

National statistics on tattoo and permanent make-up related data

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Replies to questionnaires
Statistical data

Table A: Prevalence of tattoos and PMU inside and outside Europe.

Country	MS 1A. Population with tattoos (%)			MS 1B. Population with PMU (%)
	General	Male	Female	
In Europe				
AT	<u>19</u> (16y– 50+) 29 (16 – 29y) 26 (30 – 49y) 7 (>50y)			u
BE	u			u
BG	<u>10-12</u>			< <u>8</u>
CH	u			u
CY	<u>30</u>			<u>20</u>
CZ	u			u
DE	<u>9</u> 23 (16-29y)			u
	<u>15</u>	<u>14</u>	<u>15</u>	
	20 (15-34y)			
DK	19 (35-49y) 9 (50-64y) 3 (65-74y)			u
ES	u			u
	<u>10</u>			
FI	9 (15-19y) 12 (20-24y) 19 (25-29y)			u
	<u>10</u>	<u>11</u>	<u>9</u>	
FR	8 (18-24 y) 20 (25-34 y) 12 (35-49 y) 5 (50-64 y) 1 (> 64 y)			u
HU	50			u
IS	<u>70</u> (18-40y)			u
	<u>12.8</u>	<u>11.7</u>	<u>13.8</u>	<u>3</u>
	7.7 (12-17 y)			0 (12-17 y)
	22.1 (18-24 y)			0 (18-24 y)
IT	22.7 (25-34 y) 23.9 (35-44 y) 15.0 (45-54 y) 2.2 (> 54 y)			5.6 (25-34 y) 2.1 (35-44 y) 3.8 (45-54 y)
LI	u			u
LU	<u>60</u>			u
	<u>10</u> (12+)			
	2-3 (12-19 y)			
NL	20-30 (20-29 y) 25-30 (30-39 y) 25-30 (40-49 y) 10-15 (50-59 y) 10 (>60y)			u
NO	25 (<30 y) 10 (>30 y)			u
PL	<u>9</u> (15-50 y)			u
RO	u			u
SE	11			u
SI	u			u
SK	u			u
UK	u			u
Outside Europe				
CA	<u>24</u> (2013)	<u>26</u> (based on US study)	<u>22</u> (based on US study)	
	<u>21</u>	<u>19</u>	<u>23</u>	
	22 (18-24 y)			
US	30 (25-29 y) 38 (30-39 y) 27 (40-49 y) 11 (50-64 y) 5 (>65 y)			
NZ	<u>20</u>			

MS: Member States Question Number

y: years

Values underlined indicate the general population

Table B: Tattoo procedures, regrets and removals.

Country	Tattoo procedures (number/year)		Tattooed population with regrets (%)	Removal procedures (number/year)
	MS 4	TAT 10	MS 5	MS 6
In Europe				
AT	u		u	u
BE	u		20	u
BG	9 000		12 (10 for PMU)	u
CH	u	810 000 (VST)	u	u
CY	u		u	u
CZ	u		u	u
DE	u	u (UETA & BTV))	5	u
DK	u		Regret: 18 (F 17 and M 19) 13 (15-34y) 9 (35-49y) 40 (50-64y) Consider removal: 11 (F 10 and M 11) 12 (15-34y) 8 (35-49y) 12 (50-64y)	5% (F 4% and M 7%) 6% (15-34y) 5% (35-49y) 5% (50-64y)
ES	u	About 400/y multiplied by 2500 (1/2 of legal studios) = 1 million tattoos. With illegal tattoos --> more than 2 million tattoos (Untap)	u	u
FI	u		u	u
FR	u		u	1 (35-49 y)
HU	250 000		5-10	Low. Laser clinics perform special removals. Professional tattoo artist make special covers.
IS			5-10	
IT	388 (Only 1 studio reported by CNA)	u (ART) PMU: 1500/2000 per 100 000 habitants (ATEC)	17.2	u
LI	u		u	u
LU	u		Very low.	Many people go to Germany (better equipment).
NL	u		u	u
NO	u	650 professional artists make one/day = 152 750 tattoos/y. 4000 non professionals make one/week = 208 000 people/y (NTU)	u	u
PL	u		12	u
RO	u		u	
SE	1000/day (according to SRT)	1000/day (SRT)	u	u
SI	u		u	u
SK	u		u	u
UK	u		u	u
Outside Europe				
CA	u		17	u
US	u		14	96 000 (American Society of Dermatologic Surgeons in 2013)
NZ	u			u

MS: Member States Question Number
TAT: Tattooist Association Question Number
y: years

Table C: Age of individuals for their first tattoo or PMU.

Country	MS 2A. Age of people for 1st tattoo (years)		MS 2B. Age of people for 1st PMU (years)	
	General	Male	Female	
In Europe				
AT	16 – 30			25
BE	>18			>16
BG	18 (some 12-16 with parents consent)			25
CH	u			u
CY	18-20			25
CZ	u			u
DE	≤18 (17.6%) 18-35 (77%) ≥ 35 (4.8%)			u
DK	<20 (37%) 20-24 (25%) 25-34 (24%) 35-66 (18%)	<20 (39%) 20-24 (26%) 25-34 (23%) 35-66 (12%)	<20 (35%) 20-24 (23%) 25-34 (25%) 35-66 (18%)	u
ES	Legally min 18 (minors with tutors consent)			Legally min 18 (minors with tutors consent)
FI	u			u
FR	22			u
HU	18-25			u
IS	16-18			
IT	25			u
LI	u			u
LU	18 – 21 (a few years ago)			
NL	16 (12 with parents permission)			16 (12 with parents permission)
NO	25			
PL	<25			u
RO	u			u
SE	18-22			u
SI	u			
SK	u			u
UK	Legally min 18 (Exemption for medical reasons by qualified medical practitioner).			Legally min 18 (local authorities state a minimum age but not consistently applied).
Outside Europe				
CA	21-36 (36%) 32-42 (24%) 43-53 (15%)			u
US	<18 (16%) >18 (84%)			>35
NZ	<30 (33%) No age restrictions			

MS: Member States Question Number

Table D: Number of tattoos/person.

Country	MS 3. Number of tattoos/person (% population)		
	1	2-5	>5
In Europe			
AT	<u>13</u>	<u>≥ 6</u>	
BE	u	u	u
BG	<u>28</u>	<u>56.5</u>	<u>15.5</u>
CH	u	u	u
CY	u	u	u
CZ	u	u	u
DE	<u>34.9</u>	<u>51</u>	<u>14.3</u>
	<u>49</u> (F 52/M 45)	<u>23*</u> (F 23/M 22)	<u>29*</u> (F 25/M 32)
DK	51 (15-34y)	24 (15-34y)	25 (15-34y)
	47 (35-49y)	21 (35-49y)	32 (35-49y)
	48 (50-64y)	24 (50-64y)	28 (50-64y)
ES	u	u	u
FI	u	u	u
FR	<u>52</u>	<u>39</u>	<u>9</u>
HU	<u>20-30</u>	<u>30-40</u>	<u>30-40</u> (so called collectors are having continuous bigger tattoos)
IS	u	u	u
IT	66.2	31.3	2.5
LI	u	u	u
LU	20	50	
NL		50**	
NO	<u>10</u>	<u>60</u>	<u>30</u>
PL	<u>30</u>	<u>30***</u>	<u>20***</u>
		<u>20***</u>	
RO	u	u	u
SE	u	u	u
SI	u		
SK	u	u	u
UK	u	u	u
Outside Europe			
CN	<u>21****</u>		
	12 (18-29y)	19 (18-29y)	7 (18-29y)
US	12 (30-45y)	16 (30-45y)	5 (30-45y)
	9 (46-64y)	5 (46-64y)	0 (46-64y)
	3 (>65y)	3 (>65y)	0 (>65y)
NZ	Tattoos culturally based 'tell a story' and are built up over a number of tattooing sessions and are interlinked. Thus not possible to differentiate between individual tattoos.		

MS: Member States Question Number

F: Female

M: Male

y: Years

DK*: Ranges 1, 2-3, >4

NL**: Range >2

PL***: Ranges 1, 2-3, ≥5

CN****: Range ≥2

Table E: Number of tattoo artists and studios according to Member States' Authorities.

Country	MS 7A. Number registered/official	MS 7B. Number registered/official	MS 8A. Number NON registered/official	MS 8B. Number NON registered/official
	Tattoo studios	Tattoo artists	Tattoo studios	Tattoo artists
In Europe				
AT	u	u	u	u
BE	691	1 033	u	u
BG	151 (Under the Health Act, Additional Provisions, § 1, point 9 „f“ and Ordinance № 9 of 21.03.2005)	200 (Ministry of Health does not perform registration of tattoo artists)	u	u
CH	u	u	u	u
CY	8 (studios + artists)	8 (studios + artists)	40 (studios + artists)	40 (studios + artists)
CZ	u	u	u	u
DE	No obligation to register a tattoo studio.		u	
DK	u	A code for tattoo artist is lacking	u	u
ES	870 (Data provided by 12 out of 17 Regional Authorities)	u	u (Autonomous Communities and local authorities perform inspections to avoid this)	u
FI	250 (No legislation on official tattoo studios)	u (No legislation on official tattoo artists)	u	u
FR		3 500 - 4 000		
HU	150-200	400-500	150-200	400-500
IS	18			50-70
IT	2 055	2 500 - 4 000	u	4 000 - 1 0000
LI	5	6	u	u
LU	28	u	28 (According to registered tattoo artists, as many as the registered tattoo artists/studios)	National tattoo convention believes 10 times more non-registered than registered tattoo artists.
NL	969 (+ 1 027 for PMU)	1 000 – 2 000	500 – 1 000	500 – 1 000
NO	150-200	600	u	
PL	547	587	u	u
RO	146 in 2013	u	u	u
SE	800 - 1 000 (1.7 tattooists/studio)	u	15 000 start kits (on the home market with no estimate for how many of these kits used by official tattoo studios, but normal for a small town of 25-40 000 habitants is 5-10 home scratchers and 1-2 official tattoo studios)	u
SI	44 (studios + artists)	44 (studios + artists)	Number of unregistered tattoo studios and artists > than registered.	Number of unregistered tattoo studios and artists > than registered.
SK	207 (studios + artists)	207 (studios + artists)	u	u
UK	742 (TPIU 2008 for the Health and Safety Laboratory survey)	Hygiene licensing schemes exist only for studios/premises (not tattoo artists or individuals)	Illegal (Environmental Health officers inspection following discovery)	No official registration of tattoo artists
Outside Europe				
CA	885 (salons see Q9) Regulated by the individual provinces/territories	150 according to The Canadian Association of Face & Body Artists (Tattoos + PMU) Regulated by the individual provinces/territories	u	u
NZ	u		u Most cities and towns have commercial tattoo facilities.	
US	15 000			

MS: Member States Question Number

Table F: Number of tattoo artists and studios according to tattooist associations.

Country	Tattooists associations	TAT 2A. Number registered/official	TAT 3.2A. Number registered/official	TAT 3.1A. Number NON registered/official	TAT 4A. Number NON registered/official
		Tattoo studios	Tattoo artists	Tattoo studios	Tattoo artists
CH	VST	600	900	250	1 000
DE	UETA	8 000	u	u	6 000
DE	BVT	8 000	No separate registration process for artists and studios.	Outnumber the registered ones.	Outnumber the registered ones.
DK	DTL	u	0	3-400	1 000-1 200
ES	UNTAP	2200 - 2500	3 000-3 500	2000-5000 (30% - 40% working full time and the rest as complementary work or extra income)	2 000-5 000
IT	ART	1 500	2 500	u	> 30 000
IT	ATEC	10 20-30 (PMU)	u 5 (PMU)	15-20 20-30 (PMU)	u
IT	CNA	528 (2009) (Tattoos and piercings)	10 000	u	20 000
NO	NTU	250 only premises approved by health department	600-650 only premises approved by health department	50 not approved by government	4-5 000 not approved by government
SE	SRT	1 000 (some are registered as a beauty parlour, or other)	No official registration (Registration through health ministry, locally)	u	Home market is 10-1 compared to the legal tattoo artists

Table G: List of tattooist associations.

Country	MS 9. Number national associations of tattoo artists	Acronym	TAT 1. Number of members in association	TAT 11A. Number of customers/year	TAT 11B. Number of <18y customers/year
In Europe					
AT	Association within the Chamber of Commerce	WKO			
BE	YES				
BG	NO				
CH	Swiss Association of Tattoo Artists	VST	34	400 – 450	2%
CY	u				
CZ	u				
DE	United European Tattoo Artists	UETA	120	u	u
	German Federal Association for tattooing	BTV	800	Most customers are ≥18y (artists refuse for their own legal safety)	
	German Tattoo Organisation Pro Tattoo	DOT PT			
DK	Dansk Tatovør Laug	DTL	72	u	illegal
ES	Spanish National Union of Professional Tattooists	UNTAP	480	400	10-15%
FI	Finnish Tattoo Artist Association	FTAA			
FR	Syndicat National des Artistes Tatoueurs Association Tatouage et Partage	SNAT ATP			
HU	Professional and Interest Association of Tattoo Artists Association of Hungarian Tattoo Artists	TSZEE MTSZ			
IS	NO (certified tattoo artists Facebook group share information on dangerous and harmful tattoo inks)				
IT	Italian Association of Professional Piercers and Tattooists Association of united tattoo artists Tattooists Association Association of Corrective Aesthetic Tattoos National Artwork Confederation	APTPI ATIR ART ATEC CNA	100 100 23 000 (hairdressers and beauticians)	u 600-700 (PMU) 347 (Only 1 studio)	u 10-15 (PMU) 0 (Only 1 studio)
LI	NO				
LU	NO				
NL	Advocacy for Tattoo artists and Piercers	BVTP			
NO	Norwegian Tattoo Union	NTU	59	100 000	10 000
PL	No				
RO	Roman Tattoo union	UTR			
SE	Swedish Registered Tattoo Artists Association	SRT	110	u	<18y not allowed by members
SI	u				
SK	NO				
UK	Tattooing and Piercing Industry Union British Tattoo Artists Federation	TPIU BTAF			

MS: Member States Question Number
TAT: Tattooist Association Question Number
y: year

Table G: List of tattooist associations (continued).

Country	MS 9. Number national associations of tattoo artists	Acronym
Outside Europe		
CA	Allied Beauty Association	ABA
	Canadian Institute of Public Health Inspectors	CIPHI
	Canadian Network of Make-up Artists	CNMA
	Cosmetology Association of New Brunswick	CANB
	Cosmetology Industry Association of British Columbia	CIABC
	Esthetique SPA International	ESAPI
	International Spa Association	ISA
	Leading Spas of Canada	LSC
	The Cosmetology Association of Nova Scotia	CANS
Cosmetology Industry Association of Ontario	CIAO	
NZ	Tattoo Artist Association of New Zealand	TAANZ
US	National Tattoo Association	NTA
	Alliance of Professional Tattooists	APT
	Association of Professional Tattoo Artists	APTA
	American Academy of Dermatology	AAD
	New York Tattoo Society	NYTS
	Tattoo Directory	TD
	Idaho Tattoo Association	ITA
	Society of Permanent Cosmetic Professionals (PMU)	
	Permanent Makeup Society International (PMU)	
	American Academy of Micropigmentation (PMU)	
Conventional and Cosmetic Tattoo Association (PMU)		
MS:	Member States Question Number	

Table H: Ink and instrument purchase.

Country	Tattooist associations	Acronym	TAT 5. Where do members buy their ink	TAT 6. Volume of inks purchased yearly/member	TAT 9. Origin of equipment and needles purchase
CH	Swiss Association of Tattoo Artists	VSB	DE Bullets Ink	2 – 3 liters	There are too many to list.
DE	United European Tattoo Artists	UETA	Abstract Silver (UETA, BTV) Fix Ink (UETA, BTV) Magic Moon (UETA, BTV) Premier Products (UETA, BTV)	u	
	German Federal Association for tattooing	BTV	Tattoobedarf (UETA) Tattoo Safe (UETA, BTV) Tattoo Tools (UETA) Wildcat (BTV)	Only a fraction of the ink bought reaches a customer's skin. Most of it is wasted.	See TAT 5.
DK	Danish Professional Tattooist Association	DTL	Intenze Eternal Fusion	0.5-1 liters	
ES	Spanish National Union of Professional Tattooists	UNTAP	Only 80-85% of permitted inks is used and comes from the Black Steel Company	2- 3,2 liters (5-8 ml/tattoo)	<p>China</p> <p>Spain:</p> <p>AM Tattoo Supplies Alkimia Tattoo Akira Body Art NTS Black Steel Supplier Black Stone Pro Arts Sun Tattoo / Micky Sharpz Rufner Primo Tattoo Supplier La Morgue Tattoo Distribution Silvermoon Paratatuatur.es tatuajes.com Worldtattoozone.com FamilyArtTattooShop</p> <p>Europe:</p> <p>BarberDTS KillerInk Global Tattoo Suppliers LTD Lauro Polini</p>
IT	Tattooists Association	ART	ACME (ART), Aquafirenze (CNA), Biomutazione (ART), Biotek (ART, CNA), BMD sas (ART), BMD Tattoo Supply (CNA), Bodysupply (CNA), Calavera Tattoo Supply (ART), Clarissanails (CNA), Clinita (CNA), Color Lab (ART), Colour Waves Supply (ART), Chriss Supplies (ART), Crazy Tattoo (ART), Dimensione Tatuaggio (ART), GEKO Tattoo Supplies & Equipment (ART), Geko (ART), Goldeneyeitalia (CNA), I MAX (ART, CNA), Incredibile Tattoo Supply (ART), Italian Tatto Supply (ART), Lauropaolini (CNA), MA.PI. (ART), Mar-San Supply (ART), Max Signorello Tattoo Supply (ART), Micromutazioni (ART, CNA), Passion Tattoo Supply (ART), Professional Body Supply (ART), Ripar (CNA), Sfumature (CNA), Skin Energy (ART), Sunskin Tattoo Equipment (ART), Tattoo Art Club (ART), Tattoo Devices (ART), Tattoo Supplies (ART), Tattoo Supply/AI Sole dei Caraibi (ART), Truccopermanente (CNA), Yakuza Ink (ART)	u	See TAT 5.
	National Artwork Confederation	CNA		0.5 liters	See TAT 5.
	Association of Corrective Aesthetic Tattoos	ATEC		1 liters (PMU)	Distributor
NO	Norwegian Tattoo Union	NTU	Mokki Lundberg Tattoo Supply East Street Tattoo Supply Killer Ink Ebay	Depends on how the tattoo looks, its size and who the tattooartist is. More ink is bought than used and left over ink is thrown away.	See TAT 5.
SE	SRT Swedish Registered Tattoo Artists Association	SRT	Lundberg custom supply Eaststreet tattoo supply Killer ink	1.5-2 liters	See TAT 5.

TAT: Tattooist Association Question Number

Table I: Tattoo and PMU ink importers.

MS 10 Number ink importers in your country		
Country	Tattoos	PMU
In Europe		
AT	u	
BE	u	
BG	Hibiskus Group Ltd Radoev 23 Ltd Velev Tattoo Ltd	Capital - East Ltd Fashion Cosmetics Ltd
CH	u	
CY	u	
CZ	u	
DE	H-A-N GmbH Magic Moon MT.Derm GmbH Tattoo Goods, Dresden Tattoo Ink Manufacturers of Europe – TIME Tattoo Tools GmbH Tribal Jewelry GmbH WEFAcolors Jo Weinbach	H-A-N GmbH MT.Derm GmbH
DK	u	
ES	Alkimia Technology and Stetic American Cosmetics- Lola Samy AM Tattoo and Piercing Supplies Ecosmeticos Electric Ink NTS Europe Micropigmentación Corporación Española Starlight- Estetica Especializada Tevian	Alkimia Technology and Stetic American Cosmetics- Lola Samy AM Tattoo and Piercing Supplies Ecosmeticos Electric Ink NTS Europe Micropigmentación Corporación Española Starlight- Estetica Especializada Tevian
FI	u	
FR	French Touch Colors	Laboratoires Biotic Phocœa
HU	Radical shop Sebi Tattoo Supplies	
IS	Each artist or studio imports for itself and one store has sold ink.	
IT	Atomik Eternal Eternal/Fusion Tattoo Ink Fusion Tattoo Ink Karma Tattoo Intenzit Srl I Max International Srl Professional Body Supply Starbrite Colors: Colour Waves Supply	
LI	Only for their own studios	
LU	ITC Tattoo et Piercing Magic Moon Tattooing	
NL	Baloe La Coresse Coldskin / B.S. Trading BV TS Trading BV Tattworks	Ecuri Cosmetics B.V. Nouveau Contour

MS: Member States Question Number

Table I: Tattoo and PMU ink importers (continued).

MS 10 Number ink importers in your country		
Country	Tattoos	PMU
In Europe		
NO	Atomic Ink Diabolo genesis Diabolo genesis Plus Dynamic Easyflow Superior Electric Ink Eternal Fusion Ink Intenze Kuro Sumi Lining black Silverback Ink Star Brite Color Starlight Tattoo Goo	Ecuri Gaube Kosmetik Mabea PureBeau
RO	none	
SE	Majority of inks is imported (23 companies notified 1600 tattoo inks)	
SI	Only distributors, two of them provide tattooists, most buy ink online.	
SK	Tattoo Supply Slovakia Tattoo Supply Czech Republic Eternaltattooink Euro Tattoo Supply International	
Outside Europe		
CA	Badger Air Brush co. Cam's Tattoo Supply Stencil Stuff Products Demco Evanesco Cream Papillon Supply & Mfg. Biokolor Italia SRL Radiant Colors Schwan Stabilo Cosmetics GMBH & CO	
NZ	Ink supplies imported or made very locally (if for cultural reasons).	
US		u

MS: Member States Question Number

Table J: Tattoo and PMU ink production countries (in columns).

MS 11 Where are manufactured the inks imported in your country		
Country	Tattoos	PMU
In Europe		
AT	US, DE importers	u
BE	US	DE
BG	US (Intenze, Eternal, Kuro Sumi, Fusion) DE (HAN GmbH, brand Bullets) UK (Dr Sailor Company - Sailor Ink, Micky Sharp Supplies Limited - Micky Sharp ink) JP	DE, UK, ES, IL (Magic Cosmetic)
CH	u	u
CY	u	u
CZ	u	u
DE	US, UK, IT, JP, MX, BR	US
DK		u
ES	US, CN, DE, UK, IT	
FI	u	u
FR	US, CN (Imported by IT), DE, UK	u
HU	US, DE	CN
IS	US, Europe	
IT	US, DE, UK, SE	US, DE, FR
LI	DE	DE
LU	US, CN	
NL	US, CN	Europe, NL
NO	US, CN, DE, UK, ES, BR	DE, NL, AT
PL	u	u
RO	u	u
SE	u	u
SI	US JP	US
SK	US, PL, JP	CN
UK	86.7% purchased inks within UK: US (40% manufacturers) UK (32% manufactured) Asian (10% imported) Europe (4% manufacturers)	u
Outside Europe		
CA	US, CN, DE, IT	US, CN, DE, IT
NZ	US, CN	
US	US, CN	

MS: Member States Question Number

Table K: List of manufacturers according to Member States' Authorities.

MS 10 Number ink manufacturers		
Country	Tattoos	PMU
In Europe		
AT	u	
BE	u	
BG	u	
CH	u	
CY	u	
CZ	u	
DE	H-A-N, Magic Moon, MT.Derm, Tattoo Goods, Tattoo Ink Manufacturers of Europe – TIME, Tattoo Tools, Tribal Jewelry, WEFAcolors Jo Weinbach	H-A-N MT.Derm
DK	u	
ES	Laurendor, Euro Permanent Cosmetics	Laurendor, Euro Permanent Cosmetics
FI	u	
FR	French Touch Colors Laboratoires Biotic Phoceia	
HU	Webshops: Radical shop Sebi Tattoo Supplies	
IS	None	
IT	ABC INK, Nuova EUROCOLORI, Sunskin Tattoo Equipment, I Max International, di Max Grassi Incredibile Tattoo Supply, Yakuza Ink	Biotek
LI	Only for their own studios	
LU	None	
NL	None	
NO	None	None
PL	u	
RO	None	
SE	Majority of inks imported	
SI	None	
SK	Toppiercing – Tattoo Supply Slovakia, Eternaltattooink, Tattooshop, Tattoo-supply	
UK	u	
Outside Europe		
CA	Tattoo ink supplies are either imported or made on a very localised basis	
NZ	u	
US	Badger Air Brush, Cam's Tattoo Supply, Stencil Stuff Products, Demco, Evanesco Cream, Papillon Supply & Mfg., Biokolor Italia, Radiant Colors, Schwan Stabilo Cosmetics GmbH&co	

MS: Member States Question Number

Table L: Manufacturers production volume.

MAN 3. Yearly total production volume and European market share					MAN 8. Average sale price of production	
Manufacturers	Tattoo inks		PMU inks		A. Tattoo inks (€/ml)	B. PMU inks (€/ml)
	A. Volume produced/ year (m3)	B. Volume produced sold on the EU market (%)	C. Volume produced/ year (m3)	D. Volume produced sold on the EU market (%)		
A	2.3	90	1.15	66	0.31	5.5
B	10	98	0.05	100	0.15 – 0.50	5.9
C	4	90	0.2	60	0.35	0.45
D					0.4	
E	10	100	1	100	0.12	0.6
F			0.3	100		5
L			0.4	60		5.8

MAN: Manufacturers Question Number

Table M: Manufacturers quality features.

Manufacturers	MAN 1. Origin of the ingredients and raw materials used for manufacturing tattoo or PMU inks	MAN 2. Do you request purity certificate of raw materials to your providers	MAN 9A. Risk assessment of manufactured products and ingredients before putting them on the market.	MAN 9B. Notification to country Competent Authorities.	MAN 10. GMP in production of products	MAN 13. EU manufactured inks are safer than those coming from other countries
A	BASF (DE) Geotech (NL) Univar (DE) Kronox (DE) RoHa (UK) ProVita (ES) Roth (DE) VWR (DE)	NO	On final product and on ingredients	YES	YES	Yes, because EU manufacturer take safety seriously and EU resolution exists.
B	Different European manufacturers/distributors	Best ingredients available and make own tests	Only collection of raw material documents	YES	YES	Yes, restrictions in the past forced the manufacturer to change formulation of their products (e.g. replacement of yellow 74), this did not happen in all MS
C	Commercial secret	MSDS as available, other specifications	Tissue tests like cytotoxicity and UV-toxicity or physic-chemical-testings for contaminants like PAH, AA and heavy metal for the pigments and physic chemical assessment with the complete product	YES	YES	European Standards followed, controls in Europe more strict, better educated personal.
D	European companies	Purity	Ingredients and final product by CTL and other labs	YES	YES	Unknown, no information about their used formulation
E	France (Sensient, through LCM Company) Schülke & Mayr, Italy (FU/PhEur materials through resellers ACEF)	YES. The impurities/unwanted contaminants limits of each raw material MUST be well below the limits reported in RES AP 2008-1	YES. A Product Information File (similar to cosmetic one - Reg. 1223/2009). Evaluation assuming whole product applied is absorbed (tattoo inks bring pigments under the stratum corneum, reaching the derma)	NO (Not mandatory nor requested)	YES	RES AP 2008-1 is a good guideline (avoids problems). No other guidelines exist from USA (though FDA have something similar in study)
F		YES. GMP certificate	NO	NO	YES	
L	Sensient Corp. (US) Sun Chemical (US) Clariant GmbH (DE)	YES. Heavy metal content - Aromatic amines content	YES. On final product	NO	YES	Yes, more control on final product

MAN: Manufacturers Question Number

Table N: Label composition.

MAN 4.		MAN 5. Other information provided in the ink label					
Manufacturers	Labelling of list of ingredients on tattoo and PMU inks	Manufacturer name and address	Date of minimum durability	Conditions of use and warnings	Batch number	Guarantee of sterility of the contents	Other information, please specify
A	INCI Pigments in CI (decreasing order of concentration)	X	X	X	X		
B	INCI CI IUPAC (decreasing order of concentration)	X	X	X	X	X	<ul style="list-style-type: none"> • Date of production • Conditions of storage • Durability after opening • Type of product: tattoo colour / permanent make-up ink / Pigmentierfarbe • Address of distributor
C	CI (decreasing order of concentration)	X	X	X	X	X	Store in dark, dry and cool place Use product with xxx days after opening Product or ingredients can cause allergic reactions
D	Yes, see ingredients on the label	X	X	X	X	X	Use after opening within 365 days
E	INCI (following COSING) Pigments in CI (decreasing order of concentration)	X	X	X	X	X	Production is under the PRIVATE LABEL (not ABC INK). ABC INK provides all needed data for the own label of the customer.
F		X	X	X	X	X	
L	CI (decreasing order)	X	X	X	X	X	
SRT (SE)	Labelling chemical composition of the colour not required, basic ingredients required (such as # pigment, distilled water, thickener, preservative, alcohol), tapping date, exp date, method of packing and sterilization, exp date after opening, information regarding max temperature of storing, origin of the product batch number required for client of any colour used (if problem, leads the client to full information of content through the registration law that should be followed by anybody who distribute colours in Sweden).						

MAN: Manufacturers Question Number

Table O: Size of ink containers.

Country	Tattooist associations	TAT 8. Single or multiple ink containers
CH	VST	S
DK	DTL	S
DE	UETA	M (bottles multiple, caps single for each customer)
DE	DOT	
DE	BTV	M (no single use containers sold, single use containers are considered unsuitable for tattoo inks)
ES	UNTAP	S (reusing is minimal, ink is affordable so people do not buy large containers to fill)
IT	ART	M
IT	ATEC	S
IT	CNA	S (Backstage studio) 12-15 ml (members)
NO	NTU	S
SE	SRT	S

MAN 7. Single or multiple ink containers

Manufacturers	Tattoo inks: Single or multiple use containers	PMU inks: Single or multiple use containers
A	M	S & M
B	M Single use containers do not respect the way tattoo artists work in general and the market does not accept it.	M Single use containers, but it is not a good solution for cosmeticians that mix their inks for working (50%)
C	M	M
D	M	
E	S (1st choice monodose) M (10-30-50-150- mL bottles requested by customers despite RES AP 2008-1).	S (1st choice monodose) M (10-30-50-150- mL bottles requested by customers despite RES AP 2008-1).
F		S
L		S & M

MAN: Manufacturers Question Number
TAT: Tattooist Associations Question Number
S: Single
M: Multiple

Table P: Manufacturers client feed-back.

Manufacturers	MAN 11. Contact with the clients after sale	MAN 12. Client feedback in case of problems with the inks or undesirable effects in tattooed persons as result of the inks
A	Feedback of tattooists	Allergies
B	Some clients to say they are happy or if they have a problem (not often). Collection of feedback using Facebook.	Sometimes, very seldom
C	General support, adjustment of recipes, troubleshooting services, recommendations for clients with allergic background	In case of assumedly allergic reactions or infections caused by the ink
D	Information according statement of facts	No negative results
E	As the client's name/brand is on label, there is a continuous feedback for business development (client & final user satisfaction, product evolution).	Lack of brightness or not dark enough (due to safer pigments who lack colouring power compared to risky ones).
F	Strong relation to teach and train customers in using our colours.	None
L	YES. Customer care and client satisfaction	YES. Normally positive feedback on duration and tint holding in time

MAN: Manufacturers Question Number

Table Q: General issues.

MS14. Problems	MS17. Comments	TAT12. Problems	TAT13. Comments	MAN14. Problems encountered by your Company with manufacturing and distribution of inks	MAN15. Comments
Country	Safety improvements needed	Improve trade	Need for clear composition labelling	Analytical methods	Inks
AT		Inks bought mainly online – surveillance difficult.			
BE	Need to register side effects				
BG		Mainly via internet	Lack of composition certificates		
CH			Incomplete labelling of colours		
DE	1. Safety assessment should be obligatory 2. Missing guideline for risk assessment (B) 3. Missing GMP for tattoo - draft version of TIME exists (B)	Uncertain situations with pigment suppliers (C)	1. Incomplete list of ingredients 2. Manufacturer's list of ingredients inconsistent with importer's one	1. Missing method for quantification of soluble barium (MS) 2. No uniform rating by the authorities and according to their testing methods (D) 3. Missing standards for tests (B)	
ES		More control on web sales (illegal inks can be bought on the web)			Poor quality of authorised tattoo ink , better quality is available among non authorised ones (UNTAP)
FI		1. Exact chemical composition (including substance concentrations) difficult from market operators 2. Obligations of chemical legislation not well known by market operators			
IT		1. Compliance with regulations/meeting specifications workflow avoids problems (chemical or microbiological, no RAPEX) but leads to higher final product price than current prices (mainly imported products) (E) 2. PMU:correct obscene work with no knowledge of the installation, color changes and migration of pigments (ATEC) 3. Lack of training and knowledge of proper health and hygiene practices (ATEC)	Often confusion with Cosmetic products on labeling (L)	Methods for measuring heavy metals not defined (L)	Despite microbiological and chemical problems, clients continue with multidose sizes (E, F)

MS: Member States Question Number
MAN: Manufacturers Question Number
TAT: Tattooist Associations Question Number

Table Q: General issues (continued).

MS14. Problems	MS17. Comments	TAT12. Problems	TAT13. Comments	MAN14. Problems encountered by your Company with manufacturing and distribution of inks	MAN15. Comments
Country	Safety improvements needed	Improve trade	Need for clear composition labelling	Analytical methods	Inks
LI			Incomplete labelling of colours		
LU			1. Unlabelled containers with mixed or diluted inks 2. Labels poorly glued		Use of expired tattoo inks
NL				Harmonisation needed with high priority (e.g. PAA and PAH)	
NO	1. Stop hometattooers and sales of "start-kit" 2. Mandatory hygiene and ink-control classes 3. Public web-site with list of authorised studios (NTU)	Suppliers do not follow regulation (NTU)			
SE	Stop hometattooers (SRT)	Fake CE marking, questionable info (e.g. sterility of needles when it is not) (SRT)			Poor quality inks in terms of impurities from China (SRT)
SI	Make safety assessment of tattoo inks available to tattooists				
SK		Counterfeit products			

MS: Member States Question Number
 MAN: Manufacturers Question Number
 TAT: Tattooist Associations Question Number

Table R: Regulatory issues.

Country	Regulation in place	No compliance	Regulation required	Compulsory notification
In Europe				
BE		CoE ResAP	At EU level	
CH	yes	Pigments and preservative difficult to find colours according to ResAP (VST)	Establishing positive list of colorants (VST)	
DE	yes	Banned colorants and preservatives, heavy metals, PAA, PAH, unregulated dyes	<ol style="list-style-type: none"> 1. ≠ laws and requirements in MS (B, C & A) 2. Changing regulations (C) 3. CEN hygiene standard still missing (UETA) 4. Poor collaboration between manufacturers & authorities (C) 5. Guidance values for technically unavoidable impurities amounts 6. Sterility 7. System to report undesirable health effects 	<ol style="list-style-type: none"> 1. Place of production in DE or place of import in DE 2. Ingredients
ES	yes	<ol style="list-style-type: none"> 1. Tattoo inks not authorised by AEMPS 2. Incorrect labelling 	Better if at EU level (UNTAP)	
FI		"Backyard tattoo shops" out of surveillance authorities powers Obligations stipulated in health protection and consumer safety legislation not well known by tattoo service providers in general	At EU level and CEN standards	
IT	CoE ResAP applies	Sealed tattoo inks microbiologically contaminated, PAA, PAH, heavy metals	<ol style="list-style-type: none"> 1. Lack of a law establishing training and regulation of the profession (CNArt) 2. Regulations not clear (L) 	
LI		banned colorants and preservatives		
LU			To prevent illegal studios and artists	
NL	yes	PAA, PAH		
NO	yes	PAA and impurities (NTU)	Single negative or positive list instead of referencing various lists in different legislations	
SE	yes	PAA, PAH, heavy metals, missing compulsory warnings for Ni, composition labels, batch n., sterility indication and SRT		
SK		Heavy metals, missing identification of responsible person (importer)		
Outside Europe				
NZ	Voluntary guidelines	Heavy metals		
US		Pigments listed on MSDS do not reflect the actual ink composition		

Table S: Health problems.

Country	MS 16. Presence of register for adverse effects/Vigilance system	Registered adverse effects - chemical composition	Registered adverse effects - microbiological contamination
In Europe			
AT	no		
BE	no		
BG	no		
CH	no		
CY	no		
CZ	no		
DE	no	1. Extremely rare (allergic reactions to red inks) (BTV) 2. Allergies (A)	Extremely rare (troubles with wound healing) (BTV, see also 2010, Klügl)
DK	no		
ES	National cosmetovigilance system		
FI	no		
FR	yes	Hypersensitivity reactions (eczema, granulomatous, sarcoid, pseudolymphomatous reactions)	Bacterial infections (Mycobacterium chelonae)
HU	no		
IS	no		
IT	no		
LI	no		
LU	no		
NL	Online website where consumers can register complains after using cosmetic products		
NO	yes		
PL	no		
RO	yes		
SE	no	Allergic reaction (SRT)	MRSA, hepachitis, syphilis, infections (SRT)
SI	no		
SK	no		
UK	no		
Outside Europe			
CA	The Consumer Product Safety Program tracks trends in complaints and incidents. Both consumers and industry submit incident reports on a voluntary basis. A safety alert was published to warn Canadians about the risks of removal products.		
US	MedWatch (for Adverse Events) FDA (for Consumer Complaints)		

MS: Member States Question Number

Table T: Market surveillance.

Country	MS 13. Market surveillance	Samples	Results	Entity
In Europe				
AT	yes	15 tattoo dyes in 2012	6 Ni excess levels 2 Ba excess levels One 100 times ResAP-limit	Conseil Superieur Sante
BE	yes		Report	Conseil Superieur de la Sante
BG	yes		GRAS-RAPEX	Regional Health Inspectorates
CH	yes		Report 2014	Health Protection Department of the Canton Basel
CY	yes		RAPEX	
CZ	no			Czech Trade Inspection
DE	yes	1 000 since 2010 --> >22 000 results	<ul style="list-style-type: none"> • Microbiology • Elements amounts <ul style="list-style-type: none"> • PAA • Preservatives • PAH • Dyes 	Market surveillance authority
DK	no			
ES	yes		<ul style="list-style-type: none"> • Commercialization tattoo inks not authorized by the AEMPS • Incorrect labelling • Microbial contamination due to inadequate manipulation 	Autonomous Communities
FI	yes			Based on RAPEX-notifications.
FR	yes	52 in 2012-2013	<ul style="list-style-type: none"> • Sterility • PAA • Heavy metal 	Market control
HU	no			
IS	no			
IT	yes	34 tattoo and 11 PMU brands in 2013-2015	<ul style="list-style-type: none"> • microbiological contamination • PAA, PAH • Ni, Ba, Sb, Pb, As, Cd (See RAPEX notifications) 	
LI	yes			Performed by CH
LU	yes	5 in January-March 2014	Ag,Al, Ba, Co, Cr, Cu, Fe, Ga, Mg, Mn, Mo, Ni, Pb, Sn, Sr, Ti, V, Zn, Zr	Luxembourg Institute of standardization, accreditation, security and quality of products and services (ILNAS)
NL	yes	<ul style="list-style-type: none"> • 2004 • 2014 	PAH	Food and Drug Administration
NO	yes			
PL	no			
RO	no			
SE	yes	<ul style="list-style-type: none"> • 31 in 2010 • 14 in 2012 • 20 tattoos and 9 PMU in 2014-2015 	<ul style="list-style-type: none"> • impurities • PAA, PAH & benzo-a-pyrene • Sb, As, Ba, Pb, Zn 	Swedish Chemicals Agency Swedish Chemicals Agency Medical Products Agency
SI	yes	2013 in 2010-2013	<ul style="list-style-type: none"> • different metals in different colours • some PAHs • exceptionally PAA • all complied with sterility testing • some non-allowed ingredients 	
SK	yes		<ul style="list-style-type: none"> • Cu 26 737 mg/kg • RAPEX 	
UK	yes	12 brands, 143 products in 2008 & 2010	<ul style="list-style-type: none"> • microbiology • toxic metals 	Health and Safety Laboratory
Outside Europe				
CN	no	Done in 2011, testing for heavy metals and microbial contamination		Health Canada
NZ	yes		heavy metals	Ministry of Health

MS: Member States Question Number

Replies to questionnaires
Ink ingredients

Table A: List of colorants in use in tattoo inks and found in market surveillance activities.

Colour Index Generic Name	Market surveillance		Used as ingredient in tattoo inks			
	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
AR 14	14720					
AR 18	16255	BG		CA (>30%)		
AR 51	45430	BG				
AR 87	45380	BG				
BR 1	45160	CH, LI	DE			
Cinnabar (HgS)						
DR 53						
Oxamine B	22095	NL	NL			
FR 17:1	16035:1	BG, NL	DE, IT, NL			
NR 4	75470	NL	NL			
NR 22	75510					
NR 23	75510					
PR 2	12310	BG, CH, LI	IT	US		
PR 3	12120	CH, LI				
PR 4	12085	CH, LI, NL	DE, NL			
PR 5	12490	BG, CH, DE, LI, IT ¹	IT		BVT	A (25%), D
PR 7	12420		prohibited in FR			
PR 9	12460					
PR 12	12385	CH, LI				
PR 14	12380					
PR 15	12465			CA (>30%)		
PR 17	12390		IT			
PR 22	12315	BG, CH, DE, LI, IT ²	IT	CA (>30%), US	DTL, NTU	D, H
PR 23	12355	DE		US		H
PR 48:1	15865:1				NTU	
PR 49	15630	CH, LI				
PR 49:2	15630:2	IT ³	IT			
PR 51	15580	CH, LI	DE			
PR 53:1	15585	CH, LI	DE			
PR 57:1	15850:1	BG, CH, DE, LI, NL	NL			
PR 57:2	15850:2	BG, CH, LI				
PR 60	16105		IT			
PR 63:1	15880	CH, LI		US		
PR 101 and 102	77491	BG, DE, ES, NL	DK, ES, IT, NL	CA (>30%), US	BVT, DTL, NTU	D (<40%), E, F, H
PR 112	12370	CH, DE, LI, NO	NO, prohibited in FR	CA (>30%)	ART, BVT	D (<40%)
PR 120	12474		DE			
PR 122	73915	BG, CH, DE, LI, NO, SE	DK, IT, NO, SE, prohibited in FR	CA (>30%), US	ART, BVT, DTL, NTU	D (<40%), E, H
PR 146	12485	CH, DE, LI, NL, SE	DK, IT, NL, SE	CA (>30%)	BVT, UETA	D (<40%), I
PR 170	12475	BG, CH, DE, LI, IT ⁴ , NL, NO	DK, IT, NL, NO	US	ART, BVT, NTU, UETA	C, D (<40%), E, F, H, I
PR 177	65300					
PR 179	71130	DE		US		
PR 181	73360	BG, CH, DE, LI	IT			
PR 202	73907	CH, DE, LI, SE	IT, SE		ART	
PR 210	12477	BG, CH, LI, DE, NL, NO, SE	IT, NL, NO, SE	CA (>30%), US	BVT, DTL, NTU	D (<40%), E, F, H
PR 222	123665			US		
PR 242	20067					
PR 254	56110	CH, DE, LI, SE	IT, SE	US	ART, UETA	I
PR 257	56270					
PR 266	12474	CH, DE, LI	DK			
PR 269	12466	BG, NL, NO	IT, NL, NO		ART, NTU	
PR 340		BG				
SR 1	12150					

Market surveillance			Used as ingredient in tattoo inks			
Colour Index Generic Name	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
AY 3	47005	BG, CH, DE, LI, NL	IT, NL			
AY 9	13015					
AY 23	19140	CH, DE, LI, SE	IT, SE	CA (>30%)		
AY 104	15985:1	DE				
Diarylide Y				US		
Arylide Y				US		
FY 3	15985	ES	ES, IT		UETA	
PY 1	11680	BG, CH, DE, LI, IT ⁵ , NL	DK, prohibited in FR, IT, NL		ART, BVT	C (<40), E (25%)
PY 3	11710	CH, DE, LI, IT ⁶ , NL	IT, NL	US		
PY 12	21090	CH, LI		CA (>30%)		
PY 14	21095	CH, DE, LI, IT ⁷ , NO, SE	IT, NO, SE		BVT, NTU	C (<40), I
PY 36	77955					
PY 42 and	77492	DE	IT, NL	CA (>30%), US	BVT, DTL,	C (<40), G, H, I
PY 55	21096					
PY 65	11740	BG, CH, DE, LI, IT ⁸ ,	IT, NO	US	NTU	H
PY 74	11741	BG, CH, DE, LI, IT ⁹ , NL, NO, SE	DK, IT, NL, NO, SE	CA (>30%), US	ART, BVT, DTL, NTU	C (<40), G, I
PY 83	21108	BG, CH, DE, LI, IT ¹⁰ , NO	prohibited in FR, IT, NO	CA (>30%), US	ART, BVT, DTL, NTU	C (<40), G, H, I
PY 87	21107:1		IT			
PY 93	20710		IT			
PY 97	11767	CH, DE, LI, NL	DK, IT, NL	CA (>30%)	ART, BVT	B, C (<40), H
PY 100	19140:1					
PY 110	56280					B (evaluation)
PY 119	77496			CA (>30%)		
PY 138	56300	CH, DE, LI	IT	US	ART, UETA	A (0-40%), B
PY 139	56298					B (evaluation)
PY 151	13980	CH, LI, DE, NL, NO	IT, NL, NO	CA (>30%), US	ART	
PY 154	11781	CH, LI				
PY 155	200310	DE			UETA	D
PY 180	21290	NL	NL			
PY 194	11785			US		
AB 9	42090	BG, DE, NL	NL	CA (0.1-0.3%)		
DB 86	74180				NTU	
PB 15	74160	BG, CH, DE, LI, ES, NL, NO, SE	DK, ES, IT, NL, NO, SE	CA (>30%), US	ART, BVT, DTL, NTU, UETA	A (0-20%), B, C (x<25), D, E (25%), G, H, I
PB 17	74180 74200				NTU	
PB 25	21180	IT ¹¹	IT		NTU	
PB 27	77510	BG, ES	ES			
PB 29	77007	BG, DE, NL	NL		BVT	C (x<30)
PB 60	69800					B (evaluation)
Lawsonone	75480					
PO 5	12075	CH, DE, LI, NO	NO			G, I
PO 13	21110	BG, CH, DE, LI, NL, NO	IT, NL, NO	CA (>30%), US	ART, BVT, DTL, NTU	C (x<40), H
PO 16	21160	BG, CH, DE, LI, IT ¹² , NL, NO, SE	IT, NL, NO, SE	CA (>30%), US	ART, BVT, DTL, NTU	C (x<40), G, I
PO 22	12470	NL	NL			
PO 34	21115	CH, DE, LI	IT		ART, NTU	
PO 36	11780		DK			

Market surveillance			Used as ingredient in tattoo inks			
Colour Index Generic Name	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
PO 43	71105	CH, DE, LI, NL, NO	DK, prohibited in FR, IT, NL, NO			
PO 73	561170	CH, DE, LI, NL, SE	IT, NL, SE		ART, UETA	A (0-15%), B, D
PO 74						
BV 10	45170	BG, DE, CH, LI	prohibited in FR, IT	US	NTU	H
PV 1	45170:2	BG		US		
PV 12	58050			US		
PV 15	77007		IT			
PV 16	77742	DE, NL	IT, NL	US		
PV 19	73900	CH, DE, LI, NL, NO	prohibited in FR, NL, NO	CA (>30%), US	BVT, UETA (prohibited)	C (x<40), G, H, I
PV 23	51319	BG, CH, LI, DE, NL, NO	DK, NO, prohibited in FR, IT, NL	CA (>30%), US	ART, BVT, DTL, NTU, UETA (prohibited)	C (x<40), E (25%), G, H, I
PV 37	51345	CH, DE, LI	IT		ART, UETA	A (0-10%), B, D
VV 2	73385	DE			NTU	
Ferrous oxide,black	77489	BG, NL, SE	IT, NL, SE			
PBlack 2				US		
PBlack 6 and 7	77266 77265	BG, DE, ES, NL, NO, SE	DK, ES, IT, NL, NO, SE	CA (>30%)	ART, BVT, DTL, NTU, UETA	A (0-20%), B, C (x<25), D, E (25%), G, H, I
PBlack 9	77267	NL	NL			
PBlack 11	77499	DE, ES, NL	ES, IT, NL			
PBlack 15				US		
PBr 6 and 7	77491 77492 77499	BG, DE, ES, NL, NO, SE	ES, IT, NL, NO, SE	CA (>30%), US	BVT, NTU	C (x<35)
PBr 25	12510	CH, DE, LI, IT ¹³ , NL	DK, IT, NL		ART	
PBr 175		BG				
AG 25	61570	NL	NL			
PG 7	74260	BG, CH, DE, LI, NO	DK, prohibited in FR, IT, NO	CA (>30%)	ART, DTL, NTU, UETA (prohibited)	A (0-20%), B (not used but would like), E (25%), G, C (x<30)
PG 17	77288	BG, DE, ES	ES		BVT	
PG 18	77289					
PG 36	74265	BG, CH, DE, LI, NL, NO	IT, NL, NO	US	ART, BVT, NTU	B, C, D
Aluminium Silicate	77004					
Barium sulphate	77120					
PW 4	77941		IT			
PW 6	77891	BG, DE, ES, NL, NO, SE	DK, ES, IT, NL, NO, SE	US	ART, BVT, DTL, NTU, UETA	A (0-45%), B, C (x<60), D, E (25%), G, H, I

IT¹ o-toluidine, 167 mg/Kg; p-chloroaniline, 52 mg/Kg; p-cresidine, 1.0 mg/Kg (as impurities or reductive cleavage products)

IT² 2-methyl-5-nitroaniline, 40 mg/Kg; 2,4-diaminotoluene, 400 mg/Kg (as impurities or reductive cleavage products)

IT³ 3,3'-dichlorobenzidine, 3,3 mg/Kg (as impurity or reductive cleavage product)

IT⁴ o-toluidine, 27 mg/Kg; o-anisidine, 1.7 mg/Kg; p-chloroaniline, 23 mg/Kg; 2-methyl-5-nitroaniline, 47 mg/Kg; 2,4-diaminotoluene, 238 mg/Kg (as impurity or reductive cleavage products)

IT⁵ o-toluidine, 8.5 mg/Kg (as impurity or reductive cleavage product)

IT⁶ o-anisidine, 28 mg/Kg (as impurity or reductive cleavage product)

IT⁷ o-toluidine, 100 mg/Kg average (as impurity or reductive cleavage product)

IT⁸ o-anisidine, 200 mg/Kg average (as impurity or reductive cleavage product)

IT⁹ o-anisidine, 250 mg/Kg average; o-toluidine, 3.0 mg/Kg (as impurities or reductive cleavage products)

IT¹⁰ o-anisidine, 175 mg/Kg (as impurity or reductive cleavage product)

IT¹¹ o-anisidine, 20 mg/Kg average (as impurity or reductive cleavage product)

IT¹² o-anisidine, 250 mg/Kg (as impurity or reductive cleavage product)

IT¹³ o-toluidine, 2.7 mg/Kg; p-chloroaniline, 29 mg/Kg

Table B: List of colorants in use in PMU inks and found in market surveillance activities.

Colour Index Generic Name	Market surveillance		Used as ingredient in PMU inks			
	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
AR 14	14720		IT			
AR 18	16255		IT	CA (>30%)		
AR 51	45430			CA (>30%)		
AR 87	45380	ES	DK, ES			F
BR 1	45160	CH, LI				
Cinnabar (HgS)						
DR 53	22095					
Oxamine B						
FR 17:1	16035:1	DE, ES	DK, ES, IT			A (0-30%), F
NR 4	75470	SI	IT			
NR 22	75510	DE				
NR 23	75510	DE				
PR 2	12310	CH, LI				
PR 3	12120	CH, LI				
PR 4	12085	CH, LI	IT			F
PR 5	12490	CH, LI	IT	CA (>30%)	BVT	A (0-30%), E (25%)
PR 7	12420	DE	prohibited in FR			
PR 9	12460					
PR 12	12385	CH, LI				
PR 14	12380					
PR 15	77015					
PR 17	12390					
PR 22	12315	CH, LI				
PR 23	12355					
PR 48:1	15865:1					
PR 49	15630	CH, LI				
PR 49:2	15630:2					
PR 51	15580	CH, LI				
PR 53:1	15585	CH, LI				
PR 57:1	15850:1	CH ¹ , LI, ES	ES, IT		CNA	F, L (<20%)
PR 57:2	15850:2	CH ² , LI				F
PR 60	16105					
PR 63:1	15880	CH, LI				
PR 101 and 102	77491	DE, ES, SE, SI	DK, ES, IT, SE	CA (>30%)	BVT, CNA	A (0-35%), C (<40)
PR 112	12370	CH, LI	prohibited in FR, IT			
PR 120	12474					
PR 122	73915	CH, LI, ES, SI	ES, prohibited in FR		BVT	C, L (<30%)
PR 146	12485	CH, LI				
PR 170	12475	CH ³ , LI, SI			CNA	B
PR 177	65300					
PR 179	71130				CNA	
PR 181	73360	CH, DE, LI, ES, SE, SI	ES, SE	CA (>30%)		A (0-25%), L (<45%)
PR 202	73907	CH, DE, LI, SI				
PR 210	12477	CH, LI, SI				
PR 222	123665					
PR 242	20067					L (<35%)
PR 254	56110	CH, DE, LI, SI			CNA	L (<50%)
PR 257	56270					
PR 266	12474	CH ⁴ , LI				
PR 269	12466					
PR 340						
SR 1	12150	ES	DK, ES			

Colour Index Generic Name	Market surveillance		Used as ingredient in PMU inks			
	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
AY 3	47005	CH, DE, LI	DK, ES, IT	CA (>30%)		
AY 9	13015					
AY 23	19140	CH, DE, LI, ES, SE	ES, IT, SE	CA (>30%)	CNA	F
AY 104	15985:1		IT			
Diarylide Y						
Arylide Y						
FY 3	15985					A (0-20%), F
PY 1	11680	CH, LI	prohibited in FR			E (25%)
PY 3	11710	CH, LI				
PY 12	21090	CH, LI				
PY 14	21095	CH, LI, SI				
PY 36	77955					
PY 42 and 43	77492	DE, ES, SI	DK, ES, IT	CA (>30%)	BVT, CNA	C (x<40)
PY 55	21096					
PY 65	11740	CH, LI, SI				
PY 74	11741	CH, LI				
PY 83	21108	CH, LI	prohibited in FR			
PY 87	21107:1					
PY 93	20710	DE				
PY 97	11767	CH, DE, LI				B
PY 100	19140:1					A (0-10%)
PY 110	56280					B (evaluation)
PY 119	77496					
PY 138	56300	CH, LI				A (0-20%), B
PY 139	56298					B (evaluation)
PY 151	13980	CH, LI				
PY 154	11781	CH, LI			CNA	
PY 155	200310					
PY 180	21290					
PY 194	11785					
AB 9	42090	DE	DK, IT			
DB 86	74180					
PB 15	74160	CH, DE, LI, SI	IT	CA (>30%)	BVT	A (0-15%), B, C (x<35), E (25%)
PB 17	74180					
PB 17	74200					
PB 25	21180					
PB 27	77510		IT			
PB 29	77007	DE, ES, SI	ES, IT	CA (>30%)	BVT	C (x<30), F
PB 60	69800					B (evaluation)
Lawsonone	75480					
PO 5	12075	CH, LI				
PO 13	21110	CH, LI, SI				
PO 16	21160	CH, LI				
PO 22	12470					
PO 34	21115	CH, LI				
PO 36	11780					
PO 43	71105	CH, LI	prohibited in FR			
PO 73	561170	CH, LI				B
PO 74						

Market surveillance			Used as ingredient in PMU inks			
Colour Index Generic Name	Colour index Constitution Number	Country	Country	Jurisdictions	tattooist associations	manufacturers
BV 10	45170	CH, LI	prohibited in FR			
PV 1	45170:2					
PV 12	58050					
PV 15	77007					
PV 16	77742	DE, SE	DK, IT, SE		BVT	C (x<30), F
PV 19	73900	CH, LI	prohibited in FR			
PV 23	51319	CH, LI	prohibited in FR			
PV 37	51345	CH, LI				
VV 2	73385					
Ferrous oxide,black PBlack 2	77489	NL, SE, SI	DK, IT, NL, SE		BVT	C (x<40)
PBlack 6 and 7	77266 77265	DE, ES, NL, SI	ES, IT, NL	CA (>30%)	CNA, BVT	A (0-20%), B, C (x<25), E (25%), F, L (<55%)
PBlack 9	77367					
PBlack 11	77499	DE, ES, NL, SE, SI	ES, IT, NL, SE		CNA, BVT	A (0-50%), C (x<40), L (<40%)
PBlack 15	77403					
PBr 6 and 7	77491 77492 77499	DE, ES, SE, SI	DK, ES, NL, SE	CA (>30%)	CNA, BVT	A (0-20%), F, C (x<35), L (<60%)
PBr 25	12510	CH, LI				
PBr 175						
AG 25	61570					
PG 7	74260	CH, LI, SI	prohibited in FR			
PG 17	77288	DE	IT	CA (>30%)	CNA	B (not used but we would like to use it), E (25%)
PG 18	77289	ES	ES, IT			
PG 36	74265	CH, LI				
Aluminium Silicate (bentonite, White)	77004	DE				
Barium sulphate	77120					
PW 4	77941					
PW 6	77891	DE, ES, SE, SI	DK, ES, IT, SE		BVT, CNA	A (0-50%), B, C (x<60), L (<60%)

CH¹ (not differentiated from free Base or :2)

CH² (not differentiated from free Base or :1)

CH³ 55/637 (29 samples only C.I. 12475; 26 samples in combination with C.I. 12474 as part of pigment C.I. 12477)

CH⁴ 26/637 (always in combination with C.I. 12475 as part of pigment C.I. 12477)

Table C: List of additives, both auxiliaries and preservatives, in use in tattoo inks and found in market surveillance activities.

Market surveillance results			Used as ingredient in tattoo inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Acrylates copolymer						B
Acrylic polymer						A (0-5%)
Acrylic Resin			US		NTU	G, H, I
TSRN00195201005-5100P						
Acrylic Resin					NTU	H
TSRN00195201005-5102P						
Aloe barbadensis	85507-69-3 94349-62-9	CH, LI				
Aluminum hydroxide	21645-51-2	CH, LI, DE				
Aminomethyl propanediol	115-69-5	CH, LI				
Ammonia	7664-41-7	NL		NL		B
Ammonium acrylates copolymer	63744-68-3	CH, DE, LI, SE		SE	ART, BVT, UETA	B, C, D
Amorphous silica (Silicon dioxide)	7631-86-9	CH, DE, LI			BVT	B, C
Anionic surfactant						
Barium sulphate	7727-43-7	DE, NL		NL	BVT, UETA	C, D
beta-Naphthol ethoxylate	35545-57-4	CH, LI (1.6-19%)				
Block copolymer		DE				
Borax	71377-02-1	NL		NL		
Butanamid	541-35-5					
Calcium natrium phosphosilicate		CH, LI		DE		B
Calcium sodium phosphosilicate		CH, DE, LI, NL		NL		
Calendula extract	84776-23-8	SE		SE	BVT, NTU	C
Capryll glycol (1,3-octadienol)	1117-86-8				BVT	B, C
Carboxylated acrylic						B
Carbomer	9007-20-9 9003-01-4 76050-42-5 9062-04-8 9007-16-3 9007-17-4	CH, DE, LI				
5-Chloro-2methyl-2H-isothiazol-3-one/2-Methyl-2H-isothiazol-3 one mixture (CMIT/MIT mixture) antimicrobial	55965-84-9				ART	
Citric acid	77-92-9 5949-29-1	CH, DE, LI				
Detergents						
Dibutyl phthalate	84-74-2					
7-Diethylamino-4-methylcoumarin	91-44-1		US			
Diethyleneglycol	111-46-6	NL		NL		
Dimethicone	9006-65-9				ART	
Dipropylene glycol	110-98-5					B
Disodium cocoyl glutamate Emulsifier	68187-30-4	CH, LI				
Ethanol	64-17-5	BG, CH, LI, DE (48%), ES, NL, SE	CA (10-30%)	ES, IT, NL, SE	ART, BVT, DTL	B, C
Ethylene glycol	107-21-1					
Ethylhexyl glycerine	70445-33-9	CH, DE, LI				
Essential oils		DE				
Gelatine	9000-70-8	NL		NL		
Glycerol (Glycerine)	56-81-5 8043-29-6	BG, CH, LI, DE, ES, NL, SE	US, CA (10-30%)	ES, IT, NL, SE	ART, BVT, DTL, NTU, UETA	A (1-5%), B, C, D, E, G, H, I
Glyceryl caprylate/caprate	26402-26-6 27214-36-4					B
Glyceryl stearate	31566-31-1	CH, DE, LI			ART	

Market surveillance results			Used as ingredient in tattoo inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Gum	11138-66-2	NL		NL		
Hamamelis virginiana (leaf extract)/ Whitz hazel extract	84696-19-5	CH, LI, NL, SE		IT, NL, SE	ART, NTU	C
Hamamelis virginiana extract	68916-39-2	DE			ART, BTV	B
Hydrochloric acid	7647-01-0	CH, LI				
Hydroxypropylmethylcellulose	9004-64-2	CH, LI				
	9004-65-3					
	8063-82-9					
Hydroxymethyl aminoethanol	65184-12-5	CH, LI				
Humectants						
iso-Octylphenoethoxylate, Octoxynol	92046-34-9	CH, LI				
Isopropanol	67-63-0	BG, CH, LI, DE (19%), NL, SE	CA (10-30%)	IT, NL, SE	ART, BVT, DTL, NTU, UETA	A (5-20%), C, D, E, G, H, I
Kaolin	1332-58-7	DE	CA (3-10%)			
Lactic acid	50-21-5	CH, LI				
Lecithin	8002-43-5	CH, LI	US			
	8030-76-0 (soybean)					
Menthol	2216-51-5	NL		NL		
Methanol	67-56-1					
Methyl ethyl keton	78-93-3	CH, LI				B
Methylpropanediol	2163-42-0				BVT	B, C
Modified organo polysiloxanes						A (0-1%)
Neodecanoic acid	26896-20-8					
N-vinyl-2-pyrrolidone	94800-10-9				ART	
Nonylphenoethoxylate, Nonoxynol		CH, LI (0.03-3.9%)				
Non-ionic surfactant						
C9-11 Pareth-6	68439-46-3	CH, LI				B
PEG-8	5117-19-1	CH, DE, LI, SE		SE	ART, BVT, NTU, UETA	B, C
	25322-68-3 (generic)					
PEG-200	25322-68-3	CH, DE, LI, SE		IT, SE	ART, NTU	
PEG-400	25322-68-3				BVT	A (0-5%), C
PEG-600		CH, LI	US			
PEG Isooctyl phenyl ether		CH, LI	US			B, G, H
Phenylpropanol	1335-12-2				BVT	C
Poloxamer 188	9003-11-6	CH, DE, LI			UETA	
Poloxamer 407	9003-11-6	CH, LI			BVT	C
Poly alchilen glycol ether					UETA	
Polyethylenglycol	25322-68-3	DE				
Poly(oxy-1,2-ethanediyl), .alpha.-(nonylphenyl)-.omega.-hydroxy-, branched, phosphates	68412-53-3	DE			ART	
Polysorbate 20 (Tween 20)	9005-64-5	CH, LI			ART, BVT	C
Polysorbate 80 (Tween 80)	9005-65-6					B
Polyvinylpyrrolidone (PVP) (Polyvidone, Povidone)	9003-39-8	CH, DE, LI, NL		NL	BVT, NTU, UETA	B, C, D
Proprietary resin		NL		NL		I
Polypropilene	9003-07-0				ART	
Propanediol	26264-14-2				ART	
Propylene glycol	57-55-6	CH, LI, DE, NO, SE	US	IT, NO, SE	BVT, NTU, UETA	A (10-15%), B, C, D, H, G
Poly(propylene glycol)	25322-69-4				ART	
Ricin Oil	8001-79-4	CH, LI				
Rosa canina	84603-93-0				BVT	C
Rosa Centifolia	84604-12-6	NL		NL		
Rosa damascena extract	90106-38-0	CH, LI				B

Market surveillance results			Used as ingredient in tattoo inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Rosin	8050-09-7	CH, LI				
Shellac	9000-59-3	CH, DE, LI, NL		NL	ART, BVT, UETA	B, C, D
Silica	112945-52-5				ART, UETA	
Silica dimethyl silylate	271-893-4					B
Simethicone	8050-81-5				BVT	B, C
Sodium cocoyl glutamate	68187-32-6	CH, LI				
Sodium hydroxide	1310-73-2	BG, CH, DE, LI	CA (10-30%)		BVT	C
Sorbitol	50-70-4 98201-93-5	CH, LI				
Tetramethyl decynediol (Surfonyl®104, TMDD)	126-86-3	CH, LI, NO		NO		
Thymol	89-83-8	NL		NL		
Trimethylolpropane triisostearate	68541-50-4	CH, LI				
Vodka						
VP/VA Copolymer	25086-89-9	CH, LI			BVT, NTU	A (0-10%), B, C
Water	7732-18-5	DE, NL, SE	US	NL, SE	BVT, NTU	B, G, H, I
Witch hazel			US			I
Market surveillance results			Used as ingredient in tattoo inks			
Preservatives	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Aldehydes (like glutaraldehyde)						
2-Amino-2-methylpropanol	124-68-5	DE			BVT, UETA	C, D
Benzoates						
Benzophenone	119-61-9					
Benzoic acid	65-85-0	CH, LI (0.004-0.12%), DE (0.04%), NL		NL	BVT	B (not used as preservative), C
Benzoisothiazolinone (BIT)	2634-33-5	CH, LI (20-420 mg/kg), DE (0.0004%, >100ppm)		IT	UETA	D
2-Bromo-2-nitropropane-1,3-diol	52-51-7	CH, LI (0.02%)			ART	
Buthylparaben	94-26-8					
Chlorhexidine	55-56-1	CH, LI (0.02%)		DE		
4-Chloro-3,5-dimethylphenol (Chloroxylenol)	88-04-0	CH, LI (0.25%)		DE		
Dehydroacetic acid	520-45-6 771-03-9 16807-48-0	CH, LI (0.038-0.089%)				
Dibenzofuran	132-64-9					
1,2-Dibromo-2,4-dicyanobutane	35691-65-7					
2-4 Dichlorobenzylalcohol	1777-82-8					
DMDM Hydantoin	6440-58-0	CH, LI				
Ethylparaben	120-47-8	CH, LI (0.02%)				
9-Fluoenone	486-25-9					
Formaldehyde	50-00-0	CH, LI (0.005-0.23%)	US	DE		
Glyoxal	107-22-2	CH, LI (80-200 mg/kg)		DE		
Hexachlorobutadiene	87-68-3					
Hexamethylenetetramine	100-97-0					
p-Hydroxy benzoate	456-23-5			DE		
Hydroxymethylamino ethanol			US			G, H
Iodopropynyl butylcarbamate	55406-53-6	CH, LI, DE				
Isobutylparaben	4247-02-3					
Isopropylparaben	4191-73-5					
Isothiazolon (Kathon CG)	96118-96-6					

Market surveillance results			Used as ingredient in tattoo inks			
Preservatives	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Listerine (mouth wash) for thinning of traditional inks - this contains thymol, eucalyptol, menthol, methyl-salicylate, benzoic acid, sodium benzoate, water, alcohol, poloxamer						
Melamine	108-78-1		US			
Methylchloroisothiazolinon	26172-55-4	CH, LI				D
Methyldibromo glutaronitrile	35691-65-7	NL	CA (0.1-0.3%)	NL		
Methylisothiazolinone (2-methyl-4-isothiazolinone)	2682-20-4	CH, LI (0.4-70 mg/kg), DE (0.0003%)			UETA	
Methylparaben	99-76-3	CH, LI (0.04, 0.06%), DE (0.04%), NL		NL		
MI/MCI	26172-55-4 2682-20-4			DE		
Octylisothiazolinon	26530-20-1	CH, LI (40-450 mg/kg)		DE	ART	
o-Phenylphenol	90-43-7	CH, LI (0.06-0.11%)		DE		
Phenol	108-95-2	CH, LI (80-4700 mg/kg), NO		DE, NO		
Phenoxyethanol	122-99-6	CH, LI (0.015-1.5%), DE (0.75%), NL		NL	BVT, UETA	B, C
Polyaminopropyl biguanide	32289-58-0 133029-32-0	CH, DE, LI				
Preservative						
Propylparaben	94-13-3	CH, LI (0.01%)				
Salicylic acid	69-72-7	CH, LI (0.02%)				
Sodium Borat	1330-43-4 1303-96-4	DE				
Sodium Chloride	7647-14-5					
Sorbic acid	110-44-1	CH, LI (0.01-0.076%)		DE		
Thymol	89-83-8	NO		NO	UETA	
Triclosan Irgasan	3380-34-5					
Toluenesulfonamide resin			US			

Table D: List of additives, both auxiliaries and preservatives, in use in PMU inks and found in market surveillance activities.

Market surveillance			Used as ingredient in PMU inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Acrylates copolymer						B
Acrylic polymer						
Acrylic Resin						
TSRN00195201005-5100P						
Acrylic Resin						
TSRN00195201005-5102P						
Aloe barbadensis	85507-69-3 94349-62-9	CH, LI				
Aluminum hydroxide	21645-51-2	CH, LI				
Aminomethyl propanediol	115-69-5	CH, LI			BVT	
Ammonia	7664-41-7	SI				B
Ammonium acrylates copolymer	63744-68-3	CH, LI			BVT	B, C
Amorphous silica (Silicon dioxide)	7631-86-9	CH, LI			BVT	B, C
Anionic surfactant						
Barium sulphate	7727-43-7				BVT	B
beta-Naphthol ethoxylate	35545-57-4	CH, LI (1.6-19%)				
Block copolymer						
Borax	71377-02-1					
Butanamid	541-35-5					
Calcium natrium phosphosilicate						B
Calcium sodium		CH, LI, SI				
Calendula extract	84776-23-8				BVT	C
Caprylyl glycol (1,3-octadienol)	1117-86-8				BVT	B, C
Carboxylated acrylic						B
Carbomer	9007-20-9 9003-01-4 76050-42-5 9062-04-8 9007-16-3 9007-17-4	CH, LI				
5-Chloro-2methyl-2H-isothiazol-3-one/2-Methyl-2H-isothiazol-3 one mixture (CMIT/MIT mixture) antimicrobial	55965-84-9					
Citric acid	77-92-9 5949-29-1	CH, LI				
Detergents						
Dibutyl phthalate	84-74-2					
Diethylene glycol	111-46-6					
Dimethicone	9006-65-9					
7-Diethylamino-4-methylcoumarin	91-44-1					
Dipropylene glycol	110-98-5					B
Disodium cocoyl glutamate	68187-30-4	CH, LI				
Emulsifier						
Ethanol	64-17-5	CH, DE, LI, ES, SE, SI		ES, SE	BVT	B, C
Ethylene glycol	107-21-1					
Ethylhexyl glycerine	70445-33-9	CH, LI				
Essential oils						
Gelatine	9000-70-8					
Glycerol	56-81-5	CH, DE, LI, ES, SE, SI		ES, SE	BVT	A (10-15%), B, C, E, F
Glyceril caprylate/caprato						B
Glyceryl stearate	31566-31-1	CH, LI				

Market surveillance			Used as ingredient in PMU inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Gum	11138-66-2					
Hamamelis virginiana (leaf extract)/ Whitz hazel extract	84696-19-5	CH, LI				
Hamamelis virginiana extract	68916-39-2				BVT	B, C
Hydrochloric acid	7647-01-0	CH, LI				
Hydroxypropylmethylcellulose	9004-64-2 9004-65-3 8063-82-9	CH, LI				
Hydroxymethyl aminoethanol	65184-12-5	CH, LI				
Humectants						
iso-Octylphenoethoxylate, Octoxynol	92046-34-9	CH, LI (0.13-1.2%)				
Isopropanol	67-63-0	CH, LI, DE (31%), ES, SE, SI	CA (10-30%)	ES, SE	BVT	A (25-40%), C, E, F
Kaolin	1332-58-7					
Lactic acid	50-21-5	CH, LI				
Lecithin	8002-43-5 8030-76-0 (soybean)	CH, LI				
Menthol	2216-51-5					
Methanol	67-56-1					
Methyl ethyl ketone (Butanone)	78-93-3	CH, LI				B
Methylpropanediol	2163-42-0				BVT	B, C
Modified organo polysiloxanes						
Neodecanoic acid	26896-20-8					
N-vinyl-2-pyrrolidone	94800-10-9					
Nonylphenoethoxylate, Nonoxynol		CH, LI (0.03-3.9%)				
Non-ionic surfactant						
C9-11 Pareth-6	68439-46-3	CH, LI				B
PEG-8	5117-19-1 25322-68-3 (generic)	CH, LI, SI			BVT	B, C
PEG-200	25322-68-3	CH, LI		IT		
PEG-400	25322-98-3				BVT	A (1-5%), C
PEG-600		CH, LI				
PEG Isooctylphenyl ether	9004-87-9					B
Phenylpropanol	1335-12-2				BVT	C
Poloxamer 188	9003-11-6	CH, LI				
Poloxamer 407	9003-11-6	CH, LI			BVT	C
Poly alchilen glycol ether						
Polyethylenglycol	25322-68-3					
Poly(oxy-1,2-ethanediyl), .alpha.-(nonylphenyl)-.omega.-hydroxy-, branched, phosphates	68412-53-3					
Polysorbate 20 (Tween 20)	9005-64-5	CH, LI			BVT	C
Polysorbate 80 (Tween 80)	9005-65-6					B
Polyvinylpyrrolidone (PVP) (Polyvidone, Povidone)	9003-39-8	CH, LI, SI			BVT	B, C
Proprietary resin						
Polypropilene	9003-07-0					
Propanediol	26264-14-2					
Propylene glycol	57-55-6	CH, DE, LI, SE, SI		SE	BVT	A (10-20%), B, C
Poly(propylene glycol)	25322-69-4					
Ricin oil	8001-79-4	CH, LI				
Rosa canina	84603-93-0				BVT	C
Rosa Centifolia	84604-12-6					
Rosa damascena extract	90106-38-0	CH, LI				B

Market surveillance			Used as ingredient in PMU inks			
Auxiliaries	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Rosin	8050-09-7	CH, LI				
Shellac	9000-59-3	CH, LI, SI			BVT	B, C
Silica	112945-52-5					
Silica Dimethyl silylate	271-893-4					B
Simethicone	8050-81-5				BVT	B, C
Sodium Cocoyl Glutamate	68187-32-6	CH, LI				
Sodium hydroxide	1310-73-2	CH, LI			BVT	C
Sorbitol	50-70-4 98201-93-5	CH, LI, SE		SE		
Tetramethyl decynediol (Surfonyl®104, TMDD)	126-86-3	CH, LI				
Thymol	89-83-8					
Trimethylolpropane triisostearate	68541-50-4	CH, LI				
Vodka						
VP/VA Copolymer	25086-89-9	CH, LI, SI			BVT	A (0-5%), C
Water	7732-18-5	SE		SE		F, B
Witch hazel						
Market surveillance			Used as ingredient in PMU inks			
Preservatives	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Aldehydes (like glutaraldehyde)						
2-Amino-2-methylpropanol	124-68-5					C
Benzoates						
Benzophenone	119-61-9					
Benzoic acid	65-85-0	CH, LI (0.004-0.12%), DE (0.3%)			BVT	B, C
Benzoisothiazolinone (BIT)	2634-33-5	CH, LI (20-420 mg/kg)				
2-Bromo-2-nitropropane-1,3-diol	52-51-7	CH, LI (0.02%)				
Buthylparaben	94-26-8					
Chlorhexidine	55-56-1	CH, LI (0.02%)				
4-Chloro-3,5-dimethylphenol (Chloroxyleneol)	88-04-0	CH, LI (0.25%)				
Dehydroacetic acid	520-45-6 771-03-9 16807-48-0	CH, LI (0.038-0.089%)				
Dibenzofuran	132-64-9					
1,2-Dibromo-2,4-dicyanobutane	35691-65-7					
2-4 Dichlorobenzylalcohol	1777-82-8					
DMDM Hydantoin	6440-58-0	CH, LI				
Ethylparaben	120-47-8	CH, LI (0.02%)				
9-Fluoenone	486-25-9					
Formaldehyde	50-00-0	CH, LI (0.005-0.02%)				
Glyoxal	107-22-2	CH, LI (80-200 mg/kg)				
Hexachlorobutadiene	87-68-3					
Hexamethylenetetramine	100-97-0					
p-Hydroxy benzoate	456-23-5					
Hydroxymethylamino ethanol						
Iodopropynyl	55406-53-6	CH, LI				
Isobuthylparaben	4247-02-3					
Isopropylparaben	4191-73-5					
Isothiazolon (Kathon CG)	96118-96-6					

Market surveillance			Used as ingredient in PMU inks			
Preservatives	CAS number	Country	Jurisdictions	Country	tattooist associations	manufacturers
Listerine (mouth wash) for thinning of traditional inks - this contains thymol, eucalyptol, menthol, methyl-salicylate, benzoic acid, sodium benzoate, water, alcohol, poloxamer						
Melamine	108-78-1					
Methylchloroisothiazolinon	26172-55-4	CH, LI (0.9-54)				
Methyldibromo	35691-65-7					
Methylisothiazolinone (2-methyl-4-isothiazolinone)	2682-20-4	CH, LI (0.4-70 mg/kg)				
Methylparaben	99-76-3	CH, LI (0.04, 0.06%)				
M/MCI	26172-55-4 2682-20-4					
Octylisothiazolinon	26530-20-1	CH, LI (40-450 mg/kg)				
o-Phenylphenol	90-43-7	CH, LI (0.06-0.11%)				
Phenol	108-95-2	CH, LI (80-4700 mg/kg)				
Phenoxyethanol	122-99-6	CH, LI (0.015-1.5%)			BVT	C
Polyaminopropyl biguanide	32289-58-0 133029-32-0	CH, LI				
Preservative						
Propylparaben	94-13-3	CH, LI (0.010%)				
Salicylic acid	69-72-7	CH, LI (0.02%)				
Sodium Borat	1330-43-4 1303-96-4					
Sodium Chloride	7647-14-5	SE		SE		
Sorbic acid	110-44-1	CH, LI (0.01-0.076%)				
Thymol	89-83-8					
Triclosan Irgasan	3380-34-5					
Toluenesulfonamide resin						

**Analysis of tattoo and PMU inks
Test results**

Table A: Summary of chemical analysis results from all sources.

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
PAH (total)		31	ZEK 01.2-08	13 (4)	national law=ResAP (2008)1	0.5	0.2-270	Classic, Gold 13, Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		14		57 (8)	national law=ResAP (2008)1	0.5	0-34		2012, Swedish Chemical Agency
		29	GC-MS	21 (6)	national law 2013=ResAP (2008)1	0.5	1.1-29	Bloodline, Intenze, Kuro Sumi, Mom's	2015, Swedish Medical Products Agency
		37	GC-MS	41 (15)	ResAP (2008)1	0.5	> 0.5		2015, Nederlandse Voedsel en waren autoriteit
		57 only black and grey inks	HPLC/FLD (toluene extraction)	24 (13)	national law=ResAP (2008)1	0.5	0.5-65.1		2014, Hauri
		19	in house (Acetone, benzene extraction), GC-MS	74 (14)	ResAP(2008)1	0.5	0.53-55056		2012 (a), Danish EPA
		11	GC-MS	91 (10)	national law=ResAP	0.5	0.04-29.4	Eternal Ink, Huck Spaulding, Intenze, Micky Sharpz, Dynamic Color, Pelikan Ink, National Tattoo, Starbrite, Wefa Color, Gold	2013 (a), Høgsberg
		19	GC-MS	94 (15)	national law=ResAP	0.5	0.14-201	not specified	2010, Regensburger
		16 (skin/lymph)	HPLC-DAD		national law=ResAP	0.5	0.1- 0.6 skin 0.1- 11.8 lymph node		2014, Lehner
		11		91	ResAP(2008)1	0.5	200		(P) 2015, Baeumler, Ispra
	19		74		0.5	PAH > 0.5 µg/g	tattoo inks	(P) 2015, Lerche, Ispra	
	34 (2009)		30	ResAP(2008)1	0.5			(P) 2015, Hrzenjak, Ispra	
	35 (2014)		20	ResAP(2008)1	0.5	>0.5		(P) 2015, Hrzenjak Ispra	
	22 (13 tattoo-9 PMU inks) (2014)					<0.5		(P) 2015, Mildau Blume, Ispra	
	20 (2014)	Extraction by a Benzene/Acetone solution	10 (2)	ResAP(2008)1	0.5	0.5-50	tattoo inks	(P) 2015, Fontana, Ispra	
Acenaphthene	83-32-9	11	GC-MS				0.12-0.17		2013 (a), Høgsberg
		19	GC-MS				0.9+/- 0.3		2010, Regensburger
		16	HPLC-DAD						2014, Lehner
Acenaphthylene	208-96-8	11	GC-MS				0.005-3.6		2013 (a), Høgsberg
		19	GC-MS				14.5+/- 5.5 (av)		2010, Regensburger

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Acenaphthylene	208-96-8	19	GC-MS				3.3+/- 0.8 (av)		2010, Regensburger 2014, Lehner
		16	HPLC-DAD						
		4	HPLC-FLD			0.001-0.4			
Benzo(a)anthracene	56-55-3	11	GC-MS				0.005-0.31		2013 (a), Høgsberg
		19	GC-MS				1.6+/- 0.2 (av)		2010, Regensburger
Benzo(b)fluoranthene	205-99-2	11	GC-MS				0.073-1.99		2013 (a), Høgsberg
		19	GC-MS				4.5+/- 4.3 (av)		2010, Regensburger
		16	HPLC-DAD						2014, Lehner
Benzo(ghi)perylene	191-24-2	11	GC-MS				not analysed		2013 (a), Høgsberg
		19	GC-MS				1.2+/- 1.5 (av)		2010, Regensburger
		4	HPLC-FLD				0.008- 89.7		2004, Bromer
Benzo(j)fluoranthene	205-82-3	16	HPLC-DAD					2014, Lehner	
Benzo(k)fluoranthene	207-08-9	11	GC-MS				0.03-1.01		2013 (a), Høgsberg
		19	GC-MS				0.4+/- 0.2 (av)		2010, Regensburger
		16	HPLC-DAD						2014, Lehner
Benzo[a]pyrene	50-32-8	29	GC-MS	3 (1)	national law 2013=ResAP (2008)1	0.005	0.6	Mom's	2015, Swedish Medical Products Agency
		37	GC-MS	24 (9)	ResAP (2008)1	0.005	> 0.005		2015, Nederlandse Voedsel en waren autoriteit
		57 only black and grey inks	HPLC/FLD (toluene extraction) in house (Acetone, benzene extraction), GC- MS	25 (14)	national law=ResAP	0.005	0.085-0.71		2014, Hauri
		19		5 (1)	ResAP (2008)1	0.005	5.3		2012 (a), Danish EPA
		11	GC-MS	100 (11)	national law 2013=ResAP (2008)1	0.005	0.02-1.02	Eternal Ink, Huck Spaulding, Intenze, Micky Sharpz, Dyynamic Color, Pelikan Ink, National Tattoo, Starbrite, Wefa Color, Gold, Talens Black ink	2013 (a), Høgsberg
		19	GC-MS	21 (4)	national law=ResAP	0.005	0.3+/- 0.2 (av)	not specified	2010, Regensburger
		4	HPLC-FLD	75 (3)	national law=ResAP	0.005	0.011-6.8	Sterling V, N330, Lampblack	2004, Bromer
		19	GC-MS						2010, Regensburger
		11		100			0.3		(P) 2015, Baeumler, Ispra
		34 (2009)		9	ResAP(2008)1	0.005			(P) 2015, Hrzenjak, Ispra

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Benzo[a]pyrene	50-32-8	35 (2014)		6	ResAP(2008)1	0.005			(P) 2015, Hrzenjak Ispra
		20 (2014)	Extraction by a Benzene/Acetone solution	10	ResAP(2008)1	0.005	0.0005-0.218	tattoo inks	(P) 2015, Fontana, Ispra
Chrysene	218-01-9	11	GC-MS				0.006-0.41		2013 (a), Høgsberg
		19	GC-MS				1.7+/- 0.8 (av)		2010, Regensburger
Dibenzo(a,h)anthracene	53-70-3	11	GC-MS				not analysed		2013 (a), Høgsberg
		19	GC-MS				0.1+/- 0.1 (av)		2010, Regensburger
Fluoranthene	206-44-0	11	GC-MS				0.23-8.19		2013 (a), Høgsberg
		19	GC-MS				2.8+/- 1.0 (av)		2010, Regensburger
		16	HPLC-DAD						2014, Lehner
Fluorene	86-73-7	4	HPLC-FLD				0.01- 21.5		2004, Bromer
		11	GC-MS				0.006-0.01		2013 (a), Høgsberg
		19	GC-MS				0.9+/- 0.2 (av)		2010, Regensburger
Indeno(1,2,3-cd)pyrene	193-39-5	16	HPLC-DAD						2014, Lehner
		11	GC-MS				not analysed		2013 (a), Høgsberg
		19	GC-MS				1.1+/- 1.0 (av)		2010, Regensburger
Naphthalene	91-20-3	16	HPLC-DAD						2014, Lehner
		11	GC-MS				0.005-0.44		2013 (a), Høgsberg
		19	GC-MS				0.3+/- 0.1 (av)		2010, Regensburger
Phenanthrene	85-01-8	16	HPLC-DAD						2014, Lehner
		4	HPLC-FLD				0.039- 8.8		2004, Bromer
		11	GC-MS				0.005-12.8		2013 (a), Høgsberg
Pyrene	129-00-0	19	GC-MS				24.5+/- 6.0(av)		2010, Regensburger
		16	HPLC-DAD						2014, Lehner
		4	HPLC-FLD				0.065- 202.5		2004, Bromer
PAA (total)		31	EN 14362-1 HPLC /GC-MS	32 (10)	national law 2013=ResAP (2008)1	0	24-68	Classic, Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		829 (2004)		14 (113)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		555 (2005)		13 (74)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
PAA (total)		675 (2006)		8 (55)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		454 (2007)		8 (35)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		about 300	derived from EN ISO 17234	> 40			16% <10 , 40% 10<mg/kg<100 and 44% > 100		2015, Agnello
		30 (2012)		67	ResAP(2008)1	0			(P) 2015, Lerche, Ispra
		34 (2009)		15	ResAP(2008)1	0			(P) 2015, Hrzenjak, Ispra
		35 (2014)		17	ResAP(2008)1	0			(P) 2015, Hrzenjak, Ispra
	200 (2007-2013)	DD CEN ISO/TS 17234:2003		42	ResAP(2008)1	0		tattoo and PMU inks	(P) 2015, Fontana, Ispra
o-Aminoazobenzene	97-56-3			x		0			2015, Agnello
4-Aminoazobenzene	60-09-3			x					2015, Agnello
Aniline	62-53-3	29	GC-MS/LC-MS	21 (6)	national law 2013=ResAP (2008)1	0	5-61	Biotouch, Bloodline, Eternal Ink, Tattoo	2015, Swedish Medical Products Agency
		19	EN 14362-1 GC-MS	68 (13)	ResAP(2008)1	0	0.54-300		2012 (a), Danish EPA
		24 -free	EN 14362-1 (without dithionite reduction step) GC-MS	25 (6)	ResAP(2008)1	0	2.3-79		2012 (a), Danish EPA
		200 (2007-2013)	DD CEN ISO/TS 17234:2003	20 (10)	ResAP(2008)1	0		tattoo and PMU inks	(P) 2015, Fontana, Ispra
		120	reductive cleavage	10 (12)	ResAP (2008)1	0	4.43-236		2013, BVL
		22-free		13.6 (3)	ResAP (2008)1	0	1.58-30.9		2013, BVL
o-Anisidine	90-04-0	14		7 (1)	national law 2013=ResAP(2008)1	0			2012, Swedish Chemical Agency
		702	GC-MS	17 (118)	national law	10	10-2197		2014, Nederlandse Voedsel en waren autoriteit
		829 (2004)		9 (72)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		555 (2005)		6 (34)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
o-Anisidine		675 (2006)		4 (29)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		454 (2007)		5 (21)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
	90-04-0	29	GC-MS/LC-MS	7 (2)	national law 2013=ResAP (2008)1	0	5-14	Bloodline, Eternal Ink	2015, Swedish Medical Products Agency
		229	EN 14362-1 LC-MS-MS	14 (23)	national law=ResAP	0	1.4-24		2014, Hauri
		19	EN 14362-1 GC-MS	79 (15)	ResAP(2008)1	0	0.52-1775		2012 (a), Danish EPA
		24 -free	EN 14362-1 (without dithionite reduction step) GC-MS	29 (7)	ResAP(2008)1	0	4.6-34		2012 (a), Danish EPA
				x			3-536		2015, Agnello
		127	reductive cleavage	18.1 (23)	ResAP (2008)1	0	3.04-67		2013, BVL
		23-free		47.8 (11)	ResAP (2008)1	0	5.4-53		2013, BVL
				x					2015, Agnello
Benzidine	92-87-5			x				2015, Agnello	
Biphenyl-4-ylamine	92-67-1			x				2015, Agnello	
4-Chloroaniline	106-47-8	29	GC-MS/LC-MS	3 (1)	national law 2013=ResAP (2008)1	0		Tattoo	2015, Swedish Medical Products Agency
		702	GC-MS	3 (20)	national law	10	11-691		2014, Nederlandse Voedsel en waren autoriteit
		829 (2004)		2.4 (20)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		555 (2005)		2 (10)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		0.3 (2)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		19	EN 14362-1 GC-MS	21 (4)	ResAP(2008)1	0	1.1-100		2012 (a), Danish EPA
		24 -free	EN 14362-1 (without dithionite reduction step) GC-MS	8 (2)	ResAP(2008)1	0	2.1-6.3		2012 (a), Danish EPA

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference	
4-Chloroaniline	106-47-8			x			5-52		2015, Agnello	
		127	reductive cleavage	0.8 (1)	ResAP (2008)1	0	0.086-0.40		2013, BVL	
		24-free		4.2 (1)	ResAP (2008)1	0	0.017-0.40		2013, BVL	
4-Chloro-o-toluidine	95-69-2			x					2015, Agnello	
		19	EN 14362-1 GC-MS	5 (1)	ResAP(2008)1	0	15		2012 (a), Danish EPA	
		24 -free	EN 14362-1 (without dithionite reduction step) GC-MS	4 (1)	ResAP(2008)1	0	5.9		2012 (a), Danish EPA	
3,3'-Dichlorobenzidine	91-94-1	702	GC-MS	3 (19)	national law	10	10-4758		2014, Nederlandse Voedsel en waren autoriteit	
		829 (2004)		3 (23)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit	
		555 (2005)		3 (15)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit	
		675 (2006)		0.4 (3)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit	
		454 (2007)		0.8 (4)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit	
		229	EN 14362-1 LC-MS-MS	7 (13)	national law=ResAP	0	1.0-11		2014, Hauri	
		19	EN 14362-1 GC-MS	21 (4)	ResAP(2008)1	0	2.5-6.2		2012 (a), Danish EPA	
		24 -free	EN 14362-1 (without dithionite reduction step) GC-MS	4 (1)	ResAP(2008)1	0	3.7		2012 (a), Danish EPA	
				xx				8-22		2015, Agnello
		35 (2014)		3	ResAP(2008)1	0				(P) 2015, Hrzenjak, Ispra
		127	reductive cleavage	4.7 (6)	ResAP (2008)1	0	10.5-710		2013, BVL	
		24-free		4.2 (1)	ResAP (2008)1	0	0.294-6.88		2013, BVL	

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
3,3'-Dimethoxybenzidine	119-90-4	702	GC-MS	1 (2)	national law	10	20-26		2014, Nederlandse Voedsel en waren autoriteit
		127	reductive cleavage	x					2015, Agnello
				1.6 (2)	ResAP (2008)1	0	0.101-1.9		2013, BVL
3,3'-Dimethylbenzidine	119-93-7	829 (2004)		0.1 (1)	national law	10	not reported		2008, Nederlandse Voedsel en waren autoriteit
				x					2015, Agnello
4-Methoxy-m-phenyldiamine	615-05-4			x					2015, Agnello
		702	GC-MS	1 (3)	national law	10	54-1867		2014, Nederlandse Voedsel en waren autoriteit
		829 (2004)		0.2 (2)	national law	10	not reported		2008, Nederlandse Voedsel en waren autoriteit
4-Methoxy-m-toluidine	120-71-8			x				2015, Agnello	
4,4'-Methylenbis(2-chloroaniline)	101-14-4			x				2015, Agnello	
4,4'-Methyldianiline	101-77-9			x				2015, Agnello	
4,4'-Methylendi-o-toluidine	838-88-0			x				2015, Agnello	
4-Methyl-m-phenyldiamine	95-80-7	29	GC-MS/LC-MS	7 (2)	national law 2013=ResAP (2008)1	0	44-6220	Eternal Ink, Tattoo	2015, Swedish Chemical Agency
		702	GC-MS	5 (36)	national law	10	10-2298		2014, Nederlandse Voedsel en waren autoriteit
		829 (2004)		1.3 (11)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		555 (2005)		0.1 (4)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		0.7 (5)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		454 (2007)		0.4 (2)	national law	10	>10		2008, Nederlandse Voedsel en waren autoriteit
		229	EN 14362-1 LC/MS/MS	13 (22)>1 mg/kg, 6 (10) >30 mg/kg	national law=ResAP	0	5.9-6900		2014, Hauri
		19	EN 14362-1 GC-MS	5 (1)	ResAP(2008)1	0	40		2012 (a), Danish EPA

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference			
4-Methyl-m-phenyldiamine	95-80-7	24 -free	EN 14362-1 (without reduction step) GC-MS	8 (2)	ResAP(2008)1	0	1.8-2.6		2012 (a), Danish EPA			
				x			48-240		2015, Agnello			
2-Naphthylamine	91-59-8	19	EN 14362-1 GC-MS	5 (1)	ResAP(2008)1	0	2.6		2012 (a), Danish EPA			
				x					2015, Agnello			
5-Nitro-o-toluidine	99-55-8	702	GC-MS	1 (9)	national law	10	19-285		2014, Nederlandse Voedsel en waren autoriteit			
				829 (2004)			1 (6)		national law	10	>10	2008, Nederlandse Voedsel en waren autoriteit
				555 (2005)			0.1 (5)		national law	10	>10	2008, Nederlandse Voedsel en waren autoriteit
		19	EN 14362-1 GC-MS	16 (3)	ResAP(2008)1	0	14-400	2012 (a), Danish EPA				
		24 -free	EN 14362-1 (without reduction step) GC-MS	16 (4)	ResAP (2008)1	0	6.2-190	2012 (a), Danish EPA				
4,4'-Oxydianiline	101-80-4			xx			9-48		2015, Agnello			
				x					2015, Agnello			
p-Phenylenediamine	106-50-3	29	GC-MS/LC-MS	3 (1)	national law 2013=ResAP 2008	0		Tattoo	2015, Swedish Medical Products Agency			
4,4'-Thiodianiline	139-65-1	102	reductive cleavage	1 (1)	ResAP (2008)1	0	0.134		2013, BVL			
				17-free			5.9 (1)		ResAP (2008)1	0	0.2	2013, BVL
o-Toluidine	95-53-4	29	GC-MS/LC-MS	3 (1)	national law 2013=ResAP (2008)1	0		Eternal Ink	2015, Swedish Medical Products Agency			
				702	GC-MS	8 (57)	national law	10	12-2197	2014, Nederlandse Voedsel en waren autoriteit		
		829 (2004)		2 (16)	national law	10	> 10	2008, Nederlandse Voedsel en waren autoriteit				
		555 (2005)		3 (19)	national law	10	> 10	2008, Nederlandse Voedsel en waren autoriteit				
		675 (2006)		3 (22)	national law	10	> 10	2008, Nederlandse Voedsel en waren autoriteit				

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference	
o-Toluidine	95-53-4	454 (2007)		2 (9)	national law	10	> 10		2008, Nederlandse Voedsel en waren autoriteit	
		229	EN 14362-1 LC-MS-MS	13 (21)>1 mg/kg 4 (6) >30 mg/kg	national law=ResAP	0	1.2-129		2014, Hauri	
		19	EN 14362-1 GC-EN 14362-1	58 (11)	ResAP(2008)1	0	1.1-133		2012 (a), Danish EPA	
		24 -free	(without dithionite reduction step) GC-MS	25 (6)	ResAP(2008)1	0	1.0-2.9		2012 (a), Danish EPA	
				xx				5-710		2015, Agnello
		34 (2009)		12	ResAP(2008)1	0				(P) 2015, Hrzenjak, Ispra
		127	reductive cleavage	3.1 (4)	ResAP (2008)1	0	2.11-206			2013, BVL
2,4,5-Trimethylaniline	137-17-7	24-free		12.5 (3)	ResAP (2008)1	0	6.92-152		2013, BVL	
				x					2015, Agnello	
2,4-xylydine	95-68-1	121	reductive cleavage	0.8 (1)	ResAP (2008)1	0	0.097-1.27		2013, BVL	
		17-free		5.9 (1)	ResAP (2008)1	0	1.36		2013, BVL	
Aluminium (Al)	7429-90-5	61	ICP-MS (total content)	100 (61)	positive samples		1.8-11000		2012 (a), Danish EPA	
		56	acid digestion/ MW oven				1.59 -5893		2009 (a), Forte	
		5		100 (5)	positive samples		23.3-8390	Eternal ink, Yakuza	Questionnaire, LU	
Antimony (Sb)	7440-36-0	87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.08 - 0.68		(P) 2015, Bocca, Ispra	
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.50		(P) 2015, Bocca, Ispra	
		34 (2009)		0	ResAP(2008)1	2	<0.2		(P) 2015, Hrzenjak, Ispra	
		35 (2014)		0	ResAP(2008)1	2	<0.2		(P) 2015, Hrzenjak, Ispra	
		280 (2013)		25	ResAP(2008)1	2	< 2		(P) 2015, Mildau Blume, Ispra	
		104		18 (19)	ResAP(2008)1	2	0.04-2.7		(P) 2015, Mildau Blume, Ispra	
		169	ICP-MS (total content)	11 (18)	EPA Guideline 2012	2	3-147	Alla Prima, Intenze, Kuro Sumi, Tattoo Colour King	2013, Ministry of Health (NZ)	

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Antimony (Sb)	7440-36-0	29	ICP-MS (total content)	3 (1)	national law 2013=ResAP (2008)1	2	7.1	Tattoo	2015, Swedish Medical Products Agency
		121		2 (2)	national law 2005	5	>5		2015, Conseil Superior de la Santé (BE)
		56	acid/ MW oven	4 (2)	ResAP (2008)	2	0.004- 4.11	Intenze Prod.: Dark chocolate brown; Diabolo by Deep Colours: Ultramarine Blue	2009 (a), Forte
		189 (coloured)		0.5 (1)	ResAP(2008)1	2	2.83		2013, BVL
Arsenic (As)	7440-38-2	31	DIN EN ISO 11885 ICP-OES (total content)	3 (1)	national law 2013=ResAP (2008)1	2	18	Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		32	ICP-MS (total content)	3 (1)	ResAP (2008)1	2	4.1		2011 (a), Health Canada
		169	ICP-MS (total content)	4 (7)	EPA Guideline 2012	2	3-60	Alla Prima, Intenze, HLC, Tattoo Colour King	2013, Ministry of Health (NZ)
		29	ICP-MS (total content)	3 (1)	national law 2013=ResAP (2008)1	2	49	Magic Cosmetics	2015, Swedish Medical Products Agency
		72	ICP-MS (total content)	4 (3)	national law =ResAP (2008)1	2	2.9-8.9		2014, Nederlandse Voedsel en waren autoriteit
		121		2 (2)	national law 2005	5	>5		2015, Conseil Superior de la Santé (BE)
		87 (tattoo)	ICP-MS after under-pressure digestion	10 (tattoo); 0 (PMU)	ResAP(2008)1	2	<0.16 - 15.8		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.21 - 1.0		(P) 2015, Bocca, Ispra
		34 (2009)		0	ResAP(2008)1	2	<0,2-0,3		(P) 2015, Hrzenjak, Ispra
		35 (2014)		6	ResAP(2008)1	2			(P) 2015, Hrzenjak, Ispra
190 (coloured)		3.2 (6)	ResAP(2008)1	2	2-30.9		2013, BVL		
98 (black)		1 (1)	ResAP(2008)1	2	2-2.3		2013, BVL		

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Barium (Ba)	7440-39-3	31	DIN EN ISO 11885 ICP-OES (total content)	51 (16)	national law 2013=ResAP (2008)1	50	11-9800	Classic, Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		14		35 (5)	national law 2013=ResAP (2008)1	50	0-190		2012, Swedish Chemical Agency
		32	ICP-MS (total content)	9 (3)	ResAP (2008)1	50	600-1500		2011 (a), Health Canada
		169	ICP-MS (total content)	12 (21)	EPA Guideline 2012	50	50-17000	Alla Prima, Eternal Ink, Fusion, Intenze, HLC, Kuro Sumi, Mom's, Tattoo Colour King, Tattoo Tang Dragon, Starbright, Waverly Colour	2013, Ministry of Health (NZ)
		29	ICP-MS (total content)	24 (7)	national law 2013=ResAP (2008)1	50	62-17737	Biotouch, Eternal Ink, Magic Cosmetics, Pure Colours, Purebeau, Tattoo	2015, Swedish Medical Products Agency
		121		13 (16)	national law 2005	5	> 5		2015, Conseil Superior de la Santé (BE)
		61	ICP-MS (total content)	13 (8)	ResAP (2008)1	50	50-1800		2012 (a), Danish EPA
		56	acid/ MW oven	27 (15)	ResAP (2008)1	50	0.058- 1226	Starbrite Colors: Blue (Country & Deep Turquoise), Deep Green, Scarlet Red; Intenze Prod.:Green Grasshopper, Cherry bomb red, Banana cream yellow; Diabolo by Deep Colours: Magic Black, Blue (Blue, Turquoise, Ultramarine), Red (Bordeaux, Port), Violet (Light, Violet)	2009 (a), Forte
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.1 - 8580		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.48 - 562		(P) 2015, Bocca, Ispra
		34 (2009)		15	ResAP(2008)1	50	<5 - 990		(P) 2015, Hrzenjak, Ispra
		35 (2014)		26	ResAP(2008)1	50			(P) 2015, Hrzenjak, Ispra
		200 (2013)		32	ResAP(2008)1				(P) 2015, Mildau Blume, Ispra
5		20 (1)	positive samples		656	Eternal ink	Questionnaire, LU		
111		14.4 (16)	ResAP(2008)1	50	50-9385		2013, BVL		

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Cadmium (Cd)	7440-43-9	39	acid/ MW oven	36 (14)	ResAP (2008)	0.2	0.001- 3.0	Blue (Deep Turquoise, Ice, Baby), Dark chocolate brown, Green (Deep, Grasshopper), Hound Grey, Peach Orange, Violet (Deep, Violent, Grape), White (Brite, Power, Snow Opaque)	2009, Bocca
		13	acid/ MW oven	38 (5)	ResAP (2008)	0.2	0.007- 1.15	Country Blue, Deep Turquoise, Deep Green, Deep Violet, White Brite	2009 (b), Forte
		56	acid/ MW oven	32 (18)	ResAP (2008)	0.2	0.001- 2.98	Starbrite Colors: Blue (Country & Deep Turquoise), Deep Green; Deep Violet, Brite White; Millennium Colorworks Inc: Ice Blue, Hound Grey, Violent Violet; Intenze Prod.: Baby Blue, Dark chocolate brown, Green Grasshopper, Orange peach, Rose Pink, Violet (Grape, Lavender), Banana cream yellow, Snow opaque white	2009 (a), Forte
		32	ICP-MS (total content)	9 (3)	ResAP (2008)1	0.2	0.28-0.4		2011 (a), Health Canada
		169	ICP-MS (total content)	24 (40)	EPA Guideline 2012	0.2	0.21-0.80	Eternal Ink, Fusion, Intenze, Kuro Sumi, Makkuro Sumi, Mom's, Tattoo, Silverback Ink, Starbright, Waverly Colour	2013, Ministry of Health (NZ)
		72	ICP-MS (total content)	1 (1)	national law =ResAP (2008)1	0.2	2.8		2014, Nederlandse Voedsel en waren autoriteit
		787 (2004)		0.1 (1)	national law =ResAP (2008)1	0.2	5		2008, Nederlandse Voedsel en waren autoriteit
		61	ICP-MS (total content)	1 (1)	ResAP (2008)1	0.2	0.27		2012 (a), Danish EPA
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.007 - 7.84		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.50		(P) 2015, Bocca, Ispra

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
		34 (2009)		3	ResAP(2008)1	0.2	<0,02-0,38		(P) 2015, Hrzenjak, Ispra
		35 (2014)		0	ResAP(2008)1	0.2			(P) 2015, Hrzenjak, Ispra
		134		22 (30)	ResAP(2008)1		0.007-5.5		(P) 2015, Mildau Blume, Ispra
		250 (coloured)		9.6 (24)	ResAP(2008)1	0.2	0.2-2.77		2013, BVL
		129 (black)		1.6 (2)	ResAP(2008)1	0.2	0.2-0.77		2013, BVL
Cr (VI)					ResAP (2008)1	0.2	Tattoo:0.3-147 (total); PMU: <0.5 - 2.6 (total)		(P) 2015, Bocca, Ispra
Chromium (tot)	7440-47-3	13	acid/ MW oven		positive samples	1	0.315- 4.7		2009 (b), Forte
		39	acid/ MW oven		positive samples	1	0.31- 147		2009, Bocca
		56	acid/ MW oven		positive samples	1	0.315- 147		2009 (a), Forte
		31	DIN EN ISO 11885 ICP-OES (total content)	35 (11)	positive samples		15-100	Starbrite 2, Intenze	2010(b), Swedish Chemical Agency
		14		35 (5)					2012, Swedish Chemical Agency
		787 (2004)		5 (39)	positive samples		not reported		2008, Nederlandse Voedsel en waren autoriteit
		121		23 (28)	national law 2005	5	>5		2015, Conseil Superior de la Santé (BE)
		61	ICP-MS (total content)	93 (57)	positive samples		up to 31		2012 (a), Danish EPA
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		0.7 - 13.2		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.5 - 2.6		(P) 2015, Bocca, Ispra
		34 (2009)		68	positive samples		<0,2-2,8		(P) 2015, Hrzenjak, Ispra
		35 (2014)		86	positive samples				(P) 2015, Hrzenjak, Ispra
		129		60 (78)	positive samples		0.01-2038		(P) 2015, Mildau Blume, Ispra
		5		80 (4)	positive samples		4.1-12		Questionnaire, LU

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Cobalt (Co)	7440-48-4	121		1 (1)	national law 2005	5	> 5		2015, Conseil Superior de la Santé (BE)
		39	acid/ MW oven	0	ResAP(2008)1	25	0.003- 6.4		2009, Bocca
		13	acid/ MW oven	0	ResAP(2008)1	25	0.003-0.125		2009 (b), Forte
		56	acid/ MW oven	0	ResAP(2008)1	25	0.0028- 6.43		2009 (a), Forte
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.09 - 12.5		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.11 - 25		(P) 2015, Bocca, Ispra
		34 (2009)		0	ResAP(2008)1	25	<1,0 - 1,8		(P) 2015, Hrzenjak, Ispra
		35 (2014)		0	ResAP(2008)1	25			(P) 2015, Hrzenjak, Ispra
		5		40 (2)	positive samples		1.7-3.1	Eternal ink	Questionnaire, LU
		Copper (Cu) soluble	7440-50-8	31	DIN EN ISO 11885 ICP-OES	58 (18)	national law 2013=ResAP (2008)1	25	15-45000
14				14(2)	national law 2013=ResAP (2008)1	25	0-2600		2012, Swedish Chemical Agency
169	ICP-MS (soluble Cu)			12 (21)	EPA Guideline 2012	25	25-32900	Alla Prima, Eternal Ink, Fusion, Intenze, Kuro Sumi, Mom's, Tattoo Colour King, Starbright	2013, Ministry of Health (NZ)
					ResAP (2008)1	25	Tattoo:0.1-31.3 (total)		(P) 2015, Baeumler, Ispra; (P) 2015, Bocca, Ispra
34 (2009)				15	ResAP(2008)1	25	<2,5-3400		(P) 2015, Hrzenjak, Ispra
35 (2014)				34	ResAP(2008)1	25	>25		(P) 2015, Hrzenjak, Ispra
Copper (Cu total)		61	ICP-MS (total content)	3 (2)	positive samples		100-140		2012 (a), Danish EPA
		56	acid/ MW oven		positive samples		0.076- 31.3		2009 (a), Forte
		5		80 (4)	positive samples		1.6-11800	Eternal ink, Yakuza	Questionnaire, LU
		110		64 (71)	positive samples		0.1-49500		(P) 2015, Mildau Blume, Ispra
Iron (Fe)	7439-89-6	56	acid/ MW oven		positive samples		0.717- 88.443		2009 (a), Forte
		25		100 (25)	positive samples		1.7-785		(P) 2015, Mildau Blume, Ispra
		5		100 (5)	positive samples		8.9-1050	Eternal ink, Yakuza	Questionnaire, LU

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Lead (Pb)	7439-92-1	39		5 (2)	ResAP (2008)	2	0.028- 14.8	Dark chocolate brown, Peach Orange	2009, Bocca
		56	acid/ MW oven	4 (2)	ResAP (2008)	2	0.015- 14.79	Intenze Prod.: Dark chocolate brown, Peach Orange	2009 (a), Forte
		14		14 (2)	national law 2013=ResAP (2008)1	2	31-44		2012, Swedish Chemical Agency
		32	ICP-MS (total content)	34 (11)	ResAP (2008)1	2	0.18-2.5		2011 (a), Health Canada
		169	ICP-MS (total content)	22 (38)	EPA Guideline 2012	2	2.1-45	Alla Prima, Intenze, HLC, Kuro Sumi, Makkuro Sumi, Tattoo Colour King, Tattoo	2013, Ministry of Health (NZ)
		29	ICP-MS (total content)	14 (4)	national law 2013=ResAP (2008)1	2	3.3-41	Kuro Sumi, Magic Cosmetics, Tattoo	2015, Swedish Medical Products Agency
		72	ICP-MS (total content)	7 (5)	national law =ResAP (2008)1	2	2.6-401.5		2014, Nederlandse Voedsel en waren autoriteit
		787 (2004)		0.5 (4)	national law =ResAP (2008)1	2	> 2		2008, Nederlandse Voedsel en waren autoriteit
		121		7 (8)	national law 2005	5	> 5		2015, Conseil Superior de la Santé (BE)
		61	ICP-MS (total content)	7 (4)	ResAP (2008)1	2	> 2		2012 (a), Danish EPA
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.08 - 7.73		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.1 - 6.4		(P) 2015, Bocca, Ispra
		34 (2009)		12	ResAP(2008)1	2	<0,2-18		(P) 2015, Hrzenjak, Ispra
		35 (2014)		6	ResAP(2008)1	2			(P) 2015, Hrzenjak, Ispra
		148 (2007)							(P) 2015, Mildau Blume, Ispra
379 (2013)		42	positive samples		coloured ink : <14 mg/kg; black ink< 23		(P) 2015, Mildau Blume, Ispra		
134		30 (40)	positive samples		0.02-36.5		(P) 2015, Mildau Blume, Ispra		
250 (coloured)		3.2 (8)	ResAP(2008)1	2	2-14.3		2013, BVL		
129 (black)		1.6 (2)	ResAP(2008)1	2	2-23		2013, BVL		
Manganese (Mn)		20		65	positive samples		0.02-6.8	(P) 2015, Mildau Blume, Ispra	
		56	acid/ MW oven				0.079- 98.8	2009 (a), Forte	
		5		60 (3)	positive samples		1.1-4.2	Eternal ink, Yakuza	

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Mercury (Hg)	7439-97-6	169	ICP-MS (total content)	0.6 (1)	EPA Guideline 2012	0.2	0.6	Intenze	2013, Ministry of Health (NZ)
		13	acid/ MW oven	0	ResAP(2008)	0.2	<LoQ - 0.179		2009 (b), Forte
		39	acid/ MW oven	0	ResAP(2008)	0.2	<LoQ - 0.19		2009, Bocca
		56	acid/ MW oven	2 (1)	ResAP(2008)	0.2	<LoQ - 0.253	Diabolo by Deep Colours: Chinese Red	2009 (a), Forte
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.001-0.17		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.005-0.05		(P) 2015, Bocca, Ispra
		34 (2009)		0	ResAP(2008)1	0.2	<0,02		(P) 2015, Hrzenjak, Ispra
		35 (2014)		0	ResAP(2008)1	0.2			(P) 2015, Hrzenjak, Ispra
		305 (2013)		5	positive samples		< 2 (coloured ink); <0.2 (black ink)		(P) 2015, Mildau Blume, Ispra
		106		12 (13)	positive samples		0.001-0.3		(P) 2015, Mildau Blume, Ispra
		209 (coloured)		1.9 (4)	ResAP(2008)1	0.2	0.2-2.8		2013, BVL
		Nickel (Ni)	7440-02-0	31	DIN EN ISO 11885 ICP-OES (total content)	3 (1)	national law 2013=ResAP (2008)1	ALTA	not reported
14				14 (2)	national law 2013=ResAP (2008)1	ALTA	0-29		2012, Swedish Chemical Agency
169	ICP-MS (total content)			79 (133)	EPA Guideline 2012	ALTA	0.30-22.8	All tested brands	2013, Ministry of Health (NZ)
61	ICP-MS (total content)			100 (61)	ResAP (2008)1	ALTA	up to 18		2012 (a), Danish EPA
13				2 (2)	possible limit set to 1 ppm	1	0.037- 2.32	Deep Green, Deep Violet	2009 (b), Forte
39	acid/ MW oven			18 (7)	on the basis of a possible limit set to 1ppm	1	0.067- 9.6	Ultramarine Blue, Dark chocolate brown, Green (Deep, Basic), Hound grey, Violet (Deep, Violet)	2009, Bocca

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
		56	acid/ MW oven	16 (9)	on the basis of a possible limit set to 1ppm	1	0.037- 9.59	Starbrite Colors: Deep green, Deep violet; Millennium Colorworks Inc: Hound grey; Intenze Prod.: Dark chocolate brown; Diabolo by Deep Colours: Ultramarine blue, Green (Basic, Willow), Port Red, Violet violet	2009 (a), Forte
		87 (tattoo)	ICP-MS after under-pressure digestion		positive samples		<0.1 - 64		(P) 2015, Bocca, Ispra
		17 (PMU)	ICP-MS after under-pressure digestion		positive samples		<0.21 - 78		(P) 2015, Bocca, Ispra
		34 (2009)		100	ResAP (2008)1	ALTA	<0,03-3,1		(P) 2015, Hrzenjak, Ispra
		35 (2014)		46	ResAP (2008)1	ALTA			(P) 2015, Hrzenjak, Ispra
		379 (2013)		44	positive samples		coloured ink : <65.1 mg/kg; black ink<60		(P) 2015, Mildau Blume, Ispra
		5		60 (3)	positive samples		1.1-1.8	Eternal ink	Questionnaire, LU
Selenium (Se)	7782-49-2	72	ICP-MS (total content)	5 (4)	EPA Guideline 2012	2	3.0-290		2014, Nederlandse Voedsel en waren autoriteit
	7783-00-8	34 (2009)		0	ResAP(2008)1	2	<0,02-0,85		(P) 2015, Hrzenjak, Ispra
		35 (2014)		0	ResAP(2008)1	2			(P) 2015, Hrzenjak, Ispra
		25		96 (24)	positive samples		0.1-1.3		(P) 2015, Mildau Blume, Ispra
Strontium (Sr)	7440-24-6	31	DIN EN ISO 11885 ICP-OES (total content)	32 (10)			12-120	Classic, Intenze	2010(b), Swedish Chemical Agency
		56	acid/ MW oven				0.174- 36.4		2009 (a), Forte
		5		20 (1)	positive samples		14.9	Eternal ink	Questionnaire, LU
Thallium (Tl)	7440-28-0	148 (2007)							(P) 2015, Mildau Blume, Ispra
		24		21 (5)	positive samples		0.003-0.2		(P) 2015, Mildau Blume, Ispra
Tin (Sn)	7440-31-5	31	DIN EN ISO 11885 ICP-OES (total content)	3 (1)	national law 2013=ResAP (2008)1	50	56	Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		169	ICP-MS (total content)	1.2 (2)	EPA Guideline 2012	50	88-101	Intenze, Kuro Sumi	2013, Ministry of Health (NZ)
		34 (2009)		0	ResAP(2008)1	50	<0,5		(P) 2015, Hrzenjak, Ispra
		35 (2014)		0	ResAP(2008)1	50			(P) 2015, Hrzenjak, Ispra

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Titanium (Ti)	7440-32-6	8		12 (1)	positive samples		3.2		(P) 2015, Mildau Blume, Ispra
		5		40 (2)	positive samples		1.2-4	Eternal ink	Questionnaire, LU
								median:1-159436	Sicotan
		56 (tattoo)	ICP-MS after MW digestion				6597-180893		(P) 2015, Bocca, Ispra
Uranium (U)	7440-61-1	5		80 (4)	positive samples		2.4-1510	Eternal ink, Yakuza	Questionnaire, LU
		148 (2007)		25 (5)	positive samples		0.01-0.1		(P) 2015, Mildau Blume, Ispra
Vanadium (V)	7440-62-2	20		25 (5)	positive samples		0.01-0.1		(P) 2015, Mildau Blume, Ispra
		56	acid/ MW oven	100 (56)	positive samples		0.006- 11.05	Diabolo by Deep Colours, Intenze, Millenium, Starbrite	2009 (a), Forte
Zinc (Zn)	7440-66-6	5		20 (1)	positive samples		1.9	Eternal ink	Questionnaire, LU
		31	DIN EN ISO 11885 ICP-OES (total content)	6 (2)	national law 2013=ResAP (2008)1	50	16-95	Starbrite 2, Intenze	2010 (b), Swedish Chemical Agency
		14		43 (6)	national law 2013=ResAP (2008)1	50	0-88		2012, Swedish Chemical Agency
		169	ICP-MS (total content)	35 (60)	EPA Guideline 2012	50	51-1640	Intenze, Kuro Sumi, Mom's, Tang Dragon, Tattoo Colour King, Starbright	2013, Ministry of Health (NZ)
		61	ICP-MS (total content)	1 (1)	ResAP (2008)1	50	53		2012 (a), Danish EPA
		29	ICP-MS (total content)	14 (4)	national law 2013=ResAP (2008)1	50	102-513	Kuro Sumi, Magic Cosmetics, Tattoo	2015, Swedish Medical Product Agency
		56 (tattoo)	ICP-MS after MW digestion		positive samples		0.3 - 48		(P) 2015, Bocca, Ispra
		34 (2009)		0	ResAP(2008)1	50	<5-13		(P) 2015, Hrzenjak, Ispra
		35 (2014)		3	ResAP(2008)1	50			(P) 2015, Hrzenjak, Ispra
		30		76 (23)	positive samples		0.3-195		(P) 2015, Mildau Blume, Ispra
Preservatives (total)		5		100 (5)	positive samples		7.9-29	Eternal ink, Yakuza	Questionnaire, LU
		829 (2004)		12 (103)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		556 (2005)		2 (13)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		2 (11)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Benzoic Acid	65-85-0	829 (2004)		3 (29)	national law	0.05%	>0.05%		2008, Nederlandse Voedsel en waren autoriteit
		556 (2005)		2 (9)	national law	0.05%	>0.05%		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		1 (4)	national law	0.05%	>0.05%		2008, Nederlandse Voedsel en waren autoriteit
		229	MeOH/Phosphoric acid extr., UPLC-DAD	11 (25)	national law		0.010-0.12%		2014, Hauri
		94		5 (5)	positive samples		0.02-54		2007, BVL
Benzoisothiazolinone (BIT)	2634-33-5	229	MeOH/Phosphoric acid extr., UPLC-DAD	24 (55)	national law		30-424		2014, Hauri
		106		35 (37)	positive samples		0.01-170		2007, BVL
Dehydroacetic Acid	520-45-6	229	MeOH/Phosphoric acid extr., UPLC-DAD	3 (5)	national law		0.038-0.089%		2014, Hauri
Formaldehyde	50-00-0	229	Derivat. with DNPH, HPLC-DAD	7 (15)	national law		0.005-0.035%		2014, Hauri
DMDM hydantoine	6440-58-0	229	MeOH/Phosphoric acid extr., UPLC-DAD	3 (7)	national law		not quantified		2014, Hauri
Ethyl-p-Hydroxybenzoate	120-47-8	556 (2005)		0.1 (1)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
Isobutyl-p-Hydroxybenzoate	94-26-8	556 (2005)		0.1 (1)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
kathon CG		16		25 (4)	positive samples		0.0001-0.001%		2007, BVL
Methyl-p-Hydroxybenzoate	99-76-3	829 (2004)		2 (22)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		556 (2005)		0.1 (1)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		1 (5)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
Propyl-p-Hydroxybenzoate	94-13-3	829 (2004)		2 (22)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		556 (2005)		0.1 (1)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
p-Hydroxybenzoate	456-23-5	829 (2004)		2 (20)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
p-Hydroxybenzoate	456-23-5	675 (2006)		0.3 (2)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		15		6 (1)	positive samples		0.02%		2007, BVL
Methylchloroisothiazolinone (MCI)	26172-55-4	229	Acq. phosphoric acid extraction, HPLC-DAD	2 (5)	national law		1.1-1.5		2014, Hauri
Methylisothiazolinone (MI)	2682-20-4	229	Acq. phosphoric acid extraction, HPLC-DAD	8 (18)	national law		0.42-70		2014, Hauri
		37		5 (2)	positive samples		39-47		2007, BVL
Sum MI/MCI	26172-55-4 2682-20-4	229	MeOH/Phosphoric acid extr., UPLC-DAD	2 (5)	national law		2.3-2.7		2014, Hauri
2-Octyl-2H-isothiazol-3-one	26530-20-1	16		6 (1)	positive samples		19		2007, BVL
Phenol	108-95-2	229	MeOH/Phosphoric acid extr., UPLC-DAD	3 (6)	national law		0.008-0.47%		2014, Hauri
		11	GC-MS				1770-3800		2013, Høgsberg
		19	GC-MS				0.2-385		2010, Regensburger
2-Phenoxyethanol	122-99-6	829 (2004)		3 (32)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		556 (2005)		1 (4)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		675 (2006)		0.3 (2)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
		229	MeOH/Phosphoric acid extr., UPLC-DAD	3 (8)	national law	0.01%	0.015-0.80%		2014, Hauri
		107		2 (2)	positive samples		0.013-0.019		2007, BVL
o-Phenylphenol	90-43-7	229	MeOH/Phosphoric acid extr., UPLC-DAD	1 (2)	national law		0.084-0.11%		2014, Hauri
Salicylic Acid	69-72-7	829 (2004)		1 (8)	national law	0.01%	>0.01%		2008, Nederlandse Voedsel en waren autoriteit
Sorbic Acid	110-44-1	829 (2004)		0.1 (1)	national law	0.05%	>0.05%		2008, Nederlandse Voedsel en waren autoriteit
		229	MeOH/Phosphoric acid extr., UPLC-DAD	1 (3)	national law		0.063-0.076%		2014, Hauri
		38		3 (1)	positive samples		0.01-0.07		2007, BVL

Substance	CAS nr	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	Content/Range (min-max) (mg/kg)	Brand names of non compliant samples	Reference
Trichlorobenzene		11	GC-MS		positive samples		0.01-0.72		2013, Høgsberg
Nitrosodiethanolamine	1116-54-7	229	LC-MS-MS water extraction	6 (14)	national law	0.15	0.012-66.7		2014, Hauri
Nitrosodimethylamine	62-75-9	229	LC-MS-MS water extraction	0.4 (1)	national law	0.15	0.026		2014, Hauri
Dibutyl phthalate (DBP)	84-74-2	11	GC-MS				0.2-5.0		2013, Høgsberg
Dibutyl phthalate (DBP)		14	GC-MS				0.12-691.2		2011, Lehner
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	11	GC-MS				0.2-19.3		2013, Høgsberg
Hexachloro-1,3-butadiene	87-68-3	14	GC-MS				0.08- 4.52		2011, Lehner
Metheneamine	74-89-5	14	GC-MS				0.08- 21.64		2011, Lehner
Dibenzofuran	132-64-9	14	GC-MS				0.02-1.62		2011, Lehner
Benzophenone	119-61-9	14	GC-MS				0.26-556.66		2011, Lehner
9-fluorenone	486-25-9	14	GC-MS				0.04-3.04		2011, Lehner
Pigment orange 15 Pigment red 53 Pigment violet 23 Pigment violet 19 Pigment red 122	CI 12075 CI 15585 CI 51319 CI 73900 CI 73915	37 (red inks)	MALDI-TOF/DMF extraction and HPLC	30 (11)	national law	0	> 0		2014, Hauri
Pigment green 7	CI 74260	31 (green inks)	MALDI-TOF/DMF extraction and	52 (16)	national law	0	> 0		2014, Hauri
Pigment yellow 1 Pigment yellow 83 Pigment orange 43	CI 11680 CI 21108 CI 71105	20 (yellow inks)	MALDI-TOF/DMF extraction and	10 (2)	national law	0	> 0		2014, Hauri
Pigment red 53 Pigment violet 23	CI 51319 CI 73900 CI 73914	16 (violet inks)	MALDI-TOF/DMF extraction and HPLC	60 (10)	national law	0	> 0		2014, Hauri
Pigment red 53 Pigment violet 23 Pigment red 122	CI 51319 CI 73900 CI 73915	15 (magenta inks)	MALDI-TOF/DMF extraction and HPLC	40 (6)	national law	0	> 0		2014, Hauri
Pigment orange 15 Pigment red 122	CI 12075 CI 73915	15 (orange inks)	MALDI-TOF/DMF extraction and HPLC	13 (2)	national law	0	> 0		2014, Hauri

Table B: Summary of microbiological analysis results from all documents considered in this WP.

Microbiological agent	Number of analysed samples	Test method used	non compliant samples, % (nr)	Criteria for compliance (national law, CoE ResAP)	limit (mg/kg)	cfu/g	Reference
Contamination	15 (sealed)	ISO 21149 ISO 18415 ISO 18416 ISO 21150 ISO 22717 ISO 22718 ISO 16212	20 (3)	Canada jurisdiction limits for cosmetic products	sterility	15-1.5*10 ⁵	2011 (b), Health Canada
Aerobic mesophilic bacteria	15 (sealed)	ISO 21149	12 (2)	Canada jurisdiction limits for cosmetic products	sterility	200-900	2011 (b), Health Canada
<i>P.aeruginosa</i>	15 (sealed)	ISO 22717	6 (1)		sterility	1.5*10 ⁵	2011 (b), Health Canada
yeasts/moulds	15 (sealed)	ISO 16212	12 (2)		sterility	15-1000	2011 (b), Health Canada
Contamination	698		6 (41)	national law	sterility	not sterile	2014, Nederlandse Voedsel en waren autoriteit
Contamination	829 (2004)		18 (149)	national law	sterility	not sterile	2008, Nederlandse Voedsel en waren autoriteit
Contamination	588 (2005)		12 (73)	national law	sterility	not sterile	2008, Nederlandse Voedsel en waren autoriteit
Contamination	710 (2006)		5 (39)	national law	sterility	not sterile	2008, Nederlandse Voedsel en waren autoriteit
Contamination	553 (2007)		4 (25)	national law	sterility	not sterile	2008, Nederlandse Voedsel en waren autoriteit
Contamination	34		91 (31)	CoE ResAP (2008) ¹	sterility	not sterile	2013, Bonadonna
Contamination	39 (sealed) 106 (opened)		44 (17) (32)	30	sterility	10 ¹ - 10 ⁸ cfu/ml	2011, Baumgartner
<i>Pseudomonas</i> sp. <i>Aeromonas</i> sp. <i>Staphylococcus</i> sp. <i>Enterococcus faecium</i> <i>Streptococcus sanguinis</i> <i>Streptococcus salivarius</i> <i>Acinetobacter</i> sp.	58 (sealed) 6 (opened)		10 (6) 17 (1)		sterility	100-650 bacteria/ml	2013 (b), Høgsberg
Contamination	216		13 (29)		sterility	not sterile	2007, BVL

Statistical data from literature and national reports

Table A: Prevalence of tattoos inside and outside Europe.
Prevalence of tattoos inside Europe.

Member State	Literature Reference	Survey type	N value	Age (years)	Total (%)	Male (%)	Female (%)
DE	2006, Stirn	general population	2043	14 - 93	8.5		
				14 - 44	15		
				25 - 34		22	
DK	2010, Dannemand	youth survey	1112	15 - 25	13		
FI	2009, Myllyniemi	youth barometer	1898	15 - 29	13		
				15 - 19	9		
				20 - 24	12		
				25 - 29	19		
FR	2010, Fourquet	general population	958	18 - 65+	10	11	9
				18 - 24	8		
				25 - 34	20		
				35 - 49	12		
				50 - 64	5		
				65+	1		
				20 - 22	17	11.5	24
2002, Eurispes	school children	3800	12 - 18	6.6	7.2	5.7	
2005, Boncompagni	high school students	496	14 - 20	4.8	3	6	
			14 - 16	3.5	3.5	2.4	
			16 - 17	5.1	3	5.3	
			18 - 20	10	0	20	
IT	2006, Preti	high school students	817	15 - 19+	8.6	14.5	5.4
				15 - 16	6		
				17 - 18	7.2		
				19+	15.8		
				13 - 21	6		
2010 (a), Cegolon	secondary school students	4277	13 - 21	6			
2011, Galle	high school students	9322	[16.1]	11.3	11.7	10.9	
	university students	3610	[21.6]	24	15.1	20.7	
2011, Quaranta	university students	1598	20.1	9.6	9	9.8	

Note: Bold values indicate totals of the group

[]: Mean

Table A: Prevalence of tattoos inside and outside Europe (continued).
Prevalence of tattoos outside Europe.

Country	Literature Reference	Survey type	N value	Age (years)	Total (%)	Male (%)	Female (%)
AU	2001, Makkai	general population	10030	14+	10	11.9	8.5
	2003, Grulich	general population	19000	16 - 59	12.6	14.5	13.6
	2012, Heywood	general population	8656	16 - 64	14.5	15.4	13.6
				16 - 19		5.4	6.9
				20 - 29		22.3	29.4
30 - 39					23.2	22.3	
40 - 49		16.3	9.8				
> 50		8.7	3.3				
BR	2006, Oliveira	adolescents public school	664	12 - 19	3.2		
	2013, Bicca	military recruits	1968	18	10.8	10.8	0
CA	2006b, Deschesnes	high school students	2180	12 - 18	7.9	5.8	9.8
				12 - 13		4	3.5
				14 - 15		4.9	7.6
				16 - 18		8.5	18.1
	2006a, Deschesnes	high school students	2145	12 - 18	7.7	5.6	9.8
				12 - 13	3.8		
				14 - 15	6.1		
				16 - 18	12.9		
US	2002, Mayers	university undergraduates	454	16 - 26	23	22	24
	2002, Roberts	school-based survey	5837	11 - 21	4.6	4.8	4.2
				11 - 13		0.5	
				14 - 16		2.6	
	2003, Sever	general population	2215	18 - 65+	16	16	15
				18 - 24		13	
				25 - 29		36	
				30 - 39		28	
				40 - 49		14	
	50 - 65+		17				
	2006, Laumann	general population	500	18 - 50	24	26	22
				18 - 29		36	
				30 - 40		24	
	41 - 50		15				
	2007, PEW	general population	1275	18 - 64	24		
18 - 25					36		
26 - 40					40		
41 - 64		10					
2002, Mayers	university undergraduates	661	[21]	21.8	23	21	
2008, Corso	general population	2302	18 - 65+	14	15	13	
			18 - 24		9		
			25 - 29		32		
			30 - 39		25		
			40 - 49		12		
50 - 65+		17					
2010, Taylor	general population	2020	18 - 65+	23			
			18 - 29		38		
			30 - 45		32		
			46 - 64		15		
			65+		6		
2012, Braverman	general population	2016	18 - 65+	21	19	23	
			18 - 24		22		
			25 - 29		30		
			30 - 39		38		
			40 - 49		27		
50 - 65+		16					
2012, Karagas	general population - internet survey	452	18 - 49		18	29	
			50 - 69		16	7	
2014, Shannon-Missal	general population (10 major cities)	2102	≥18	22			

Note: Bold values indicate totals of the group

[]: Mean

Table A: Prevalence of tattoos inside and outside Europe (continued).
Prevalence of tattoos based on national reports.

Country	National Report Reference	Countries mentioned	Total (%)	Comments	Specific references
BE	2015, Conseil Supérieur de la Santé	Germany	9	58% black 40% coloured sum: 120 million	2012, BfR 2009, D'Hollander 2006, Klugl
		United States	24		
		United Kingdom	12		
		Sweden	7		
		Worldwide			
CH	2014, Hauri	Germany	25	15 - 25 years	2009, Pressemitteilung, Universität Leipzig: verbreitung von Tätowierungen, Piercing und Körperhaarentfernung in Deutschland
DE	2012, BfR	Germany	9	16 - 20 years	2003, Allensbacher Reports 2006, Laumann and Derick 2010, Klugl
			23		
DK	2012(a), Danish EPA		13	adults (sum: 600000)	
NZ	2013, Ministry of Health		20 33	< 33 years	2009, Forte
SE	2010(a), Swedish Chemical Agency	EU	5 - 10		2003, Papameletiou
		US	24		
US	2013, Harris Poll Global Omnibus		14	sum: 45 million	Pew Research Center
			36	18 - 25 years	
			40	26 - 40 years	

Table B: Regrets, removals and motivations for removal.

Country	Literature Reference	Survey type	N value	Tattooed individuals	Population regrets (% considering removal) Tattoos	Motivations for tattoo removal
	2010, Klugl	general population	3411	3399	5	
DE	2014, Klein	laser tattoo removal survey	157	157	100	esthetic 28%, youthful folly 29% medical problems
DK	2013b, Hogsberg	youth survey	154	154	13.6	
FR	2011, Latreille	laser tattoo removal survey	151	151	100	never been pleased with tattoo (21%) embarrassment/shame (20%) professional reasons (17%) became dissatisfied (12%)
IT	2005, Boncompagni	high school students	496	24	4.3	
	2002, Mayers	university undergraduates	454	104	4	
US	2003, Sever	general population	2215	354	17	
	2006, Laumann	general population	500	118	17	
	2008, Corso	general population	2302	322	16	
	2012, Braverman	general population	2016	423	14	

National reports

Country	National Report Reference	Tattoos placed	Country covered	Population regrets (%)	Removals (%)	Additional comments	Specific references
BE	2015, Conseil Supérieur de la Santé	300 000 - 500 000 per year	Belgium		10 - 20		2011, Bfr; 2010, Laumann
SE	2010(a), Swedish Chemical Agency	2000 daily 600 daily	Sweden Stockholm				
US			US	17	11	costs for placing a tattoo: \$45 (small) \$150/h (large)	2013, Harris Poll Global Omnibus

Table C: Age of individuals for their first tattoo.

Reference	Survey type	N value	Comment	Age (years)	First tattoo			
					Total (%)	Male (%)	Female (%)	
Member State								
DE	2010, Klugl	general population	3400	tattooed individuals	< 18	18	13	21
					18 - 35	77	80	75
					35+	5	7	3
FR	2011, Latreille	laser tattoo removal survey	152	tattooed individuals	11 - 18	43.7		
					19 - 29	41.1		
					≥ 30	15.2		
Country outside Europe								
BR	2013, Bicca	military recruits	209	tattooed adolescents	12 - 13	5		
					14 - 15	18		
					16 - 17	58		
					18	19		
CA	2006(a), Deschesnes	high school students	166	tattooed students (7.7 % of 2145)	< 15	32.1		
					< 12		16.9	1
US	2008, Armstrong	dermatology clinics	189	tattooed patients	12 - 15	15	16	16
					16 - 18	43	41	41
					19 - 23	29	29	23
					24+	15	14	16
	2006, Laumann	general population	119	tattooed individuals	< 18	16		
				18+	84			
				< 24	65			
				30+		11	30	

Table D: Size and localisation of tattoos.

Reference	Survey type	N value	Size of tattoos					Localization of tattoos					
			Type	Size (cm2)	Total (%)	Male (%)	Female (%)	Type	Localization	Total (%)	Male (%)	Female (%)	
Member State													
DE	2010, Klugl	general population	3411	size of most recent tattoo	< 300 (small) ≥ 300 (large)	39 61	27 73	48 52	localization of most recent tattoo	extremities trunk head/ neck	51 45 3	64 32 2	41 54 3
	2015, Conseil Supérieur de la Santé			size corresponds to localization	800 4 500 16 400					arms back body			
	2012, BfR				25 >900	8 16							
DK	2012a, DK EPA				454 - 1090								
	2013(c), Høgsberg	youth survey	342	size of each tattoo relative to body surface area (where 1% = palm + fingers)	≤ 1% > 1%	70 30	56 44	88 12	localization of each tattoo	extremities trunk head/ neck	58 37 4	67 29 5	48 48 4
	2014, DK EPA				900								
FR	2011, Latreille	laser tattoo removal survey	151	size	< 30 ≥ 30		45 54	74 26		arms hands lower back		75 13 0	25 3 12
IT	2005, Boncompagni	high school students	496							shoulders ankles arms & wrists lower back		54.6 7.8 7.8	28.7 27.1 11.4
Country outside Europe													
BR	2013, Bicca	male military recruits	1968	size	≤ 10 11 - 20 > 20	51 35 14	51 35 14		localization of each tattoo	extremities trunk	80 20	80 20	
US	2006, Lauman	general population	203	size of each tattoo expressed in terms of palm size	≤ palm > palm	67 34	56 45	80 20	localization of each tattoo	extremities trunk head/ neck	51 45 4	61 35 4	35 60 5
	2002, Mayers	university undergraduates								extremities trunk	27 43	35 33	18 53

Table E: Colours of tattoos.

Country	Reference	Survey type	N value	Type	Colour	Total (%)	
DE	2010, Klugl	general population	3411	colour of most recent tattoo	black	50	
					red	14	
					blue	10	
					green	9	
					yellow	8	
					white	2	
					violet	1.6	
					colours of tattoos in general	black	59
						mixed colours	40
					colour combinations of most recent tattoo	1 colour	63.4
2 colours	14						
3 colours	9.4						
≥ 4 colours	13.1						
DK	2013(b), Hogsberg	youth survey	342	colours of each tattoo	black	96	
					red	15	
					green	11	
					blue	10	
					yellow	10	
white	7						
BR	2013, Bicca	military recruits	213	colour combinations	monochromatic	75	
					dichromatic	12	
					trichromatic	5	
					≥ 4 colours	8	

Table F: Skin exposure.

Member State	Reference	Comment	Skin exposure (mg ink/skin cm2)
	2008, Engel	measurements made with Pigment Red 22 directly after tattooing comparing expert tattooists or laboratory researcher and pig or human skin	[2.53] 0.6 - 9.42 [400 cm2]=1 g
	2010, Regensburger extrapolated from 2008, Engel	typical tattoo of 400 cm2 contains 1g black pigment (dry chemical) but because of PAH weight/volume is roughly 50% this implies 2g black ink into skin	2.5
		inks contain: carbon black nanoparticles PAH (0.14 - 201 microg/g) phenols (0.2- 385 microg/g)	
DE	2011(a), Lehner	presence in inks of dibutyl phthalate (0,12-691,2 microg/g) dibenzofuran (0,02-1,62 microg/g) & other substances	
	2012, BfR Based on 2008, Engel	significant differences in the quantity of tattoo ink applied, depending on the experience of the tattooist, thus exposure estimations are unable to give a clear indication of the real situation	0.63 - 2.49 (10% pigment solution) 1.42 - 9.42 (25% pigment solution)
		estimated PAH exposure in tattoo inks based on two scenarios	2.4 - 3.5
	2014, Lehner	presence in human skin of PAH (0,1-0,6 microg/g) and lymph nodes (0,1-11,8microg/g)	
	2015, Conseil Supérieur de la Santé Based on 2012, BfR		2.5 arm=800cm2= 2g back=4 500 cm2=11g body=16 400 cm2=40g
DK	2012(a), DK EPA 2014, DK EPA Based on 2008, Engel		[2.5] 0.6-9.4 [454 cm2] X [2.53] = 1,1 g/person [1 090 cm2] X [9.42 mg/cm2] = 10,3 g/person

[]: mean value

Table G: Tattooed individuals and their number of tattoos.

Reference	N value	Type	Number of tattoos	Total (%)	Male (%)	Female (%)	
Member State							
DE	2010, Klugl	3411	tattooed individuals, general population	1	34.9	30.7	37.8
				2 - 3	37.7	33.6	40.5
				4 - 5	13.3	14.4	12.5
				6 - 9	7.8	9.4	6.6
				≥ 10	6.5	11.9	2.7
				single	35	31	38
				multiple	65	69	62
DK	2013(a), Hogsberg	154	tattooed youth	1	47.4	50.6	44
				2 - 3	36.4	30.4	42.7
				4 - 5	9.1	7.6	10.7
				6 - 9	5.8	8.9	2.7
				≥ 10	1.3	2.5	0
FR	2011, Latreille	151	laser tattoo removal survey	single		29	60
				multiple		71	40
IT	2005, Boncompagni	24	tattooed high school students	1	95		
				2	5		
Country outside Europe							
BR	2013, Bicca	213	tattooed male military recruits	1	66	66	
				2	21	21	
				3	7	7	
				4	4	4	
				> 5	2	2	
CA	2006, Deschesnes	165	tattooed high school students	1	79		
				≥ 3	7	11.9	4.1
US	2010, Taylor	768	tattooed individuals: 18 - 29 years old	1	31		
				2 - 5	50		
				≥ 6	18		
	2014, Shannon-Missal	462	tattooed adults living in ten major cities	1	47		
				≥ 6	9		
				1	32		
				2	23		
			3	9			
			4	9			
			≥ 5	23			

Table H: Number of tattooists.

Country	Literature Reference	Population (million)	No. professional tattooists	No. tattooists/inhabitant	Affiliated tattooists (syndicate)		Estimation unlicensed tattooists
					Number	Name of syndicate	
CH	2015, Kluger	8	550 - 600	1/ 13000	34	VST	
DE		80	6000	1/ 13000	100	DOT	> 20000
DK		5.6	500	1/ 11200	58	DTL	
FR		68	2000 - 3000	1/ 22600	1100	SNAT	
IS		0.3	8 - 10	1/ 30000	0		16 - 20
IT		60.6	1200 - 3000	1/ 20000	98	ART	7000
NO		5	400 - 500	1/ 10000	65	NTU	3000 - 3500
SE		9.6	2000 - 3000	1/ 3200	89	SRT	3000

National reports

Country	National report Reference	Number of professional studios	Affiliated artists	Name of Syndicate
DK	2002, DK EPA		54 tattooists 4 PMU	Danish Tattoo Organisation (DPT) Danish Tattoo Guild (DTL)
	2012(a), DK EPA		40 tattooists 72 tattooists	
SE	2010(a) Swedish Chemicals Agency	100 PMU studios		Swedish Association of Registered Tattoo Artists (SRT)
US	2013, Harris Poll Global Omnibus	21000 tattoo studios		

Table I: Problems and non-compliances.

Country	Reference	Problems and non-compliances related to labelling
BE	2015, Conseil Superior de la Santé	Sterility of inks is not controlled Life date after opening is not always provided
	2011, Conseil Superior de la Santé	Most manufacturers do not provide a complete list of ingredients. No indication of durability neither manufacturer and indication of use. Often undefined substances are mentioned (Ex. Vodka)
CH	2014, Hauri	lack of contents 4% lack of best before and batch number in 1% of cases 18% of sampled inks (tot 229) contained not authorized pigments, most of them not declared on the package
DK	2012(a), Danish EPA	Ni was found in all 61 samples and none of the labells stated that Ni was present in the product. 2 samples contained Cu (extractable or from phthalocyanines) without declaration on label
NL	2014, Nederlandse Voedsel en waren autoriteit	
	2014	700 samples, 21.7% not compliant: mandatory information were incomplete / absent
	2007	518 samples, 16.4% not compliant: idem
	2006	675 samples, 23.6% not compliant: idem
	2005	514 samples, 55.1% not compliant: idem
	2004	628 samples, 69.4% not compliant: idem
SE	2015, Medical Products Agency	27 out of 29 samples had labelling problems: instructions, warnings, durability and table of ingredients are missing. No batch number and manufacturer mentioned in the label.

Ink ingredients from literature and national reports

Table A: List of colorants in use in tattoo and PMU inks.

Colour Index Generic Name (CIGN)	Colour index Constitution Number (CICN)	tattoo inks	PMU inks
AR 14	14720		
AR 18	16255		
AR 51	45430		
AR 87	45380		2002, Danish EPA
BR 1	45160		
Cinnabar (HgS)		2015, Agnello	
DR 53 Oxamine B	22095	2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
FR 17:1	16035:1	2008, Nederlandse Voedsel en waren autoriteit	2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
NR 4	75470	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
NR 22	75510		
NR 23	75510		
PR 2	12310	2014, Hauri	2014, Hauri
PR 3	12120	2014, Hauri	2014, Hauri
PR 4	12085	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit
PR 5	12490	P 2015, Bäuml er (Ispra); 2000, Bäuml er; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäuml er
PR 7	12420		
PR 9	12460	P 2015, Bäuml er (Ispra), 2000 Bäuml er; 2006, Engel; 2008, Vasold; 2011, Lehner	2000, Bäuml er
PR 12	12385		
PR 14	12380		
PR 15	77015		
PR 17	12390	2011, Høgsberg; 2012-a, Danish EPA	
PR 22	12315	P 2015, Bäuml er (Ispra); 2015, Petersen; 1988, Lehmann; 2000, Bäuml er; 2006, Engel ; 2008, Vasold; 2008, Engel (2.53 mg/cm ² from human/ pig skin (ex vivo)); 2011 Lehner (0.04 -0.11 mg/cm ² from human skin (in vivo)); 2009, Engel (mouse skin: 0.186 mg/cm ²); 2014, Hauri	2015, Petersen; 2014, Hauri; 2000, Bäuml er; 1998, Lehmann
PR 23	12355		
PR 48:1	15865:1	2011, Høgsberg	
PR 49	15630	2014, Hauri	2014, Hauri
PR 49:2	15630:2		
PR 51	15580	2014, Hauri	2014, Hauri
PR 53:1	15585	2014, Hauri	2014, Hauri
PR 57:1	15850:1	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PR 57:2	15850:2		
PR 60	16105		
PR 63:1	15880	2014, Hauri; 2012-a, Danish EPA	2014, Hauri
PR 101 and 102	77491	2015, Petersen; 2010, De Cuyper; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
PR 112	12370	P 2015, Bäuml er (Ispra); 2000, Bäuml er; 2011, Høgsberg; 2011 Lehner (0.029 - 0.150 mg/cm ² from human skin (in vivo)); 2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäuml er
PR 120	12474	2014, Hauri	2014, Hauri
PR 122	73915	P 2015, Bäuml er (Ispra); 2000, Bäuml er; 2010, De Cuyper; 2014, Hauri; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäuml er
PR 146	12485	P 2015, Lerche (Ispra); 2010, De Cuyper; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PR 170	12475	P 2015, Bäuml er (Ispra); P 2015, Lerche (Ispra); 2000, Bäuml er; 2008, Poon; 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäuml er
PR 177	65300	2015, Petersen	2015, Petersen
PR 179	71130		
PR 181	73360	2010, Wenzel; 2014, Hauri	P 2015, Bäuml er (Ispra); 2014, Hauri; 2010,
PR 202	73907	2015, Petersen; 2014, Hauri	2015, Petersen; 2014, Hauri

Colour Index Generic Name (CIGN)	Colour index Constitution Number (CICN)	tattoo inks	PMU inks
PR 210	12477	2015, Petersen; 2011, Høgsberg; 2010, De Cuyper; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit
PR 222	123665		
PR 242	20067		
PR 254	56110	2015, Petersen; 2014, Hauri	2015, Petersen; 2014, Hauri
PR 257	56270	P 2015, Bäumlér (Ispra)	
PR 266	12474	2002, Danish EPA	
PR 269	12466	2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PR 340			
SR 1	12150		2002, Danish EPA
AY 3	47005	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
AY 9	13015		
AY 23	19140	2014, Hauri	2014, Hauri
AY 104	15985:1		
Diarylide Y			
Arylide Y			
FY 3	15985		
PY 1	11680	2011, Høgsberg; 2010, De Cuyper	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit
PY 3	11710	2011, Høgsberg	2008, Nederlandse Voedsel en waren autoriteit
PY 12	21090		
PY 14	21095	P 2015, Bäumlér (Ispra); 2000, Bäumlér; 2008, Poon; 2010, De Cuyper; 2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér
PY 36	77955		
PY 42 and 43	77492	2015, Petersen; 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
PY 55	21096	P 2015, Bäumlér (Ispra); 2015, Petersen; 2000, Bäumlér	2015, Petersen; 2000, Bäumlér
PY 65	11740	2015, Petersen; 2011, Høgsberg; 2014, Hauri; 2012-a, Danish EPA	2015, Petersen; 2014, Hauri
PY 74	11741	1988, Lehmann; 2000, Bäumlér; 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér; 1998, Lehmann
PY 83	21108	P 2015, Bäumlér (Ispra); 1988, Lehmann; 2000, Bäumlér; 2010, De Cuyper; 2014, Hauri; 2012, Danish EPA; 2008, Nederlandse Voedsel en waren	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér; 1988, Lehmann
PY 87	21107:1	P 2015, Bäumlér (Ispra), 2000, Bäumlér	2000, Bäumlér
PY 93	20710		
PY 97	11767	P 2015, Bäumlér (Ispra); P 2015, Lerche (Ispra); 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit
PY 100	19140:1		
PY 110	56280		2014, Hauri
PY 119	77496		
PY 138	56300	2015, Petersen; 2014, Hauri	2015, Petersen
PY 139	56298		2014, Hauri
PY 151	13980	2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit
PY 154	11781	2014, Hauri	
PY 155	200310		
PY 180	21290	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PY 194	11785		
AB 9	42090	2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
DB 86	74180		

Colour Index Generic Name (CIGN)	Colour index Constitution Number (CICN)	tattoo inks	PMU inks
PB 15	74160	P 2015, Bäumlér (Ispra); 2015, Petersen; 1988, Lehmann; 2000, Bäumlér; 2008, Poon; 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér; 1998, Lehmann
PB 17	74180		
PB 25	21180		
PB 27	77510		
PB 29	77007	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PB 60	69800		2014, Hauri
Lawsoné	75480	2011, Almeida (1-2% -found in 82% of commercial henna preparations)	
PO 5	12075	2014, Hauri ; 2012-a, Danish EPA	2014, Hauri
PO 13	21110	P 2015, Bäumlér (Ispra); 2015, Petersen; 2000, Bäumlér; 2011, Høgsberg; 2014, Hauri ; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér
PO 16	21160	1988, Lehmann; 2014, Hauri ; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PO 22	12470	2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PO 34	21115		
PO 36	11780	P 2015, Lerche (Ispra); 2002, Danish EPA	2014, Hauri
PO 43	71105	2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri (CH); 2008, Nederlandse Voedsel en waren autoriteit
PO 73	561170	2015, Petersen; 2014, Hauri; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit
PO 74		2005, Cui	
BV 10	45170		
PV 1	45170:2		
PV 12	58050	2015, Petersen	2015, Petersen
PV 15	77007		
PV 16	77742	2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
PV 19	73900	1988, Lehmann; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit; 1998, Lehmann
PV 23	51319	P 2015, Bäumlér (Ispra); 2000, Bäumlér; 2010, De Cuyper; 2014, Hauri ; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2000, Bäumlér; 2014, Hauri; 2008, Nederlandse Voedsel en waren autoriteit
PV 37	51345	2015, Petersen; 2014, Hauri	2015, Petersen
VV 2	73385		
Ferous oxide,black PBlack 2	77489	2011, Høgsberg; 2008, Nederlandse Voedsel en waren autoriteit	2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
PBlack 6 and 7	77266 77265	P 2015, Bäumlér (Ispra); P 2015, Dirks (Ispra); 2015, Petersen; Agnello; 2011, Høgsberg; 2008, Poon; 2010, De Cuyper; 2012-a, Danish EPA (5500-330000); 2002, Danish EPA; 2015, Nederlandse Voedsel en waren autoriteit; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit
PBlack 9	77367	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PBlack 11	77499	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit
PBlack 15	77403 77491		
PBr 6 and 7	77492 77499	2011, Høgsberg; 2010, De Cuyper	2010, Wenzel; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit
PBr 25	12510	P 2015, Lerche (Ispra); 2010, De Cuyper; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
PBr 175			
AG 25	61570	2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit
PG 7	74260	P 2015, Bäumlér (Ispra); 1988, Lehmann; 2000, Bäumlér; 2008, Poon; 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit; 2000, Bäumlér; 1998, Lehmann

Colour Index Generic Name (CIGN)	Colour index Constitution Number (CICN)	tattoo inks	PMU inks
PG 17	77288		
PG 18	77289		P 2015, Lerche (Ispra); 2014, Hauri
PG 36	74265	2015, Petersen; 2011, Høgsberg; 2010, De Cuyper; 2014, Hauri ; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2008, Nederlandse Voedsel en waren autoriteit
Aluminium Silicate (bentonite, White)	77004		
Barium sulphate	77120	2015, Prior; 2015, Olsen	2015, Prior; 2015, Olsen
PW 4	77941		
PW 6	77891	2015, Petersen; 2015, Agnello; 2015, Prior; 2015, Olsen; 2011, Høgsberg; 2008, Poon; 2010, De Cuyper; 2012-a, Danish EPA; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit	2015, Petersen; 2015, Prior; 2010, Wenzel; 2002, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit

Table B: List of additives, both auxiliaries and preservatives, in use in tattoo and PMU inks.

Auxiliaries	CAS number	tattoo inks	PMU inks
Acrylates copolymer			
Acrylic polymer			
Acrylic Resin TSRN00195201005-5100P			
Acrylic Resin TSRN00195201005-5102P			
Aloe barbadensis	85507-69-3 94349-62-9		
Aluminum hydroxide	21645-51-2		
Aminomethyl propanediol	115-69-5		
Ammonia	7664-41-7	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Ammonium acrylates copolymer	63744-68-3	P 2015, Michel (Ispra)	
Amorphous silica (Silicon dioxide)	7631-86-9		
Anionic surfactant		2012-a, Danish EPA	
Barium sulphate	7727-43-7	2015, Prior; 2015, Olsen; 2010, De Cuyper	2015, Prior; 2015, Olsen; 2010, De Cuyper
beta-Naphthol ethoxylate	35545-57-4		
Block copolymer		P 2015, Dirks (Ispra)	
Borax	71377-02-1	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Butanamid	541-35-5		
Calcium natrium			
Calcium sodium phoshsilicate		2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Calendula extract	84776-23-8		
Caprylil glycol (1,3-octadienol)	1117-86-8		
Carboxylated acrylic copolymer			
	9007-20-9		
	9003-01-4		
Carbomer	76050-42-5		
	9062-04-8		
	9007-16-3		
	9007-17-4		
5-Chloro-2methyl-2H-isothiazol-3-one/2-Methyl-2H-isothiazol-3 one mixture (CMIT/MIT mixture) antimicrobial	55965-84-9	P 2015, Mildau-Blume (Ispra)	
Citric acid	77-92-9 5949-29-1		
Detergents			
Dibutyl phthalate	84-74-2	2010, De Cuyper	
Diethyleneglycol	111-46-6	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Dimethicone	9006-65-9	P 2015, Michel (Ispra)	
7-Diethylamino-4-methylcoumarin	91-44-1		
Dipropylene glycol	110-98-5		
Disodium cocoyl glutamate	68187-30-4		
Emulsifier			
Ethanol	64-17-5	2012-a, Danish EPA; 2010, De Cuyper, 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Ethylene glycol	107-21-1	2010, De Cuyper	
Ethylhexyl glycerine	70445-33-9		
Essential oils			
Gelatine	9000-70-8	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Glycerol (Glycerine)	56-81-5 8043-29-6	P 2015, Michel (Ispra); 2012-a, Danish EPA; 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Glyceryl caprylate/caprata	26402-26-6 27214-36-4		
Glyceryl stearate	31566-31-1		
Gum	11138-66-2	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Hamamelis virginiana (leaf extract)/ Witch hazel extract	84696-19-5	2010, De Cuyper	2008, Nederlandse Voedsel en waren autoriteit
Hamamelis virginiana extract	68916-39-2	P 2015, Michel (Ispra)	
Hydrochloric acid	7647-01-0		
Hydroxypropylmethylcellulose	9004-64-2 9004-65-3 8063-82-9		
Hydroymethyl aminoethanol	65184-12-5		
Humectants			
iso-Octylphenoethoxylate, Octoxynol	92046-34-9	2012-a, Danish EPA	
Isopropanol	67-63-0	Bäumler, 2012-a, Danish EPA; 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Kaolin	1332-58-7		
Lactic acid	50-21-5		

Auxiliaries	CAS number	tattoo inks	PMU inks
Lecithin	8002-43-5 8030-76-0 (soybean)		
Menthol	2216-51-5	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Methanol	67-56-1	2010, De Cuyper	
Methyl ethyl keton	78-93-3		
Methylpropanediol	2163-42-0		
Modified organo polysiloxanes			
Neodecanoic acid	26896-20-8		
N-vinyl-2-pyrrolidone	94800-10-9		
Nonylphenoethoxylate, Nonoxynol			
Non-ionic surfactant		2012-a, Danish EPA	
C9-11 Pareth-6	68439-46-3		
PEG-8	5117-19-1 25322-68-3 (generic)	P 2015, Michel (Ispra)	
PEG-200	25322-68-3		
PEG-400	25322-68-3		
PEG-600			
PEG Isooctyl phenyl ether			
Phenylpropanol	1335-12-2		
Poloxamer 188	9003-11-6		
Poloxamer 407	9003-11-6		
Poly alchilen glycol ether			
Polyethyleneglycol	25322-68-3		
Poly(oxy-1,2-ethanediyl), .alpha.- (nonylphenyl)-.omega.-hydroxy- , branched, phosphates	68412-53-3		
Polysorbate 20 (Tween 20)	9005-64-5		
Polysorbate 80 (Tween 80)	9005-65-6		
Polyvinylpyrrolidone (PVP)	9003-39-8	P 2015, Dirks (Ispra); 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Proprietary resin		2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Polypropilene	9003-07-0		
Propanediol	26264-14-2		
Propylene glycol	57-55-6	2010, De Cuyper	
Poly(propylene glycol)	25322-69-47		
Ricin Oil	8001-79-4		
Rosa canina	84603-93-0		
Rosa Centifolia	84604-12-6	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Rosa damascena extract	90106-38-0		
Rosin	8050-09-7		
Shellac	9000-59-3	P 2015, Dirks (Ispra); 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Silica	112945-52-5	P 2015, Michel (Ispra)	
Silica dimethyl silylate	271-893-4	P 2015, Michel (Ispra)	
Simethicone	8050-81-5		
Sodium cocoyl glutamate	68187-32-6		
Sodium hydroxide	1310-73-2		
Sorbitol	50-70-4 8201-93-5		
Tetramethyl decynediol (Surfonyl®104, TMDD)	126-86-3		
Thymol	89-83-8		
Trimethylolpropane triisostearate	68541-50-4		
Vodka		2010, De Cuyper	
VP/VA Copolymer	25086-89-9		
Water	7732-18-5	2015, Bäumlner; 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Witch hazel		2012-a, Danish EPA; 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit	
Preservatives			
Aldehydes (like glutaraldehyde)		tattoo inks	PMU inks
2-Amino-2-methylpropanol	124-68-5	2010, De Cuyper	
Benzoates		2010, De Cuyper	
Benzophenone	119-61-9	2012, Lehner, thesis	
Benzoic acid	65-85-0	P 2015, Baeumlner (Ispra) (0.02%); P 2015, Michel (Ispra); P 2015, Mildau-Blume (Ispra) (0.02-54, av. 18.6); 2014, Hauri (0.010-0.12%); 2010, De Cuyper; 2008, Nederlandse Voedsel en waren autoriteit (>0.05%)	2014, Hauri (0.010-0.12%); 2008, Nederlandse Voedsel en waren autoriteit (>0.05%)
Benzoisothiazolinone (BIT)	2634-33-5	P 2015, Baeumlner (Ispra); P 2015, Mildau-Blume (Ispra) (0.01-170, av.26.9); Blume; 2014, Hauri (30-424)	2014, Hauri (30-424)

Preservatives	CAS number	tattoo inks	PMU inks
2-Bromo-2-nitropropane-1,3-diol	52-51-7	P 2015, Mildau-Blume (Ispra)	
Buthylparaben	94-26-8	P 2015, Mildau-Blume (Ispra)	
Chlorhexidine	55-56-1	P 2015, Baeumler (Ispra) (0.018%)	
4-Chloro-3,5-dimethylphenol (Chloroxylenol)	88-04-0	P 2015, Baeumler (Ispra) (0.25%)	
Dehydroacetic acid	520-45-6 771-03-9	P 2015, Mildau-Blume (Ispra); 2014, Hauri (0.038-0.089%)	2014, Hauri (0.038-0.089%)
Dibenzofuran	132-64-9	2012, Lehner, thesis	
1,2-Dibromo-2,4-dicyanobutane	35691-65-7	P 2015, Mildau-Blume (Ispra)	
2-4 Dichlorobenzylalcohol	1777-82-8	P 2015, Mildau-Blume (Ispra)	
DMDM Hydantoin	6440-58-0	2014, Hauri	2014, Hauri
Ethylparaben	120-47-8	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
9-Fluorenone	486-25-9	2012, Lehner, thesis	
Formaldehyde	50-00-0	P 2015, Baeumler (Ispra) (0.02%); 2014, Hauri (0.005-0.035%)	2014, Hauri (0.005-0.035%)
Glyoxal	107-22-2	P 2015, Baeumler (Ispra) (0.013%)	
Hexachlorobutadiene	87-68-3	2012, Lehner, thesis	
Hexamethylenetetramine	100-97-0	2012, Lehner, thesis	
p-Hydroxy benzoate	456-23-5	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Hydroxymethylamino ethanol			
Iodopropynyl butylcarbamate	55406-53-6	P 2015, Mildau-Blume (Ispra)	
Isobuthylparaben	4247-02-3	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Isopropylparaben	4191-73-5	P 2015, Mildau-Blume (Ispra)	
Isothiazolon (Kathon CG)	96118-96-6	P 2015, Mildau-Blume (Ispra) (0.001%)	
Listerine (mouth wash) for thinning of traditional inks - this contains thymol, eucalyptol, menthol, methyl-salicylate, benzoic acid, sodium benzoate, water, alcohol, poloxamer		2010, De Cuyper	
Melamine	108-78-1		
Methylchloroisothiazolinone	26172-55-4	2014, Hauri (1.1-1.5)	2014, Hauri (1.1-1.5)
Methyldibromo glutaronitrile	35691-65-7	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Methylisothiazolinone (2-methyl-4-isothiazolinone)	2682-20-4	P 2015, Mildau-Blume (Ispra) (39-74, av. 43); 2014, Hauri (0.42-70)	2014, Hauri (0.42-70)
Methylparaben	99-76-3	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
MI/MCI	26172-55-4 2682-20-4	P 2015, Baeumler (Ispra) (9.9); 2014, Hauri (2.3-2.7)	2014, Hauri (2.3-2.7)
Octylisothiazolinon	26530-20-1	P 2015, Baeumler (Ispra) (0.06%); 2015, Blume	
o-Phenylphenol	90-43-7	P 2015, Baeumler (Ispra) (0.06%); 2014, Hauri (0.084-0.11%)	2014, Hauri (0.084-0.11%)
Phenol	108-95-2	P 2015, Baeumler (Ispra) (0.29%); 2015, Blume; 2014, Hauri (0.008-0.47%)	2014, Hauri (0.008-0.47%)
Phenoxyethanol	122-99-6	P 2015, Baeumler (Ispra) (0.98%); P 2015, Mildau-Blume (Ispra) (0.013-0.019%, av. 0.016); 2014, Hauri (0.015-0.80%); 2008, Nederlandse Voedsel en waren autoriteit	2014, Hauri (0.015-0.80%); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Polyaminopropyl biguanide	32289-58-0 133029-32-0		
Preservative		2012-a, Danish EPA; 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Propylparaben	94-13-3	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Salicylic acid	69-72-7	P 2015, Mildau-Blume (Ispra); 2008, Nederlandse Voedsel en waren autoriteit (>0.01%)	2008, Nederlandse Voedsel en waren autoriteit (>0.01%)
Sodium Borat	1330-43-4		
Sodium Chloride	7647-14-5		
Sorbic acid	110-44-1	P 2015, Mildau-Blume (Ispra) (0.01%); 2014, Hauri (CH) (0.063-0.076%); 2008, Nederlandse Voedsel en waren autoriteit (>0.05%)	2014, Hauri (0.63-0.076%); 2008, Nederlandse Voedsel en waren autoriteit (>0.05%)
Thymol	89-83-8	2008, Nederlandse Voedsel en waren autoriteit	2008, Nederlandse Voedsel en waren autoriteit
Triclosan Irgasan	9012-63-9	P 2015, Mildau-Blume (Ispra)	
Toluenesulfonamide resin			