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SUPPORTING INFORMATION

Selected aspects of undercover production of explosives and explosive devices in 1939-1945
Wybrane aspekty konspiracyjnej produkcji materiałów i wyrobów wybuchowych w latach 1939-1945

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Table S1. Achievements of some activists of the clandestine explosives industry (supplement to Table 1)

Person	Before **WW2**	During **WW2**	After **WW2**	Ref.
Klepfisz, Michał (1913-1943)	Student of Warsaw Polytechnic (Mechanical Engineering, diploma thesis undertaken in 1939).	In 1943 he started the home-made production of grenades and incendiary bottles for the Jewish Combat Organization based on **AK** training – only supposed by [48] but confirmed by other sources.	–	[46-48]
Kościukiewicz, Stanisław Franciszek (1893-?)	Graduate of the Electrotechnical Institute in Petersburg (1918), 1918-1920 – employee of Factory of Silk and Powder in Sochaczew (Branch of nitrocellulose smokeless powders), 1926-1939 – employee of Lignoza S.A. in Bieruń Stary (manufacturer of blasting explosives).	Leader of the **ZWZ-AK** manufacturing sites of **EXs**.	–	[16]
Lewańska [also: Szyc-Lewańska], Kazimiera (1910-2003)	Graduate of Warsaw Polytechnic (technology of explosives, 1937), 1937-1939 – assistant in Ammuntion Factory no. 2 in Rembertów.	Production of **MF** for **ZWZ-AK** (1943-1944).	Scientific researcher in Warsaw Polytechnic and the Military University of Technology (Warsaw).	[16]
Pankowski, Władysław (1902-1980)	Pyrotechnician.	Constructor of friction fuse P-42, used in grenades R-42 and *Karbidówka*. Manufacturer of black powder in Lublin (not confirmed).	–	[45, 49, 50, 92, 99]
Smoliński, Eugeniusz (1903-1949)	Graduate of Warsaw University of Technology (explosives, 1931), 1933-1939 employee of **PWP**, also as the director of Central Laboratory.	Adviser for the "*Inspection*" in Production Leadership of Headquarters **AK**.	–	[16]
Sudlitz, Czesław (1900-1984)	Graduate of University of Technology in Lwów (explosives, 1925), 1928 employee of **PWP** (one of his inventions was a flame arrester – patent was sold to France and Belgium).	Leader of clandestine manufacturing sites (1943-1944) of: a) nitrocompounds, b) solvent naphta, c) **AN**.	–	[16, 51]

Table S1. continuation

Person	Before **WW2**	During **WW2**	After **WW2**	Ref.
Śmiśniewicz, Tadeusz (1893-1943)	Graduate of University in Geneva (before world war 1) and of Warsaw University of Technology (1920), 1922-1928 Director of Central Laboratory in Central School of Artillery in Toruń. Since 1928 organizor and first leader of Central Laboratory in **PWP**, ~1931 – Director of **PWP**, 1936 – Director of organized of Ammunition Factory no 3 in Dęba, within the frame of Central Industrial District (pl. *Centralny Okręg Przemysłowy*).	He produced **EXs** at the clandestine site "*Asfaltowa"*.	–	[16, 28]
Tymoszak, Edward (1905-1979)	Foreman-pyrotechnician in Ammuntion Factory no. 2 in Rembertów and (not confirmed) in Armaments Depot no 2 in Lublin.	Constructor and manufacturer of **ET-40** grenade.	–	[45, 49, 52, 53]

Table S2. Examples of **PC**-based **EXs** with 75-79% **PC**, known before 1960

Component	Composition I	Steelite No. 3	Colliery Steelite	Chlorate gunpowder of Berthollet	Cheddite		Explosif O No. 2 Formula 60 *bis* M (Cheddite No. 4)	Cheddite
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
PC	75.0	75	72.5-75.5	76.7	79	79	79	79[d)]
Castor oil	5.0	–	0.5-1.0	–	–	5	5	5
Picronitronaphthalene	20.0	–	–	–	–	–	–	–
Oxidized resin[a)]	–	25	23.5-26.5	–	–	–	–	–
Moisture	–	–	0-1	–	–	–	–	–
Sulphur	–	–	–	11.6	–	–	–	–
Charcoal	–	–	–	11.6	–	–	–	–
Nitrobenzene	–	–	–	–	21	–	–	–
Cellulose	–	–	–	–	YES[c)]	–	–	–
Dinitrotoluene	–	–	–	–	–	15	15	15
(Mono)nitronaphthalene	–	–	–	–	–	1	1	–
MNN[b)]	–	–	–	–	–	–	–	1
Ref.	[56]	[56]	[56]	[16, 56, 58]	[59]	[55]	[56, 60]	[57]

*[a)] fr. Résidée; [b)] MMN – mixture of 3 parts of mononitronaphthalene and 7 parts of picric acid, obtained by mixing under water [56]; [c)] – share not known, assumed > 100% (material for **PC** container); [d)] Ref. [57] was published after 1960 − is cited only, as a supplementation of data presented in [55]*

Table S3. Examples of **PC**-based **EXs** with less than 75% **PC**, known before 1960

Component	White powder of Augendrev	Chlorate **EX**		Composition II
1	*2*	*3*	*4*	*5*
PC	66.7[b)]	70	73	74.6
Potassium ferrocyanide	16.7[b)]	–	–	–
Cane sugar	16.7[b)]	–	–	–
Sodium chloride	–	22	–	–
Oxidized resin[a)]	–	8	–	–
Castor oil		–	5	5.0
Dinitrotoluene	–	–	16	–
Starch	–	–	6	14.9
(Mono)nitronaftalen	–	–	–	5.5
Ref.	[56]	[55]	[55]	[56]

[a)] fr. Résidée; [b)] – total sum (100.1%) is the result of rounding the values (original ratio of components is 4:1:1)

Table S4. Examples of sodium chlorate(V)-based **EXs**, known before 1960

Component	Chlorate **EX**	Cheddite	Cheddite No. 1	O No. 5 Cheddite No. 1	Explosif S	
1	*2*	*3*	*4*	*5*	*6*	*7*
Sodium chlorate(V), $NaClO_3$	43.5	79	79	79	89	90
PC	44.0	–	–	–	–	–
Spindle oil	9.5	–	–	–	–	–
Wood meal	3.0	–	–	–	–	–
Dinitrotoluene	–	16	26	16	–	–
Resinous oil	–	5	–	–	–	–
Castor oil	–	–	5	5	–	–
Paraffin	–	–	–	–	11	7
Vaseline	–	–	–	–	–	3
Ref.	[55]	[55]	[60]	[55, 56]	[56]	[57]

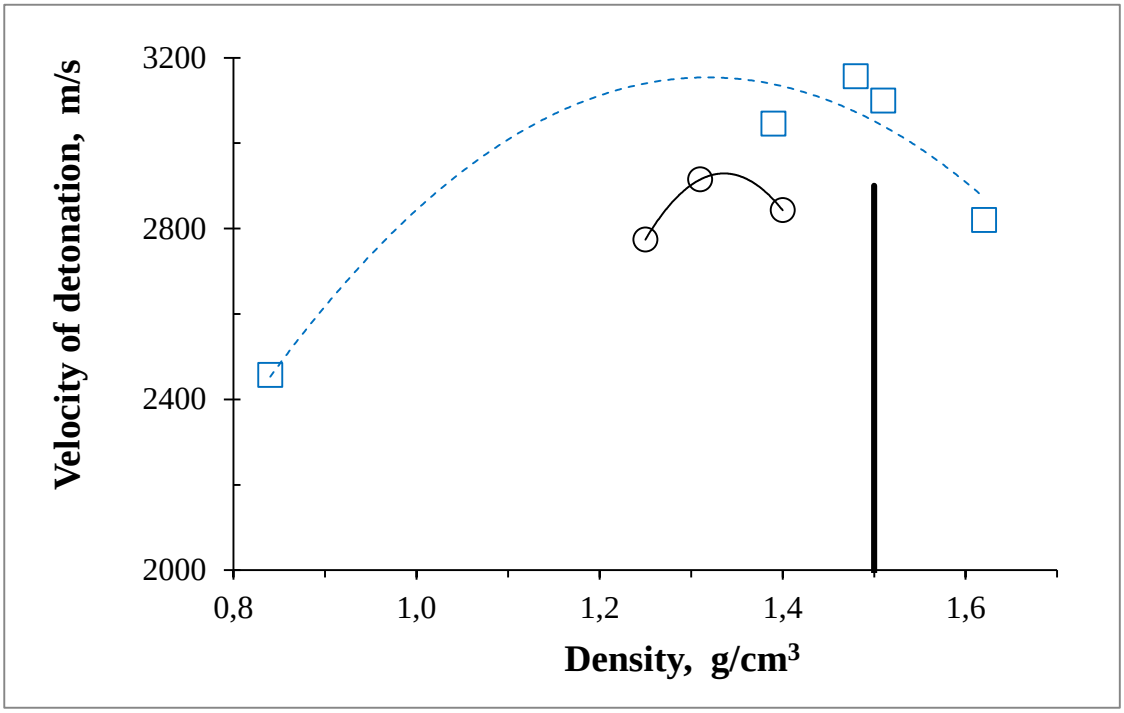

Figure S1. Influence of density on velocity of detonation for Cheddite 60(4th), **PC**-based **EX**, with trend lines and – marked with vertical line segment – density for which non full detonation occurred in paper tube, in respect to material of the tube (Ø 22 mm): - -□- - – copper, -○- – paper

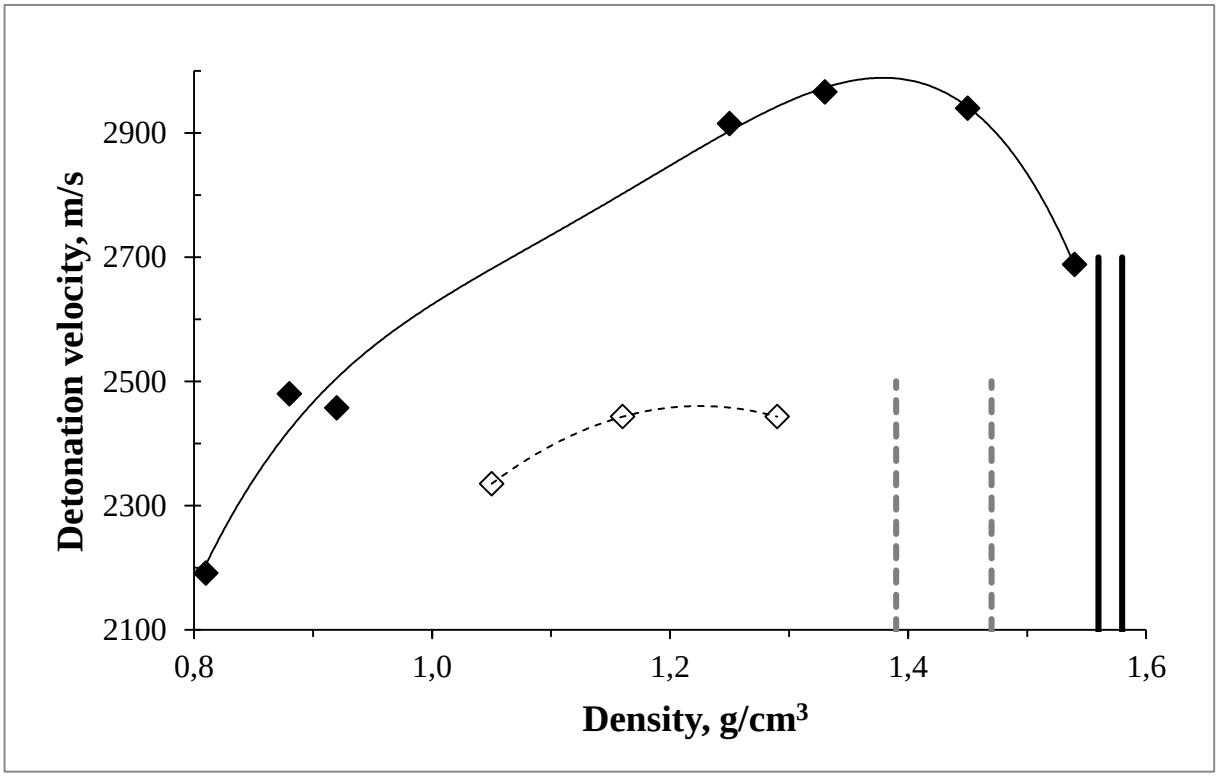

Figure S2. Influence of density on velocity of detonation for Explosive S, $NaClO_3$-based **EX**, with trend lines and – marked with vertical line segments – densities for which non full detonation occurred, in respect to material of the tube (Ø 22 mm): ♦ – copper, ◊ – paper

W TYM DOMU
W LATACH 1941-1943
DZIAŁAŁA KONSPIRACYJNA
WYTWÓRNIA MATERIAŁÓW WYBUCHOWYCH
ARMII KRAJOWEJ
WYTWÓRNIĄ KIEROWALI :
KPT.INŻ. TADEUSZ ŚMIŚNIEWICZ - „HRABIA"
I POR. INŻ. BOLESŁAW HONOWSKI - „ANDRZEJ"
W WYTWÓRNI PRACOWALI :
EUGENIA BIEŃKOWSKA „IRKA", JÓZEF CHROSTOWSKI „JÓZIO", ZOFIA HONOWSKA „JANINA", NN „KUBA", NN „PIOTRUŚ", HALINA SIEMIEŃSKA „ZYGMUŚ", JERZY SZYPOWSKI „JERZY", WINCENTY ŚWIĄTKIEWICZ „WICEK", WACŁAW ZIELIŃSKI „WACEK", JANINA ŻÓRAWSKA „JOANNA", FELIKS ŻUKOWSKI „ŻUCZEK"
W STYCZNIU 1943 R. PO ARESZTOWANIU „KUBY" WYTWÓRNIA ZOSTAŁA ZLIKWIDOWANA. 13 STYCZNIA, W TYM MIEJSCU, W WALCE Z GESTAPO POLEGŁ JÓZEF CHROSTOWSKI, A ARESZTOWANY, RANNY I TORTUROWANY POR. INŻ. BOLESŁAW HONOWSKI ZMARŁ 15 STYCZNIA NA PAWIAKU. ARESZTOWANY 13 KWIETNIA, WIĘZIONY NA PAWIAKU KPT.INŻ. TADEUSZ ŚMIŚNIEWICZ ZOSTAŁ ROZSTRZELANY 29.V.1943 R.
CZEŚĆ ICH PAMIĘCI!
ŻOŁNIERZE PUŁKU AK >BASZTA<
WŁADZE I SPOŁECZEŃSTWO MOKOTOWA
2007 r.

(a)

(b)

Figure S3. Commemorating the place of **AK** clandestine production of **EXs** at 15 Asfaltowa Street in Warsaw: (a) memorial plaque and (b) its locality (fot. T. Sałaciński, 2018)

W TYM MIEJSCU
6·IV·1944 r.
ZGINĘLI
BOHATERSKĄ
ŚMIERCIĄ
Z RĄK
HITLEROWCÓW
CZŁONKOWIE
ZAŁOGI
WYTWÓRNI
MATERIAŁÓW
WYBUCHOWYCH
AK "KINGA"

(a)

(b)

Figure S4. Commemorating the place of **AK** clandestine production of **EXs**, "*Kinga"* (former address 103 Solec Street) at the fence of the playground of Primary School no 34, from the side of Solec street, in Warsaw: (a) memorial plaque and (b) its locality (fot. T. Sałaciński, 2018)

Komisariat VII
ul. KROCHMALNA
N° 15
SUKCESOR
JAKÓB BARONSKI
W TYM MIEJSCU W LATACH 1943-1944
POD OKUPACJĄ NIEMIECKĄ
DZIAŁAŁA PODZIEMNA
WYTWÓRNIA MATERIAŁÓW WYBUCHOWYCH
ARMII KRAJOWEJ
ZAMASKOWANA JAKO
WYTWÓRNIA FARB MINERALNYCH „FARBOLIT"
PK

(a)

(b)

Figure S5. Commemorating the place of **AK** clandestine production of **EXs**, "*Farbiarnia*" (former address: 15 Krochmalna Street; today: 26a Al. Jana Pawła II) at the wall of Primary School no 220 in Warsaw: (a) memorial plaque and (b) its locality (fot. T. Sałaciński, 2018)

(a)

(b)

Figure S6. Commemorating the place of **ZWZ-AK** activities *e.g.* clandestine production of grenades **ET-40** at 14 Królewska Street in Warsaw: (a) locality of (b) memorial plaque (fot. T. Sałaciński, 2018)

(a)

(b)

Figure S7. Memorial plaque: (a) at 3/5 T. Czackiego Street in Warsaw dedicated to the "Memory of all engineers and technicians who struggled and died for a free and independent Poland" and (b) its locality (fot. T. Sałaciński, 2018)

PŁK JAN SZYPOWSKI „LEŚNIK"
1889-1950
WSPÓŁZAŁOŻYCIEL CENTRALNEGO
OKRĘGU PRZEMYSŁOWEGO
SZEF UZBROJENIA ARMII KRAJOWEJ
TWÓRCA PODZIEMNEGO
PRZEMYSŁU ZBROJENIOWEGO
DOWÓDCA ZGRUPOWANIA
BOJOWEGO „LEŚNIK"
W POWSTANIU WARSZAWSKIM
MMV

(a)

(b)

(c)

(d)

(e)

Figure S8. Locations commemorating Jan Szypowski: (a, b) 76 Grochowska Street in Warsaw: a monument in the park named after him and its locality, respectively, (c) Powązki Military Cemetery in Warsaw: Jan Szypowski tombstone, (d, e) façade of the District Courthouse in Warsaw at 127 Solidarności Street: memorial plaque commemorating the place of formation of the **AK** troop "*Leśnik*" (Forester), commanded by Jan Szypowski during the Warsaw Uprising and its locality, respectively (fot. T. Sałaciński, 2018)

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