AQC ASSOCIATION POUR L'ASSURANCE QUALITÉ DES FABRICANTS DE BRACELETS CUIR	**DOC nb**	LIS005_07
	Replace	LIS005_06

RESTRICTED SUBSTANCES LIST FOR INSIDES (PLASTIC & RUBBER)

Application date: 14Sep23		Page 1/8
Written by	Quality review (signature/date) Sep 8, 2023	Process owner (signature/date) Sep 8, 2023
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Change log

Version	Date	Modification
05	16Apr21	- Precision about internally produced bonded leather
06	26Aug22	Revision - Add of LIS008 in associated documents level 3 - Suppression of reference to old annexes A and B of EU POP regulation (before recast in 2019) - Alkylphenols: add of isononylphenol and isononylphenol ethoxylated - Alkylphenols: change of regulatory reference : withdraw of REACH annex XIV (not applicable to article) - Bisphenols : add of Bisphenol B (SVHC), SVHC limit for Bisphenol A (instead of internal 200 mg/kg) and change of method to ISO 11936 adapted to plastic/rubber - MCCPs: entry in SVHC list (08Jul21) -> new limit 1'000 mg/kg - Metals : alignment of total Arsenic content with bracelet limit (1 mg/kg) - PAHs: update of method version - PAHs : Correction of CAS number for anthracene (action CQI-22-026b) - Add of a new SVHC entry (17Jan22): 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - Suppression of Allergen risk reduction program table at the end of the document - Suppression of the option for contact with skin (will be transferred to the RSL for bracelet (option bi-component bracelet) - Suppression of VOCs testing (will be handled by the RSL for leather bracelets (incl. bi-component bracelets)
07	14Sep23	Revision (validation TWG by mail 30Aug23) - Page 2/8 : End of option Top or Insides options for textiles and cork - Suppression of formaldehyde - Bisphenol S : entry SVHC => limit 1'000 mg/kg - Flame retardant : Add of Tetrabromobisphenol ,A and brominated DEHP - Metals : suppression of total Arsenic - Metals : Add of extractable As, Cd, Pb and Hg (entry 72 of REACH restrictions – Annexe XVII) - Metals :Add of Total Organic Fluorine (TOF) for polymeric PFAS testing - PAHs : Correction of the substance name with n° CAS 83-32-9 - PFAS : Update of table – Suppression of all C9-C14 PFAS - Phenols : Suppression of PTAP, 4-HP and PTBP

Associated document (level 1)

Document	Title
MAQ016	Chemical Compliance Process

Associated document (level 2)

Document	Title
PRO007	Management of AQC Quality control for insides

Associated document (level 3)*

Document	Title
LIS001	Restricted substances list for Leather
LIS008	Restricted substances list for Textiles and Threads

* Some Internal documents are not disclosed.

Scope of the document

This document defines the list of restricted dangerous chemical substances and testing requirements for materials used for the inside layers of leather bracelet as specified by AQC. Multiple materials could be used within the inside layer of a bracelet:

- Split leather or Synderme
- Textiles (like tearproof materials, non-woven materials for padding)
- Cork
- Plastic inserts
- Rubber inlay
- Rubber parts for bicomponent leather/rubber bracelet

For other insides materials, the following AQC requirements are applied:

- Split leather, Synderme and internally produced bonded leather

Split leather is the bottom layer of leather after splitting.

Synderme is a material made of leather particles bonded with a resin (also call latex even if not from natural source). Per ISO 15115 *Leather – Vocabulary*, this material could not be designated as leather.

Internally produced bonded leather (e.g. LIM) is a material made of leather particles from traceable sources bonded with a synthetic bonding agent. Per ISO 15115 Leather - Vocabulary, this material cannot be designated as leather.

Taking into consideration that split is leather and Synderme/internally produced bonded leather are mainly composed of leather particles, AQC requirements for those materials are AQC RSL for leather (LIS001).

- Textiles (tearproof materials, non-woven materials)

AQC requirements for tearproof materials and padding materials made of non-woven synthetic fibers are the ones of AQC RSL for Textiles and Threads (LIS008)

- Cork

Cork is a material made of particles from outer layer of the bark from a cork oak linked with a polymer (like NBR for instance). This material could be classified as a non-woven textile.
When used in the inside layer of a watch bracelet, AQC requirements for this material are the ones of AQC RSL for Textiles and Threads (LIS008).

For the definition of the limit present in this Restricted Substances list (RSL), AQC takes into consideration all the current international regulations for dangerous substances available and select the strictest limit. The list of chemicals present in this document has been selected on the basis of a risk-based approach completed by AQC experience and knowledge.

International regulations mentioned in this document are:

Abbreviation	Regulation	Country	Comment
EU POP	Regulation (EU) 2019/1021 of the European Parliament and of the Council on persistent organic pollutants	European Union	-
JP 112	Law on Control of Household Products Containing Harmful Substances	Japan	-
OChim	Ordinance on Protection against Dangerous Substances and Preparations	Switzerland	-
ORRChim	Ordinance on the Reduction of Risks relating to the Use of Certain Particularly Dangerous Substances, Preparations and Articles	Switzerland	-
Proposition 65	Safe Drinking Water and Toxic Enforcement Act	USA (California)	-
REACH XIV	Regulation (EC) no 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)	European Union	Annex XIV Substances subject to authorization
REACH XVII			Annex XVII Substances subject to restriction
REACH SVHC			Substances of Very High Concern
RoHS	Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment	European Union	-

Specific AQC considerations

In the column for regulation, “AQC” stands for extra-regulatory limit set by AQC in a pro-active way:

- “AQC” alone is applied for substances without known regulation
  For some substances, AQC performs testing without limit (for information) or with a limit concentration

- (AQC) after a regulation indicates that the scope has been enlarged to glues by AQC or that the limit applied by AQC is lower than requested by the more stringent regulation.

AQC limit for REACH SVHCs

Article 33(1) of REACH requires that a supplier of articles containing a SVHC included in the Candidate List for authorization in a concentration above 0.1% (w/w) has to provide relevant safety information to the recipients of these articles (Watch Brands). Upon request of a consumer, Watch Brands have to provide relevant safety information about the SVHC to this consumer (Article 33(2) of REACH).
This requirement is also present in Swiss ordinance OChim, article 71.

There is no regulatory requirement to limit SVHC content in articles to 1’000 mg/kg. Nevertheless, AQC Bracelet manufacturers limit all SVHC listed substances to 1’000 mg/kg in leather bracelet and all its components.

AQC limit for Proposition 65

For substances listed in the Proposition 65 California, AQC limits take into account the limit in articles present in the case law of Proposition 65 and more precisely the limits indicated in the reformulation injunctions of settlements and judgements.
AQC considers in case law: leather articles and related articles to the watch bracelet but also any other articles with a related exposure scenario (skin contact).

For substances without any indication of a limit in articles, AQC performs testing of a risk-based selection of substances potentially used for leather production and keeps available for Watch Brands all the data as a support for labelling decision.

AQC limit for EU POP

AQC limits for substances EU POP regulation are in full accordance with the terms detailed for each substance.

General requirements for laboratory testing

- Sample picture

Picture of samples received by the laboratory have to be taken **without** plastic bag.

- Sample preparation

Sample preparation methods to apply are the ones described in normalized analytical methods.
AQC has no specific requirement for samples preparation when internal methods are applied by the laboratory.

Substance family	Substance Name	Abbr.	CAS Number	AQC limit	Strictest Regulation	Test Method
Aromatic amines	Biphenyl-4-ylamine	-	92-67-1	< 30 mg/kg each	REACH XVII (entry 43)	ISO 14362 adapted
	Benzidine	-	92-87-5			
	4-chloro-o-toluidine	-	95-69-2			
	2-naphthylamine	-	91-59-8			
	4-o-tolylazo-o-toluidine	-	97-56-3			
	5-nitro-o-toluidine	-	99-55-8			
	4-chloroaniline	-	106-47-8			
	4-methoxy-m-phenylenediamine	-	615-05-4			
	4,4'-methylenedianiline	MDA	101-77-9			
	3,3'-dichlorobenzidine	-	91-94-1			
	3,3'-dimethoxybenzidine	-	119-90-4			
	4,4'-bi-o-toluidine	-	119-93-7			
	4,4'-methylenedi-o-toluidine	-	838-88-0			
	6-methoxy-m-toluidine	-	120-71-8			
	4,4'-methylenebis[2-chloroaniline]	MOCA	101-14-4			
	4,4'-oxydianiline	-	101-80-4			
	4,4'-thiodianiline	-	139-65-1			
	o-toluidine	-	95-53-4			
	4-methyl-m-phenylenediamine	-	95-80-7			
	2,4,5-trimethylaniline	-	137-17-7			
	4-methyl-m-phenylenediamine	-	90-04-0			
	4-aminoazobenzene	-	60-09-3			
	2,6-xylidine	-	87-62-7			
	2,4-xylidine	-	95-68-1			
Anti-UV	2-benzotriazol-2-yl-4,6-di-tert-butylphenol	UV-320	3846-71-7	1'000 mg/kg	REACH SVHC	Solvent extraction GC-MS detection
	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol	UV-327	3864-99-1	1'000 mg/kg		
	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol	UV-328	25973-55-1	1'000 mg/kg		
	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol	UV-350	36437-37-3	1'000 mg/kg		
Antioxidant	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol	-	119-47-1	1'000 mg/kg	REACH SVHC	Solvent extraction GC-MS detection
Bisphenols	4,4'-isopropylidenediphenol (bisphenol A)	BPA	80-05-7	1'000 mg/kg	REACH SVHC	ISO 11936 adapted
	4,4'-(1-methylpropylidene)bisphenol (bisphenol B)	BPB	77-40-7	1'000 mg/kg		
	4,4'-sulphonyldiphenol (bisphenol S)	BPS	80-09-1	1'000 mg/kg		
	2,2'-methylenediphenol (bisphenol F)	BPF	2467-02-9	for information	AQC	
	4,4'-[2,2,2-trifluoro-1 (trifluoromethyl)ethylidene] diphenol (bisphenol AF)	BPAF	1478-61-1	for information		
Chlorine compounds	Alkanes, C10-13, chloro	SCCP	85535-84-8	1'000 mg/kg	REACH SVHC	Internal method
	Alkanes, C14-17, chloro	MCCP	85535-85-9	1'000 mg/kg	REACH SVHC	

Substance family	Substance Name	Abbr.	CAS Number	AQC limit	Strictest Regulation	Testing Method
Flame retardants	Polybromobiphenyls	PBB	59536-65-1	not detected	REACH XVII (entry 8) (AQC)	ISO 17881 adapted
	Diphenyl ether, pentabromo derivative	PentaBDE	32534-81-9	not detected	EU POP	
	Diphenyl ether, octabromo derivative	OctaBDE	32536-52-0	not detected		
	Diphenyl ether, decabromo derivative	DecaBDE	1163-19-5	not detected		
	Diphenyl ether, tetrabromo derivative	TetraBDE	40088-47-9	not detected		
	Diphenyl ether, heptabromo derivative	HeptaBDE	68928-80-3	not detected		
	Diphenyl ether, hexabromo derivative	HexaBDE	36483-60-0	not detected		
	Diphenyl ether, nonabromo derivative	NonaBDE	63936-56-1	not detected	AQC	
	Hexabromocyclododecane and isomers	HBCDD	Several CAS	not detected	Proposition 65 (AQC)	
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol (Tetrabromobisphenol A)	TBBPA	79-94-7	1'000 mg/kg	REACH SVHC	
	Bis(2-ethylhexyl) tetrabromophthalate	-	26040-51-7	1'000 mg/kg		
Metals	Chromium	Cr	18540-29-9	1'000 mg/kg	RoHS AQC limit for Cr(VI)	EPA 3050B or EN 16711-1
	Cadmium	Cd	7440-43-9	100 mg/kg	REACH XVII (entry 23)	
	Lead	Pb	7439-92-1	100 mg/kg	Prop65 (2012-00629)	
	Mercury	Hg	7439-97-6	1 mg/kg	JP 112	
	Tin[1]	Sn	7440-31-5	1 mg/kg	REACH XVII entry 20 (AQC)	
	Cadmium Extractable	Cd	7440-43-9	1 mg/kg	REACH XVII entry 72	EN 16711-2
	Lead Extractable	Pb	7439-92-1	1 mg/kg		
	Mercury	Hg	7439-97-6	1 mg/kg		
	Arsenic Extractable	As	7440-38-1	1 mg/kg		
	Fluorine (Total Organic Fluorine)	TOF	7782-41-4	50 mg/kg	EU REACH XVII proposal	EN 14582 ISO 10304-1
Phenols	Octylphenols	OP	-	100 mg/kg (sum OP+OPEO)	REACH SVHC OChim (AQC)	Solvent extraction GC-MS detection
	- 4-(1,1,3,3-tetramethylbutyl)phenol	PTOP	140-66-9			
	Octylphenol ethoxylates	OPEO	-			
	- 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-	9002-93-1 2497-59-8 2315-67-5 2315-61-9			
	Nonylphenols incl.	NP	25154-52-3	100 mg/kg (sum NP+NPEO)	REACH SVHC (AQC)	
	- 4-Nonylphenol, branched and linear	4-NP	several CAS			
	- Isononylphenol	-	11066-49-2			
	Nonylphenol Ethoxylates incl.	NPEO	-			
	- 4-Nonylphenol, branched and linear, ethoxylated	(4-NPEO)	several CAS incl. 26027-38-3			
	- Isononylphenol, ethoxylated	-	37205-87-1			

[1] In case of total Tin > 1 mg/kg, the following testing is performed

Substance family	Substance Name	Abbr.	CAS Number	AQC limit	Strictest Regulation	Testing Method
Organotins	Tributyltin and related compounds Incl. TBT metacrylate	TBT	several CAS incl. 2155-70-6	1'000 mg/kg each	REACH XVII entry 20 & REACH SVHC	ISO 16179 adapted
	Triphenyltin and related compounds Incl. TPT hydroxide	TPT	several CAS incl. 76-87-9			
	All other tri-substitued tin compounds	-	Several CAS			
	Dibutyltin and related compounds	DBT	several CAS incl. 683-18-1			
	Dioctyltin and related compounds	DOT	several CAS			
	di-μ-oxo-di-n-butylstanniohydroxyborane	DBB	75113-37-0		ORRChim REACH XVII entry 21	

Substance family	Substance Name	Abbr.	CAS Number	AQC limit	Strictest Regulation	Test Method
PFOS and related substances	Perfluorooctanesulfonic acid	PFOS	1763-23-1	0.01 mg/kg (sum)	ORRChim EU POP (AQC)	ISO 23702-1
	Perfluorooctanesulfonic acid, potassium salt	PFOS-K	2795-39-3			
	Perfluorooctanesulfonic acid, lithium salt	PFOS-Li	29457-72-5			
	Perfluorooctanesulfonic acid, ammonium salt	PFOS-NH_4	29081-56-9			
	Perfluorooctane sulfonate diethanolamine salt	PFOS-$NH(OH)_2$	70225-14-8			
	Perfluorooctanesulfonic acid, tetraethylammonium salt	PFOS-$N(C_2H_5)_4$	56773-42-3			
	N-Ethylperfluoro-1-octanesulfonamide	N-Et-FOSA	4151-50-2			
	N-Methylperfluoro-1-octanesulfonamide	N-Me-FOSA	31506-32-8			
	2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol	N-Et-FOSE	1691-99-2			
	2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol	N-Me-FOSE	24448-09-7			
	Perfluoro-1-octanesulfonyl fluoride	POSF	307-35-7			
	Perfluorooctane sulfonamide	PFOSA	754-91-6			
	1-Decanaminium, N-decyl-N,N-dimethyl-, salt with heptadecafluorooctane-1-sulfonic acid (1:1)	-	251099-16-8			
PFOA and its salts	Perfluorooctanoic acid	PFOA	335-67-1	0.025 mg/kg (sum)	EU POP	
	Sodium perfluorooctanoate	PFOA-Na	335-95-5			
	Potassium perfluorooctanoate	PFOA-K	2395-00-8			
	Silver perfluorooctanoate	PFOA-Ag	335-93-3			
	Perfluorooctanoyl fluoride	PFOA-F	335-66-0			
	Ammonium pentadecafluorooctanoate	APFO	3825-26-1			
	Chromium(3+) perfluorooctanoate	-	68141-02-6			
	Ethanaminium, N,N,N-triethyl-, salt with pentadecafluorooctanoic acid (1:1)	-	98241-25-9			
PFOA related substances	1H,1H,2H,2H-Perfluorodecanesulfonic acid	8:2 FTS	39108-34-4	1 mg/kg (sum)		
	Methyl perfluorooctanoate (Me-PFOA)	Me-PFOA	376-27-2			
	Ethyl perfluorooctanoate (Et-PFOA)	Et-PFOA	3108-24-5			
	2-Perfluorooctylethanol (8:2 FTOH)	8:2 FTOH	678-39-7			
	1H,1H,2H,2H-Perfluorodecyl acrylate	8:2 FTA	27905-45-9			
	1H,1H,2H,2H-Perfluorodecyl methacrylate	8:2 FTMA	1996-88-9			
	2H,2H,3H,3H-Perfluoroundecanoic acid	4HPFUnA	34598-33-9			
	Perfluoro-3,7-dimethyloctanoic acid	PF3,7 DMOA	172155-07-6			
	1H,1H,2H,2H-Perfluorododecyl acrylate	10:2 FTA	17741-60-5			
	1H,1H,2H,2H-Perfluorododecan-1-ol	10:2 FTOH	865-86-1			
C4-C6 PFAS	Perfluorohexane-1-sulphonic acid	PFHxS	355-46-4	1'000 mg/kg	REACH SVHC	
	Perfluorobutane sulfonic acid and its salts	PFBS	375-73-5 375-72-4 25628-08-4 34454-97-2	1'000 mg/kg		
	Perfluoroheptanoic acid and its ammonium, sodium and potassium salts	PFHpA	375-85-9 6130-43-4 20109-59-5 21049-36-5	1'000 mg/kg	REACH SVHC	
	Undecafluorohexanoic acid, its salts and related substances	PFHxA	several	for information	REACH restriction intention	

Substance family	Substance Name	Abbr.	CAS Number	AQC limit	Strictest Regulation	Testing Method
Phthalates	Diisobutyl phthalate	DIBP	84-69-5	1'000 mg/kg (sum)	REACH XVII (entry 51)	ISO 14389
	Dibutyl phthalate	DBP	84-74-2			
	Benzyl butyl phthalate	BBP	85-68-7			
	Bis(2-ethylhexyl) phthalate	DEHP	117-81-7			
	Bis(2-methoxyethyl) phthalate	DMEP	117-82-8	1'000 mg/kg (each)	REACH SVHC	
	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	DHNUP (L&R)	68515-42-4			
	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	-	71888-89-6			
	Di-isopentyl phthalate	DIPP	605-50-5			
	Di-n-pentyl phthalate	DnPP	131-18-0			
	N-pentyl-isopentylphthalate	nPIPP	776297-69-9			
	1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear	DNiPP (L&R)	84777-06-0			
	Di-n-hexyl phthalate	DnHP	84-75-3			
	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	DIHxP (L&R)	68515-50-4			
	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters	-	68648-93-1 68515-51-5			
	Dicyclohexyl phthalate	DHCP	84-61-7			
	Diisohexyl phthalate	DIHP	71850-09-4			
	Di-n-octyl phthalate	DNOP	117-84-0		REACH XVII (entry 52) (AQC)	
	Di-"isononyl" phthalate	DINP	28553-12-0 68515-48-0			
	Di-"iso-decyl" phthalate	DIDP	26761-40-0 68515-49-1			
Polycyclic Aromatic Hydrocarbons (PAHs)	Benzo(a)pyrene	BaP	50-32-8	1 mg/kg	REACH XVII (entry 50) ORRChim	AfPS-GS-2019-01-PAK
	Benzo(a)anthracene	BaA	56-55-3	1 mg/kg		
	Benzo(b)fluoranthene	BbF	205-99-2	1 mg/kg		
	Benzo(e)pyrene	BeP	192-97-2	1 mg/kg		
	Benzo(j)fluoranthene	BjF	205-82-3	1 mg/kg		
	Benzo(k)fluoranthene	BkF	207-08-9	1 mg/kg		
	Chrysene	CHR	218-01-9	1 mg/kg		
	Dibenzo(a,h)anthracene	DBA	53-70-3	1 mg/kg		
	Phenanthrene	PEH	85-01-8	1'000 mg/kg	REACH SVHC OChim	
	Fluoranthene	FLT	206-44-0	1'000 mg/kg		
	Pyrene	PYR	129-00-0	1'000 mg/kg		
	Benzo(g,h,i)perylene	BPE	191-24-2	1'000 mg/kg		
	Anthracene	-	120-12-7	1'000 mg/kg		
	Indeno(1,2,3-cd)pyrene	IPY	193-39-5	for information	Prop 65	
	Naphtalene	NAP	91-20-3	for information		
	Acenaphtylene	ANY	208-96-8	for information	AQC	
	Acenaphtene	ANA	83-32-9	for information		
	Fluorene	FLU	86-73-7	for information		

LIS005_07 RSL for insides_Plastic_Rubber

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