figs. 16:3–4). Other solitary fragments come from Bezručová Street No. 156 (Široký 2000, 69) and No. 184 (Blažková 2006, 24), Republic Square No. 235 – hence the bottom of the vessel (Vydra 2002, 39), Prešovská Street No. 196, 318–319 (Široký 2001, 48), and from the excavation of cesspits in Perlová Street No. 66–67 (Kočár et al. 2005, 25–26, 30). Several fragments of fine-grained ceramics, which probably belong to the Pfeifenton-type group but differ in their yellowish color and coarser inclusions, come from the research of the Minorite monastery⁵ (Figs. 15:3–4). One fragment of the rim with traces of red paint comes from a miniature vessel with a four-lobed mouth.



Fig. 14. Distribution of white kaolinitic ceramics of the Pfeifenton type in Pilsen. Background map <https://nahliznidokn.cuzk.cz/VyberKatastrMapa.aspx>; edited by L. Čapek.

Obr. 14. Distribuce bílé kaolinitické keramiky typu Pfeifenton z Plzně. Podkladová mapa <https://nahliznidokn.cuzk.cz/VyberKatastrMapa.aspx>; upravitel L. Čapek.

4 Description of ceramic fabric PM209 “Pfeiffentonware”: 1) structure of ceramic mass: without macroscopic inclusions (finely prepared kaolinitic clay); 2) surface: smooth surface, thin wall, throwing rings, diagonal “flying off” of the material; 3) firing: hard, oxidizing; 4) color: white, beige (<http://www.zip-ops.cz/keramikaonline/>). Similar to this fabric, the PM213 is considered to be a solitary find from Pfeifenton, which differs in its submicroscopic inclusions of mica and reddish color (Nováček 2000, 209).

5 Thanks go to Doc. Mgr. Karel Nováček, Ph.D., and Mgr. J. Orna for the opportunity to see the finds in the depository of the West Bohemian Museum.

The dating of the occurrence of these vessels in the Pilsen assemblages remains a question. Miniature vessels from the older excavations of cesspits are dated to the second half of the 14th century (see Orna et al. 2011). The dating of the contexts was derived from the predominant representation of reduction-fired ceramics. Unfortunately, the stratigraphy of the fills of cesspits was not well documented in detail in the past. The deposition of layers in the cesspits occurred in a relatively wide chronological range from the beginnings of the town at the end of the 13th century to the entire period of the Late Middle Ages. Moreover, during a modern excavation of cesspits in Perlová Street No. 66–67, where the stratigraphy of layers was observed, the finds of the ceramic fabric PM209, which represent Pfeifenton ware, fall into the 2nd horizon dated to the second half of the 14th century (Kočár et al. 2005, 107).

The position of the ceramic fabric PM209 was documented in the stratigraphy in Sedláčkova Street No. 187 in layer 124, which was a backfill of an unspecified oval pit No. 158, which is dated to the 3rd phase of building development of the house and plot at the end of the 14th century (Nováček 2000, 8). In 29 Bezručová Street, the fabric PM209 comes from the layers of the first settlement horizon, which is dated before the mid-14th century (Šíroký–Kočár–Malina 2002; Blažková 2006, 24). The stratigraphic position of the fabric PM209 was also found in the line trenches during their sampling in Sedláčkova Street. Layers containing fragments of these fabrics were deposited directly on the subsoil (layer 4001) or overlapped the level of the soil horizon (layer 4102). They are dated to the mid-14th century. Pfeifenton-type ceramics appear here together with the occurrence of both archaic coarser reduction-fired ceramics and the emerging high-quality reduction-fired ceramics (Šíroký–Kaiser–Kočár–Nováková 2007, 102).

In the assemblages of miniature vessels, it is possible to observe a certain variability. One significant group consists of wheel-thrown ceramics with a smooth surface made of fine-grained clay without visible inclusions. The second group is characterized by a rougher surface

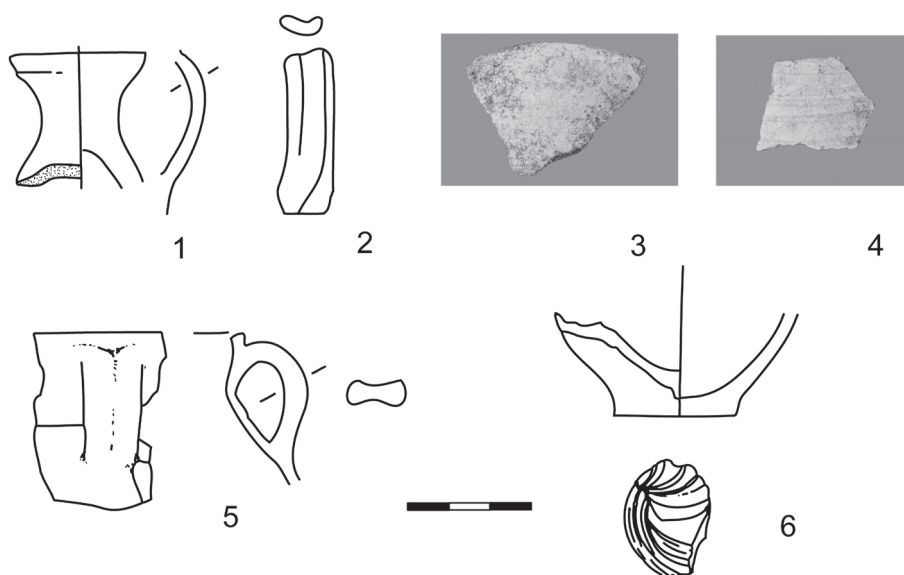


Fig. 15. Fragments of white fine-grained ceramics of the Pfeifenton-type from Pilsen. 1–2 – Sedláčkova Street No. 187; 3–4 – Sedláčkova Street – line trenches; 5 – Františkánská Street No. 120/1; 6 – Riegerova Street No. 207/3; 7 – Republic Square No. 6/1; 8 – Dřevěná Street No. 103/6; 9 – Solní Street No. 237/1.

Obr. 15. Zlomky bílé, jemně plavené keramiky typu Pfeifenton z Plzně. 1–2 – Sedláčkova čp. 187; 3–4 – Sedláčkova ulice – liniový výkop; 5 – Františkánská čp. 120/1; 6 – Riegerova čp. 207/3; 7 – náměstí Republiky čp. 6/1; 8 – Dřevěná čp. 103/6; 9 – Solní čp. 237/1.

with coarser inclusions. This group also includes a small goblet with a four-lobed mouth. Given that similarly vessel forms in the Pilsen assemblages are dated to the period around the mid-14th century (Orna 2010, 100, 101, Fig. 3), it is possible to consider the fact that this group could have originated in this period. On the contrary, products made of fine-grained ceramics can be dated to the second half of the 14th century.

Based on the analysis of the found contexts, the Pilsen white, fine-grained Pfeifenton-type ceramics can be dated to the second half of the 14th century with a possible overlap to the first half of the 14th century. These are therefore variants of white ceramics, which differ in dating from other examples from Bohemia and Moravia and belong to the younger group.

10 Case study – “white ware” from České Budějovice

Several fragments of pottery came from the town of České Budějovice, which were marked as “white ceramics” or “white wares” and considered to be imports (Fig. 16). They were recognized during the 1990s when a number of rescue archaeological excavations of urban plots were carried out (Militký 1995, 83). They differed from the traditional wares of medieval ceramics – graphite wares of the 13th century and grey reduction-fired ceramics from the beginning of the 14th century. Unfortunately, a number of archaeological excavations have not yet been evaluated in detail, so we do not know the number or approximate estimate of their finds in the inner town. However, the white ceramics are probably represented in the order of several dozen items.

Only assemblages of medieval ceramics from the excavations of urban plots in the Square of Přemysl Otakar II No. 58/16 (Čapek 2010), the town hall courtyard No. 1/1 (Čapek 2013; Čapek–Militký et al. 2016; Čapek 2018), Hroznová Street No. 159/23 (Kocina 2016) and Radniční Street



Fig. 16. Distribution of white fine-grained ceramics in České Budějovice. Background map <https://nahliznidokn.cuzk.cz/VyberKatastrMapa.aspx>; edited by L. Čapek.

Obr. 16. Distribuce bílé, jemně plavené keramiky z Českých Budějovic. Podkladová mapa <https://nahliznidokn.cuzk.cz/VyberKatastrMapa.aspx>; upravil L. Čapek.

No. 138/11 (unpublished) were elaborated in detail together with the excavation of the medieval household in the city's Prague Suburb (Eliška 2012).

The largest amount of “white ceramics” from the inner city comes from the archaeological excavations in the courtyard of the town hall. There, fragments of thin-walled ceramics of fabric CB3026⁶ made of fine-grained clay and with a high temperature of firing in an oxidizing atmosphere were collected (a total of 19 fragments were found). The color of the shards is yellowish-white to whitish, in places with a pinkish tinge. Some fragments contain small inclusions of sandy grains (up to 1 mm), and the material is slightly porous in some shards. The bases of the miniature vessels had traces of being cut off from the wheel.

This group includes an uncomplete ceramic bell with a drilled hole for hanging a heart and traces of red painted decoration (Fig. 17:3). On the knob with a diameter of 2.8 cm, there are clear traces of cutting off from the wheel and a drilled hole on the outer surface. Another example is the rim and neck of a 4 cm diameter jug, which is decorated with multiple grooves and red paints in the form of brush strokes (Fig. 17:1); the other rim comes from a miniature bowl-shaped vessel (Fig. 17:2). Furthermore, two shards originating from the shoulder of unspecified vessels were discovered, of which the first fragment bears traces of plastic decoration and shallow grooves (Fig. 17:4), and the second shard is decorated with red paint (Fig. 17:5). In addition, a lid knob with a drilled hole for hanging (Fig. 17:6) and a pair of handles were found (Fig. 17:7–8). The first handle is decorated with red paint and traces of green glaze (Fig. 17:7). Interesting specimens include a pair of bases of miniature vessels with a diameter of 3.5 and 3 cm (Figs. 17:11–12). Traces of wire marks were preserved on one base and mineralized residues were found on the inside surface of the other base. Other examples are atypical shards that cannot be further assigned to the form of the vessel (Figs. 17:9–10).

Five fragments of “white ware” were found in layer 4038, which belongs to the fill of a shallow oval feature No. 1/4 in trench 4. Based on the analysis of the predominant graphite pottery, the context is dated from the third to the end of the 13th century. The sunken feature was situated at the bottom of the room (at the entrance?) of the Gothic wing of the house and was destroyed at the beginning of the 15th century by the foundation of a brick feature No. 1/4 inserted directly into the interior of the room. The rectangular brick feature is interpreted as a tank for malting. The fragment of the bell was found together with other shards decorated with red paint in layer 5003 of cobblestone paving in trench 5 in the passage of the town hall. The layer is dated by other ceramic finds to the turn of the 13th and 14th centuries. One fragment of the handle comes from the fill of an oval feature No. 6/6 (layer 6012), which can be dated to the second half of the 13th century due to the occurrence of graphite ceramics. Other solitary shards of “white ware” were freely dispersed in layers, including the rim of the jug in the tertiary position in the layer (6006) of leveling (Čapek–Militký et al. 2016, 217).

Other examples of the white ware (ceramic fabric CB3026) from the urban area of České Budějovice come from the excavation in Hroznová Street No. 159/23 (Havlice 2001). The typologically identifiable fragments are in one case a fragment of a 5 cm diameter reinforced and recessed rim with a part of the shoulder preserved, which belongs to a miniature pot (Fig. 18:1), two collared rims of a pot called “okruží” with a neck section of 4 cm in diameter (Fig. 18:2), and two rims of small bowls, of which the second is unreinforced and the horizontally cut rim is decorated on the neck with engraved grooves – Fig. 18:3 (Kocina 2016, 68, 121, 132, 143–144). The other shards were atypical.

Most examples of fabric CB3026 (8 pieces) come from pottery assemblages from a sequence of layers beneath the mortar floor of a brick building, which was merged as one context 4029 (this context also includes layers 4020 and 4021 with fragments of the rims of the cups). The layers

6 Description of ceramic fabric CB3026. Ceramic mass: medium-grained (0.5–1.5 mm); inclusions/temper: grains of rocks and sand occasionally protruding to the surface; the atmosphere of firing and hardness: hard oxidation firing; surface treatment: outer and inner surface smooth; color: outer surface white cream, from side white, inner surface white.

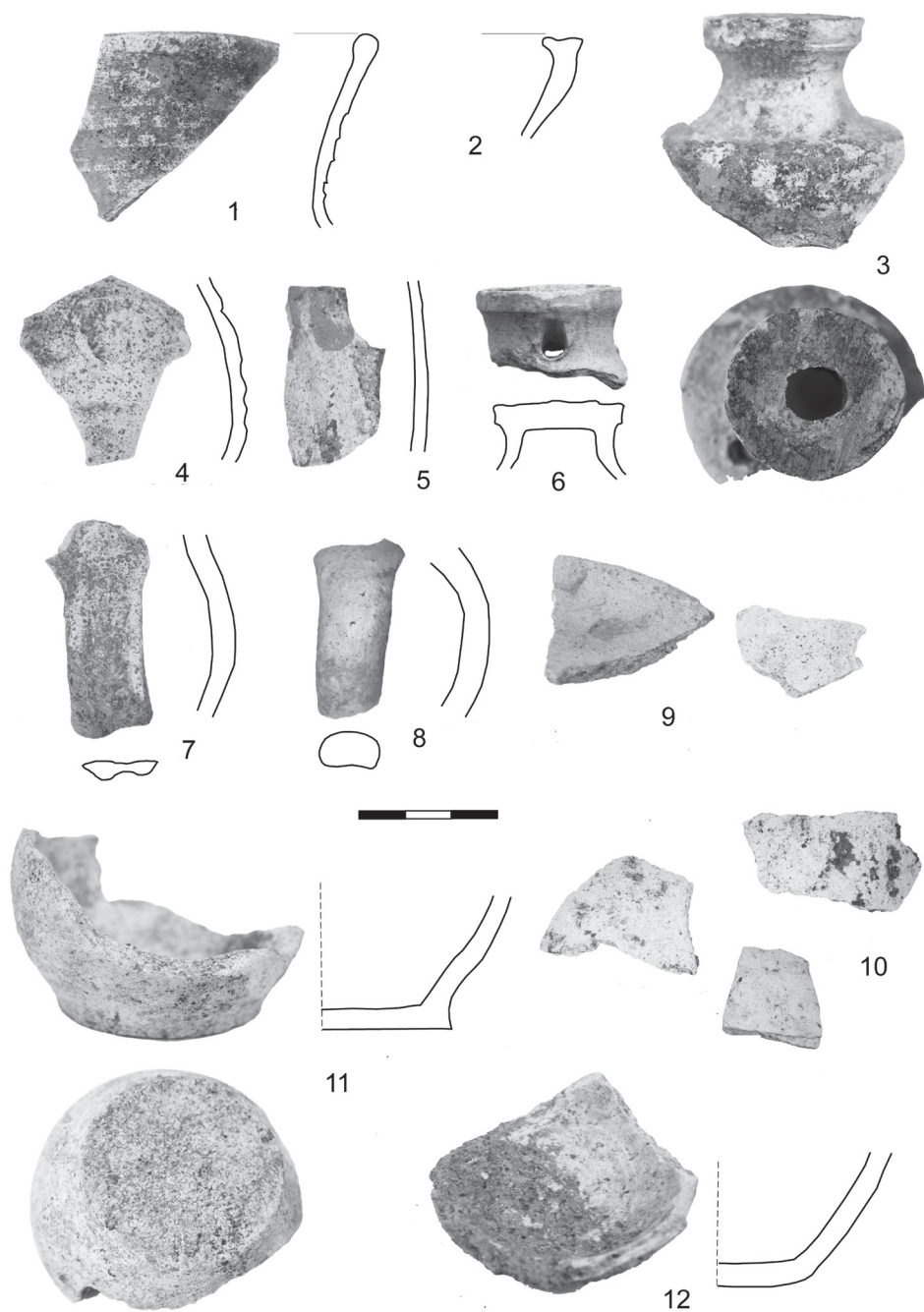


Fig. 17. Miniature vessels made of fine-grained ceramics of a white to creamy yellow color from the courtyard of the town hall in České Budějovice. Photo by L. Čapek.

Obr. 17. Miniaturní nádoby z jemně plavené keramiky bílé až krémově žluté barvy z nádvoří radnice v Českých Budějovicích. Foto L. Čapek.

were characterized by a very heterogeneous character, where both archaic reduction-fired and thin-walled high-quality reduction-fired ceramics were represented. Fabrics of graphite pottery and modern lead-glazed ceramics appeared as intrusions (Kocina 2016, 50–51, graph 7). A very mixed assemblage can be dated to the 3rd phase of the building development of the plot, the upper limit of which can be placed in the second half of the 15th century.

Other specimens of fabric CB3026 (4 pieces) come from the fill (6023) of feature No. 6/6, which also includes the rim of a small pot and bowl (Figs. 18:1 and 3). Both fabrics of graphite pottery and fabrics of emerging brown-black reduction-fired ceramics appear in the assemblage. The context can be dated to the C1 horizon around the mid-14th century (Kocina 2016, 68; cf. Čapek–Militký et al. 2016, 143–144).

Recently, attention was paid to three small fragments of miniature vessels from Radniční Street No. 138/11 (unpublished excavation). In the backfill of timber house (layer No. 9002) a rim of white miniature pot was found (Fig. 18:4). The context is dated to the first half of the 14th century. Other small rim and a bottom of miniature vessels with traces of wheel throwing and green glaze were found in the layer No. 5012 which is dated to the last third of the 13th century (Figs. 18:5–6).

The largest collection of “white ware” was discovered during the research in Mariánské Square near Pražská Boulevard (former area of the Prague suburb) in 1995, where waste layers were discovered, proving the production of miniature vessels made of whitish clay and ceramic figures, especially the figures of Madonnas (Militký 1996, 4–5, 14). This is a unique assemblage, which is undoubtedly related to the existence of a specialized pottery workshop existing from the second half of the 14th to the 15th century. The ceramics from this excavation were elaborated upon in a diploma thesis (Eliška 2012). Unfortunately, the documentation and evaluation of the ceramics was not performed sufficiently, and thus the miniature vessels were again described and interpreted in more detail.

A total of 40 fragments of miniature vessels have been preserved in a fragmentary state. Several outwardly curved, unreinforced, rounded, or slightly cut rims of the pots were found

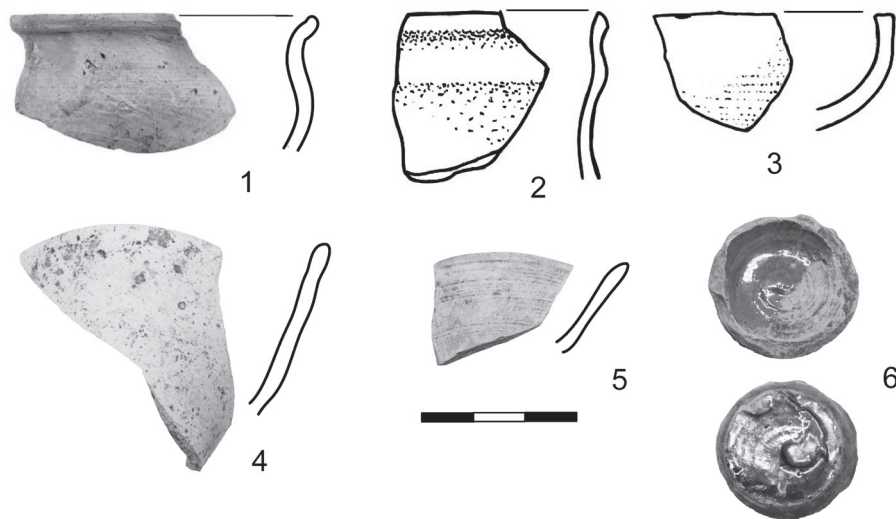


Fig. 18. White fine-grained ceramics from České Budějovice. 1–3 – Hroznová Street No. 159/23; 4–6 – Radniční Street No. 138/11 in. After Kocina 2016 and Čapek, unpublished.

Obr. 18. Bílá jemně plavená keramika z Českých Budějovic. 1–3 – Hroznová čp. 159/23; 4–6 – Radniční čp. 138/11. Podle Kocina 2016 a Čapek, nepublikováno.

(Figs. 19:1–4, 7–12), as well as the oval rim of the pot (Fig. 19:3) and one rim that probably came from the bowl (Fig. 19:13). Furthermore, a spout of the jug was found (Fig. 19:19) along with fragments of the base of the hollow vessels with traces of wire marks (Figs. 19:22–26). Three uncompleted ceramic bells (Figs. 19:14–18) were also found, which were similar in shape to the bell from the town hall courtyard. All miniature vessels were made of whitish to yellow-ocher

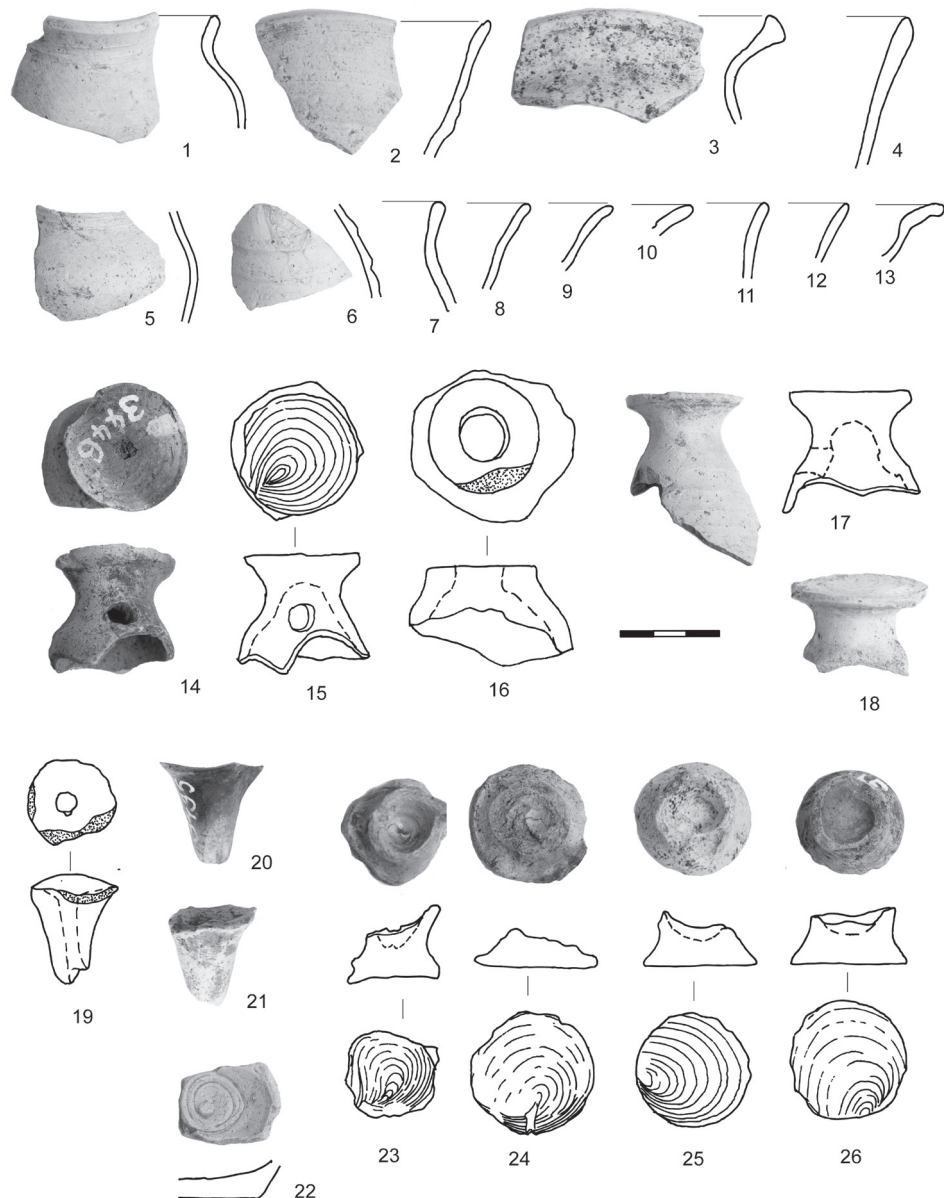


Fig. 19. Miniature vessels from the research of a farmstead in the Prague Suburb. After Eliška 2012, edited and photo by L. Čapek.
Obr. 19. Miniaturní nádoby z výzkumu usedlosti na Pražském předměstí. Podle Eliška 2012, upravil a foto L. Čapek.

fine-grained clay. Small clay figures and several larger vessels were also made from the same material. Most fragments came from layers 4002 (12 pieces), 5001 (12 pieces), and 5002 (14 pieces), and were dated to the second half of the 14th - the 15th century due to the predominant occurrence of reduction fired ceramics.

Older examples from České Budějovice from the courtyard of the town hall dated to the period between the second half of the 13th and the beginning of the 14th century show signs of poorer quality in comparison with the Pilsen examples. They have a more porous structure with visible inclusions unlike the younger specimens from Mariánská Square. Terminologically, we could classify them into the group referred to in Germany as *Grobe Weiße Irdenware* (Beutmann 1997, 24–26; Kenzler 2001, 106). On the contrary, younger finds from the Prague Suburb and Hroznová Street No. 159/23 dating to the second half of the 14th to 15th century show higher quality. They are visually close to the miniature vessels of the Pfeifenton-type ceramics from Pilsen (fabric PM206).

Miniature vessels made of white, fine-grained clay from the oldest settlement horizons in the inner town are associated with the presence of foreign (German) communities and are considered imports (Kovář 2015, 15; Čapek–Militký et al. 2016, 217–219). Due to the interpretation of the context of the probable pottery workshop in the Prague Suburb, where clay figures and miniature vessels made of identical ceramic mass were discovered, it is possible to point out their younger production, perhaps the second half of the 14th century. In the background of the town, there are available kaolin deposits from kaolinite-ilitic sandstones in the vicinity of Hosín, which were used in České Budějovice for the production of modern white earthenware (whiteware) and stoneware in the 19th century. Their mass production began by J. Hardmuth before the mid-19th century (Čílek 1990, 91–92; Novák 2002, 95–96). The local deposits of kaolin could have been used for the production of white ware ceramics in the Middle Ages, but we lack an exact scientific analysis.

11 Petrographic analysis of white ceramics from Pilsen and České Budějovice

Shards of white ceramic mass originating from miniature vessels from Pilsen and České Budějovice were subjected to petrographic analysis. The aim was to determine whether there are similarities or differences in the chemical and mineralogical composition between the Pfeifenton-type fabrics of Pilsen and its imitation with the fabric of “white ware” from České Budějovice. Another goal of the analysis was to determine the relative proportion of kaolin in the ceramic mass and to estimate the firing temperature.

For the petrographic analysis of white ceramics, three fragments of miniature vessels were selected (one of the fabric PM209 representing “Pfeifenton-type ware” and one fabric of PM216 from Pilsen, which is considered an imitation, and one shard of the fabric CB3026 from České Budějovice, which represents a typical “white ware”). The choice of the limited number of fragments was influenced not only by their sporadic occurrence in white ceramics, but also by the destructive nature of the scientific analysis. Shard samples were analyzed by X-ray diffraction (XRD) analysis. The energy-dispersive X-ray fluorescence (ED-XRF) method was used for the chemical composition.

Powder X-ray diffraction (PXRD) analysis was performed on the Panalytical X'Pert PRO MPD apparatus with Co-anode ($\lambda K\alpha_1 = 0.178901$ nm), 1-D position-sensitive detector and fixed divergence screens while using conventional Bragg-Brentano para-focusing Θ - Θ reflective geometry. Step: $0.033^\circ 2\theta$, time per step: 100 s, measured angular area: 6 – $100^\circ 2\theta$, total reading time of one scan: 2 950 s. The obtained data were processed using Panalytical HighScore 3 plus software (Fig. 20).

ED-XRF analysis was performed on compressed powder tablets using a Rigaku NexCG spectroscope, which has a Pd anode with a power of 50 W and an SSD detector with a resolution of up to 145 eV. The spectroscope uses indirect excitation using secondary targets, which leads to a better signal-to-noise ratio in the spectrum. The measurement length was 120 s for each target.

Tab. 3. Concentration of chemical elements (in ppm) determined by ED-XRF.**Tab. 3. Koncentrace chemických prvků (v ppm) zjištěná pomocí ED-XRF.**

element/sample	PM209	PM216	CB3026
Al	168000	137000	129000
Si	241000	340000	280000
P	780	708	833
S	425	427	399
K	8960	13200	21200
Ca	7640	4410	5430
Ti	6710	7720	5150
V	176.0	207.0	133.0
Cr	71.4	58.8	96.4
Mn	178	216	270
Fe	20300	14300	34900
Ni	38.6	34.4	45.1
As	17.40	10.30	11.70
Rb	98.1	85.8	268.0
Sr	62.7	65.5	74.0
Ba	535	400	667
Pb	31.9	23.6	25.1

to the phase composition, is also evidenced by the profile and position of the maximum diffusion background, which corresponds to metakaolinite, an amorphous product formed by the dehydroxylation of kaolinite.

12 Conclusions and discussion

The study focused on the group of miniature vessels made of white fine-grained ceramic mass, which were incorrectly referred to as *Pfeifentonware/Pfeifenton* type products. Thus, it would be more appropriate to denote fine-grained white pottery, which was used for the production of modern ceramics and especially clay pipes. In the case of medieval white ceramics, it is more appropriate in accordance with German literature to use the distinction of two basic groups differing in the grain size of the ceramic mass, namely *fine-grained white ceramics* or *coarser-grained white ceramics*, where other types of shades can be observed. The ceramic mass can be described as kaolinitic in both groups, as it contains a significant proportion of kaolin or metakaolin, as confirmed independently by the results of several petrographic analyses, including newly evalu-

ated shards from Pilsen and České Budějovice. On both ceramic wares, there is a decoration in the form of red paint, as well as glazing, which was used for decorative purposes. We also encounter undecorated specimens.

In Western Europe, miniature vessels made of white ceramic mass are widespread over a relatively wide territory of north-western Europe, where the oldest specimens appeared as early as the 11th century (Netherlands, Belgium). They are further widespread in Germany, especially in the 12th and 13th centuries. As has been pointed out by German scientists, the products there cannot be directly linked to Andenne or Rhineland Pingsdorf-type wares based on their abundance in Saxony, where the existence of local pottery workshops can be assumed (cf. Beutmann–Kenzler 2006). Archaeologically, however, there is only a single evidence of local specialized production of miniature vessels together with small clay figures from the early 13th century in the townlet of Brandis in north-western Saxony (Hoffmann–Stephan 2016, 206–207). In other pottery workshops in Central Germany (e.g. Coppengrave, Einbeck, Duingen), the production of miniature vessels (in glazed or unglazed forms) is documented as a by-product in parallel with ceramic figures. These specialized workshops produced several types of pottery.

Miniature vessels entered the Czech lands as imports during the 13th century. The oldest miniature vessels are known from north-western Bohemia, where they appear as early as the first third of the 13th century – post quem 1227–1238, when the medieval town of Most was first founded. They were also found in the Late Hillfort Period – horizon E of the early medieval settlement in Hrdlovka. Miniature vessels were commonly available goods and it can be assumed that they spread throughout the territory of Bohemia, Moravia, and Silesia through developed market exchange. They were not exceptional or exclusive goods that might be tied to a certain type of environment, as they were also easily accessible to rural communities. Their frequency in the urban context is due to the predominance of archaeological excavations of medieval cities

compared to other forms of settlement. In the territory of Bohemia, Moravia and Silesia, there is a wide range of shapes of various pots, jars, jugs, cups, bottles, etc. With a few exceptions (vessels from Most and Opava), we have no knowledge of two identical or similar forms which would come from the same pottery workshop.

The issue of these vessels' provenance is problematic and difficult to solve, and they are generally regarded as imports. In the Czech lands, it is possible to consider that these products made of whitish fine-grained clay were local imitations, as shown by some younger examples (Pilsen). Their occurrence is noticeable in areas with available deposits of kaolinitic clay, especially in western and north-western Bohemia. There is no clear evidence of the use of kaolin deposits in the production of ceramics in the Middle Ages. In Bohemia, direct production dated to the second half of the 14th and early 15th century is documented only in České Budějovice in the Prague Suburb and in the pottery workshop in Loštice (northern Moravia), where local production also took place since the second half of the 14th century. It can be assumed that the production was a certain specialization of the pottery craft that used raw materials from kaolinitic clays.

The presence of kaolinitic clays as sources of raw material has been proven by all previous petrographic analysis, which has so far been performed very little due to the small number of shards and the destructive nature of the scientific analysis. Their number is supplemented by three new analyses of shards of miniature vessels from Pilsen and České Budějovice. Petrographic analysis indicates a heterogeneous chemical and mineralogical composition, which suggests a different provenance of the products from multiple source areas. It would be appropriate in the future to perform a broader comparative analysis a larger number of samples of miniature vessels with raw material sources – deposits of kaolinitic clays.

The results of the petrographic analysis of three shards are so far only a small contribution to this issue, but they suggest the potential for further scientific study. However, a certain limit of the analysis is the destructiveness of the methods, especially the X-ray diffraction analysis, which precludes greater use on these unique ceramic finds.

Given their finding context, it can be assumed that miniature vessels could have fulfilled several functions that may have changed over time. In the literature, their function as the "packaging" for pharmaceutical products, ointments, fragrant essences, or spices is most often mentioned, and they could have also served as boxes for small valuables. In connection with their co-occurrence with small clay figures (especially figures of horses, dolls or centaurs), they can also be considered children's toys. Together they were found, for example, in contexts from Zwickau, Nuremberg, and Swidnica. For some products found in the sacral milieu or in "special" contexts under the floors of houses and in the foundations of buildings, their symbolic or devotional significance cannot be ruled out. Ceramic bells can be considered a signal device and were probably used in hunting.

In any case, miniature white kaolinitic vessels and bells are one of the few artefacts of the Middle Ages that can point to contact and social relations between producers and their consumers within the Czech lands and neighboring German countries, as well as the "medieval world of childhood and games". Therefore, they should be given important attention when evaluating medieval ceramics.

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Bibliography

- AUCH, M.–TRZECIECZKI, M., 2007: Średniowieczne importy ceramiczne z badań na dziedzińcu głównym pałacu pod Blachą. In: *Kronika Zamkowa: biuletyn informacyjny Zamku Królewskiego w Warszawie*, 127–154. Warszawa.
- BAČOVÁ, V., 2009: Vesnické osídlení v Týnci u Janovic nad Úhlavou na základě rozboru keramiky 13.–15. století (před dočasným zánikem). Nepublikovaná diplomová práce, KAR FF ZČU, Plzeň.
- BELCREDI, L., 2006: Bystřec. O založení, životě a zániku středověké vsi. Archeologický výzkum zaniklé středověké vsi na Dražanské vrchovině 1975–2005. Brno.
- BEUTMANN, J., 1997: Zur Keramikchronologie des 13. bis 17. Jahrhunderts in Zwickau. Ein stratifizierter Fundkomplex vom Kornmarkt. Unveröffentlichte Magisterarbeit, Universität Freiburg.
- 2007: Untersuchungen zu Topographie und Sachkultur des mittelalterlichen Zwickau. Die Ausgrabungen im Nordwesten des Stadtkerns. Veröffentlichungen des Landesamtes für Archäologie mit Landesmuseum für Vorgeschichte 49. Dresden.
- BEUTMANN, J.–KENZLER, H., 2006: Weiße Miniaturgefäße des 12. bis 14. Jahrhunderts aus Sachsen in ihrem überregionalen Kontext, Arbeits- und Forschungsberichte zur sächsischen Bodendenkmalpflege 46 (2004), 485–494.
- BIERMANN, F., 1999: Die mittelalterliche Keramik der Ausgrabung Altstädtische Fischerstraße 5–6 zu Brandenburg an der Havel. Veröffentlichungen des Brandenburgischen Landesmuseums für Ur- und Frühgeschichte, Band 33, 179–268. Brandenburg.
- BIS, M., 2014: Późnośredniowieczne i wczesnonowoczesne naczynia białe z Solca nad Wisłą. Warszawa.
- BLAŽKOVÁ, T., 2006: Počátky středověké keramiky v Plzni: Plzeň, Bezručova 29. Nepublikovaná bakalářská práce, KAR FF ZČU, Plzeň.
- BLÁHA, J., 1998: Komunikace, topografie a importy ve středověku a raném novověku (7.–17. století) na území města Olomouce – Die Kommunikationen, Topographic und Importe im Mittelalter und in der Frühneuzeit (7.–17. Jh.) auf dem Gebiet der Stadt Olmütz, AH 23, 133–159.
- 1999: Archeologické poznatky ke stavební konstrukci nejstarších měšťanských domů v Olomouci – Archäologische Erkenntnisse zur Baukonstruktion der ältesten bürgerlichen Häuser in Olmouc (Olmütz), AH 24, 189–213.
- BLEKTA, J., 1934: Smilovo hradisko a Starý Plumlov. In: *Ročenka Národopisného a průmyslového musea města Prostějova a Hané XI. Prostějov*.
- BORKOWSKI, T., 2004: Produkcja figurek ceramicznych w późnośredniowiecznym Wrocławiu. In: *Wrocław na przełomie średniowiecza i czasów nowożytnych. Materialne przejawy życia codziennego, Wratislavia Antiqua. Vol. 6* (Piekalski, J.–Wachowski, K., edd.), 207–244. Wrocław.
- BORREMANS, R.–WARGINAIRE, R., 1966: *La céramique d'Andenne: recherches de 1956–1965*. Rotterdam.
- BRUIJN, A., 1960: Die mittelalterliche Töpferindustrie in Brunssum, Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek 9, 139–188.
- BŘICHÁČEK, P., 1992: Příspěvek k dějinám města Týna nad Vltavou. In: *Sborník Společnosti přátel starožitností 3. Miroslavu Richtrovi k životnímu jubileu*, 31–40. Praha.
- BUREŠ, M.–KAŠPAR, V.–ŠPAČEK, L.–VAŘEKA, P., 1997: The 13th century pre-urban settlement complex near the St. Peter's church in Prague. In: *Urbanism in Medieval Europe – Papers of the „Medieval Europe Brugge 1997” Conference. Volume I* (De Boe, G.–Verhaeghe, F., edd.), 7–17. Zellik.
- BURAČINSKÁ, M., 2008: Zaniklá ves Kokot. In: Vařeka, P. a kol.: *Archeologie zaniklých středověkých vesnic na Rokycansku II*, 53–116. Plzeň.
- CÍLEK, V., 1990: Kaolinové ložisko Hosín u Českých Budějovic, *Sborník jihočeského muzea v Českých Budějovicích*, 91–96.
- CYMBALAK, T.–HLADÍKOVÁ TRACHTOVÁ, N., 2016: Soubor drobné figurální plastiky s náboženskou tematikou z novoměstské lokality palác Národní v Praze, *Stoletá Praha XXXII*, č. 2, 28–52.
- ČAPEK, L., 2010: Depoziční a postdepoziční procesy středověké keramiky na parcelách Českých Budějovic. Případová studie z domu čp. 16. Plzeň.

- 2013: Archeologické transformace v městském prostředí. Rukopis disertační práce uložený na Katedře archeologie FF ZČU v Plzni. Plzeň.
- ČAPEK, L.–MENŠÍK, P.–NETOLICKÝ, P.–VLADAŘ, J., 2017: Archeologický výzkum na parcele čp. 159 v Jungmannově ulici v Přešticích, okr. Plzeň-jih a vyhodnocení souboru pravěkých a středověkých artefaktů, AZČ 12, 68–92.
- ČIŽMÁŘ, Z.–ŠMÍD, M., 2000: Vývoj Prostějova v archeologických a historických pramenech v období 10.–16. století – Entwicklung der Stadt Prostějov in den archäologischen und schriftlichen Quellen aus der Zeit des 10.–16. Jahrhunderts, AH 25, 77–102.
- DANHEIMER, H., 1973: Keramik des Mittelalters aus Bayern. Kataloge der Prähistorischen Staatssammlung 15. Kallmünz.
- DERNER, K., 2018: Středověké hornictví a hutnictví na Přísečnicku ve středním Krušnohoří – Mittelalterlicher Bergbau und Hüttenwesen in der region Preßnitz im mittleren Erzgebirge. Veröffentlichungen des Landesamtes für Archäologie Sachsen. Band 68. Dresden.
- DIRKS, U., 1994: Bleiglasierte Miniaturgefäße des ausgehenden hohen Mittelalters. In: Das Rathaus in Höxter. Schriften des Weserrenaissance-Museums Schloß Brake 7 (Großmann, G. U., ed.), 229–237. München – Berlin.
- DRAGANOVÁ, J., 1978: Kolonizační prvky v keramice 12. a 13. století ve střední Evropě. Nepublikovaná diplomová práce, FF UK, Praha.
- DURDÍK, T., 1973: Středověká konvička z hradu Budčtic, okr. Klatovy, AR XXV, 339–340.
- 1977: Středověké keramické zvonky z českých hradů, AR XXIX, 94–95.
- 2004: Nálezy z hradů přechodného typu (Hlavačov, Angerbach, Tachov). Castellologica Bohemica Fontes 1. Praha.
- 2007: Hradý přechodného typu v Čechách. Praha.
- DURDÍK, T.–MATOUŠEK, V.–PROCHÁZKA, Z., 1982: K typologii a chronologii českých středověkých keramických zvonků, AR XXXIV, 308–312.
- DZIEDZICYKI, W., 1980: Zum studium weitreichender Kontakte frühstädtischen Zentren am Beispiel der Diffusion keramischer Importe nach Polen im X.–XIII. Jh., Archaeologia Polona XIX, 71–96.
- ELIŠKA, J., 2012: Archeologický výzkum Pražského předměstí v Českých Budějovicích. Nepublikovaná diplomová práce, Ústav pro pravěk a ranou dobu dějinnou FF UK, Praha.
- ES VAN, W. A.–VERWERS, W. J. H., 2009: Excavations at Dorestad 3 Hoogstraat 0, II–IV. Nederlandse Oudheden 16. Amersfoort.
- ESSLING-WINTZER, W.–BERGMANN, R.–CICHY, E., 2015: Der Töpferofen von Brilon-Alme. In: Archäologie in Westfalen-Lippe 2014, 98–103. Langenweißbach.
- FELGENHAUER-SCHMIEDT, S., 1982: Katalog der mittelalterlichen Keramik. In: Keramische Bodenfunde aus Wien, Mittelalter – Neuzeit (Harl, O., ed.), 31–126. Wien.
- 1993: Die Sachkultur des Mittelalters. Europäische Hochschulschriften 42. Frankfurt am Main.
- GABRIEL, F.–SMETANA, J., 1991: K vývoji výrobních okruhů červeně malované keramiky v severních Čechách – Zur Entwicklung der Produktionsbereiche rotbemalter Keramik in Nordböhmen, AH 8, 119–138.
- GASTON PHÉBUS, Le Livre de la Chasse que fit le comte, kolem 1400, uloženo v Bibliothèque nationale de France.
- GOMULKA, I., 2018: Gry i zabawy. In: Rytm rozwoju miasta na kulturowym pograniczu – Studium strefy placu Nowy Targ we Wrocławiu. Wratislawia Antiqua. Tom 23 (Piekalski, J.–Wachowski, K., red.), 993–1048. Wrocław.
- GOŠ, V., 2007: Loštice. Město středověkých hrnčírů. Opava.
- GOŠ, V.–KAREL, J., 1992: Tvrz v Rýmařově (okr. Bruntál) – Die Feste in Rýmařov (Bez. Bruntál), AH 17, 225–232.
- 2005: Hry a zábava ve středověkém Rýmařově – Spiele und Unterhaltung im mittelalterlichen Rýmařov, Pravěk NŘ 15, 451–459.
- GOŠ, V.–NOVÁK, J.–KAREL, J., 1985: Počátky osídlení Rýmařova, PA LXXXVI, 184–227.
- GROSS, U., 1991: Mittelalterliche Keramik zwischen Neckarmündung und Schwäbischer Alb: Bemerkungen zur räumlichen Entwicklung und zeitlichen Gliederung. Stuttgart.

- GROTE, K., 1976: Bengerode, ein spätmittelalterlicher Töpfereiornt bei Fredesloh im südlichen Niedersachsen, Nachrichten aus Niedersachsens Urgeschichte 45, 245–304.
- GRÖNKE, E.–WEINLICH, E., 2003: Nürnberg. Ein Produktionszentrum spätmittelalterlicher Tonfiguren. In: Archäologie und Kulturgeschichte (Friedel, B.–Frieser, C., ed.), 217–219. Nürnberg.
- HANYKÝŘ, V.–MARYŠKA, M.–BRŮČEK, P., 2002: Hodnocení mikrostruktury a fázového složení keramiky z Mostu. In: Archeologie středověkého domu v Mostě (čp. 226) (Klápště, J., ed.), 35–76. Praha – Most.
- HAUSER, G., 1984: Beiträge zur Erforschung hoch- und spätmittelalterlicher Irdenware aus Franken, Zeitschrift für Archäologie des Mittelalters. Beiheft 3. Köln – Bonn.
- HAVLICE, J., 2001: Archeologický výzkum v Hroznové ulici v Českých Budějovicích. In: Výroční zpráva Státního památkového ústavu v Českých Budějovicích 2001, 172–175. České Budějovice.
- HAVRDA, J.–MATĚJKOVÁ, K., 2014: Hrnčíři ve středověké Praze. Výsledky výzkumu výrobních zařízení z Malé Strany v kontextu dosavadních poznatků – Potters in Medieval Prague: results of research into production equipment from Malá Strana in the context of existing information, AH 39, 23–51.
- HEEGE, A., 1993: Die Topferei am Negenborner Weg, Kleine Schriften des Stadtischen Museums Binbeck 1, Oldenburg.
- 1997: A Local Potter's Workshop at Einbeck, Lower Saxony, Germany, Producing from 1140/1145–1230 AD Kilns, Ceramic Products and Production Technology, Environment and Subsistence: an Interdisciplinary Approach. In: Material Culture in Medieval Europe. Papers of the 'Medieval Europe Brugge 1997' Conference. Volume 7 (De Boe, G.–Verhaeghe, F., ed.), 95–106. Zellik.
- HEJNA, A., 1983: Příspěvek ke studiu malých opevněných sídel doby přemyslovské v Čechách, PA LXXIV, 366–436.
- HENKER, J.–SCHIFER, T., 2013: Was kommt woher? Neutronenaktivierungsanalyse an mittelalterlicher Keramik aus Horno. In: Mitteilungen der DGAMN: Archäologischer Kontext und soziale Interpretation. Bd. 25, 143–176. Paderborn.
- HOFFMANN, Y., 1997: Rotbemalte Irdenware des Mittelalters und der frühen Neuzeit in Sachsen. In: W. Schwabenicky (Hrsgb.), Forschungen zu Baugeschichte und Archäologie II, 31–65. Mittweida.
- HOLL, I., 1966: Mittelalterliche Funde aus einem Brunnen von Buda. Budapest.
- HOŠŠO, J., 1983: Prehľad vývoja stredovekej keramiky na Slovensku, AH 8, 215–232.
- CHYBOVÁ, H., 2009: Kroměříž zmizelá a znovu objevená aneb historie ukrytá pod dlažbou. Kroměříž.
- JANSA, P., 2006: Hrad Bolkov. Nepublikovaná bakalářská práce, KAR FF ZČU, Plzeň.
- JUŘINOVÁ, Š., 2015: Lidová zbožnost pozdního středověku a novověku v odrazu hmotné kultury (na příkladu drobné keramické plastiky). Nepublikovaná diplomová práce, Ústav dějin křesťanského umění, Katolická teologická fakulta UK, Praha.
- KALTENBERGER, A., 2009: Keramik. Des Mittelalters und der Neuzeit in Oberösterreich. Band I: Grundlagen. Linz.
- KAREL, J., 1996: Vzácná skupina gotické keramiky v rýmařovských nálezech, Střední Morava – kulturně historická revue 3, 80–83.
- KAREL, T.–KNOLL, V.–KLSÁK, J., 2007: Nové poznatky k vývoji hradu Hartenberg v Hřebenech. In: Dějiny staveb 2007, 275–292. Plzeň.
- KARST, D., 2009: Ceramika z klasztoru dominikanów w Świdnicy, Śląskie Sprawozdania Archeologiczne 51, 269–279.
- KARTOUSOVÁ, H., 2016: Středověké a raně novověké hračky a součást her v archeologické podsbírce Slezského zemského muzea, ČSZM B 65, 1–12.
- KAŠPAR, V., 2000: Mariánská věž na hradě Karlštejně – archeologický výzkum, CB 7, 315–328.
- KAŠPAR, V.–ŽEGKLITZ, J., 2007: Hrnčíři z Truhlářské ulice. In: Juřina, P. a kol., Náměstí Republiky. Výzkum století, 79–83. Praha.
- KELLER, H., 1975: Reliquien, in Architekturteilen beigezetzt. In: Beiträge zur Kunst des Mittelalters. Festschrift für Hans Wentzel (Rüdiger Becksmann, I.–Korn, U.–D.–Zahlten, J., ed.), 105–114. Berlin.
- KENZLER, H., 2001: Archäologische Untersuchungen zum Kornmark in Zwickau. Keramikchronologie – Platzgeschichte – Stadtgeschichte. Dresden.

- 2008: Struktur und Entwicklung der Bergstadt auf dem Treppenhauer Ergebnisse der archäologischen Untersuchungen von 2005 bis 2007, Arbeits- und Forschungsberichte zur sächsischen Bodendenkmalpflege, Band 50, 263–306.
- KIECON, M.–ZEZULA, M., 2005: Dřevohliněná zástavba v Opavě ve středověku (současný stav výzkumu) – Die hölzerne Bebauung in Opava (Troppau) im Mittelalter (der gleichzeitige Forschungsstand). In: *Forum Urbes Medii Aevi II* – sborník z konference FUMA konané 16.–18. 4. 2003, 26–43. Brno.
- KIRSCH, E., 1994: Die Keramik vom 13. bis zum Anfang des 16. Jahrhunderts in Berlin/Brandenburg. Aus der Sammlung des Märkischen Museums. Berlin.
- 2000: Archäologische Spielzeugfunde des 13. bis 18. Jahrhunderts im Stadtmuseum. Jahrbuch Stiftung Stadtmuseum Berlin IV, 123–176.
- KLÁPŠTĚ, J., 1983: Studie o středověké studně z Mostu – Studie über einen mittelalterlichen Brunnen aus Most, PA LXXIV, 443–492.
- 1994: Paměť krajiny středověkého Mostecka. Praha – Most.
- 1997: Proměny keramiky ve středověkém městě Mostě, *Archaeologia Historica Polona* 5, 163–174.
- 1998: Die Anfänge der jüngeren mittelalterlichen Keramik in Böhmen als kulturhistorisches Problem, *AR L*, 138–58.
- KLÁPŠTĚ, J.–MUK, J., 1988: Studie o středověkém domě z Mostu (čp. 226) – Eine Studie über das mittelalterliche Haus aus Most (Nr. 226), PA LXXIX, 199–240.
- KLÁPŠTĚ, J.–MUK, J.–BUBENÍK, J., 2010: Klášter minoritů v Mostě – Das Minoritenkloster in Most (Brüx), *AR LXII*, 429–468.
- KLÁPŠTĚ, J. a kol., 2002: Archeologie středověkého domu v Mostě (čp. 226). Praha – Most.
- KLSÁK, J., 2006: Kostel sv. Mikuláše pod Krudumem prezentace archeologického výzkumu zaniklého středověkého kostela sv. Mikuláše pod Krudumem. Karlovy Vary.
- KLUTTIG-ALTMANN, R., 2006: Von der Drehscheibe zum Scherbenhaufen. Leipziger Keramik des 14. bis 18. Jahrhunderts im Spannungsfeld von Herstellung, Gebrauch und Entsorgung. Dresden.
- KOČÁR, P. a kol., 2005: Plzeň, čp. 66/67, Perlová 3–5. Nálezová zpráva o záchraně archeologického výzkumu při odstranění havárie ve sklepech. Nálezová zpráva uložena u společnosti ZIP, o. p. s. Plzeň.
- KOCH, R., 1979: Mittelalterliche Trinkbecher aus Keramik von der Burg Weibertreu bei Weinberg, Kr. Heilbronn. In: *Forschungen und Berichte der Archäologie des Mittelalters in Baden-Württemberg* 6 (Lutz, D., red.), 47–75. Stuttgart.
- KOLEJÁKOVÁ, K., 2018: Soubor středověké keramiky z hrádku Kostelní Horky v Doupovských horách. Nепublikovaná bakalářská práce, KAR FF ZČU, Plzeň.
- KOUŘIL, P.–WIHODA, M., 2003: Etnické trojmezí? Výpověď písemných a hmotných pramenů k etnické struktuře moravsko-slezského pomezí v epoše vrcholného středověku – Ethnische Dreischeide? Aussage schriftlicher und materieller Quellen zur ethnischen Struktur des mährisch-schlesischen Grenzgebiets im Hochmittelalter, *AH* 28, 69–111.
- KOUŘIL, P.–PRIX, D.–WIHODA, M., 2000: Hrad českého Slezska. Brno – Opava.
- KOVÁŘ, D., 2015: Fundatio civitatis – zrození královského města Českých Budějovic. České Budějovice.
- KRABATH, S., 2012: Die Entwicklung der Keramik im Freistaat Sachsen vom späten Mittelalter bis in das 19. Jahrhundert. Ein Überblick. In: *Keramik in Mitteldeutschland Stand der Forschung und Perspektiven*. 41. Internationales Hafnerei-Symposium des Arbeitskreises für Keramikforschung in Dresden, Deutschland, vom 21. September bis 27. September 2008 (Smolnik, R., ed.), 35–72. Dresden.
- KRAFT, I., 1996: Taucha und die Parthenaue, Leipzig und sein Umland-Führer zu archäologischen Denkmälern in Deutschland 32, 161–170.
- KRÁL, J., 1975: Keramické zvonky ze středověkých nálezů, *AR XXVII*, 387–389.
- LEPÓWNA, B., 1982: Ceramika importowana w Gdańsku wczesnośredniowiecznym, *Archeologia Polski* XXVII, 113–149.
- LOBBEDEY, U., 1968: Untersuchung mittelalterlichen Keramik vornemlich aus Südwestdeutschland. Berlin.
- LOSERT, H., 1993: Die früh- bis hochmittelalterliche Keramik in Oberfranken. ZAM–Beiheft 8. Bonn.
- LÜDTKE, H., 1985: Die mittelalterliche Keramik in Schleswig. Ausgrabung Schild 1971–1975. Ausgrabungen in Schleswig – Berichte und Studien 4. Neumünster.

- MADSEN, P., 1991: Mittelalterliche bleigasierte Miniaturgefäße aus Ribe. In: *Töpfereiforschung archäologisch, ethnologisch, volkskundlich. Beiträge des internationalen Kolloquiums 1987 in Schleswig* (Lüdtkke, H.–Rüdiger, V., ed.), 427–440. Bonn.
- MADSEN, P. K.–STILKE, H., 2001: Bleigasierte Irdenware. In: *Handbuch zur mittelalterlichen Keramik in Nordeuropa*. 3 Bde (Lüdtkke, H.–Schietzel, K., ed.), 539–612. Neumünster.
- MARETHOVÁ, B.–SKALICKÁ, P.–VESELÁ, P.–ZEZULA, M., 2012: Hmotná kultura středověkého a raně novověkého města a její odraz v nálezech z archeologických výzkumů při Horním náměstí a v areálu pivovaru v Opavě. In: *Předměty vyprávějí... Hmotná kultura středověké a raně novověké Opavy ve světle nálezů z archeologických výzkumů v prostoru bývalé Radniční ulice a v areálu opavského pivovaru* (Vojkůvková, K.–Zezula, M., ed.), 32–35. Ostrava.
- MATĚJKOVÁ, K.–NOVÁK, R., 2014: Soubor keramiky z raného a vrcholného středověku ze Starého Místa u Jičína – A pottery assemblage from the early and high Middle Ages from Staré Místo, Jičín District, ASČ 18, 319–349.
- MEDUNA, P., 2002: Výzkum zaniklého klášterního dvora Hrnčiče, k. ú. Jenišův Újezd. In: *Sborník Drahořímu Kouteckému* (Čech, P.–Smrž, Z., ed.), 153–162. Most.
- MEDUNA, P. ed., 2012: Raně středověké sídliště v Hrdlovce. *Archeologické studijní materiály* 20. Praha.
- MĚCHUROVÁ, Z., 1997: Konůvky – zaniklá středověká ves ve Ždánickém lese. *Studie Archeologického ústavu AV ČR v Brně XVII/1*. Brno.
- MĚŘÍNSKÝ, Z., 1977: Dohled a záchranný výzkum při pozemních úpravách v místech zaniklé středověké osady Studýň u Zbýšova (okr. Brno-venkov), PV 1975, 67–68.
- MILITKÝ, J., 1996: Zpráva o záchranných archeologických výzkumech provedených na lokalitě České Budějovice, Mariánské náměstí (novostavba České pojišťovny). Nepublikovaný rukopis, uložen v archivu Jihočeského muzea v Českých Budějovicích.
- MITTELSTRAß, T., 2012: Die Münzschatzgefäße des Mittelalters und der Neuzeit aus Bayern. *Studia archaeologiae mediaevali* 2. Kempten.
- NECHVÁTAL, B.–RADOMĚRSKÝ, P., 1963: Archeologický výzkum na tvrzi v Tleskách u Jesenice (okr. Rakovník) – Eine archäologische Grabung auf der Feste in Tlesky bei Jesenice (Bezirk Rakovník), ČNM A CXXXII, 4–13.
- NEKUDA, V.–NEKUDA, R., 1997: Mstěnice. Zaniklá středověká ves 2. Dům a dvůr ve středověké vesnici. Brno.
- NEKUDA, V.–REICHERTOVÁ, K., 1968: Středověká keramika v Čechách a na Moravě. Brno.
- NEU-KOCK, R., 1993: Ein Bilderbäcker-Werkstatt des Spätmittelalters an der Goldgasse in Köln, *Zeitschrift für Archäologie des Mittelalters* 21, 3–70.
- NIEGODA, J., 1999: Naczynia ceramiczne. In: *Ze studiów na życiu codziennym w średniowiecznym mieście. Parcele przy ulicy Więziennej 10–11 we Wrocławiu. Wrocławia Antiqua*. Vol. 1 (Buško, C.–Piekal-ski, J., ed.), 158–182. Wrocław.
- NOVÁK, D.–VAŘEKA, P., 2013: Tvrze na Berounsku – Medieval manor houses in the Beroun region, AH 38, 491–506.
- NOVÁK, V., 2002: Topografická mineralogie jižních Čech 1966–1998. Borovany: Jelmo.
- NOVÁČEK, K., 1996: Městská archeologie v Tachově: výsledky a perspektivy. In: *Sborník Západočeského muzea v Plzni – Historie XIII*, 92–110. Plzeň.
- 1996a: Nové výsledky archeologického výzkumu na hradě ve Velharticích (1993–1994) – Neue Ergebnisse archäologischer Forschungen auf der Burg Velhartice (1993–1994), CB 5, 285–288.
- 2000: Středověký dům v Plzni. Archeologický výzkum parcely v Sedláčkově ul. 1 (čp. 187) – Das mittelalterliche Haus in Plzeň. Archäologische Erforschung der Parzelle Sedláčkova Strasse 1. In: *Sborník Západočeského muzea v Plzni – Historie XV*, 5–66. Plzeň.
- NOVÁČEK, K.–RAZÍM, V.–EBEL, M., 2004: Opevnění města Tachova – Die Befestigung der Stadt Tachov, PRP XI, č. 2, 51–94.
- NOVÁČEK, K. a kol., 2010: Kladrubský klášter 1115–1421. Osídlení – Architektura – Artefakty. Plzeň.
- NOVÁČEK, K.–STOČES, J.–ŠIROKÝ, R.–MALIVÁNKOVÁ-WASKOVÁ, M., 2014: Počátky Nové Plzně a její vývoj do husitství. In: *Dějiny města Plzně do roku 1788*, 123–186. Plzeň.

- OEXLE, J., 1993: Minne en miniature – Kinderspiel im mittelalterlichen Konstanz. In: Stadtluft, Hirsebrei und Bettelmonch, Die Stadt um 1300, cat. Zürich. 1992/1993 (Flüeler, N., ed.), 392–395. Stuttgart.
- ORNA, J., 2002: Středověký keramický zvonek z Plzně – Mittelalterliche Keramikglocke aus Pilsen. In: Sborník Západočeského muzea v Plzni – řada Historie XVI, 182–184. Plzeň.
- ORNA, J., 2010: Obličejový pohár z hradu Lopata u Plzně – Gesichtsbecher von Lopata, AZČ 1, 99–104.
- ORNA, J. a kol., 2011: Keramická produkce města Plzně v období 14. a 15. století. Plzeň.
- PEKSA, V., 2019: Středověká keramika středního Poohří, Archeologie severozápadních Čech 1. Sborník k počtě Milanu Zápotockému, 139–198. Ústí nad Labem – Teplice – Roudnice nad Labem.
- PETRÍK, J.–SLAVÍČEK, K.–SEDLÁČKOVÁ, P., 2015: Petroarcheologie keramiky. In: Plaček, M.–Dejmal, M. a kol., Veselí nad Moravou. Středověký hrad v říční nivě, 102–111. Brno.
- PÍČKA, J.–TETOUR, M., 2005: Vícov u Přestice (okr. Plzeň-jih). Středověké osídlení při kostele sv. Ambrože – Vícov bei Přestice (Kr. Pilsen-Süd). Die mittelalterliche Besiedlung bei der St. Ambrosius-Kirche, AVJČ 18, 179–210.
- POSTRÁNECKÁ, K.–WASKOVÁ, M., 2008: Změny v lokaci středověké vsi Ostrov na Tachovsku – Änderungen auf der Grabungsstätte des mittelalterlichen Dorfes Ostrov im Gebiet um Tachov, AH 33, 73–83.
- PREUSZ, M., 2017: Keramika 16. a 1. poloviny 17. století v jižních a západních Čechách. Inovace a kontinuita hrnčířské produkce. Nепublikovaná disertační práce, KAR FF ZČU, Plzeň.
- PROCHÁZKA, R., 1984: Pozdně hradištní keramika v některých moravských regionech, AR XXVI, 430–442.
- 1991: Brünner Keramik des 13. und der ersten Hälfte des 14. Jahrhunderts und die Frage ihrer auswärtigen Beziehungen. In: Kulturně historické styky jižní Moravy. 20. mikulovské sympozium, 233–246. Břeclav.
- 1994: Brněnská stolní a kuchyňská keramika 2. poloviny 14. – počátku 15. století, Pravěk NŘ 4, 323–344.
- 1995: Keramik des 14.–14./15. Jahrhunderts aus Brno und Boskovice, Ein Beitrag zur Regionalisierung der mittelalterlichen Keramik in Mähren. In: Zur Regionalität der Keramik des Mittelalters und der Neuzeit, Beiträge des 26. Internationalen Hafnerei-Symposiums, Soest 5.–9. 10. 1993, Denkmalpflege und Forschung in Westfalen 32 (Endres, W., ed.), 113–124. Bonn.
- PROCHÁZKA, R.–PEŠKA, M., 2007: Základní rysy vývoje brněnské keramiky ve 12.–13./14. století, PV 48, 143–232.
- PROCHÁZKA, R.–HLOŽEK, M., 2013: Opavský džbán v Brně? K otázce počátků vrcholně středověké keramiky, ČSM B 62, 231–244.
- QUINN, P., 2013: Ceramic Petrography: The Interpretation of Archaeological Pottery and Related Artefacts in Thin Section. Oxford.
- RADOMĚRSKÝ, P.–RICHTER, M., 1985: Korpus české keramiky datované mincemi, SbNM A XXVIII, 57–171.
- RICHTER, M., 1961: Nejstarší středověká polévaná keramika v Čechách, PA LII, 573–579.
- 1979: Středověká keramika ze Sezimova Ústí. Katalog výstavy v Alšově jihočeské galerii. Hluboká nad Vltavou.
- 1982: Hradištko u Davle. Městečko ostrovského kláštera. Praha.
- RICHTER, M.–VOKOLEK, V., 1995: Hradec Králové. Slovanské hradiště a počátky středověkého města. Hradec Králové.
- RZEŽNIK, P.–STOKSIK, H., 2011: Problem of the glazed ceramics production in the pottery of medieval Silesia, AR LXIII, 466–484.
- SEDLÁČKOVÁ, L., 2015: Středověká keramika. In: Plaček, M.–Dejmal, M. a kol., Veselí nad Moravou. Středověký hrad v říční nivě, 102–111. Brno.
- 2020: Proměny vybavení brněnské měšťanské kuchyně vrcholného a pozdního středověku. Nепublikovaná disertační práce, ÚAM FF MU, Brno.
- SCHEIDEMANTELL, D.–SCHIFER, T., 2005: Waldenburger Steinzeug. Archäologie und Naturwissenschaften. Dresden.
- SCHIRMER, E., 1939: Die deutsche Irdenware des 11.–15. Jahrhunderts im engeren Mitteldeutschland. Vorgeschichtliches Jahrbuch des Germanischen Museums der Friedrich-Schiller-Universität. Band I. Jena.

- SCHNEIDERWINKLOVÁ, P., 2014: Kuchyňská, stolní a užitková keramika. In: Hůrková, J. a kol., *Archeologický výzkum panského sídla v Chanovicích*, 149–242. Klatovy – Chanovice.
- SCHÜTTE, S., 1982: Spielen und Spielzeug in der Stadt des späten Mittelalters. In: *Aus dem Alltag der mittelalterlichen Stadt*, Brenner Landesmuseum Für Kunst- und Kulturgeschichte, 201–210. Bremen.
- SCHWABENICKY, W., 1990: Der mittelalterliche Silber-, Blei- und Kupferbergbau im mittleren und westlichen Erzgebirge sowie im Erzgebirgsvorland unter besonderer Berücksichtigung der Grabungsergebnisse vom Treppenhauer bei Sachsenburg. Nepublikovaná disertační práce na Humboldtově univerzitě v Berlíně.
- 2009: Der mittelalterliche Silberbergbau im Erzgebirgsvorland und im westlichen Erzgebirge unter besonderer Berücksichtigung der Ausgrabungen in der wüsten Bergstadt Bleiberg bei Frankenberg. Chemnitz.
- SOUKUP, J., 1925: Husitská ostražitost při obléhání Plzně 1433: zvonečky na plotě prozradily chodce, *Český lid* 15, 321–328.
- STANDKE, G., 2003: Tonpfeifen – Pfeifenton: Zur geologischen Geschichte des Rohstoffes – Clay pipes – pipe clay: Toward the geological history of the raw material), *Knasterkopf* 16, 99–104.
- STEPHAN, H.-G., 1981: Coppengrave: Studien zur Töpferei des 13.–19. Jahrhunderts in Nordwestdeutschland, *Materialhefte zur Ur- und Frühgeschichte Niedersachsens XVII*. Hildesheim.
- 1982: Die mittelalterliche Keramik in Norddeutschland (1200–1500). In: *Aus dem Alltag der mittelalterlichen Stadt*. Ausstellungskat. Bremen. H. Focke-Mus. 62, 65–122. Bremen.
- 1986: Großalmerode. Ein Zentrum der Herstellung von technischer Keramik, Steinzeug und Irdenware in Hessen. Teil I. Die Geschichte der keramischen Gewerbe in Großalmerode und die Entwicklung ihrer Produktion vom 12. bis zum 19. Jahrhundert. Melsungen.
- 1986a: Beiträge zur archäologischen Erforschung der materiellen Kultur des hohen und späten Mittelalters im Weserbergland. Funde aus zwei Kloaken in der Altstadt von Hörter, Neue Ausgrabungen und Forschungen in Niedersachsen 17, 219–308.
- 2012: Das „Pottland“ Mittelalterliche und neuzeitliche Töpferei von landesgeschichtlicher Bedeutung und Keramik von europäischem Rang in Niedersachsen. In: *Aus dem Pottland in die Welt Eine historische Töpferregion zwischen Weser und Lein* (Leiber, C., ed.), 9–70. Holzminden.
- STEPHAN, H.-G.–HOFFMANN, Y., 2016: Brandis, ein wichtiges hochmittelalterliches Töpfereizentrum in Nordwestsachsen. Graue, gelbe und bleiglasirte Irdenware, Gebrauchskeramik, Kleingefäße und Miniaturfiguren im Kontext der nordwest- und mitteleuropäischen Entwicklung. In: *Beiträge des 47. Internationalen Symposiums für Keramikforschung vom 8. bis 12. September 2014 in der Lutherstadt Wittenberg*, 199–222. Langenweissbach.
- STOLL, H.-J., 1977: Widerspiegelung von Handelsbeziehungen in den spätmittelalterlichen Bodenfinden von Magdeburg. In: *Archäologie als Geschichtswissenschaft* (Herrmann, J., ed.), 403–418. Berlin.
- SUROVINOVÉ ZDROJE ČESKÉ REPUBLIKY – Nerostné suroviny 2018, statistické údaje do roku 2017. Výroční zpráva České geologické služby. Praha.
- ŠEBESTA, P., 2002: Archeologický náález v chebské Dominikánské ulici, *Sborník Chebského muzea* 2001, 37–46.
- ŠIKULOVÁ, V., 1985: Středověká polévaná keramika z Opavy – Mittelalterliche glasierte Keramik aus Opava (Troppau), *AH* 10, 230–233.
- ŠIROKÝ, R., 2000: K počátkům využívání městských parcel v Plzni. Archeologický výzkum domů čp. 156 a 194. In: *Sborník Západočeského muzea v Plzni – Historie XV*, 67–78. Plzeň.
- 2001: Plzeň. „Bílé nároží“ (čp. 196 a 318/319, Prešovská 18 a 20). Nálezová zpráva o archeologickém výzkumu, *Archäia Přichovice*, č. j. P85/01.
- ŠIROKÝ, R.–KOČÁR, P.–MALINA, O., 2002: Plzeň, čp. 184, Bezručova 29. Nálezová zpráva o záchraném archeologickém výzkumu. Plzeň.
- ŠIROKÝ, R.–KAISER, L.–KOČÁR, P.–NOVÁKOVÁ, K., 2007: Sedláčkova ulice v Plzni ve světle archeologického výzkumu. K podobě veřejných prostranství středověkých měst. In: *Forum urbes medii aevi 4: parcelace a uliční síť ve vrcholně středověkých městech střední Evropy*. Sborník příspěvků z konference FUMA konané 20.–22. 4. 2005 v Brně, 94–117. Brno.
- ŠLÉZAR, P., 1999: Archeologické nálezy ze Smilova hradiska. Nepublikovaná bakalářská diplomová práce, Ústav historie a muzeologie Filozoficko-přírodovědecké fakulty Slezské univerzity, Opava.

- ŠMEJDA, L., 1999: K hmotné kultuře Vysokého Mýta ve středověku, *Mediaevalia archaeologica* 1, 169–192.
- TAKÁCS, M., 1996: Formschatz und Chronologie der Tongefäße des 10.–14. Jahrhunderts der Kleinen Tiefebene, *Acta Archaeologica Academiae Scientiarum Hungaricae* 48, 135–195.
- TIMPEL, W., 1990: Mittelalterliche Keramik im westlichen Thüringen. 8.–12. Jahrhundert. II: Katalog und Tafeln. Weimar.
- TYMONOVÁ, M., 2010: Archeologické doklady každodenního života obyvatel hradu Cvilína v období středověku a raného novověku – Archäologische Belege des Alltagslebens der Bewohner von Burg Cvilín in der Zeit des Mittelalters und der frühen Neuzeit, *AH* 35, 63–79.
- UNGER, J., 1981: Hradištní a středověká osada u Šakvic, okr. Břeclav, *AR XXXIII*, 55–87, 120.
- 1984: Základní horizonty keramiky 12.–15. století na soutoku Jihlavy a Svatky, okr. Břeclav, *AR XXXVI*, 288–296.
- 1994: Koválov. Šlechtické sídlo z 13. století na jižní Moravě. Brno.
- UNGER, J.–MICHNA, P., 1980: Pece na pálení vápna ze zaniklé osady Teplany u Vranovic (okr. Břeclav). In: *Zkoumání výrobních objektů a technologií archeologickými metodami* 1, 18–29. Brno.
- VAŘEKA, P., 2009: Pohled do kuchyně a na jídelní stůl – výpověď keramických nálezů. In: P. Juřina a kol., *Náměstí Republiky. Výzkum století*, 153–162. Praha.
- VELÍMSKÝ, T., 1991: Město na louce. Archeologický výzkum na Mariánské louce v Děčíně 1984–1989. Děčín.
- 1992: Zur Problematik der Stadtgründung des 13. Jahrhunderts in Kynšperk nad Ohří (Königsberg), *PA LXXXI*, 105–148.
- VERHAEGHE, F., 1968: La céramique médiévale: problèmes concernant la glaçure, *Berichten van der Rijksdienst voor het Oudheidkundig Bodemonderzoek* 18, 193–208.
- VYDRA, M., 2002: Středověká keramika z odpadní jímky domu čp. 235 v Plzni. Nepublikovaná bakalářská práce, KAR FF ZČU, Plzeň.
- VYŠOHLÍD, M., 2009: Keramické dýmky v archeologických nálezech a jejich vypovídací možnosti – Clay tobacco pipes in the archaeological finds and their ability to testify, *ASČ* 13, 965–1000.
- 2014: Péče o zdraví v pozdním novověku v obraze archeologických pramenů – Nálezy kameninových lahví na minerální vodu – Health care in the late modern period as reflected in archaeological sources. Finds of stoneware mineral water bottles, *ASČ* 18, 425–454.
- WESTPHALEN, T., 1995: Stadtarchäologie in Leipzig – Die Grabung im Nordwesten des mittelalterlichen Stadtkerns, *Arbeits- u. Forschungsber. z. sächs. Bodendenkmalpflege* 37, 163–176.
- WILLEMSSEN, A., 1997: Medieval Children's Toys in the Netherlands Production, Sale, and Trade. In: *Urbanism in Medieval Europe – Papers of the “Medieval Europe Brugge 1997 – Material Culture in Medieval Europe”* (De Boe, G.–Verhaeghe, F., edd.), 405–412. Zellik.
- WOLF, O., 2004: Kolonizace, weichbild a počátky manských tvrzí na Trutnovsku – Colonisation, weichbild and the beginnings of vassal manors in the Trutnov region, *AR LVI*, 561–590.
- 2005: Počátky středověkého osídlení na česko – slezském pomezí východně Krkonoš (se zvláštním zřetelem k JV Podkrkonoší). Nepublikovaná disertační práce, ÚAM FF MU, Brno.
- ZÁPOTOCKÝ, M., 1978: Středověká keramika ze severočeského Polabí. Morfologie a relativní chronologie, *PA LXIX*, 171–238.
- 1979: Katalog středověké keramiky severočeského Polabí, *Výzkumy v Čechách – Supplementum*. Praha.
- ZELENKA, A., 2013: Záchraný archeologický výzkum na hradě Skála, okr. Plzeň-jih, Jižní Plzeňsko: historickovlastivědný sborník muzea jižního Plzeňska v Blovicích 11, 117–132.
- ZEZULA, M.–KIECOŇ, M.–KOLÁŘ, F., 2007: Archeologické doklady k vývoji půdorysu, uliční sítě a parcelace středověké Opavy – Archäologische Belege zur Entwicklung des Grundrisses, des Strassennetzes und der Parzellierung im mittelalterlichen Troppau (Opava). In: *Forum Urbes Medii Aevi* 4 – Parcelace a uliční síť ve vrcholné středověkých městech střední Evropy. Sborník příspěvků z konference FUMA konané 20.–22. 4. 2005 v Brně, 118–143. Brno.
- ZEZULA, M.–MORAVEC, Z.–KOČÁR, P.–SŮVOVÁ, Z., 2009: Archeologické výzkumy na Masarykově náměstí v Ostravě a jejich výpověď k vývoji, hmotné kultuře a životnímu prostředí města ve středověku a raném novověku. In: *Ostrava. Sborník příspěvků k dějinám a k výstavbě města* 24. 538–579. Ostrava.

Shrnutí

Středověká bílá, jemně zrnitá kaolinitická keramika v českých zemích se zřetelem k nálezům z Plzně a Českých Budějovic

Príspevek se zabývá hodnocením tzv. miniaturních nádobek vyrobených z bílé, jemně plavené kaolinitické hlíny nalezených v Čechách, na Moravě a ve Slezsku, které jsou někdy nesprávně označovány za skupinu zboží typu *Pfeifentonware* / *Pfeifenton* (hlína používaná na výrobu keramických dýmek). Jedná se o výrobky, které jsou obvykle interpretovány jako importy, které byly distribuovány do českých zemí z oblastí západní Evropy, kde je předpokládána jejich místní výroba, a to již od přelomu 11. a 12. století. Na základě četné distribuce miniaturních nádobek se předpokládá, že jedno z míst produkce se nacházelo v Sasku, archeologicky je však specializovaná výroba přímo doložena pouze v městečku Brandis v severozápadním Sasku. V dalších hrnčířských dílnách ve středním Německu (Coppengrave, Einbeck, Duingen) byly malé glazované i neglazované nádobky vyráběny jako součást hrnčířské výroby vedle užitkové keramiky jiných keramických skupin.

Miniaturní nádoby jsou v Čechách bezpečně doloženy již před polovinou 13. století (Most, Hrdlovka) a objevují se vedle keramiky domácí pozdně hradištní tradice. Podle distribuce malých nádobek v kontextu různého sociálního prostředí (města, opevněná sídla šlechty, vesnice a kláštery) předpokládáme, že se ve 13. století rozšířily díky rozvinutému tržnímu prostředí, k jehož intenzifikaci došlo v souvislosti se zakládáním měst. Z nálezových souborů mizí postupně po polovině 14. století. Mladší varianty nádobek z druhé poloviny 14. století představují plzeňské a některé českobudějovické příklady.

Dosavadní publikované příklady z Čech, Moravy a Slezska ukazují na velkou rozmanitost tvarů miniaturních nádobek, mezi něž patří nejrůznější hrnky a džbánky, rozličné pohárky, lahvičky a vzácně i jiné druhy. K této skupině jsou zařazeny i keramické zvonky vyrobené z totožné hlíny. Některé nádobky jsou zdobeny červeným malováním, vývalkovou šroubovicí nebo olovnatými polevami – patří zároveň i do skupiny malých glazovaných nádob. Odřezávaná dna a tloušťka stěny nádobek s vnitřními prstenci ukazuje na jejich výrobu vytáčením. Několik provedených petrografických rozborů keramické hmoty nezávisle na sobě potvrzuje jejich výrobu z kaolinitických hlín. Přítomnost kaolinu a metakaolinitu doložily také analýzy z Plzně a Českých Budějovic. Chemické a mineralogické složení vzorků odebraných ze stěpů malých nádobek je heterogenní a ukazuje na odlišný původ tamních výrobků.

Podle keramické hmoty, z níž jsou výrobky vytvořeny, můžeme rozlišit dvě základní skupiny lišící se zrnitostí a pórovitostí struktury keramického stěpu. V případě jemně plavené keramiky s hrubší frakcí nelze vyloučit i místní výrobu a napodobování (imitaci) keramiky. V oblastech, kde se tato keramika nejčastěji vyskytuje, se nacházejí ložiska kaolinitických hlín – o jejich využití ve středověku však dosud chybí jakékoliv přímé doklady.

Otázkou zůstává funkce miniaturních nádobek objevujících se v různých sociálních prostředích. Původně mohly sloužit jako obal na nejrůznější komodity (masti, vonné esence, koření, sůl). Pravděpodobná je také jejich primární funkce jako dětských hraček, neboť jsou často nalézány společně s drobnými keramickými plastikami (Cvikov, Norimberk, Svídnice, Praha – Petráská ulice, náměstí Republiky). Některé „zvláštní kontexty“ ukazují na jejich symbolický a devocionální účel, například ve smyslu základových obětí. Upozornit lze v těchto souvislostech na výskyt miniaturních nádobek v klášterním prostředí.

Zvláštní pozornost byla věnována hodnocení výrobků z bílé jemně plavené keramiky z Plzně a Českých Budějovic, které vykazují nápadné rozdíly. Plzeňská jemně plavená kaolinitická keramika typu *Pfeifenton* je velmi kvalitně provedena. Datována je vyjma jednoho případu do druhé poloviny 14. století a představuje jedny z nejmladších příkladů této keramiky v Čechách, která mohla být produktem místní výroby. Českobudějovické příklady, které spadají do nejstaršího sídelního horizontu založení města po roce 1265, jsou kvalitativně hrubšího provedení.

Výjimečnou situaci představuje kontext venkovské usedlosti na Pražském předměstí, kde bylo několik těchto výrobků objeveno společně s figurálními keramickými plastikami (zejm. madonek z kruselerem), z nichž některé byly vyrobeny ze stejné hmoty. Jejich výroba je datována od druhé poloviny 14. až do 15. století.

Tato studie byla podpořena projektem NAKI II – Vrcholně středověká keramika jako součást movitého kulturního dědictví DG18P02OVV020.

Mgr. Ladislav **Čapek**, Ph.D., Katedra archeologie Fakulty filozofické Západočeské univerzity, Sedláčkova 15, 306 14 Plzeň, Česká republika, capekla@kar.zcu.cz

Mgr. Jiří **Orna**, Západočeské muzeum v Plzni, Kopeckého sady 2, 306 14 Plzeň, Česká republika, jorna@zcm.cz

Mgr. Karel **Slaviček**, Ústav geologických věd Přírodovědecké fakulty Masarykovy univerzity, Kotlářská 267/2, 611 37 Brno, Česká republika, slav.karel@mail.muni.cz

Mgr. Dalibor **Všianský**, Ph.D., Ústav geologických věd Přírodovědecké fakulty Masarykovy univerzity, Kotlářská 267/2, 611 37 Brno, Česká republika, dalibor@sci.muni.cz



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