

Appendix

The test results of inks that Tukes had tested are lot-specific.

The results of the analyses for polycyclic aromatic hydrocarbons (PAHs), primary aromatic amines and elements have been compared with:

- the recommendations in ResAP(2008)1 of the Council of Europe. Resolution on requirements and criteria for the safety of tattoos and permanent make-up (ResAP(2008)1):
https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805d3dc4
- the opinion of the European Chemical Agency (ECHA). Committee for Risk Assessment (RAC) and Committee for Socio-economic Analysis (SEAC), Opinion on an Annex XV dossier proposing restrictions on substances used in tattoo inks and permanent make-up: <https://www.echa.europa.eu/documents/10162/dc3d6ea4-df3f-f53d-eff0-540ff3a5b1a0>

Final background document: <https://echa.europa.eu/documents/10162/2f5b2f8c-430e-34db-2966-2f2d3e6c0bd6>

The results are presented only for inks which contain hazardous substances in concentrations above the maximum allowed concentrations set in ResAP(2008)1 and ECHA opinion.

The information on non-compliant products will be published in the EU's Safety Gate -system. The Safety Gate system facilitates the exchange of information on dangerous products found on the market:
https://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/repository/content/pages/rapex/index_en.htm

Table 1: Tested tattoo and permanent make-up inks

Table 2: List of analysed substances

Table 3: Results for inks containing substances above the specified concentration limits

Table 4: Hazard classifications and specified concentration limits: PAHs and aromatic amines

Table 5: Hazard classifications and specified concentration limits: Elements

Table 1 Tested tattoo and permanent make-up inks

Product name	Producer	LOT No.	Batch Code	Expire date
Panthera XXX Tribal Black	Yakuza Ink	3384	05052018	05/2020
Permablend Lady Bug	Permablend Pigments	PBLDBG180312	B10102	12/26/21
Chris Garver Solid Ink Blood Orange	The Solid Ink		7277	07/21
The Alex De Pase Series Magenta	Intenze Products Inc.	SS265	RD76O84B90BK140IMX40	12/31/2022
Muted Earth Tones Green Slime	Eternal Ink	05/21/18		05/21/21
Viking-ink Tribal	Viking-ink	1-101		01/2022
Arte Stylo Cafe	Charme International	180624		06/23
Amiea Organic Line Geisha	Mt. Derm GmbH	0010691		08/22
Dynamic BLK	Dynamic	12026230		
Bloodline All Purpose Black	Bloodline LLC			01/22
World Famous Tattoo Ink Rushmore Magenta	World Famous Tattoo Ink	WFRM180609	B10102	11/27/21
Micro Pigment Cosmetic Color Black (suspected counterfeit)	BioTouch		308457	
Mastór PMU Dark Pink M307	Mastor PMU		MFG:2016.03.12	2019.03.12
PMU Colour Inorganic Line Natural Plum	Wilde Cosmetics GmbH	0003649		08/2019
Janos Fehér's Erektion Black	H-A-N GmbH		RAB35-JAN-ERCBLK	
Kashoku Tattoo Ink Deep Black	Suzhou	180511	KAS30-DEEBLK	08/2021
Color King Crimson Red	Producer			
Color King Country Blue	Yakuza Ink			
Color King Black	Permablend Pigments			
Color King Orange	The Solid Ink			

Table 2 List of analysed substances

Polycyclic aromatic hydrocarbons (PAH)	Primary aromatic amines		Elements
Benzo(a)pyrene [50-32-8]	4-Aminoazobenzene [60-09-3]	2-Naphtylamine [91-59-8]	Chromium
Acenaphthene [83-32-9]	ortho-Aminoazotoluene [97-56-3]	5-Nitro-o-toluidine [99-55-8]	Cobalt
Acenaphthylene [208-96-8]	4-Aminodiphenyl [92-67-1]	4,4'-Oxydianiline [101-80-4]	Nickel
Anthracene [120-12-7]	6-Amino-2-ethoxynaphthaline [293733-21-8]	p-Phenylenediamine [106-50-3]	Zinc
Benzo(a)anthracene [56-55-3]	4-Amino-3-fluorophenol [399-95-1]	4,4'-Thiodianiline [139-65-1]	Arsenic
Benzo(b)fluoranthene [205-99-2]	Aniline [62-53-3]	4-Methyl-m-phenylenediamine [95-80-7]	Selene
Benzo(j)fluoranthene [205-82-3]	ortho-Anisidine [90-04-0]	o-Toluidine [95-53-4]	Cadmium
Benzo(k)fluoranthene [207-08-9]	Benzidine [92-87-5]	2,4,5-Trimethylaniline [137-17-7]	Antimony
Benzo(g,h,i)perylene [191-24-2]	4-Chloroaniline [106-47-8]	2,6-Xylidine [87-62-7]	Barium
Chrysene [218-01-9]	4-Chloro-o-toluidine [95-69-2]	2,4-Xylidine [95-68-1]	Mercury
Dibenzo(a,h)anthracene [53-70-3]	6-Methoxy-m-toluidine [120-71-8]		Lead
Fluoranthene [206-44-0]	4-Methoxy-m-phenylenediamine [615-05-4]		Copper
Fluorene [86-73-7]	4,4'-Methylenedianiline [101-77-9]		
Indeno(1,2,3-cd)pyrene [193-39-5]	3,3'-Dichlorobenzidine [91-94-1]		
Naphthalene [91-20-3]	3,3'-Dimethylbenzidine [119-93-7]		
Phenanthrene [85-01-8]	3,3'-Dimethoxybenzidine [119-90-4]		
Pyrene [1718-52-1]	4,4'-Methylenedi-o-toluidine [838-88-0]		
Benzo(e)pyrene [192-97-2]	4,4'-Methylene-bis-(2-chloroaniline) [101-14-4]		

Table 2 Results for inks containing substances above the specified concentration limits

Product name	Producer	Polycyclic aromatic hydrocarbons (PAHs) mg/kg		Total PAH's mg/kg	Primary aromatic amines mg/kg			Elements mg/kg				
		Benzo(a)pyrene [50-32-8]	Naphthalene [91-20-3]	Benzo(a)pyrene [50-32-8] Benzo(b)fluoranthene [205-99-2] Benzo(e)pyrene [192-97-2], Naphthalene [91-20-3], Benzo(a)anthracene [56-55-3], Chrysene [218-01-9], Benzo(j)fluoranthene [205-82-3], Benzo(k)fluoranthene [207-08-9], Dibenzo(a,h)anthracene [53-70-3]	4-Methyl-m-phenylenediamine [95-80-7]	o-Toluidine [95-53-4]	o-Anisidine [90-04-0]	Barium	Cadmium	Lead	Nickel	Zinc
The Alex De Pase Series Magenta	Intenze Products Inc.	n.d.	0.23	0.23	13	n.d.	7	52	n.d.	0.08	n.d.	3.7
Arte Stylo Cafe	Charme International	n.d.	0.28	0.28	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	22	18
Dynamic BLK	Dynamic	0.12	1.3	1.62	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Bloodline All Purpose Black	Bloodline LLC	0.14	1.1	1.46	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	40
Micro Pigment Cosmetic Color Black	BioTouch	0.18	1.3	1.94	n.d.	n.d.	n.d.	3.6	0.42	26	1.3	32
Mastór PMU Dark Pink M307	Mastor PMU	n.d.	0.24	0.24	n.d.	25	n.d.	2.4	n.d.	1.3	n.d.	1542
Color King Black	Permablend Pigments	0.32	1.5	1.88	n.d.	n.d.	n.d.	n.d.	0.52	30	n.d.	15
Color King Orange	The Solid Ink	n.d.	0.5	0.5	13	n.d.	n.d.	5214	n.d.	n.d.	n.d.	8.1

Table 3 Hazard classifications and specified concentration limits: PAHs and aromatic amines

	Polycyclic aromatic hydrocarbons (PAHs) mg/kg		Total PAH's mg/kg	Primary aromatic amines mg/kg		
	Benzo(a)pyrene [50-32-8]	Naphthalene [91-20-3]	Benzo(a)pyrene [50-32-8], Benzo(b)fluoranthene [205-99-2] Benzo(e)pyrene [192-97-2] Naphthalene [91-20-3], Benzo(a)anthracene [56-55-3], Chrysene [218-01-9], Benzo(j)fluoranthene [205-82-3], Benzo(k)fluoranthene [207-08-9], Dibenzo(a,h)anthracene [53-70-3]	4-Methyl-m-phenylenediamine [95-80-7]	o-Toluidine [95-53-4]	o-Anisidine [90-04-0]
CLP classification (Annex VI)¹	Skin Sens. 1 H317 (May cause an allergic skin reaction) Muta. 1B H340 (May cause genetic defects) Carc. 1B H350 (May cause cancer) Repr. 1B H360FD (May damage fertility, May damage the unborn child.)	Carc. 2 H351 (Suspected of causing cancer) Acute Tox. 4 (Harmful if swallowed)	Substances classified as Carc. 1B H350 (May cause cancer), except Naphthalene [91-20-3] classified as Carc. 2 H351 (Suspected of causing cancer).	Muta.2 H341 (Suspected of causing genetic defects) Carc. 1B H350 (May cause cancer) Skin Sens. 1 H317 (May cause an allergic skin reaction) STOT RE 2 H373 (May cause damage to organs thorough prolonged or repeated exposure) Acute tox 3 H301 (Toxic if swallowed) Acute tox. 4 H312 (Harmful in contact with skin)	Carc. 1B H350 (May cause cancer) Acute Tox. 3 H331 (Toxic if inhaled) Acute Tox. 3 H301 (Toxic if swallowed) Eye Irrit. 2 H319 (Causes serious eye irritation)	Muta. 2 H341 (Suspected of causing genetic defects) Carc. 1B H350 (May cause cancer) Acute tox.3 H311 (Toxic in contact with skin) Acute tox. 3 H301 (Toxic if swallowed) Acute tox.3 H331 (Toxic if inhaled)
ResAP (2008)¹²	5 ppb (0.005 mg/kg)	-	0.5 ppm (0.5 mg/kg)	should not contain or released from azo-colourants	should not contain or released from azo-colourants	should not contain or released form azo-colourants
ECHA opinion (Annex A)³	0.0000005% w/w (0.005 mg/kg)	0.00005% w/w (0.5 mg/kg) for individual PAHs (Carc./Muta.1 and 2)	-	0.0005% w/w (5 mg/kg)	0.0005% w/w (5 mg/kg)	0.0005% w/w (5 mg/kg)

¹ The Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation). EU harmonised classifications, ECHA C&L Inventory: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database>

²The maximum allowed concentration. Council of Europe, Resolution on requirements and criteria for the safety of tattoos and permanent make-up (ResAP(2008)1), https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805d3dc4

³ The specified concentration limit. ECHA Committee for Risk Assessment (RAC) and Committee for Socio-economic Analysis (SEAC). Opinion on an Annex XV dossier proposing restrictions on substances used in tattoo inks and permanent make-up: <https://www.echa.europa.eu/documents/10162/dc3d6ea4-df3f-f53d-ef0-540ff3a5b1a0>

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Table 6 Hazard classifications and specified concentration limits: Elements

Elements mg/kg					
	Barium	Cadmium	Lead	Nickel	Zinc
CLP classification (Annex VI)¹	-	Carc. 1B H350 (May cause cancer) Muta. 2 H341 (Suspected of causing genetic defects) Repr. 2 H361fd (Suspected of damaging fertility. Suspected of damaging unborn child) Acute Tox. 2 H330 (Fatal if inhaled) STOT RE 1 H372 (Causes damage to organs thorough prolonged or repeated exposure)	Repr. 1 A H360FD (May damage fertility, May damage the unborn child). Lact. H362 (May cause harm to breast-fed children)	Skin Sens. 1 H317 (May cause an allergic skin reaction) Carc. 2 H351 (Suspected of causing cancer) STOT RE 1 H372 (Causes damage to organs thorough prolonged or repeated exposure)	-
ResAP (2008)¹²	50 ppm (50 mg/kg)	0.2 ppm (0.2 mg/kg)	2 ppm (2 mg/kg)	As low as technically achievable	50 ppm (50 mg/kg)
ECHA opinion (Annex A)³	0.05 % w/w	0.00005 % w/w (0.5 mg/kg)	0.00007 % w/w (0.7 mg/kg)	0.0005 % w/w (5 mg/kg)	0.2 % w/w

¹ The Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation). EU harmonised classifications, ECHA C&L Inventory: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database>

² The maximum allowed concentration. Council of Europe, Resolution on requirements and criteria for the safety of tattoos and permanent make-up (ResAP(2008)1), https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805d3dc4

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