

Plastic Artefacts from Archaeological Investigations Carried out at the Auschwitz-Birkenau Camp Complex in 2015–2022

Wojciech Tabaszewski^a and Kamila Peschel^b

This article is a study of the results of archaeological research conducted at the site of the former German concentration camp Auschwitz-Birkenau and the Jawischowitz forced labour sub-camp attached to it. It discusses historical objects produced from plastics, as a result of chemical modification of natural products or synthesis of products of chemical processing of coal, oil or natural gas. The history of previous archaeological research at the site of the former Auschwitz-Birkenau camp complex and its sub-camps is outlined. The scope and regions of research that were carried out by the authors between 2015 and 2022 are discussed. Plastic products have been characterised by grouping them in terms of raw material and function, distinguishing among other things everyday objects and parts of clothing. On this basis, a comparative base was created, which can serve as a basis for applying a preliminary chronological division of plastic products.

KEY-WORDS: Auschwitz-Birkenau, concentration camp, plastics, comb, button, pocket, knife, pipe

INTRODUCTORY INFORMATION

Oświęcim and the neighbouring Brzezinka lie in the broad forks of the Vistula and Soła, in the centre of the Vistula valley (Fig. 1). The terrain is flat and rather marshy, largely covered by meadows and riparian forests. Geographically, the area is located within the Oświęcim Basin, in the part known as the Upper Vistula Valley (Kondraci 2002: 515–517; Solon *et al.*, 2018: 170). The Oświęcim Basin is an area bounded to the south by the Carpathian foothills (the Carpathian Foreland) and to the north and northwest by the Silesian Uplands. The riverbed of the Vistula and its tributaries (including the Soła, Przemsza and Skawa) runs through the middle of the Basin. In

^a Independent researcher, e-mail: panqi@wp.pl, ORCID: 0009-0005-9390-5128

^b Atia – Prace archeologiczne, Niepołomice, e-mail: kpeschel@o2.pl, ORCID: 0009-0008-7269-0780

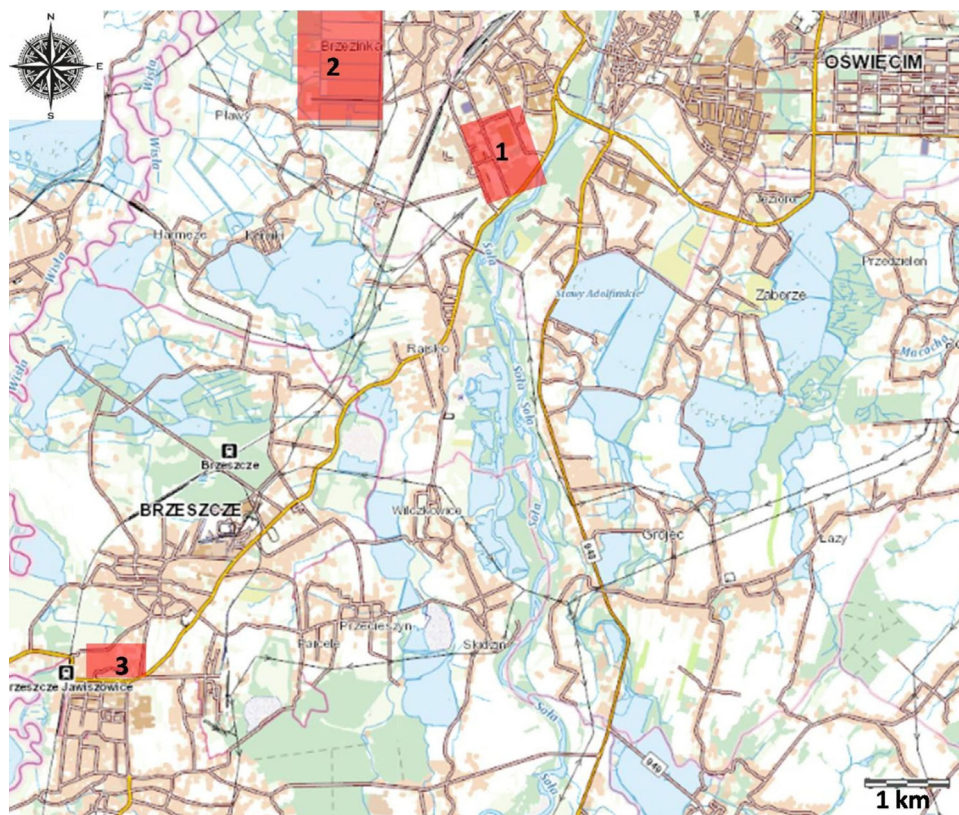


Fig. 1. Location of the elements of the former Auschwitz-Birkenau camp complex included in the present archaeological research: 1 – Auschwitz I; 2 – Auschwitz II-Birkenau; 3 – Auschwitz-Jawischowitz, scale 1:50000. Drawn: W. Tabaszewski.

the Oświęcim area, the Vistula flows through a wide lowland valley, with an average height of about 230 m above sea level, on its right side are the inflow cones of the Sola and Skawa (Lencewicz 1938: 365–366; Kondracki 2002: 516–517). Such a location, described by Heinrich Himmler, as “advantageous in terms of communication, and also because of the possibility of isolation and camouflage” (Smoleń 1980: 9), influenced the organization of one of the largest extermination centres here.

The first research work at the Auschwitz II-Birkenau site was carried out in 1961. During this work, an excavation pit was established on the site of Crematorium III. Its exact location is unknown, as is its nature. However, it is known that a tin containing the diary of one of the prisoners was discovered at that time (Myszka 2009: 4).

Six years later, research work began at the camp. This research was led by Jerzy Krupé. A trench of approximately 1 are was then established adjacent to the undressing room of crematorium III, preceding the entrance to the gas chamber (Hensel 1983: 199; Kajzer 1984: 10; Gurba 1996: 26). At the end of 1967 and in 1968, earthmoving took place in connection with the renovation of the sewage network (rainwater and sanitary sewage) and the extension of the fire pipe and drains around some of the barracks. Further earthworks were conducted between 1986 and 1989 around the foundations of the barracks, which were eventually replaced from brick to concrete. Some of the foundations were dredged and waterproofed. For some of the barracks, drainage was then installed in the form of ceramic drains and a layer of gravel and sand. No archaeological supervision was carried out during the renovation work until 1995. This became a requirement only after the Auschwitz-Birkenau site was entered into the register of monuments (Myszka 2011: 2; Tabaszewski and Wardas-Lasoń 2022: 55).

The first, archaeological survey research after 1995 took place on the camp kitchen building at Auschwitz I and on the wall of crematorium II at Auschwitz II – Birkenau in 2005, conducted by Marian Myszka (2005a; 2005b). The next research in 2006 was been implemented by Małgorzata Grupa. At that time, a trench was excavated between barracks B-135 and B-136 in section BIb, exposing a paved road that consisted of three layers of brick rubble and bricks (Grupa 2006: 1). Also in the same year, seven small construction trenches at barrack B-113 were subjected to archaeological supervision (Myszka 2007: 1–2). A large amount of archaeological work was conducted in 2007 within the BIb section of the Birkenau camp, where M. Grupa’s team established a total of 13 trenches uncovering, among other things, preserved roads and drainage structures (Grupa *et al.*, 2007: 2–6). During this period, work was also carried out on barrack B-80 and work in the area of the gas chamber and crematoria II and III (Grupa *et al.*, 2008: 2–6; Myszka 2009: 1; 2011: 2). In the following years, minor earth moving was conducted at the camp under the archaeological supervision of, among others, M. Myszka or as part of archaeological research undertaken by the consortium of companies “Barta” Pracownia Archeologiczno-Konserwatorska A. Bartczak, E. Wójcik s.c., Pracownia Archeologiczna “Grandor” Weronika Bujnowicz-Zgodzińska, “ARCOS” Zbigniew Rybacki (Smajek-Mądrzycka 2015: 9).

Starting in 2014, work was undertaken to complete the fire protection installation. The earthmoving associated with the first phase of the completion of this installation were supervised by Ilona Smajek-Mądrzycka (2015). Subsequent phases of research related to the completion of the fire protection installation, between 2015 and 2020, were conducted under the direction of M. Myszka, Kamila Peschel

and Wojciech Tabaszewski (Peschel and Tabaszewski 2015; 2018; 2019; 2020; Myszka *et al.*, 2017). Throughout this time, various works under archaeological supervision, as well as excavations and soundings, were performed, mainly related to conservation work in individual barracks, as well as to the museum's infrastructure expansion projects (Banaś-Maciaszczyk 2017; Peschel and Tabaszewski 2017). Between 2020 and 2022, archaeological work related to the renovation of barracks B-167, B-91 and B-141, led by K. Peschel and W. Tabaszewski (2021; 2023a; 2023b), was also carried out on the former camp. Also in the area, which was once inextricably linked to the camp as its economic zone, soundings were dug aimed in order, among other things, to identify the extent of the ash pits and potential mass graves. The first survey of this type happened in 2007, using the method of small diameter boreholes from which soil samples were taken to determine the extent of the zone containing elevated concentrations of phosphorus compounds. A further survey using this method in the area on the western side of the Birkenau camp was carried out in 2018 (Sikorski 2018: 10). In the same year, verification surface surveys were carried out in this area of the Birkenau camp, which identified the location, associated with the camp, of aircraft dismantling facilities (Bartczak *et al.*, 2018: 126). These were supplemented the following year by survey research (Ostrowski and Kowalczyk 2019: 49 and 51). In 2020, archaeological research covered the site of the former IG Farben Werk plant and the former Auschwitz III – Monowitz camp (Lasota-Kuś 2020). The picture so far is completed by rescue excavations at the site of the former Auschwitz-Jawischowitz sub-camp in Brzeszcze-Jawiszowice, realised in 2021 by W. Tabaszewski (Tabaszewski and Wardas-Lasoń 2022).

RESEARCH 2015–2022

The present analysis concerns the results of archaeological research conducted in the former concentration camps Auschwitz I, Auschwitz II-Birkenau, and Auschwitz-Jawischowitz. The work was connected with investments by the Auschwitz-Birkenau State Museum in Oświęcim, i.e., in connection with the construction of a fire protection system at the site of the former Auschwitz II-Birkenau Concentration Camp and conservation work on barracks B-167, B-141 and B-91 located at the site (Fig. 2). In addition, surveying work took place in the former camp workshops located at the Auschwitz I camp site (Fig. 3) and rescue excavation work at the site of the former Auschwitz-Jawischowitz labour camp (Fig. 4). All the work discussed has been or is currently being continued by the authors.

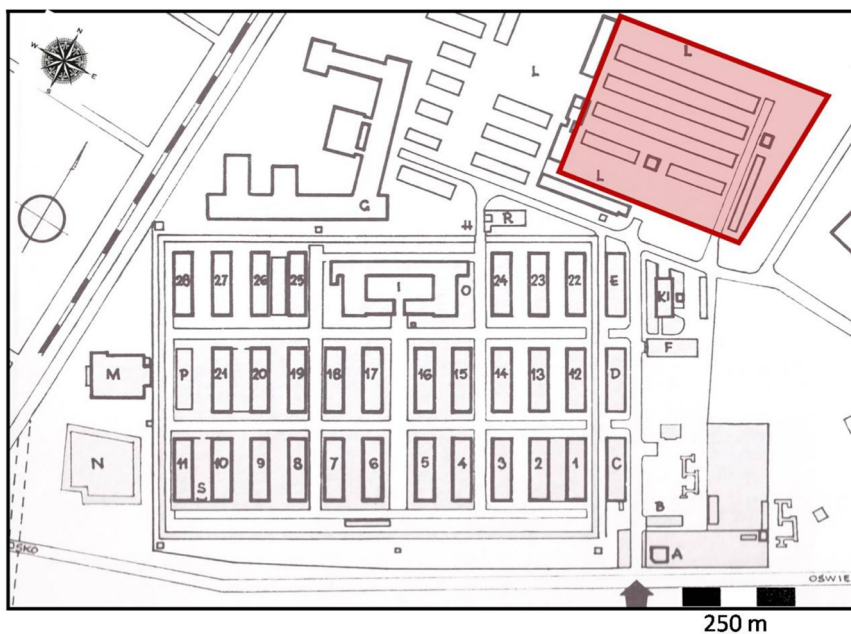


Fig. 3. Location of the study area within the former Auschwitz concentration camp. Drawn: K. Peschel.



Fig. 4. Location of the study area within the former Auschwitz-Jawischowitz labour sub-camp. Drawn: A. Piekarczyk.



1



2

Fig. 5. Remains of a preserved insulating layer under the floor in the form of a sheet of tar paper: 1– Birkenau, barrack B-167; 2 – Jawischowitz, block no. 6. Photo: K. Peschel and W. Tabaszewski.



Fig. 6. Summary of rubber products discovered at the site of the former Auschwitz II – Birkenau camp. 1–4 – heels; 5–6 – fragments of tyres reused as shoe soles. Photo: K. Peschel, W. Tabaszewski and A. Żydzik.



Fig. 7. Rubber wellington boots discovered at the site of the former Auschwitz II – Birkenau camp. Photo: W. Tabaszewski.

By using soft asphaltenes to impregnate the cardboard and covering its outer surface with harder asphaltenes, a waterproof raw material was obtained, which was used to construct layers of damp-proofing (Balada 1966: 171–173; Ziolkowski 1997: 14).

Such layers were found during investigations carried out in the interiors of the camp buildings, where they occur directly under the thin concrete screed constituting the floor of the barracks (Fig. 5). This type of insulation was identified during work carried out, among others, in Barrack B-167, located in Section BIIa of the former Auschwitz II-Birkenau camp. The floor found in the remains of Block 6, the former Auschwitz-Jawischowitz forced labour sub-camp, was similarly insulated from below (Tabaszewski 2021: 14; Tabaszewski and Wardas-Lasoń 2022: 56).

The introduction of synthetic rubber, obtained by the polymerisation of butadiene obtained during the distillation of crude oil, into mass production was no less important for the production of plastic products (Balada 1966: 360; Woźniacki 1979: 19). The objects associated with synthetic rubber products are mainly the remains of shoe bottoms (Fig. 6), some of which are objects formed secondarily from tyre fragments (Fig. 6:5 and 6). In addition, fully preserved rubber footwear can also be found (Fig. 7). The fully preserved wellingtons (Fig. 7) represent a type of footwear used from the second half of the 19th century onwards, in the form of a shoe cover to protect the shoes from moisture. A specimen was encountered which bears the mark “4877 26.10.40 T”, indicating the batch number, date of manufacture and the Berlin



Fig. 8. A selection of buttons made of plastic mass discovered at the site of the former Auschwitz and Auschwitz II- Birkenau camp. Photo: W. Tabaszewski.

company Tack und s.p. (Peschel and Tabaszewski 2019: 33). Other products made of synthetic rubber are shoe heels, one of which bears the signature of the British company BULLDOG WOOD-MAN (Fig. 6:5; Peschel and Tabaszewski 2020: 27). Two other heels bear the mark CONTI T-REX (Fig. 6:1 and 3), denoting the Hanover company CONTINENTAL (Peschel and Tabaszewski 2019: 33; 2020: 27). No legible marks have survived on a further two heels, but one (Fig. 6:4), due to its small size, can be associated with women's footwear. The other unsigned heel corresponds in size and spacing of the shoe marks – a trace of shoeing, to heels used in German military footwear (Wrona 2008: 32–33). The group of rubber products is closed by two fragments of shoe soles made secondarily from tyre fragments (Fig. 6:6 and 7). One of them bears a fragment of the Pneumant logo, which is the designation of the products of the Berlin-based company Deka Pneumatik GmbH. Both fragments are parts of shoe repair components and were made by prisoners incarcerated in the camp (Peschel and Tabaszewski 2019: 33–34).

The last group of plastics are products made from resin or polymer-based materials, which date back to the beginning of the second half of the 19th century. At that time, J. W. Hyatt invented a method of producing celluloid, which, as a substitute for ivory, was used to make billiard balls (Springate 1997: 65).

Gradually, plastics became more common, gaining more applications. The development of the production of plastics and products made from them particularly intensified in the third decade of the 20th century. This is linked to the invention of phenol-formaldehyde resins – Bakelite – by Z. W. Beakeland in 1910 (Niebojewski and Brzezinski 1965: 3; Saechtling and Zebrowski 1978: 29–32; Zajachowski and Tomaszewska 2014: 181). Among the wares from this material group, parts of costume such as buttons (Fig. 8), stocking clasps (Fig. 9:3) and jewellery (Figs 9:1 and 2) dominate. Parts of the costume are also complemented by fragments of eyeglass frames (Fig. 10). Among the buttons, there are both flat, underwear-type buttons, provided with two or four symmetrically placed holes for attachment (Figs 8:1, 2, 4 and 5), as well as flat, shield-type buttons, provided with an eye on the underside (Figs 8:3, 8 and 9) and hemispherical buttons (Figs 8:7, 9, 11 and 12). Many buttons had ornaments on their obverses in the form of floral (rosettes) or geometric elements, characteristic of the Art Deco and Bauhaus styles, dominant in the industrial design of the 1920s and 1930s (Tołłoczko 2010: 34). Some of the buttons bear the makers' marks, which make it possible to link the products to Bulgarian (*СОФИЯ VIIA. ШИЛИЯНОВЪ*) or Hungarian (*HUNGARY FUTURIT 7299*) factories. Unfortunately, a significant proportion of the buttons do not have any markings or other features to link them to a specific factory. In addition to the buttons, a plastic garter belt clip was among the items associated with the costume. This type of costume item

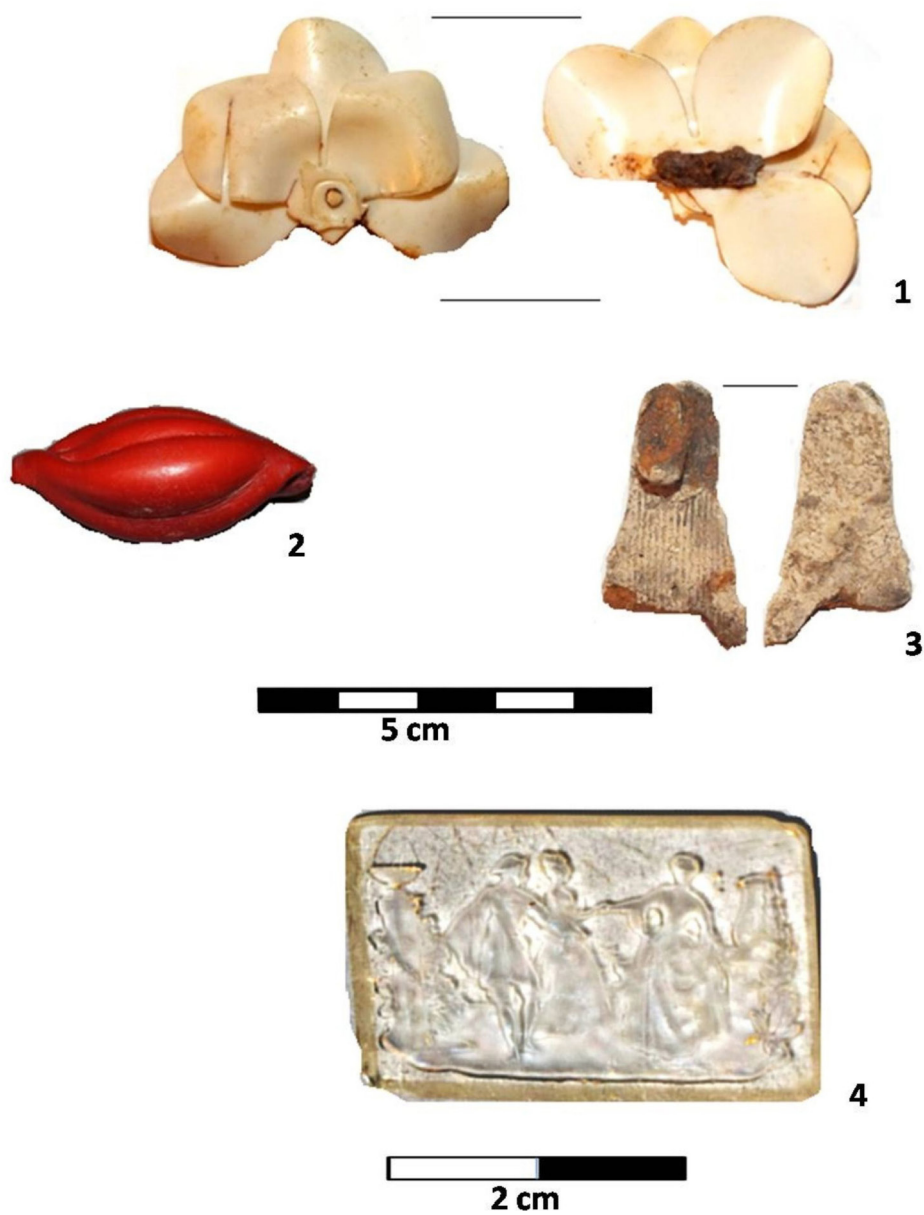


Fig. 9. Selection of garment elements of plastic mass discovered during the research at the site of the former Auschwitz II-Birkenau camp. Photo: W. Tabaszewski.

was commonly used in the 1930s and 1940s. During this period, hand-sewn nylon stockings attached usually to garters in the form of a special belt worn on the hips were very popular (Myszka *et al.*, 2017: 30). Among the items of the costume are also the remains of brooches made of polyester masses (Fig. 9:1 and 2). Items of this type were usually in the shape of flowers or floral compositions. Jewellery and costume ornaments made of artificial plastic masses appear in common use as early as the 1920s (Piskorz-Barenkova 2008: 40). During the war period, artificial jewellery became very popular and the Protectorate of Bohemia and Moravia remained its largest producer (Mruk 2017: 113). The last objects in this group are the remains of eyeglass frames (Fig. 10). The fragments of eyeglass frames were mostly made of Bakelite or black polyester pulp.

The second group of items made from plastic masses are items related to health and personal hygiene, such as combs (Figs 11 and 12), toothbrushes (Figs 13–15), remnants of hygiene products and drug packaging (Fig. 16), razors (Fig. 17:1) and dental bridges (Fig. 18). Most of these objects were discovered in the BIb section of the former Auschwitz-Birkenau camp, near barracks B-140 and B-141, as well as B-122 and B123, which originally housed the prisoners' baths (Strzelecka and Setkiewicz 2000: 87). The combs discovered during the present research present both bilateral (Fig. 11) and unilateral (Fig. 12) types. Only a few combs have marks that can be linked to specific makers. Prominent among them is a fully preserved comb of the HERCULES KAMM line, produced by the German-American concern G.W C° GARANNERT, which operated from 1933 and had factories in New York and Hamburg (Peschel and Tabaszewski 2015: 11). The REGINA KAMM line comb (Fig. 12:5) is of the single-sided comb type, and is also associated with this factory (Duma 2016: 240; Peschel and Tabaszewski 2017: 29). The double-sided comb type is also represented by a product of the Austrian company W MASEING MOD called MATADOR. It is followed by fragments of single-sided combs, among which there are two fragments signed ELASTIC (Fig. 12:4 and 6), whose fragmentary nature, however, does not allow direct attribution of the product to a specific manufacturer. Among the remaining combs, there are also female combs used to secure hairstyles (Fig. 12:1). In addition, clear attempts can be seen to make the products more attractive through the use of, among other things, multi-coloured masses (Fig. 12:1–3, 8 and 9) and the enrichment of the product forms with decorative elements (Fig. 12:2 and 7). Toothbrush fragments are mostly made of a transparent polymer. The majority of the toothbrushes bear poorly legible and partially obliterated embossed brand markings, among which products of Czech, German and British manufacturers can be distinguished. A British product is represented by one toothbrush bearing the mark of the London manufactory PICCADILLY DENTAL BRUSH. German products include brands such as COSMOS, additionally bearing the REGISTRED TRADE MARK



Fig. 10. Fragments of eyeglass frames discovered at the site of the former Auschwitz II-Birkenau camp.
Photo: K. Peschel.

(Fig. 14:1) and EXACTOR (Fig. 14:2; Peschel and Tabaszewski 2017: 28–29). In addition, fragments of brushes bearing the mark DEUTSCHEZ ERZUNGIN without preserved factory marks were also found (Peschel and Tabaszewski 2017: 28). Among the

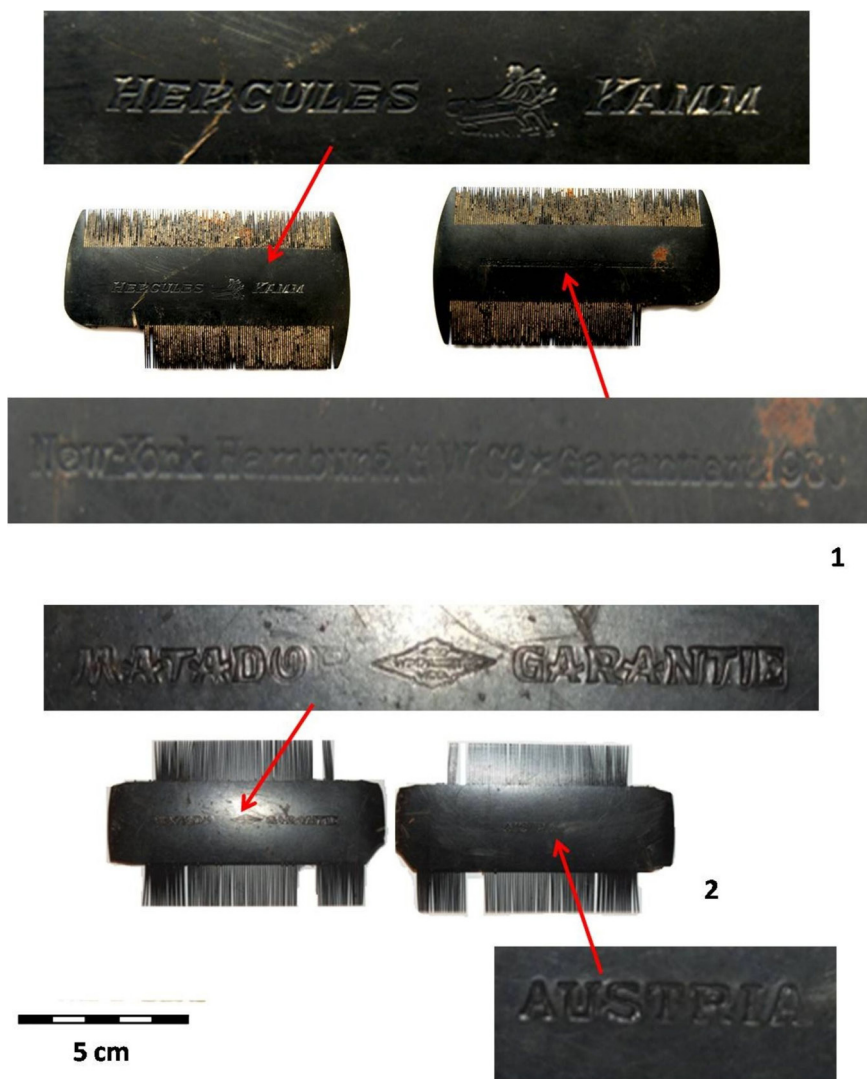


Fig. 11. Fragments of plastic combs discovered at the site of the former Auschwitz II-Birkenau camp. Photo: K. Peschel.

products of Czech factories, there is a toothbrush bearing the mark of the KOH-I-NOOR factory, operating in Budějovice.¹ The group of products related to health and hygiene

¹ <https://www.koh-i-noor.cz/en/history> (Access: December 03, 2022).

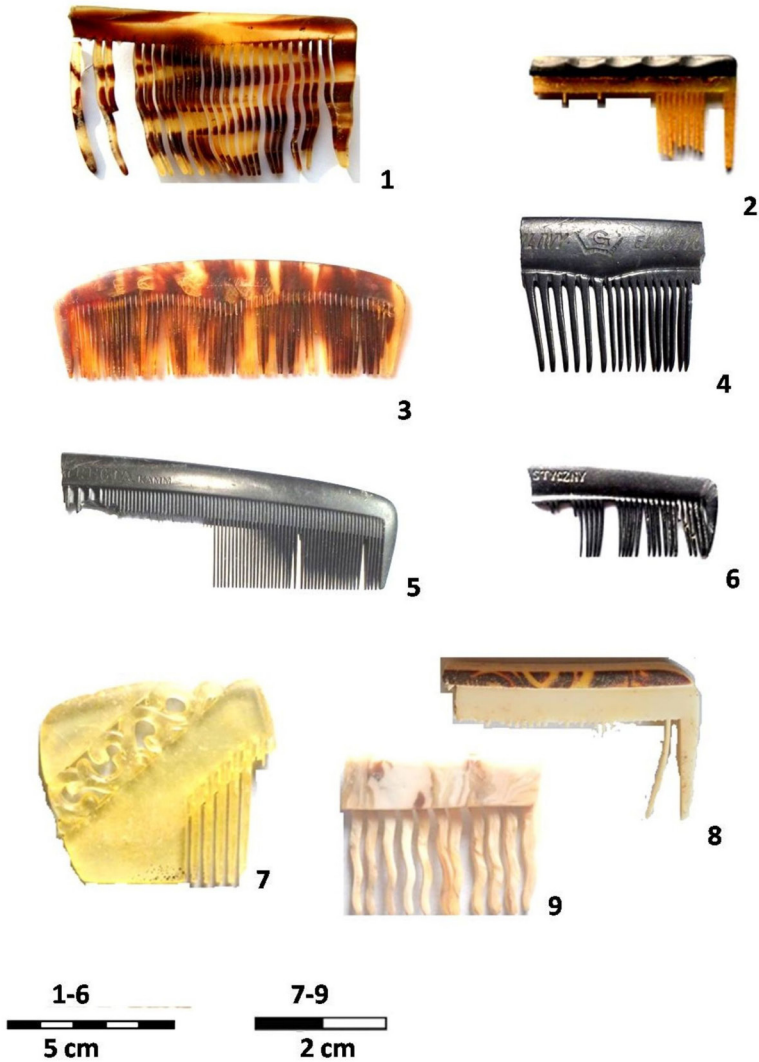


Fig. 12. Fragments of plastic combs discovered at the site of the former Auschwitz II-Birkenau camp.
Photo: K. Peschel.

includes packaging residues of hygiene products (dental powders, creams) and medicines. During the survey of the B1b section, fragments of dental powder packaging were discovered (Fig. 16:1 and 3), one of which had the name of the product printed

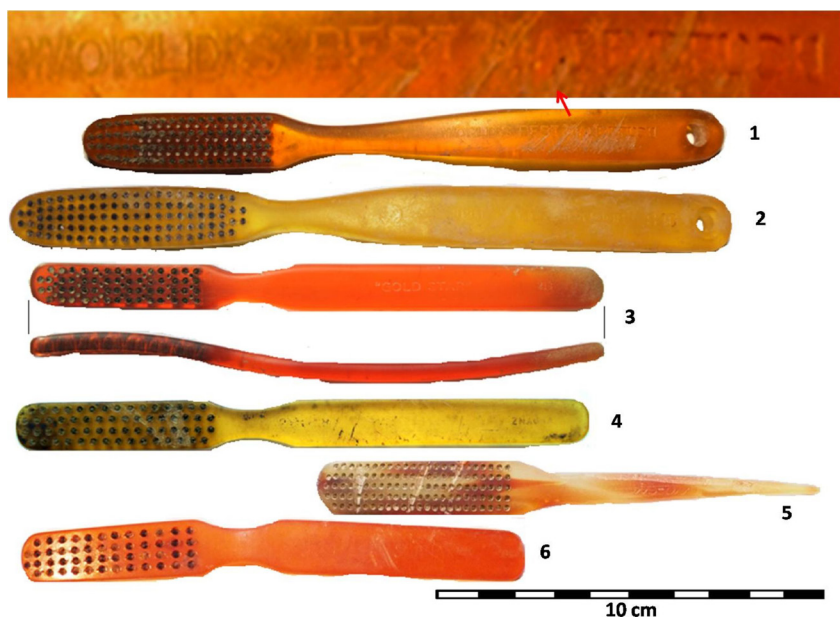


Fig. 13. Fragments of toothbrushes discovered at the site of the former Auschwitz II-Birkenau camp. Photo: W. Tabaszewski.

on it: AHA-BERGMANN AHAB WALDHEIM-SA. Dental powder from this company was part of a hygiene kit issued to SS officers. The second was the lid of a dental powder box (Fig. 16:3) made of dark red, opaque paste. It is decorated in the central part with a convex five-pointed star but has no other markings to associate it with the product of a specific company. During the research, drug packaging is also often discovered, among which an all-plastic box with Bayer's name printed on it stands out (Fig. 16:2). The box measured 6.5 x 5.5 cm and originally held 20 aspirin tablets. The lid bore the inscription 20 ORIGINAL TABLETTEN ASPIRIN ZU 0.5g and the BAYER company seal, EINGETRAGEN WARENZEICHEN (ACIDAM ACETYLO-SALICYLIUM) BAYER I.G. FARBEN INDUSTRIE AKTIENGESELLSCHAFT LEVERKUSEN. The format of the company's lettering and logo is consistent with the logo used between 1925 and 1945 (Peschel and Tabaszewski 2019: 32). Plastics found use in the manufacture of packaging for creams or ointments (Figs 16:4 and 19:2), as well as dishes (Fig. 19:1), most of which do not bear markings to link them to a specific manufacturer. Plastics materials, mainly of the Bakelite or Ebonite type, provided the raw material for all kinds of caps to close containers for

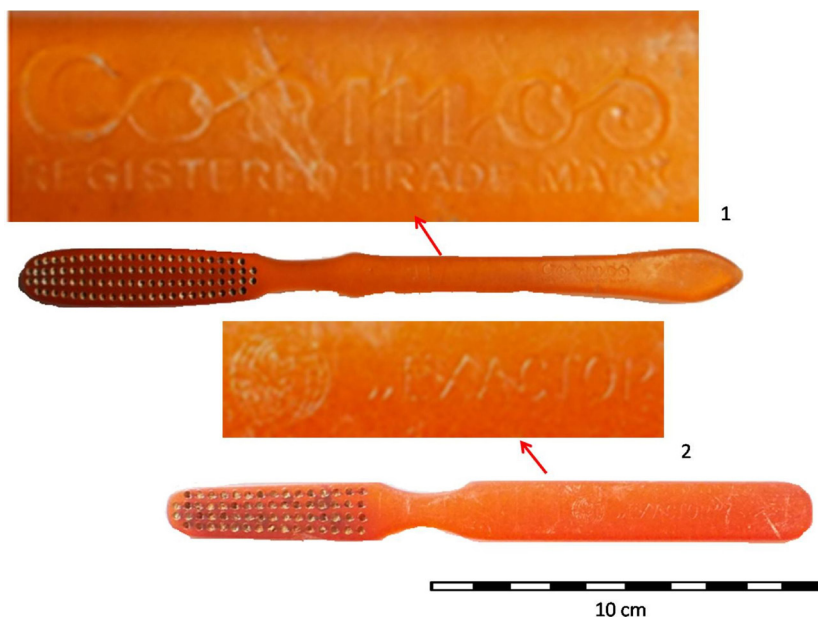


Fig. 14. Fragments of toothbrushes discovered at the site of the former Auschwitz II-Birkenau camp.
Photo: W. Tabaszewski.

example for medicines (Fig. 20:1, 3 and 4), toothpaste (Fig. 20:2) or shoe polish (Fig. 21). Excavated prosthetic bridges consist of porcelain teeth set in a bridge usually also made of ebonite or Bakelite, which was fixed in the mouth with steel brackets. The design and material of exposed bridges are typical of the type used in the 1930s and 1940s (Peschel and Tabaszewski 2020: 26).

Other types of objects were also manufactured from plastics, such as cutlery handles (Fig. 17:3), rapidographs (Fig. 17:4) or oilcloths (Fig. 17:2; Springate 1997: 63). An interesting example of a product is a small rectangular plate (Fig. 9:4) made of colourless, transparent paste and decorated on the underside with an embossed figural scene composed of three figures. This object originally served as a plate for a toy photoplasticon or as a decorative application (Peschel and Tabaszewski 2020: 27). Fragments of Bakelite or ebonite pipe mouthpieces constitute numerous groups (Fig. 22). This type of object appears in use during the interwar period. They are applied to pipes made of wood (Olbromska 2004: 35; Rapaport 2004: 102). The group of wares for which plastic was used closes with folding knives. Three pocket knives with preserved plastic facings were discovered during the survey. Two of them

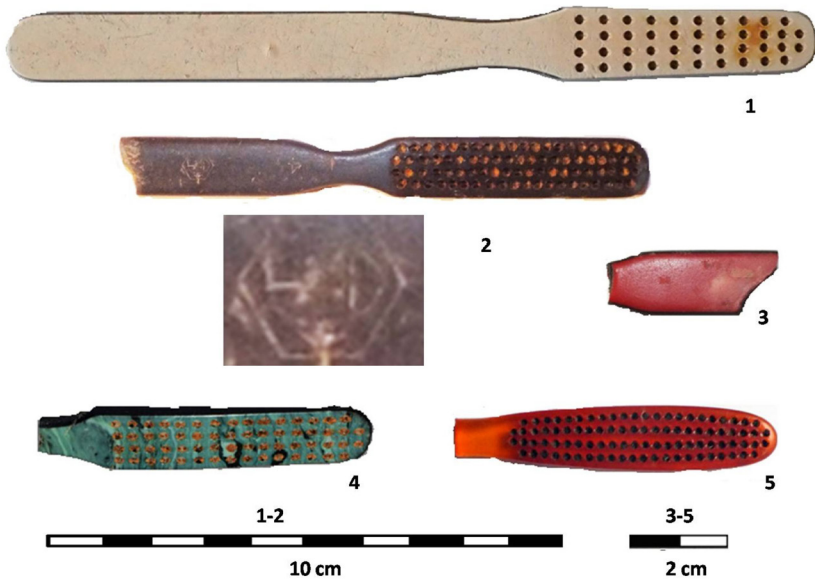


Fig. 15. Fragments of toothbrushes discovered at the site of the former Auschwitz II-Birkenau camp. Photo: W. Tabaszewski.

(Fig. 23) had engraved marks on the blade, which made it possible to link them to the Gottlibe Hammesfahr factory located in Solingen-Foche, North Rhine-Westphalia, which operated between 1684 and 1971 (Królikiewicz 2002: 234). A third penknife, on which the plastic facings were preserved (Fig. 24), had the inscription GZALOSITZER FIELBRLEMEN, CZALOSITZ a/ε C embossed on one, indicating a factory owned by the Fielbreleman family, established in the town of Žalhostice (Peschel and Tabaszewski 2019: 23).

CONCLUSION

Developments in technology and the availability of materials have made plastic products such as asphalt, synthetic rubber, Bakelite, Ebonite, celluloid, polyester resins, Plexiglas, etc. widely available. The ease of production, as well as their high flexibility and resistance, meant that plastics quickly became substitutes, imitating natural materials. Mass production meant that the objects created over the past 150 years



Fig. 16. Hygiene product and medicine packaging discovered at the site of the former Auschwitz II-Birkenau camp: 1 – lid of a packet of dental powder; 2 – lid of a packet of aspirin; 3 – lid of a packet of dental powder; 4 – lower part of a jar for cream or ointment. Photo: K. Peschel and W. Tabaszewski.

are often still present in the human environment. Today's global production of plastic products exceeds 300 million tonnes per year (Zalasiewicz *et al.*, 2016: 5). Products from this group of raw materials are increasingly included among the artefacts discovered during archaeological excavations, allowing the chronology of the objects studied to be detailed. Items of everyday use made on the basis of materials from the plastics group take on particular significance when dealing with research conducted at sites related to the history of 20th-century armed conflicts. It is on the basis of finds from sites such as concentration camps (Peschel and Tabaszewski 2015; 2017; 2018; 2019; 2020; Albert and Brandt 2016; Myszka *et al.*, 2017; Karski 2019; Tabaszewski and Wardas-Lasoń 2022) or prisoner of war camps (Augustyniak *et al.*, 2012), mass graves (Kola 2016; Popkiewicz 2016; Wrzosek 2016),² battlefields (e.g., Mazurek *et al.*, 2020; Podsiadło 2021) or airplane crash

2 http://www.muzeumkatynskie.pl/pl/2713/11387/grzebenie_mk_103_1_32_k.html (Access: December 03, 2022).



Fig. 17. Plastic products discovered at the site of the former Auschwitz II-Birkenau camp: 1 – razor; 2 – piece of oilcloth; 3 – handle of a tool or cutlery; 4 – holder of a rapidograph. Photo: A. Żydzik.

sites related to warfare during World War II (Karasiewicz *et al.*, 2021; Tabaszewski 2022), it is now possible to establish a comparative base and basis for the chronological division of plastic products. In the case of archaeological investigations at archaeological sites other than those mentioned above, plastic objects are inventoried very sporadically (Duma 2016; Peschel 2022: 506–507). Plastic objects discovered during research at the Auschwitz-Birkenau site enrich the information base concerning both the life of prisoners in German concentration camps and the state of material culture in the first half of the 20th century.

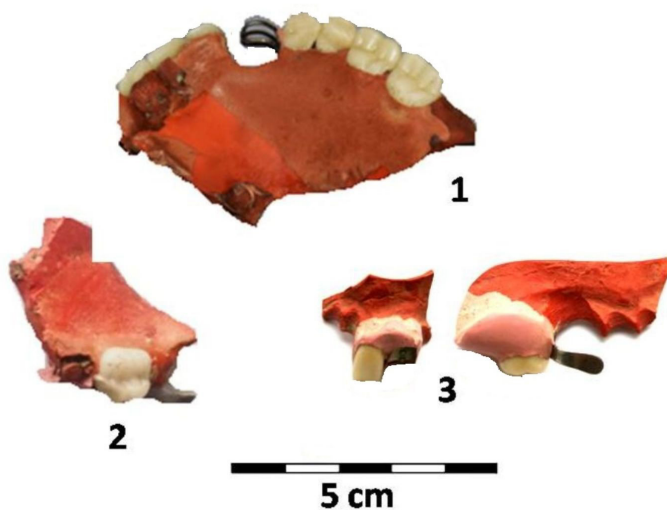


Fig. 18. Dental bridges discovered at the site of the former Auschwitz II-Birkenau camp. Photo: A. Żydzik.

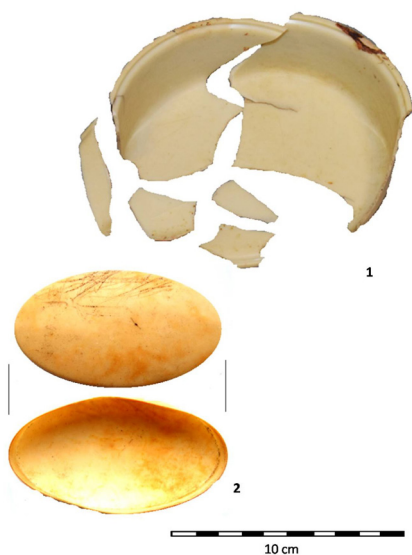


Fig. 19. Plastic products discovered at the site of the former Auschwitz II-Birkenau camp: 1 – fragment of a bowl; 2 – lid of a medicine package. Photo: A. Żydzik.



Fig. 20. Plastic caps discovered during excavations at the site of the former Auschwitz II-Birkenau camp. Photo: A. Żydzik.



Fig. 21. Plastic caps discovered at the site of the former Auschwitz II-Birkenau camp. Photo: A. Żydzik.



Fig. 22. Pipe mouthpieces made of Bakelite discovered at the site of the former Auschwitz II-Birkenau camp. Photo: W. Tabaszewski.



Fig. 23. German penknives with plastic cladding discovered at the site of the former Auschwitz II-Birkenau camp. Photo: K. Peschel.



Fig. 24. Czech penknife with plastic cladding discovered at the site of the former Auschwitz II-Birkenau camp. Photo: K. Peschel.

The sites of former concentration camps are increasingly the subject of archaeological work. To date, however, there is a lack of broader publications on the results of archaeological investigations, focusing on the analysis of movable artefact assemblages from such investigations. The subject of archaeological work carried out at the Auschwitz-Birkenau site has only been addressed in a handful of publications (Hensel 1983; Gruba 1996; Banaś-Maciszczak 2017; Tabaszewski and Wardas-Lasoń 2022). The subject of plastic products signalled above, allows us to look at the issue of the functioning of the concentration camp through a fragment of the material culture inextricably linked to the people imprisoned there. It also gives us a picture of the material culture of the entire period. The objects presented above form a compact ensemble, which at the same time reflects a picture of the material culture of Europe in the 1930s and 1940s.

REFERENCES

- Albert, D. and Brandt, J. M. A. 2016. *Archaeological plastics – a growing challenge for conservators*. Electronic document: <https://www.researchgate.net/publication/320805197> (Access: December 03, 2022).
- Augustyniak, H., Kałagate, S. and Stachowiak, P. 2012. *Opracowanie wyników badań archeologicznych prowadzonych na terenie niemieckiego obozu jenieckiego Stalag 1B Hohenstein (Królikowo, stan. 8 AZP 28-59/24, gm. Olsztynek, pow. olsztyński, woj. warmińsko-mazurskie)*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Olsztyn Branch.
- Balada, A. 1966. *Od ropy naftowej do tworzyw sztucznych*. Warszawa.
- Banaś-Maciszczak, J. 2017. Prace konserwatorskie. In B. Bartyzel and P. Sawicki (eds), *Memorial Auschwitz-Birkenau*, 54–56. Oświęcim.
- Bartczak, A., Gwóźdź, B., Nierychlewska, A., Pajor, M. and Świącicki, J. 2018. *Wyniki archeologicznych badań powierzchniowych na trasie projektowanej drogi ekspresowej S1 od węzła „Kosztowy II” w Mysłowicach do*

- węzła „Suchy Potok“ w Bielsku-Białej. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Katowice Branch.
- Duma, P. 2016. Archeologia w obliczu masowej produkcji przedmiotów na przykładzie byłego śmietniska w Lesie Rakowieckim we Wrocławiu. *Śląskie Sprawozdania Archeologiczne* 58: 227–246.
- Gurba, J. 1996. Nowa archeologia. *Annales Universitatis Mariae Curie-Skłodowska. Sectio F Historia* 51: 23–29.
- Grupa, M. 2006. *Sprawozdanie z badań archeologicznych na terenie obozu Oświęcim-Brzezinka*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Grupa, M., Majorek, M., and Słomczewska, M. 2007. *Sprawozdanie z badań archeologicznych na terenie obozu Auschwitz-Birkenau*. Typescript in the archives of the State Museum of Auschwitz-Birkenau.
- Grupa, M., Majorek, M. and Słomczewska, M. 2008. *Sprawozdanie z badań archeologicznych na terenie obozu Auschwitz-Birkenau*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Hensel, W. 1983. *Archeologia żywa. Wydanie drugie przejrzone i uzupełnione*. Warszawa.
- Kondracki, J. 2002. *Geografia regionalna Polski*. Warszawa.
- Kajzer, L. 1984. *Wstęp do badań archeologiczno-architektonicznych*. Łódź.
- Karasiewicz, K., Kielbasińska, M., and Rogusz, M. 2021. Nadma, gm. Radzymin, woj. mazowieckie: miejsce upadku samolotu Messerschit 110 – archeologiczny przyczynek do badań historii walk powietrznych we wrześniu 1939 r. *Raport* 16: 169–234.
- Karski, K. 2019. *KL Płaszów. Archeologia miejsca pamięci*. Kraków.
- Koła, A. 2016. Archeologia cmentarzysk katyńskich w Charkowie (Piatichatki) i Kijowie (Bykownia). In A. Zalewska (ed.), *Archeologia współczesności* 1: 65–90. Warszawa.
- Królíkiewicz, T. 2002. *Bagnety. Historia rozwoju, konstrukcje, zastosowanie i dane techniczne wielu typów bagnetów*. Warszawa.
- Lasota-Kuś, A. 2020. *Opracowanie wyników prac archeologicznych prowadzonych na zlecenie GDDKiA w Krakowie, w rejonie skrzyżowania ul. Fabrycznej i ul. Unii Europejskiej w Oświęcimiu (DK 44 od km 60+627 do km 60+982)*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Cracow Branch.
- Lencewicz, S. 1938. *Polska. Wielka geografia powszechna*. Warszawa.
- Mazurek, M., Sznajdrowska-Pondel, A. and Wrzosek, J. 2020. Badania archeologiczne reliktyw fortyfikacji polowych z XX wieku na inwestycjach drogowych. Procedury, metodologia i metodyka pracy. *Raport* 15: 347–368.
- Mruk, J. 2017. *Moda kobieca w okupowanej Polsce*. Łódź.
- Myszka, M. 2005a. *Dokumentacja archeologiczna wykopów konstrukcyjnych, zamieszczona w opinii konstrukcyjnej dla budynku kuchni obozowej A-31*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Myszka, M. 2005b. *Sprawozdanie z nadzoru archeologicznego wykopu wykonanego w 2005 roku przy murze krematorium II w Brzezince*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Myszka, M. 2007. *Sprawozdanie z nadzoru archeologicznego wykopów wykonanych w 2006 roku na terenie dawnego KL Birkenau*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Myszka, M. 2009. *Sprawozdanie z nadzoru archeologicznego prowadzonego w związku z wykonaniem konstrukcji oporowej i drenażu wokół komory gazowej krematorium nr II i III, na terenie dawnego obozu koncentracyjnego w Brzezince, gm. Oświęcim*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Myszka, M. 2011. *Program badań na odcinku BI*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.

- Myszka, M., Peschel, K., and Tabaszewski, W. 2017. *Opracowanie wyników nadzoru archeologicznego związanego z wykonaniem instalacji przeciwpożarowej na terenie obozu Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Niebojewski, J. and Brzeziński, J. 1965. *Obrabiamy tworzywa sztuczne*. Warszawa
- Olbromska, U. 2004. *Fajki i tabakerki z Muzeum w Łowiczu w Muzeum Dzwonów i Fajek w Przemysłu*. Przemysł.
- Ostrowski, M. and Kowalczyk, P. 2019. *Opracowanie wyników archeologicznych rozpoznawczych badań sondażowych wraz z opisem historycznym i dokumentacją krzyży wiejskich, kapliczek oraz mogił na trasie planowanej inwestycji pn.: Budowa drogi ekspresowej S1 od węzła „Kosztowy II” w Mysłowicach do węzła „Suchy Potok” w Bielsku-Białej*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Katowice Branch.
- Peschel, K. 2022. Nowożytność. In D. Minta-Tworzowska and M. Kruger (eds), *Opracowanie wyników badań archeologicznych na stanowisku Zagaje Smrokowskie 10, woj. małopolskie, AZP 98-57/70, 501–542*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Cracow Branch.
- Peschel, K. and Tabaszewski, W. 2015. *Opracowanie wyników nadzoru archeologicznego związanego z wykonaniem instalacji przeciwpożarowej na terenie obozu Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2017. *Opracowanie wyników archeologicznych badań sondażowych prowadzonych na obszarze obozu koncentracyjnego Auschwitz I w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2018. *Opracowanie wyników nadzoru archeologicznego związanego z wykonaniem instalacji przeciwpożarowej na terenie obozu Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95), prowadzonego w ramach pozwolenia MWKZ 338/18*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2019. *Opracowanie wyników nadzoru archeologicznego związanego z wykonaniem instalacji przeciwpożarowej na terenie obozu Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2020. *Opracowanie wyników nadzoru archeologicznego związanego z wykonaniem instalacji przeciwpożarowej na terenie obozu Auschwitz I i Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2021. *Opracowanie wyników prac archeologicznych związanych z konserwacją baraku nr B-167 zlokalizowanego na terenie byłego obozu koncentracyjnego Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. 2023a. *Sprawozdanie i Opracowanie wyników prac archeologicznych związanych z konserwacją baraku nr B-91 zlokalizowanego na terenie byłego obozu koncentracyjnego Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Peschel, K. and Tabaszewski, W. *Opracowanie wyników prac archeologicznych związanych z konserwacją baraku nr B-141 zlokalizowanego na terenie byłego obozu koncentracyjnego Auschwitz II – Birkenau w Oświęcimiu (nr rejestru zabytków A-714/95)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Piskorz-Barenkova, E. 2008. *Bizuteria ludowa w Polsce*. Warszawa.

- Podsiadło, R. 2021. Okres II wojny światowej. In D. Minta-Tworzowska and M. Kruger (eds), *Opracowanie wyników badań archeologicznych na stanowisku Smroków 4, gm. Słomniki, woj. małopolskie*, AZP 97-57/145, 568–645. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Cracow Branch.
- Popkiewicz, O. 2016. Poszukiwania mogił ofiar rzezi wołyńskiej na terenie Ukrainy na podstawie wyników prac archeologiczno-ekshumacyjnych w Ostrówkach i Woli Ostrowieckiej. In A. Zalewska (ed.), *Archeologia współczesności 1*, 107–124. Warszawa
- Rapaport, B. 2004. Jak palimy – akcesoria i przyrządy. In S. L. Gilman and Z. Xun (eds), *Dym. Powszechna historia palenia*, 100–107. Kraków.
- Saechtling, H. and Zebrowski, W. 1978. *Tworzywa sztuczne*. Warszawa
- Sikorski, D. 2018. *Sprawozdanie i opracowanie wyników badań archeologicznych w formie nadzoru archeologicznego przy badaniach gruntu na zawartość prochów i szczątków ludzkich na projektowanej obwodnicy miasta Oświęcim w ramach inwestycji p.n.: Budowa drogi ekspresowej S1 od węzła „Kosztowy II” w Mysłowicach do węzła „Suchy Potok” w Bielsku-Białej*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad], Katowice Branch.
- Smajek-Mądrzycka, I. 2015. *Opracowanie z przeprowadzonego nadzoru archeologicznego podczas budowy kanalizacji kablowej dla systemu sygnalizacji pożaru (SSP) na terenie byłego obozu koncentracyjnego Birkenau (pozwolenie nr 286/14)*. Typescript in the archive of the State Museum of Auschwitz-Birkenau.
- Smoleń, K. 1980. *KL Auschwitz*. Warszawa.
- Solon, J., Borzyszkowski, J., Bidlasik, M., Richling, A., Badora, K., Balon, J., Brzezińska-Wójcik, T., Chabudziński, Ł., Dobrowolski, R., Grzegorzczak, I., Jodłowski, M., Kistowski, M., Kot, R., Kraż, P., Lechnio, J., Macias, A., Majchrowska, A., Malinowska, E., Migoń, P., Myga-Piątek, U., Nita, J., Papińska, E., Rodzik, J., Strzyż, M., Terpilowski, S. and Ziaja, W. 2018. Physico-geographical mesoregions of Poland: Verification and adjustment of boundaries on the basis of contemporary spatial data. *Geographia Polonica* 91: 143–170.
- Springate, M. E. 1997. Cellulose nitrate plastic (celuloid) in archaeological assemblages: identification and care. *Northeast Historical Archaeology* 26: 63–72.
- Strzelecka, I. and Setkiewicz, P. 2000. The construction, expansion and development of the camp its branches. In W. Długoborski and F. Piper (eds), *Auschwitz 1940–1945. Tom I*, 63–138. Oświęcim.
- Tabaszewski, W. 2021. *Sprawozdanie i opracowanie wyników archeologicznych badań wykopaliskowych prowadzonych na obszarze dawnego obozu pracy przymusowej Jawischowitz*. Typescript in the Archive of the Provincial Monument Preservation Office in Krakow.
- Tabaszewski, W. 2022. *Opracowanie wyników badań poszukiwawczo-sondażowych przeprowadzonych w miejscu katastrofy samolotu B-24 Liberator KG-890 w Nieszkowicach Wielkich*. Typescript in the Archive of the Małopolska Provincial Office For Monument Protection in Tarnów.
- Tabaszewski, W. and Wardas-Lasoń, M. 2022. Results of archaeological rescue excavations AT the site of the former German forced labour camp KL Jawischowitz, Oświęcim district. *Acta Universitatis Lodzianensis. Folia Archaeologica* 37: 51–87.
- Tołłoczko, Z. 2010. Z problemów koincydencji Art Deco i ekspresjonizmu. Część I. *Wiadomości Konserwatorskie* 28: 31–48.
- Woźniacki, A. 1979. *Materiałoznawstwo*. Warszawa-Kraków.
- Wrona, B. 2008. *Umundurowanie niemieckich wojsk. Siły lądowe*. Warszawa.
- Wrzosek, J. 2016. (Nie)zapomniana mogiła. Grób masowy żołnierzy bolszewickich poległych pod Ossowem w sierpniu 1920 roku. In A. Zalewska (ed.), *Archeologia współczesności 1*, 159–178. Warszawa.
- Zajachowski, S. and Tomaszewska, J. 2014. Kompozyty polimerowo-drzewne – nowy materiał dla budownictwa i nie tylko. In T. Klepka (ed.), *Nowoczesne materiały polimerowe i ich przetwórstwo. Część 1*, 180–193. Lublin.

- Zalasiewicz, J., Waters, C. N., Ivar do Sul, J. A., Corcoran, P. L., Barnosky, A. D., Cearreta, A., Edgeworth, M., Gałuszka, A., Jeandel, C., Leinfelder, R., McNeill, J. R., Steffen, W., Summerhayes, C., Wapreisch, M., Williams, M., Wolfe, M. A. and Yonan, Y. 2016. The geological cycle of plastics and their use as a stratigraphic indicator of the Anthropocene. *Anthropocene* 13: 4–17.
- Ziomkowski, A. 1997. *Karty z historii polskiego przemysłu chemicznego. Tom 5. Historia polskiego przemysłu wielkiej syntezy chemicznej*. Warszawa