ECHA
EUROPEAN CHEMICALS AGENCY

Forum

Compendium of Analytical Methods

Recommended by the Forum to check compliance of REACH Annex XVII restrictions

June 2021
2nd edition

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Validity

The present document is intended as a dynamic document. It will be revised at regular intervals to reflect changing technical standards, new available methods as well modifications of existing ones. The revisions will be published on the ECHA website.

ECHA Forum invites interested parties to submit additional information to be incorporated in future updates of this document. These can be submitted via forum@echa.europa.eu .

Version	Changes	
First edition		March 2016
Second edition	Inclusion of analytical methods	June 2021

Title: Compendium of Analytical Methods recommended by the Forum to check compliance of REACH Annex XVII restrictions
Reference: ECHA-21-R-08-EN
ISBN: 978-92-9481-912-3
Cat. Number: ED-05-21-214-EN-N
DOI: 10.2823/931655
Publ.date: July 2021
Language: EN

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Preface

The ECHA Forum aims at contributing to harmonised enforcement of Regulation (EC) No 1907/2006 – REACH, throughout the EU. Working in this framework, the ECHA Forum decided to create a living database containing analytical methods that it recommends to check compliance with Annex XVII restrictions under REACH.

The purpose of this document is to provide a ready reference of some available analytical methods that authorities or industry may use in order to assess the compliance of chemicals manufactured, used or placed on the European market to the restrictions set forth in Annex XVII to REACH.

These methods for the analysis of chemicals are a collection of methods in use in the official laboratories supporting the Member States enforcement systems and in other laboratories linked to some stakeholders organisations consulted for this purpose.

A data gathering survey amongst the cited parties was followed by an assessment conducted by expert members of the ECHA Forum Working Group on enforceability of restrictions. The methods have been scrutinised against performance requirements agreed by the Forum[1] and taking into consideration the available information on sample preparation and analysis protocols and techniques. The methods judged suitable for checking compliance with restrictions are listed in this Compendium of analytical methods recommended by the ECHA Forum for checking compliance with REACH Annex XVII restrictions, hereinafter referred to as "Compendium".

The Compendium encompasses:

- Official methods (with references published in REACH legal text);
- Standard methods (published by International, European or National standardisation bodies);
- Methods published by a recognised technical organisation, a national or EU reference laboratory (EPA, etc.);
- Internal methods developed by the respondent laboratories.

The methods included in the Compendium are recommended by the ECHA Forum to be used in the verification of compliance with the restrictions in order to ensure the quality and comparability of the analytical results.

The Compendium of analytical methods recommended by the ECHA Forum for the enforcement of REACH restrictions is a tool offered by the Forum that all can use voluntarily thus evolving towards further harmonisation in the EU. Enforcement authorities, industry and public can benefit from such information.

[1] Forum methodology for recommending analytical methods for enforcement of REACH Annex XVII restrictions, a summary is published at the Forum website echa.europa.eu/web/guest/about-us/who-we-are/enforcement-forum

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1. Introduction to the Compendium

Article 67(1) of the REACH Regulation restricts the manufacture, placing on the market and use of certain hazardous substances, mixtures and articles. The dutyholders whose activities are subject to REACH restrictions should at all times be capable to check accurately and reliably if they comply with these obligations, for preventing negative impact of their activities on public health, on worker protection, on the environment, as well as on the free circulation of chemicals on the internal market.

National enforcement authorities (NEAs) assess activities of the above natural and legal persons in the EU being their primary goal to detect violations of the communal acquis, for example, the restrictions enumerated in Annex XVII to REACH.
In this context, the common need of all the parties is to determine accurately and reliably whether or not there is compliance with REACH restrictions.

In addition, aiming at a level playing field in the EU, it is desirable that natural and legal persons are subject to a harmonised surveillance approach wherever in the EU territory. Few entries in Annex XVII to REACH specify which analytical method must be applied for checking the requirement set out in the restriction. That is why EU Member States have adopted over the past decennia analytical methods to be used by their NEAs, for those restrictions where no official analytical method is specified in the legal text.

Some restrictions do not contain a limit value that needs to be checked, the so-called no-limit-value restrictions (NLV) and a case-by-case analysis is appropriate in those cases. To date, according to the experts of the Forum WG on the enforceability of restrictions, it remains unclear which analytical method should be applied for checking compliance with a NLV-restriction. As a consequence, those restrictions are currently covered in this compendium with certain limitations.

In 2009, the European Commission invited the ECHA Forum members to communicate which analytical methods for checking compliance with REACH Annex XVII restrictions were accepted in their country. A compilation of the replies received constituted a first database of methods. This first inventory indicated that the number and variety of analytical methods used in different Member States were huge and in most of the cases a method accepted in one Member State was not automatically accepted by another Member State, thus the harmonised enforcement of REACH Annex XVII restrictions could be jeopardized. In June 2010, the Forum concluded on the need to produce a compendium for suitable analytical methods recommended to be used for the enforcement of restrictions.

2. Rationale and methodology

With the view of producing guidance for suitable analytical methods for the enforcement of restrictions, as preliminary criteria for recommending methods, the Forum agreed that the recommended methods should preferably be standardised ones. If such methods are not available, other methods can be used.

The ECHA Forum has mandated a team of experts working under the supervision of the ECHA Forum (Forum WG Group on Enforceability of Restrictions) to first conceive a methodology for recommending analytical methods for enforcing REACH restrictions.

The Forum methodology to recommend analytical methods for checking the compliance with REACH restrictions consisted first in the definition of a set of functional qualities (characteristics) of an analytical method. General principles applied in widely accepted

international standards have been considered and a set of key performance characteristics have been identified for the purpose of assessing the suitability of an analytical method to check compliance with restrictions.

The performance characteristics identified are: applicability, limit of detection, recovery, reproducibility and measurement uncertainty. For each of the selected characteristics, the Forum agreed upon generally acceptable performance requirements for analytical methods to be recommended. Widely accepted criteria have been applied to define the requirements for the considered characteristics of an analytical method to be suitable for checking compliance with REACH Annex XVII restrictions.

Due to the broad ranges of products covered by REACH Annex XVII, and to the different limit values (including a total ban for certain substances) set forth in different REACH Annex XVII entries a case-by-case approach is applied where appropriate. To address the issue of NLV (no limit value) restrictions (e.g. total ban), the Forum accepted as a short term solution for assessing methods for NLV restrictions, to include in the Compendium the methods for which the applicability criteria are met and which show low limit of detection (LOD). Official methods (published in the legal text of REACH) are also included in the Compendium. Finally, while recognising that for enforcement purpose a qualitative method cannot be conclusive and a confirmatory analysis is needed, the Forum decided to include in the Compendium qualitative analytical methods or techniques, with relevant LOD value accompanied by a note to make explicit reference to the qualitative method.

The adopted Forum methodology was then implemented by the same experts to elaborate the Compendium of analytical methods recommended by the Forum for the enforcement of REACH Annex XVII restrictions.

A data gathering survey was conducted among EU Member States and ECHA Accredited Stakeholders and, on the basis of the methodology, the reported analytical methods have been scrutinised by the Working Group with the aim of selecting objectively methods fit for the purpose. As foreseen by the adopted methodology, in a few cases an expert judgment was applied and the selected methods were considered suitable for the purpose of detecting the restricted substance, notwithstanding they slightly deviate from the performance requirements agreed upon by the ECHA Forum.

3. How to consult the Compendium

The Compendium table in Chapter 4 of this document is divided in as many sections as there are entries in REACH Annex XVII.
Each table section contains:

- The entry number followed by the substance or group of substances (analytes) under the scope of the restriction;
- The sub-entry number followed by the substance or group of substances (analytes) and the matrix or products under the scope of the restriction;
- The substance (analyte) under the scope of the reported method;
- The matrix or product under the scope of the reported method;
- The analytical method reported in the same format as referenced by regulations, standardization bodies or recognized technical organisations. Please note that for laboratory developed method the term “internal method” is used;
- The source for internal methods;
- The analytical technique or techniques;
- The sample preparation, if available;

- A note reporting the type of method. The methods "A" are fully adherent with the performance requirements agreed upon by the ECHA Forum; the methods "B" slightly deviate from the performance requirements agreed upon by the ECHA Forum; the methods "C" are official methods included in REACH legal text; the methods "D" are qualitative methods followed by the available LOD.

Note for qualitative methods
Qualitative methods are analytical methods which allow to identify the presence of a substance on the basis of its chemical, biological or physical properties. These methods do not enable a conclusive judgement for enforcement purpose and entail a confirmatory analysis.

For some entries, the Compendium contains qualitative analytical methods (or techniques, when this is the only available information) accompanied with available LOD values. Those methods are marked as "D" in the column "note".

In general, according to the Forum methodology it is not possible to conclude on the recommendability of the qualitative methods. A qualitative method could be used to screen potential non-compliant goods but a positive result cannot be conclusive for enforcement purpose and a confirmatory analysis is deemed necessary.

For a better consultation of the Compendium table please refer also to Appendix 1 to this document, which contains the list of abbreviation and relevant definitions of terms used in the document.

4. Compendium of analytical methods recommended by the Forum to check compliance with REACH Annex XVII Restrictions

Restriction (Annex XVII entry number and analyte/s covered)						
1. Polychlorinated terphenyls (PCTs)						
1. Substances / mixtures including waste oils, equipment						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
PCT	Non-aqueous liquids	Internal method	DIN EN 12766	GC-ECD	SPE	B

Restriction (Annex XVII entry number and analyte/s covered)						
2. Chloroethene (vinyl chloride) CAS No 75-01-4; EC No 200-831-0						
2. Propellant in aerosols						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Vinyl chloride	Gas	Internal method	DIN EN ISO 6401	GC-FID or GC-MS	No	A

Restriction (Annex XVII entry number and analyte/s covered)						
3. Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F; (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10; (c) hazard class 4.1; (d) hazard class 5.1.						
3.3. liquid substances or mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Liquid substances or mixtures	Non-aqueous liquids	DIN 51562 Viscometry - Measurement of kinematic viscosity by means of the Ubbelohde viscometer		Viscometry	Without	A

Restriction (Annex XVII entry number and analyte/s covered)						
4. Tris (2,3 dibromopropyl) phosphate CAS No 126-72-7						
4.1. Textile articles						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Tris (2,3 dibromopropyl) phosphate	Textiles	Internal method	DIN EN 16377	GC-MS	Solvent extraction	A
Tris (2,3 dibromopropyl) phosphate	Textiles, plastics	Internal method	DIN EN 71 - safety of toys, part 10	GC-MS	Extraction with acetonitrile, filtration	A
Tris (2,3 dibromopropyl) phosphate	Textile	ISO 17881-2:2016		LC-MS/MS	Acetone extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
5. Benzene CAS No 71-43-2						
5.1 and 5.2 Toys /parts of toys						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Benzene	Polymers/ toys	ASTM D4526-12		HS GC-FID	Extraction	A
Benzene	Toys	DIN EN 71-11		GC-MS	Headspace or Purge & Trap	A
Benzene	Toys	MSZ EN 71-11:2006 Annex A		GC-MS Headspace	Evaporation in headspace vial	A
Benzene	Polymers/ textiles	Internal method	PN-EN 71-10: 2008 (sample preparation) PN-EN 71-11:2007 (instrumental analysis)	GC-MS		B
5.3 Substances / mixtures						
Benzene	Mixtures of xylenes	ASTM D 6563-2012		GC-FID	n.d	A
Benzene	Glues (adhesives soluble in acetone)	Internal method	CY-SGL method "METH 11 01 11", accredited according to EN ISO 17025	GC-MS	Dilution in acetone	A
Benzene	Mixtures	EPA 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution)	A

					/ EPA Method 5021 (Headspace analysis)	
Benzene	Adhesives, paints, toys and other consumer articles and products	Internal method	DIN EN 71-5 DIN EN 71-11	Headspace -GC-MS	Paints and adhesives: 0,5 g sample / 10 mL solv. Toys and other products: the sample was weighed in a Headspace-Vial (0,5 g, with accuracy of 0,01 g) and measured directly	A
Benzene	Paint, varnishes and related products	UNI EN ISO 11890-2:2013		GC-MS	Solvent dilution	A
Benzene	Aqueous and non aqueous liquids	Internal method	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	A

Restriction (Annex XVII entry number and analyte/s covered)
6. Asbestos fibres **(a) Crocidolite CAS No 12001-28-4** **(b) Amosite CAS No 12172-73-5** **(c) Anthophyllite CAS No 77536-67-5** **(d) Actinolite CAS No 77536-66-4** **(e) Tremolite CAS No 77536-68-6** **(f) Chrysotile CAS No 12001-29-5 CAS No 132207-32-0**
6.1. Fibres / articles

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Crocidolite	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A
Amosite	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A
Anthophyllite	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A
Actinolite	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A
Tremolite	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A
Chrysotile	Asbestos fibres (only in solid samples)	NIOSH 9002		PLM (polarized microscopy)		A

Asbestos	Construction material/soil /powder			SEM-EDS	Depending on the sample	A
Chrysotile, Amosite, Crocidolite, Actinolite, Anthophyllite, Tremolite	Asbestos fibres in Solid matrix only	NIOSH 9002 + HSG 248		Stereo and PLM (polarized microscopy) with Dispersion Staining	See appendix 2	A
Crocidolite, Amosite, Anthophyllite, Actinolite, Tremolite Chrysotile	Articles	Internal method	Decreto Ministeriale 06 09 1994	SEM	Graphitation of samples fibers	A
Asbestos	Thermos and Chinese lamps	Internal method	D.M. 06/09/94 All1. (GU 20 settembre 1994, n. 220 SG; 10 dicembre 1994, n.129 SO)	SEM/EDS	As it is	A

Restriction (Annex XVII entry number and analyte/s covered)						
7. Tris(aziridinyl)phosphinoxide CAS No 545-55-1 ; EC No 208-892-5						
7.1. and 7.2. Textile articles						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Tris(aziridinyl) phosphinoxide	Textiles	Internal method	DIN EN 16377	GC-MS	Solvent extraction	A
tris(aziridinyl) phosphinoxide	Textiles	ISO 17881-2:2016		LC-MS/MS	Acetone extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
8. Polybromobiphenyls; Polybrominatedbiphenyls (PBB) CAS No 59536-65-1						
8.1. and 8.2. Textile articles						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
PBBs	Textiles	Internal method	DIN EN 16377	GC-MS	Solvent extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
12. 2-Naphthylamine CAS No 91-59-8; EC No 202-080-4 and its salts						
12. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
2-Naphthylamine	liquids: Tattoo inks and pmu products; solids: leather	EN ISO 17234-1: 2010		GC-MS	Reduction with sodium ditionite and extraction with MTBE	A
2-Naphthylamine	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1: 2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	solvent extraction followed by reductive cleavage	A

Restriction (Annex XVII entry number and analyte/s covered)						
13. Benzidine CAS No 92-87-5 ; EC No 202-199-1 and its salts						
13. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Benzidine	Liquids: Tattoo inks and pmu products; solids: leather	EN ISO 17234-1:2010		GC-MS	Reduction with sodium ditionite and extraction with MTBE	A
Benzidine	Plastics	ВЛМ 104:2010		HPLC-MS-MS	Extraction in 3% acetic acid	A
Benzidine	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	Solvent extraction followed by reductive cleavage	B

Restriction (Annex XVII entry number and analyte/s covered)						
15. 4-Aminobiphenyl xenylamine CAS No 92-67-1 Einecs EC No 202-177-1 and its salts						
15. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
4-Aminobiphenyl xenylamine	Leather, textiles	ISO 17234-1; ISO 17234-2 (leather), ISO14362-1, ISO 14362-2 (textile)		HPLC-DAD or GC-MS		A
4-Amino-biphenyl xenylamine	Plastics	Internal method	ВЛМ 104:2010	HPLC-MS-MS	Extraction in 3% acetic acid	A
4-Aminobiphenyl xenylamine	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	Solvent extraction followed by reductive cleavage	A

Restriction (Annex XVII entry number and analyte/s covered)						
18. Mercury compounds						
18. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Mercury	Paints, preservation of wood	ISO 3856/7-1984		HG-AAS	Acid extraction	A
Mercury	Paints			XRF/XRD		D /5%

Mercury	Textile	Internal method	ВЛМ 141:2015; ISO 105-E04:2013	ICP-MS NexION	Extraction in acid perspiration solution	B
Mercury	Solid Sludge biowaste and soil	UNI EN 16170:2016		ICP-OES	EN 16173 Microwave and HNO3	B

Restriction (Annex XVII entry number and analyte/s covered)						
18a. Mercury CAS No 7439-97-6 EC No 231-106-7						
18a.1. Substance						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Mercury	Pure element	Internal method	AMA 254 by Altec Ltd. 2002	AAS	Homogenisation	A
Mercury	Solids, solutions, apparel products	EPA 7473 2007		Thermal decomposition, amalgamation + AAS	Homogenisation and possible mixing with mercury-free material	A
Mercury	Pure element			XRF		D / 0.01%
Mercury	Solid and liquid samples	EPA 7473:2007		AAS	Preservation and homogenisation	A

Restriction (Annex XVII entry number and analyte/s covered)						
19. Arsenic compounds						
19.1. and 19.2. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Arsenic	Paints	ISO 17294-2				D/ 0.05%

Restriction (Annex XVII entry number and analyte/s covered)
20. Organostannic compounds
20.1, 20.2 and 20.3 substances / mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Organostannic compounds	Paints	Internal method	ISO 17353	GC-MS/MS		B
20.6. Dioctyltin (DOT) compounds in articles						
MBT, DBT, TPrT, TBT, TTBT, TPhT, MOT, DOT, TCyT, MPhT, DPhT, TOT, TeOT, MMT, DMT, TMT, TeET, DPrT	textile, plastic, leather	BS ISO 17353:2004		GC-MS	Solvent extraction followed by derivatization	A
TBT, TPhT, DBT, DOT		Internal method	EN ISO 23161:2011	GC-MS	Ultrasonic extraction, derivatization, SPME	B

Restriction (Annex XVII entry number and analyte/s covered)						
23. Cadmium CAS No 7440-43-9 EC No 231-152-8 and its compounds						
23.1 Cadmium in plastic material						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Cadmium	Plastics	DIN EN 62321; VDE 0042-1:2009-12:2009-12 Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) (IEC 62321:2008); German version EN 62321:2009		ICP-MS (IS-method)	1. shred the material to pieces <5mm 2. transfer 100mg material to microwave vessel and add 5ml HNO3 and 2ml H2O2) 3. microwave digestion 4. dilute to 50ml with H2O 5. add internal standard and dilute to appropriate concentration range	A
Cadmium	Plastics	Internal method	EN-1122	FAAS	Acid (c. H2SO4 and c. HNO3) digestion in a microwave oven	A

Cadmium	Plastics	Internal method	Plastic: PN-EN 1122:2004 Plastics. Determination of cadmium. Wet decomposition method;	AAS	Plastic: digestion in muffle oven	A
Cadmium	Plastics (not polyfluorinated plastic)	Internal method	SFS-EN 1122:2001: Plastics. Determination of cadmium. Wet decomposition method.	ICP-OES	Wet digestion with concentrated H2SO4 and 30 % H2O2. After Digestion sample is diluted with water.	A
Cadmium	Plastic: PE, PVC metal (not steel)	Internal method	SFS-EN 62321-5 Determination of certain substances in electrotechnical products - Part 5:2014	ICP-OES	Acid digestion	A
Cadmium	PVC	Internal method	Regulation: Regeling bepalingsmethode cadmiumgehalte van producten Wms 2000, Bijlage 3	EDXRF	Cut the sample, prepare a sample with a thickness of at least 2 mm by adding sufficient layers of sample. Pack the layers without air between the layers.	D/45 mg/kg
Cadmium	Polymer materials	LVS EN 1122:2001 B		AAS	Wet decomposition	A
Cadmium	Plastics	Internal method	БДС CR 13695-1:2003	FAAS	MW - pressure digestion	A
23.8 Brazing fillers and 23.10 Jewellery						
Cadmium	Metals, alloys, metal coatings	Internal method	ISO 11885:2007 БДС EN ISO 11885:2009	ICP-OES	Microwave decomposition of the matrix to acid solution of cations	A
Cadmium	Metals	Internal method	Plastic and metal: EN 62321:2009 Electrotechnical products. Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers);	AAS	Metal: acid digestion in open vessel	A
Total Cadmium	Plastics, paints, aqueous liquids, wood,			EDXRF		D / 50 ppm

	leather, paper and metals					
Cadmium	Water solutions of metals and alloys (except gold and silver jewellery articles)	internal method	ВВЛМ 02:2013. Standardisation bodies convention	AAS with graphite furnace	Acid decomposition of metal/alloys	A

Restriction (Annex XVII entry number and analyte/s covered)						
24. Monomethyl — tetrachlorodiphenyl methane Trade name: Ugilec 141 CAS No 76253-60-6						
24.1. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Monomethyl — tetrachlorodiphenyl methane Trade name: Ugilec 141	Non-aqueous liquids	Internal method	DIN EN 12766	GC-ECD	SPE	A

Restriction (Annex XVII entry number and analyte/s covered)						
25. Monomethyl-dichloro-diphenyl methane ; Trade name: Ugilec 121 ; Ugilec 21						
25. Substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Monomethyl-dichloro-diphenyl methane Trade name: Ugilec 121 Ugilec 21	Non-aqueous liquids	Internal method	DIN EN 12766	GC-ECD	SPE	A

Restriction (Annex XVII entry number and analyte/s covered)
26. Monomethyl-dibromo-diphenyl methane bromobenzylbromotoluene, mixture of isomers Trade name: DBBT CAS No 99688-47-8
26. Substances / mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Monomethyl-dibromo-diphenyl methane bromobenzyl bromotoluene, mixture of isomers Trade name: DBBT	Non-aqueous liquids	Internal method	DIN EN 12766	GC-ECD	SPE	A

Restriction (Annex XVII entry number and analyte/s covered)						
27. Nickel CAS No 7440-02-0 EC No 231-111-4 and its compounds						
27. 1 and 27.2 substance in post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Nickel	Post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin	EN 1811:2011 + A1:2015 - OJ C 11 of 13/01/2017 p. 13				C
Nickel	Parts of spectacle frames and sunglasses intended to come into close and prolonged contact with the skin	EN 16128:2015 - OJ C 11 of 13/01/2017 p. 13				C
Nickel	Simulation of wear and corrosion for the detection of nickel release from coated items	EN 12472:2005 + A1:2009- OJ C 11 of 13/01/2017 p. 13				C

Restriction (Annex XVII entry number and analyte/s covered)						
28. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as carcinogen category 1A or 1B (Table 3.1) or carcinogen category 1 or 2 (Table 3.2) and listed as follows: - Carcinogen category 1A (Table 3.1)/carcinogen category 1 (Table 3.2) listed in Appendix 1; Carcinogen category 1B (Table 3.1)/carcinogen category 2 (Table 3.2) listed in Appendix 2						
28.1. Substances/constituents of substances/mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Chrysotile, Amosite, Crocidolite, Actinolite, Anthophyllite, Tremolite	Asbestos fibres in Solid matrix only	NIOSH 9002 + HSG 248		Stereo and PLM (polarized microscopy) with	Information in Appendix II.	A

				Dispersion Staining		
Benz(a)anthracene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Benz(a)anthracene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
Benzene	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
Benzene	Liquid and solid matrix	EPA5021A:2014 + EPA8260D:2018 EPA 5021A:2014 "Volatile organic compounds in various sample matrices using equilibrium headspace analysis"+EPA8260D:2018"Volatile organic compounds by gas chromatography mass spectrometry"		GC-MS	Liquid: Head Space vials Solid: a) Head Space vials b) Methanol extraction	A
Benzo(a)pyrene	Solids	Internal method	US EPA 8270,	GC-MS	Direct injection (Extraction technique)	A
Benzo(a)pyrene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
Benzo(b)fluoranthene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Benzo(b)fluoranthene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A

Benzo(k)fluoranthene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Benzo(k)fluoranthene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
Chrysene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Chrysene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
Dibenzo(a.h) anthracene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Dibenzo(a.h) anthracene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
1.2-Dibromo-3-Chloropropane	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
1.2-Dibromoethane (EDB)	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
1,2-dibromoethane	Liquid and solid matrix	EPA5021A:2014 + +EPA8260D:2018 EPA 5021A:2014		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials	A

		"Volatile organic compounds in various sample matrices using equilibrium headspace analysis"+ EPA8260D:2018 "Volatile organic compounds by gas chromatography mass spectrometry")			b) Methanol extraction	
1.2-Dichloroethane	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
1,2-dichloroethane	Liquid and solid matrix	EPA5021A:2014 +EPA8260D:20			Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A
1.2-Dichloroethane	Adhesives (glues), which are soluble in acetone	Internal method	CY-SGL method "METH 11 01 11", accredited according to EN ISO 17025	GC-MS	Dilution in acetone	A
1,2-Dichloropropane	Liquid and solid matrix	EPA5021A:2014 + EPA8260D:2018		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A
Trichloroethene	Liquid and solid matrix	EPA5021A:2014 +EPA8260D:2018		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A

o-Toluidine	Textile	БДС EN ISO 14362-1:2017 EN ISO 14362-1:2017 "Textiles - Methods for determination of certain aromatic amines derived from azo colorants - Part 1: Detection of the use of certain azo colorants accessible with and without extracting the fibres (ISO 14362-1:2017))		GC 7890A / MSD 5975 C	Solution extraction	A
o-Toluidine	Leather	БДС EN ISO 17234-1:2015 The standard has been reviewed "Leather - Chemical tests for the determination of certain azo colorants in dyed leathers - Part 1: Determination of certain aromatic amines derived from azo colorants (ISO 17234-1:2020)		GC 7890A / MSD 5975 C	Solution extraction	A
2,4-Diaminotoluene	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
2,4-Diaminotoluene	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
2-methoxy-5-methylaniline	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
2-methoxy-5-methylaniline	Leather	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4-Amino biphenyl	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4-Amino biphenyl	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
Benzidine	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
Benzidine	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A

o-Aminoazotoluene	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
o-Aminoazotoluene	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4-Chloroaniline	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4-Chloroaniline	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4-methoxy-m-phenylenediamine	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4-methoxy-m-phenylenediamine	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-methilenedianiline	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-methilenedianiline	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
3,3'-Dimethoxybenzidine	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
3,3'-Dimethoxybenzidine	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
3,3'-Dimethylbenzidine	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
3,3'-Dimethylbenzidine	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Methylene-bis-(o-chloroaniline)	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Methylene-bis-(o-chloroaniline)	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Oxydianiline	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Oxydianiline	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Thiodianiline	Textile	БДС EN ISO 14362-1:2017		GC 7890A / MSD 5975 C	Solution extraction	A
4,4'-Thiodianiline	Leather	БДС EN ISO 17234-1:2015		GC 7890A / MSD 5975 C	Solution extraction	A
Benzene	Gasoline	EN 12177 EN 12177/AC 2000 "Liquid petroleum products - Unleaded petrol - Determination of benzene content by gas chromatography"		GC-FID	Sampling internal standard	A

Hexachlorobenzene (HCB)	Solids	Internal method	US EPA 8081	GC-ECD	Liquid extraction	A
Hexachlorobenzene (HCB)	Liquids	Internal method	US EPA 8081	GC-ECD	Liquid extraction	A
Trichloroethene	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene, Dibenzo(a,l)pyrene	Solid Matrix	EPA3545 + EPA 8270D EPA3545 "Pressurised fluid extraction (PFE)"+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Accelerated Solvent extraction+ clean-up	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Solid Matrix	EPA 3550+EPA8270 D EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction")+EPA8270D (EPA 8270E:2018 "Semi volatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Ultrasonic extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Liquid Matrix	EPA 3510+EPA8270 D EPA3510 (EPA 3510C:1996 "Separatory funnel liquid-liquid extraction")+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	LLE: Liquid liquid Extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Solid Matrix	EPA 3550 + EPA8310 EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction") + EPA8310 (EPA 8310:1986 "Polynuclear aromatic hydrocarbons"))		HPLC-FLD	Ultrasonic extraction	A
Free-formaldehyde and formaldehyde extracted through hydrolysis	Textiles	UNI EN ISO 14184-1: 2011 "Textiles - Determination of formaldehyde - Part 1:		Colorimetric VIS	Water extraction	A

		Free and hydrolysed formaldehyde (water extraction method) (ISO 14184-1:2011)")				
Free formaldehyde	Textiles	UNI EN ISO 14184-2:2011 EN ISO 14184-2:2011 "Textiles - Determination of formaldehyde - Part 1: Free and hydrolysed formaldehyde (water extraction method) (ISO 14184-1:2011))")		Colorimetric VIS	Water extraction	A
Free formaldehyde	Leather process auxiliaries	UNI EN ISO 27587:2009 will be replaced EN ISO 27587:2009 "Leather - Chemical tests - Determination of the free formaldehyde in process auxiliaries (ISO 27587:2009)")		HPLC-UV		A
free-formaldehyde and formaldehyde extracted through hydrolysis	Leather	UNI EN ISO 17226-1 EN ISO 17226-1 " Leather - Chemical determination of formaldehyde content - Part 1: Method using high performance liquid chromatography (ISO 17226-1:2018)")		HPLC-UV or LC/MS	Water extraction through hydrolysis	A
Free-formaldehyde and formaldehyde extracted through hydrolysis	Leather	UNI EN ISO 17226-1 EN ISO 17226-1 " Leather - Chemical determination of formaldehyde content - Part 1: Method using high performance liquid chromatography (ISO 17226-1:2018)")		Colorimetric VIS	Water extraction through hydrolysis	A
Vinyl chloride	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A

Restriction (Annex XVII entry number and analyte/s covered)

29. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as germ cell mutagen category 1A or 1B (Table 3.1) or mutagen category 1 or 2 (Table 3.2) and listed as follows: — Mutagen category 1A (Table 3.1)/ mutagen category 1 (Table 3.2) listed in Appendix 3 ; — Mutagen category 1B (Table 3.1)/ mutagen category 2 (Table 3.2) listed in Appendix 4

29.1. Substances/constituents of substances/mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Benzene	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
Benzene	Liquid and solid matrix	EPA5021A:2014 +EPA8260D:2018 EPA5021A:2014 "Volatile organic compounds in various sample matrices using equilibrium headspace analysis"+EPA8260D:2018"Volatile organic compounds by gas chromatography mass spectrometry")		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A
Benzo(a)pyrene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Benzo(a)pyrene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
1.2-Dibromo-3-Chloropropane	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the	A

					headspace vial with defined volume of water and internal standards are added)	
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene, Dibenzo(a,l)pyrene	Solid Matrix	EPA3545 + EPA 8270D EPA3545 "Pressurised fluid extraction (PFE)"+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Accelerated Solvent extraction+ clean-up	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Solid Matrix	EPA 3550+EPA8270 D EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction")+EPA8270D (EPA 8270E:2018 "Semi volatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Ultrasonic extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Liquid Matrix	EPA 3510+EPA8270 D EPA3510 (EPA 3510C:1996 "Separatory funnel liquid-liquid extraction")+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	LLE: Liquid liquid Extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Solid Matrix	EPA 3550 + EPA8310 EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction") + EPA8310 (EPA 8310:1986 "Polynuclear aromatic hydrocarbons"))		HPLC-FLD	Ultrasonic extraction	A

Restriction (Annex XVII entry number and analyte/s covered)
30. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2) and listed as follows: - Reproductive toxicant category 1A adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 1 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 5 - Reproductive toxicant category 1B adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 2 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 6
30.1. Substances/constituents of substances/mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note

Benzo(a)pyrene	Solids	Internal method	US EPA 8270	GC-MS	Direct injection (Extraction technique)	A
Benzo(a)pyrene	Liquids	Internal method	US EPA 8270, EN ISO 6468	GC-MS	Direct injection (Extraction technique)	A
Bis(2-ethylhexyl)phthalate	Solids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Bis(2-ethylhexyl)phthalate	Liquids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Butyl benzyl phthalate	Solids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Butyl benzyl phthalate	Liquids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
1.2-Dibromo-3-Chloropropane	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
Di-isobutylphthalate	Solids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Di-isobutylphthalate	Liquids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Di-n-butyl phthalate	Solids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Di-n-butyl phthalate	Liquids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Di-pentylphthalate	Solids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A
Di-pentylphthalate	Liquids	Internal method	US EPA 8061	GC-MS	Direct injection (Extraction technique)	A

1.2.3-Trichloropropane	Solids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (sample is extracted with defined volume of methanol, aliquot volume of sample is transferred into the headspace vial with defined volume of water and internal standards are added)	A
1,2,3-Tricloropropane	Liquid and solid matrix	EPA5021A:2014 +EPA8260D:2018 EPA5021A:2014 "Volatile organic compounds in various sample matrices using equilibrium headspace analysis"+EPA8260D:2018"Volatile organic compounds by gas chromatography mass spectrometry"		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene, Dibenzo(a,l)pyrene	Solid Matrix	EPA3545 + EPA 8270D EPA3545 "Pressurised fluid extraction (PFE)"+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Accelerated Solvent extraction+ clean-up	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Solid Matrix	EPA 3550+EPA8270 D EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction")+EPA8270D (EPA 8270E:2018 Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	Ultrasonic extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene, Dibenzo(a,i)pyrene,	Liquid Matrix	EPA 3510+EPA8270 D EPA3510 (EPA 3510C:1996 "Separatory funnel liquid-liquid extraction")+EPA8270D (EPA 8270E:2018 "Semivolatile organic compounds by gas chromatography mass spectrometry"))		GC-MS	LLE: Liquid liquid Extraction	A
PAH Benzo(a)pyrene, Benzo(e)pyrene, Benzo(a)anthracene, Chrysen, Benzo(b+k+j)fluoranthene, Dibenzo(a,h,)anthracene, Indeno(1,2,3-cd)pyrene , Benzo(g,h,i)perilene, Dibenzo(a,e)pyrene, Dibenzo(a,h)pyrene,	Solid Matrix	EPA 3550 + EPA8310 EPA3550 ("EPA 3550C:2007 "Ultrasonic extraction") + EPA8310 (EPA 8310:1986 "Polynuclear aromatic		HPLC-FLD	Ultrasonic extraction	A

Dibenzo(a,i)pyrene,		hydrocarbons"))				

Restriction (Annex XVII entry number and analyte/s covered)
31. (a) Creosote; wash oil CAS No 8001-58-9 EC No 232-287-5 (b) Creosote oil; wash oil CAS No 61789-28-4 EC No 263-047-8 (c) Distillates (coal tar), naphthalene oils; naphthalene oil CAS No 84650-04-4 EC No 283-484-8 (d) Creosote oil, acenaphthene fraction; wash oil CAS No 90640-84-9 EC No 283-484-8EC No 292-605-3 (e) Distillates (coal tar), upper; heavy anthracene oil CAS No 65996-91-0 EC No 266-026-1 (f) Anthracene oil CAS No 90640-80-5 EC No 292-602-7 (g) Tar acids, coal, crude; crude phenols CAS No 65996-85-2 EC No 266-019-3 (h) Creosote, wood CAS No 8021-39-4 EC No 232-419-1 (i) Low temperature tar oil, alkaline; extract residues (coal), low temperature coal tar alkaline CAS No 122384-78-5 EC No 310-191-5

31.1. substances/mixtures/wood

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Benz(a)pyrene, PAHs, phenol	Wood	MSZ EN 1014-3:1999*; MSZ 1014-4:1999*		HPLC-UV or HPLC-FLD	Solid-liquid extraction and SPE	A
Benz(a)pyrene, PAHs, phenol	Aqueous liquids	EPA 550.1; MSZ 1484-9:2009		HPLC-UV or HPLC-FLD	SPE	A

Restriction (Annex XVII entry number and analyte/s covered)
31. (a) Creosote; wash oil CAS No 8001-58-9 EC No 232-287-5 (b) Creosote oil; wash oil CAS No 61789-28-4 EC No 263-047-8 (c) Distillates (coal tar), naphthalene oils; naphthalene oil CAS No 84650-04-4 EC No 283-484-8 (d) Creosote oil, acenaphthene fraction; wash oil CAS No 90640-84-9 EC No 283-484-8EC No 292-605-3 (e) Distillates (coal tar), upper; heavy anthracene oil CAS No 65996-91-0 EC No 266-026-1 (f) Anthracene oil CAS No 90640-80-5 EC No 292-602-7 (g) Tar acids, coal, crude; crude phenols CAS No 65996-85-2 EC No 266-019-3 (h) Creosote, wood CAS No 8021-39-4 EC No 232-419-1 (i) Low temperature tar oil, alkaline; extract residues (coal), low temperature coal tar alkaline CAS No 122384-78-5 EC No 310-191-5

31.1. substances/mixtures/wood						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Benz(a)pyrene, PAHs, phenol	Wood	MSZ EN 1014-3:1999*; MSZ 1014-4:1999*		HPLC-UV or HPLC-FLD	Solid-liquid extraction and SPE	A
Benz(a)pyrene, PAHs, phenol	Aqueous liquids	EPA 550.1; MSZ 1484-9:2009		HPLC-UV or HPLC-FLD	SPE	A

Restriction (Annex XVII entry number and analyte/s covered)						
32. Chloroform CAS No 67-66-3 EC No 200-663-8						
32.1. substances/constituents of substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Chloroform	Glues (adhesives) soluble in acetone	Internal method	CY-SGL method "METH 11 01 11", accredited according to EN ISO 17025:2005	GC-MS	Dilution in acetone	A
Chloroform	Aqueous liquids	Internal method	US EPA 8260, US EPA 5021A, US EPA 5021, US EPA 8015, MADEP 2004, rev. 1.1, ISO 15009	HSGC-MS or HSGC-FID	Headspace (no-extraction step, sample is just transferred into the headspace vial and internal standards are added)	A
Chloroform	Mixtures (non-aqueous and aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
Chloroform	Glues / Adhesives	Internal method	EPA 5021A + EPA8260C	HS-GC/MS	Solvent Extraction	B

Chloroform	Acqueous and non acqueous liquids	Internal method	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	B
Chloroform	mixtures (Non-aqueous and aqueous liquids)	EPA5021A: 2014 + EPA8260D: 2018		GC-MS	Liquid: Head Space vials Solid: a)Head Space vials b) Methanol extraction	A
Chloroform	Non-aqueous and aqueous liquids			GC-MS	A master standard (100 µg/ml in Methanol) was used for the preparation of 3 solutions at a concentration of 0,05 %, 0,1% and 0,5 %	B
Chloroform	Liquid and solid	EPA 5035A 2002; EPA 8260D 2018		GC-MS	Purge & Trap or liquid extraction	B

Restriction (Annex XVII entry number and analyte/s covered)						
34. 1,1,2-Trichloroethane CAS No 79-00-5 EC No 201-166-9						
34.1. substances/constituents of substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
1,1,2-Trichloroethane	Mixtures (non-aqueous and aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
1,1,2-Trichloroethane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solvent	D / 0.04%
1,1,2 Trichloroethane	Liquid and solid matrix	EPA5021A:2014 +EPA8260D:2018		GC-MS	Liquid: Head- Space vials Solid: a)Head-Space vials b) Methanol extraction	A
1,1,2-Trichloroethane	Liquid and solid	EPA 5035A 2002 EPA 8260D 2018		GC-MS	Purge&Trap or liquid extraction	B

Restriction (Annex XVII entry number and analyte/s covered)						
35. 1,1,2,2-Tetrachloroethane CAS No 79-34-5 EC No 201-197-8						
35.1. substances/constituents of substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
1,1,2,2-Tetrachloroethane	Mixtures (non-aqueous and aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
1,1,2,2-Tetrachloroethane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%
1,1,2,2-Tetrachloroethane	Aqueous liquids	Internal method	US EPA 624, US EPA 8260	HSGC-MS or HSGC-FID	Headspace (no-extraction step, sample is just transferred into the headspace vial and internal standards are added)	A
1,1,2,2-Tetrachloroethane	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid: Head Space vials Solid a)Head Space vials b) Methanol extraction	A
1,1,2,2-Tetrachloroethane	Liquid and solid	EPA 5035A 2002; EPA 8260D 2018		GD-MS	Purge & Trap or liquid extraction	B

Restriction (Annex XVII entry number and analyte/s covered)						
36. 1,1,1,2-Tetrachloroethane CAS No 630-20-6						
36.1. substances/constituents of substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
1,1,1,2-Tetrachloroethane	Aqueous liquids	Internal method	US EPA 624, US EPA 8260	HSGC-MS or HSGC-FID	Headspace (no-extraction step, sample is just transfered into the headspace vial and internal standards are added)	A
1,1,1,2-Tetrachloroethane	Mixtures (non-aqueous and aqueous	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021	A

	liquids)				(Headspace analysis)	
1,1,1,2-Tetrachloroethane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%
1,1,1,2 Tetrachloroethane	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid: Head-Space vials Solid a)Head Space vials b) Methanol extraction	A
1,1,1,2-Tetrachloroethan	Liquid and solid	EPA 5035A 2002 ; EPA 8260D 2018		GC-MS	Purge & Trap or liquid extraction	B

Restriction (Annex XVII entry number and analyte/s covered)

37. Pentachloroethane CAS No 76-01-7 EC No 200-925-1

37.1. substances/constituents of substances / mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Pentachloroethane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%

Restriction (Annex XVII entry number and analyte/s covered)

38. 1,1-Dichloroethene CAS No 75-35-4 EC No 200-864-0

38.1. Substances/constituents of substances / mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
1,1-Dichloroethene	Aqueous liquids	Internal method	US EPA 624, US EPA 8260	HPLC-UV or HPLC-FLD	Headspace (no-extraction step, sample is just transferred into the headspace vial and internal standards are added)	A
1,1-Dichloroethene	Mixtures (non-aqueous and aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
1,1-Dichloroethene	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%
1,1 Dichloroethene	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid: Head-Space vials Solid a)Head-Space	A

					vials b) Methanol extraction	
1,1 Dichloroethene	Liquid and solid	EPA 5035A 2002; EPA 8260D 2018		GC-MS	Purge&Trap or liquid extraction	B

Restriction (Annex XVII entry number and analyte/s covered)						
43. Azocolourants and Azodyes						
43. Aromatic amines listed in Appendix 8 of REACH in textile and leather articles or dyed parts thereof						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
	leather	EN ISO 17234-1 2020 Leather – Chemical tests for the determination of certain azo colorants in dyed leather – Part 1: Determination of certain aromatic amines derived from azo colorants				C
	leather	EN ISO 17234-2:2011 Leather – chemical tests for the determination of certain azo colorants in dyed leathers – Part 2: Determination of 4-aminoazobenzene				C
	textiles	EN 14362-1:2017 Textiles – Methods for the determination of certain aromatic amines derived from azo colorants – Part 1: Detection of the use of certain azo colorants				C

		accessible with and without extracting the fibres				
	textiles	EN 14362-3:2017 Textiles – Methods for determination of certain aromatic amines derived from azo colorants, which may release 4-aminoazobenzene				C

Restriction (Annex XVII entry number and analyte/s covered)						
45. Diphenylether, octabromo derivative C12H2Br8O						
45.1. Substances / constituents of substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Diphenylether, octabromo derivative C12H2Br8O	Liquid and solid	EPA 1614A 2010 "Brominated Diphenyl Ethers in Water, Soil, Sediment, and Tissue by HRGC/HRMS" HRGC-HRMS		HRGC-HRMS	liquid extraction and PSE EPA 3545A 2007	A
45.2. Articles / flame-retardant parts of articles						
PBBs	Textiles	DIN EN 16377		GC-MS	solvent extraction	B
Brominated flame retradants	Toys and other consumer articles and products (plastics, textiles)	Internal method	DIN EN 71-11 CEN/TC 52/WG 9/TG 2:2002	GC-MS (CI)	solvent extraction with n-hexane or THF in an ultrasonic bath	B
Brominated flame retradants	Textiles	ISO 17881-1: 2016 "Textiles -- Determination of certain flame retardants Brominated flame retardants"		GC-MS		A

Restriction (Annex XVII entry number and analyte/s covered)						
46.(a) Nonylphenol C6H4(OH)C9H19 (b) Nonylphenol ethoxylates (C2H4O)nC15H24O						
46. substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Nonylphenol	Textile	БДС EN ISO 21084; БДС EN ISO 18218-2		GC-MS		D / 0,05 mg/kg
Nonylphenol, nonylphenol ethoxylates	Textile, leather	ISO 18254-1: 2016 Textiles - Method for the detection and determination of alkylphenol ethoxylates (APEO) - Part 1: Method using HPLC - MS (ISO 18254-1: 2016))		LC-MS	Methanol extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
46a. Nonylphenol ethoxylates (NPE) (C2H4O)nC15H24O						
46.1. Textiles						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Nonylphenol ethoxylates	Leather/textiles	ISO 18218 (leather); ISO 21084, ISO 18254 (textiles)		GC-MS or LC-MS		A
Nonylphenol	Textile	БДС EN ISO 21084 EN ISO 21084 "Textiles - Method for determination of alkylphenols (AP) (ISO 21084:2019)" ; БДС EN ISO 18218-2 "Leather - Determination of ethoxylated alkylphenols - Part 2: Indirect method (ISO		GC-MS		D / 0.05 mg/kg

		18218-2:2019)"				
Nonylphenol, Nonylphenol etoxilate	leather	БДС EN ISO 18218-2; БДС EN ISO 21084		GC-MS		D / 0.05 mg/kg
nonylphenol ethoxylates	Textile, leather	ISO 18254-1:2016 ISO 18254-1:2016"Textiles -- Method for the detection and determination of alkylphenol ethoxylates (APEO) Method using HPLC-MS")		LC-MS	Methanol extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
47. Chromium VI compounds						
47.1. Cement and cement containing mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Chromium VI	Cement and cement containing mixtures	EN 196-10:2006 - OJ C23, 28.1.2005, p.8				C
Water-soluble Cr(VI) compounds	Cement and cement-containing mixtures	UNI EN 196-10:2016		Spectrophotometry	Extraction and filtration	C
Chromium VI	Cement	UNI EN 196-10:2016 and sampling procedure GTI REACH I.O.1 rev.0 15.06.2010		Spectrophotometry UV/VIS	With oxidation	C
Chromium VI	Solid	UNI EN 196-10:		Spectroscopy	According to UNI EN 196	C
47.5. Leather articles coming into contact with skin / articles containing leather parts						
Chromium VI	Leather	ISO 17075-1:2017		Colorimetric		A
Chromium VI	Leather	DIN/EN/ISO 17075-1		photometric	According to DIN 17075-1	A
Chromium VI	Leather	Internal method	Metrohm DIN 17075-1	dialysis-ion chromatography-vis	According to DIN 17075-1	A

Chromium VI	Leather	Internal method	SFS-EN ISO 17075-1:2017 SFS-EN ISO 4684	Spectrophotometric	According to standard	A
Chromium VI	Leather	ISO 17075-1:2017		Spectrophotometry	According to standard	A
Chromium VI	Leather	ISO 17075-1 and 2		colorimetric /HP-LC		D/ 3,0 mg /kg
Chromium VI	Leather	БДС EN ISO 17075		UV- VIS		A
Chromium VI	Leather	ISO 17075-1:2017 ISO 17075-2:2017		ISO 17075-1:2017 - colorimetric ISO 17075-2:2017 - IC	Extraction by dipotassium hydrogen-phosphate followed by derivatization	A
Chromium VI	Leather	PN-EN ISO 17075-1:2017-05		UV-VIS	According to PN-EN ISO 17075-1:2017-05	A

Restriction (Annex XVII entry number and analyte/s covered)						
48. Toluene CAS No 108-88-3; EC No 203-625-9						
48. Substances / mixtures in adhesives or spray paints						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Toluene	Glues (adhesives) soluble in acetone	Internal method	CY-SGL method "METH 11 01 11", accredited according to EN ISO 17025	GC-MS	Dilution in acetone	A
Toluene	Paints	PN-EN ISO 11890-2:2013-06E		GC-FID	Preparation of the sample according to PN-EN-ISO 1513:2010P, analysis according PN-EN ISO 11890-2:2013-06E extraction of toluene from paints using methanol and dichloromethane (2:3); centrifugation of the sample	A
Toluene	Adhesives and spray paints	Internal method	PN-EN ISO 11890-2	GC-FID or GC-MS	Sample (1-2g) was weighed in a tube with accuracy of 0,01mg and diluted with an appropriate amount of	A

					solvent. The content of the tube was then homogenized by vortexing.	
Toluene	Glues	Internal method	NL16ND816	GC-MS	Dilution in acetone	B
Toluene	Spray paints and Adhesives	Internal method		GC-MS	Extraction with organic solvent	A
Toluene	Spray paints and Adhesives	Internal method	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	B
Toluene	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid: Head-Space vials Solid: a)Head-Space vials b) Methanol extraction	A
Toluene	Liquid	EPA 5035A 2002 ; EPA 8260D 2018		GC-MS	Liquid extraction and PSE EPA 3545A 2007	B

Restriction (Annex XVII entry number and analyte/s covered)						
49. Trichlorobenzene CAS No 120-82-1 ; EC No 204-428-0						
49. substances / mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene	Mixtures (non-aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
Trichlorobenzene	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%
1,2,3-Trichlorobenzene; 1,2,4-Trichlorobenzene; 1,3,5-Trichlorobenzene	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid:Head Space vials Solid a)Head Space vials b) Methanol extraction	A

Restriction (Annex XVII entry number and analyte/s covered)
50.Polycyclic-aromatic hydrocarbons (PAH) **(a) Benzo[a]pyrene (BaP)** **CAS No 50-32-8** **(b) Benzo[e]pyrene (BeP)** **CAS No 192-97-2** **(c) Benzo[a]anthracene (BaA)**

CAS No 56-55-3 (d) Chrysen (CHR) CAS No 218-01-9 (e) Benzo[b]fluoranthene (BbFA) CAS No 205-99-2 (f) Benzo[j]fluoranthene (BjFA) CAS No 205-82-3 (g) Benzo[k]fluoranthene (BkFA) CAS No 207-08-9 (h) Dibenzo[a,h]anthracene (DBAhA) CAS No 53-70-3 2.						
50.1. Extender oils						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Polycyclic aromatic extract (PCA)	Extender oils	Petroleum Standard IP346:1998. This standard can be used only until 23 September 2016				C
PAH	Extender oils	EN 16143:2013				C
50.2. Tyres and treads for retreading						
Bay protons	Vulcanised rubber	ISO 21461 (Rubber vulcanised – Determination of aromatic oil in vulcanised rubber compounds)				C
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Tyres	ISO 21461:2012 UNI EN 16143:2013 ISO 1407:2011		GC-MS	Cut sample in little pieces less than 1mm x 1mm x 2mm. Weight 4,5 gr and perform Soxhlet extraction with 300 ml of Acetone for 8 hrs. Purifying with SPE Supelclean LC-SI 6 ml with n-heptane. Before purification add to sample BaPD12 0,54 mg/L. Perform another purification with	C

					Sephadex LH (see UNI 16143:2012) and inject.	
50.5-6. Articles, toys containing rubber or plastic components						
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Vulcanised rubber plastics cosmetics (tattoos, mascara) paints	Internal method	AfPS GS 2019:01 PAK	GC-MS-MS, SRM-Mode, Col. Gas Argon	Extraction with toluene, Clean-Up (AfPS GS 2019:01 PAK)	A
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Rubber	Internal method	AfPS GS 2019:01 PAK	GC-MS-MS	Extraction of 0,5 gram with 20 mL hexane followed by SPE clean-up	A
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Plastic, rubber	AfPS GS 2019:01 PAK		GC-MS	toluene extraction followed by silica gel clean up	A
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Articles with rubber and plastic components	Internal method	UNI ISO21461:2012	GC-MS	Soxhelet extraction with acetone	A
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Articles with rubber or plastic	Internal method	ZEK 01.4-08	GC-MS	Cut sample in little pieces less than 1mm x 1mm x 2mm. Weight 1,0 gr, add deuterates mix (100 µg/L) and perform extraction with Toluene:Acetone 2:1 in ultrasonic bath @60°C for 1 hr. Then purifying with silica gel and inject.	A
BaP, BeP, BaA, CHR, BbFA, BjFA, BkFA, DBAhA	Natural rubber / PVC	Internal method	ZEK 01.4-08; instrumental analysis - Agilent technologies App note 5990-6155EN	GC-MS		A

Restriction (Annex XVII entry number and analyte/s covered)
51. The following phthalates (or other CAS and EC numbers covering the substance): (a) Bis (2-ethylhexyl) phthalate (DEHP) CAS No 117-81-7 ; EC No 204-211-0 (b) Dibutyl phthalate (DBP) CAS No 84-74-2 EC No 201-557-4 (c) Benzyl butyl phthalate (BBP) CAS No 85-68-7 EC No 201-622-7 (d) Diisobutyl phthalate (DIBP) CAS No.: 84-69-5 EC No.: 201-553-2

51.1 Plasticised materials for toys and childcare articles production; 51.2 Plasticised materials in toys and childcare article; 5.3. Articles containing plasticised materials						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
DEHP DBP BBP	Plastics	Internal method	SW05OF01: SANDRA BIEDERMANN-BREM, MAURUS BIEDERMANN, KATELL FISELIER, & KONI GROB; Compositional GC-FID analysis of the additives to PVC, focusing on the gaskets of lids for glass jars; Food Additives and Contaminants, December 2005; 22(12): 1274–1284 IT07EC01: Z. Ezerskisa, V. Morkunas, M. Suman, C. Simoneau; Analytical screening of polyadipates and other plasticisers in poly(vinyl chloride) gasket seals and in fatty food by gas chromatography–mass spectrometry; Analytica chimica acta; 604 (2007); 29–38	GC-MS	Sample preparation: EN 14372:2005 (non PVC plastics) and SW05OF01 (PVC) + instrumental analysis IT07EC01 EN 14372:2005 : Soxhlet extraction of the plastic with diethylether SW05OF01: Dissolution of the PVC in tetrahydrofuran, precipitation PVC by ethanol	A
DEHP DBP BBP	Plastics	CPSC-CH-C1001-09.1	n.a	GC-MS	Solvent extraction	A
DEHP BBP DBP	PVC toys and childcare articles	Internal method	Sample preparation: 1. USA Test Method: CPSC-CH-C1001-09.1 (2009), USA Test Method: CPSC-CH-C1001-09.3 (2010) 2. Plasticisers in PVC Toys and Childcare Products: What Succeeds the Phthalates? Market Survey 2007, Sandra Biedermann-Brehm, Maurus Biedermann, Susanne Pfenninger, Martin Bauer, Werner Altkofer, Karls Rieger, Urs Hauri, Christian Droz, Koni Grob, Chromatographia 2008, 68, August (No. ¾), Vieweg + Teuber, GWV Fachverlage GmbH. Analytical method: VDI 4301 Blatt 6:2012-09 Measurement of indoor air pollution - Measurement of phthalates with GC/MS (VDI guideline)	GC-MS (EI)	1. shred the material to pieces <5mm 2. dissolve in THF 3. precipitate PVC with ethanol 4. centrifugate and then dilute solution with cyclohexane	A

DEHP BBP DBP	PVC in toys and childcare articles	Internal method	EN 12586:2007 +A1:2011Child use and care articles. Soother holder. Safety requirements and test methods	GC-MS	Softeners are extracted from the plastic with diethyl ether. Extracted softeners are diluted with cyclohexane and analyzed with GC-MS.	A
DEHP BBP DBP DIBP	PVC	Internal method	CPSC-CH-C1001-09.2	GC-MS	Dissolve in tetrahydrofuran and precipitate in hexane (1:2)	A
DEHP DBP BBP	PVC	Internal method	EPA method 8061A, PN-EN 15777:2009	GC-FID	Solid-liquid extraction (soxtec)	A
DEHP DBP BBP DIBP	Plastics FCM - Food Contact Materials paper, carton, cardboard textiles	Internal method	ISO /TC 181/WG 06 Phthalate plasticizers in toys	GC-MS, GC-FID	Soxhlet extraction of the plastics with diethylether Paints: Extraction with n-hexane in an ultrasonic bath Paper, carton and textil: ASE with n-hexane	A
DEHP DBP BBP	Solids/51. REACH Annex XVII/toys and childcare articles	Internal method	EN-14389:2014-07;CPS-CH-C1001-09.4 EN-14389:2014-07 (Textiles - Determination of the phthalate content - Tetrahydrofuran method (ISO 14389:2014)) ; CPS-CH-C1001-09.4 (Test Method:	HPLC	Dissolve in THF. Precipitation PVC by methanol	A

			CPSC-CH-C1001-09.4Standard Operating Procedure for Determination of Phthalates January 17, 2018))			
DEHP DBP BBP	Plastics mainly made of polyvinyl chloride (PVC)	Internal method	PN-EN ISO 14389:2014-07E EN ISO 14389:2014 Title: Textiles - Determination of the phthalate content - Tetrahydrofuran method (ISO 14389:2014)	HPLC-DAD	Homogenization by grinding, then dissolution and extraction	A
DEHP DBP BBP DiBP	Plastics, solid and liquid	ISO 8124-6 "ISO 8124-6:2018 Safety of toys — Part 6: Certain phthalate esters in toys and children's products"		GC-MS	Extraction by Sohxlet or ultrasonic bath	A
DEHP DBP BBP DiBP	Toys	LVS EN 14372:2004 6.3.2 EN 14372:2004 Child use and care articles - Cutlery and feeding utensils - Safety requirements and tests ICS : [97.190])		GC-MS	Shoxlet extraction	A
Phthalates	Toys and child care articles- plastics, textile, leather, footware materials, paper and board	БДС EN 16453; БДС EN ISO14389; БДС EN 14372 СД CEN ISO/TS 16181 "Footwear - Critical substances potentially present in footwear and footwear components - Determination of phthalates in		GC-MS		D / 0,003

		footwear materials (ISO/TS 16181:2011"); БДС EN 16453:2014 "Pulp, paper and paperboard - Determination of phthalates in extracts from paper and paperboard; БДС EN ISO14389:2014 "Textiles - Determination of the phthalate content - Tetrahydrofuran method (ISO 14389:2014); БДС EN 14372 EN 14372:2004 "Child use and care articles - Cutlery and feeding utensils - Safety requirements and tests"				
DEHP DBP BBP DiBP	Toys and childcare articles - plastic	U.S. CONSUMER PRODUCT SAFETY COMMISSION - Test Method CPSC-CH-C1001-09.3 - April 1, 2010 The last version is "Test Method: CPSC-CH-C1001-09.4 Standard Operating Procedure for Determination of Phthalates January 17, 2018"		GC-MS	Extraction with organic solvent (Tetrahydro furan)	A
DEHP DBP BBP DiBP	Toys and childcare articles - plastic	Internal method	Sample preparation CPSC-CH-C1001-09.3 + instrumental analysis IT12ML01	HPLC with UV detection	Extraction with organic solvent (Tetrahydro furan)	A
DEHP DBP BBP DiBP	Toys	Internal method	CPSC-CH-C1001-09.4:2018	GC-MS	a) cut the sample into small pieces (no dimension larger than 2 mm), or milled/grou	A

					nd into a representative powder b) sonicated with THF c) add hexane for precipitate any PVC polymer d) transfer supernatant solution to GC vial for analysis in GC/MS	

Restriction (Annex XVII entry number and analyte/s covered)						
52. The following phthalates (or other CAS- and EC numbers covering the substance): (a) Di-'isononyl' phthalate (DINP) CAS No 28553-12-0 and 68515-48-0 ; EC No 249-079-5 and 271-090-9 (b) Di-'isodecyl' phthalate (DIDP) CAS No 26761-40-0 and 68515-49-1 EC No 247-977-1 and 271-091-4 (c) Di-n-octyl phthalate (DNOP) CAS No 117-84-0 EC No 204-214-7						
52.1 Plasticised materials for toys and childcare articles production; 52.2 Plasticised materials in toys and childcare article						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
DINP DIDP DNOP	Plastics	Sample preparation: EN 14372:2005 (non PVC plastics) and SW05OF01 (PVC) + instrumental analysis IT07EC01	SW05OF01: SANDRA BIEDERMANN-BREM, MAURUS BIEDERMANN, KATELL FISELIER, & KONI GROB; Compositional GC-FID analysis of the additives to PVC, focusing on the gaskets of lids for glass jars; Food Additives and Contaminants, December 2005; 22(12): 1274–1284 IT07EC01: Z. Ezerskisa, V. Morkunas, M. Suman, C. Simoneau; Analytical screening	GC coupled with MS	Sample preparation: EN 14372:2005 (non PVC plastics) and SW05OF01 (PVC) + instrumental analysis IT07EC01 EN 14372:2005 : Soxhlet extraction of the plastic with diethylether	A

			of polyadipates and other plasticisers in poly(vinyl chloride) gasket seals and in fatty food by gas chromatography–mass spectrometry; analytica chimica acta; 6 0 4 (2 0 0 7); 29–38		SW05OF01: Dissolution of the PVC in tetrahydrofuran, precipitation PVC by ethanol	
DINP DIDP DNOP	Plastic toys, FCMA	Internal method	ČSN EN 15777	GC-ECD, GC-MS	Soxhlet extraction in diethylether	A
DINP DIDP DNOP	Plastics	CPSC-CH-C1001-09.1		GC/MS	solvent extraction	A
DINP DIDP DNOP	PVC toys and childcare products	Internal method	Sample preparation: 1. USA Test Method: CPSC-CH-C1001-09.1 (2009), USA Test Method: CPSC-CH-C1001-09.3 (2010) 2. Plasicizers in PVC Toys and Childcare Products: What Succeeds the Phthalates? Market Survey 2007, Sandra Biedermann-Brehm, Maurus Biedermann, Susanne Pfenninger, Martin Bauer, Werner Altkofer, Karls Rieger, Urs Hauri, Christian Droz, Koni Grob, Chromatographia 2008, 68, August (No. ¾), Vieweg + Teuber, GWV Fachverlage GmbH. Analytical method: VDI 4301 Blatt 6:2012-09 Measurement of indoor air pollution - Measurement of phthalates with GC/MS (VDI guideline)	GC/MS (EI)	1. shred the material to pieces <5mm 2. dissolve in THF 3. precipitate PVC with ethanol 4. centrifugate and then dilute solution with cyclohexane	A
DINP DIDP DNOP	PVC in toys and childcare articles	Internal method	EN 12586:2007 +A1:2011Child use and care articles. Soother holder. Safety requirements and test methods	GC-MS	Softeners are extracted from the plastic with diethyl ether. Extracted softeners are diluted with cyclohexane and analyzed with GC-MS.	A
DNOP	Toys and childcare articles;-plastics	Internal method	1) G.O. Adewuyi et al. The pacific J. Of Science and	HPLC-UV	Sample preparation CPSC-CH-C1001-09.3	A

			Technology, Vol.13 (2), 2012: 251; 2) Ying-Sing Fung et al., Fresenius J.Anal.Chem. (1994) 350: 721-723; 3) S.Marten, M.Nagusche wski, Knauer Application Note 05/2010; 4) Y.J.Yao et al., Env. Mon. And Ass. 19: 83-91, 1991		+ instrumenta l analysis IT12ML01 Extraction with organic solvent (Tetrahydro furan)	
DINP DIDP DNOP	PVC	Internal method	CPSC-CH-C1001-09.2	GC-MS	Dissolve in tetrahydrof uran and precipitate in hexane	A
DINP DIDP DNOP	Paints, plastics, paper, textiles	CPSC-CH-C1001-09.3		GC-MS	MW extraction followed by GC-MS with internal standard	A
Phthalates and other plasticizers	Plastics paper, carton, cardboard textiles	Internal method	ISO /TC 181/WG 06 Phthalate plasticizers in toys	GC-MS, GC-FID	Soxhlet extraction of the plastics with diethylether Paints: Extraction with n-hexane in an ultrasonic bath Paper, carton and textil: ASE with n-hexane	A
DNOP, DNIP, DIDP	Plastics, solid and liquid	ISO 8124-6:2018 "Safety of toys Certain phthalate esters in toys and children's products"		GC-MS	Extraction by Sohxlet or ultrasonic bath	A
DINP, DIDP, DNOP	Toys	LVS EN 14372:2004 6.3.2		GC-MS	Soxhlet extraction	A
DINP, DIDP DNOP	TOYS AND CHILDCARE ARTICLES - Plastic	U.S. CONSUMER PRODUCT SAFETY COMMISSION: CPSC-CH-C1001-09.4 Standard Operating Procedure for the		GC-MS	Extraction with organic solvent (Tetrahydro furan)	A

		determination of phthalates 17 January 2018				
DINP DIDP DNOP	TOYS AND CHILDCARE ARTICLES - Plastic	Internal method	Sample preparation CPSC-CH-C1001-09.3 + instrumental analysis IT12ML01	HPLC with UV detection	Extraction with organic solvent (Tetrahydrofuran)	A
DINP, DIDP and DNOP	Toys	Internal method	Standard Operating Procedure for Determination of Phthalates January 17, 2018 CPSC-CH-C1001-09.4:2018	GC-MS	a) cut the sample into small pieces (no dimension larger than 2 mm), or milled/ground into a representative powder b) sonicated with THF c) add hexane for precipitate any PVC polymer d) transfer supernatant solution to GC vial for analysis in GC/MS	A

Restriction
(Annex XVII entry number and analyte/s covered)

54. 2-(2-methoxyethoxy)ethanol (DEGME) CAS No 111-77-3 ; EC No 203-906-6

54. Constituent of paints, paint strippers, cleaning agents, self-shining emulsions or floor sealants

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
2-(2-methoxyethoxy) ethanol (DEGME)	Paints, paint strippers, cleaning agents, self-shining emulsions and floor sealants	Internal method	DIN 55682:2000-12 ; DIN 55683:2009-08	GC-MS	Solvent extraction	A

Restriction
(Annex XVII entry number and analyte/s covered)

55. 2-(2-butoxyethoxy)ethanol (DEGBE) CAS No 112-34-5 EC No 203-961-6

55.1. Constituent of spray paints or spray cleaners in aerosol dispensers

Analyte	Matrix/ Product	Analytical method	Reference for internal	Analytical technique	Sample preparation	Note

			methods			
2-(2-butoxyethoxy) ethanol (DEGBE)	Spray paints or spray cleaners in aerosol dispensers	Internal method	DIN 55682:200-12; DIN 55683:2009-08	GC-MS	Solvent extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
56. Methylenediphenyl diisocyanate (MDI) CAS No 26447-40-5 EC No 247-714-0						
56.1. Constituent of mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
MDI	Adhesives and sealants including hotmelts, One Component Foams (OCF) in pressurized cans, semi-solid products and pre-polymers	Internal method	Humberto E. Ferreira, José Condeço, Inês Fernandes, David Duarte and João Bordado, HPLC-UV and HPLC-ESI+-MS/MS analysis of free monomeric methylene diphenyl diisocyanate in Polyurethane Foams and Prepolymers after stabilization with NBMA a new derivatizating agent , Anal. Methods, 2014, Accepted Manuscript, 2014, DOI: 10.1039/C4AY01163E	Sample prep conducted in ambient air, with anhydrous acetonitrile dissolution. Pre-column derivatization with an excess of secondary aromatic amine (N-MethylBenzylAmine or NBMA), without catalist, for 90 minutes, followed by an HPLC separation, with UV254nm detection and quantitation. The method does not use toluene, xylene, DMF, DMSO or chlorinated solvents.	Sample prep conducted in ambient air, with anhydrous acetonitrile dissolution of 1500mg aliquote, or 600mg aliquote (pre-polymers). Pre-column derivatization with a 5 times molar excess of secondary aromatic amine (N-MethylBenzylAmine or NBMA), without catalist, for 90 minutes. Dilutions in acetonitrile.	A
MDI	Adhesives and sealants	Internal method	CAM-0642303-18E FEICA : Until very recently, no harmonised or validated test methods to determine very low ranges of monomeric diisocyanate content in given formulations including challenging matrices were	HPLC-MSMS	Dissolving of sample and derivatization of analyte	A

			available. The provided test method CAM-0642303-18E, allows accurate determination of low concentrations of monomeric diisocyanates. The test method utilises HPLC-MS/MS after derivatisation of the isocyanate groups. As such it is very accurate for the determination of very low content (in the range of 0.01% to 0.15%) free diisocyanate (MDI, TDI, HDI and IPDI), also in complex and challenging mixtures. A rigorous validation, as well as round robin tests by FEICA member companies, confirmed the accuracy of the test method, its robustness and reproducibility. FEICA has adopted the method as the most advanced and reliable available to date and it should therefore be the preferred method for the measurement of free monomeric diisocyanate in adhesives, sealants and one-component foams.			

Restriction (Annex XVII entry number and analyte/s covered)						
57. Cyclohexane CAS No 110-82-7 EC No 203-806-2						
57.1. Constituent of neoprene-based contact adhesives						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Cyclohexane	Neoprene-based contact adhesives	DIN EN ISO 10301 (F4)		HSGC-ECD or HSGC-MS	Purge & Trap or HS	B
Cyclohexane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04 %

Cyclohexane	Liquid matrix	Internal method	UNI EN ISO 10301:1999 UNI EN ISO 10301:1997 *The last version of the standard is EN ISO 11890-2:2020Paints and varnishes - Determination of volatile organic compounds(VOC) and/or semi volatile organic compounds (SVOC) content - Part 2: Gas-chromatographic method (ISO 11890-2:2020)*	GC-MS	Head Space vials	A
Cyclohexane	Liquid and solid matrix	EPA5021A: 2014+EPA 8260D:2018		GC-MS	Liquid:Head Space vials Solid a)Head Space vials b) Methanol extraction	B

Restriction (Annex XVII entry number and analyte/s covered)						
58. Ammonium nitrate (AN) CAS No 6484-52-2 EC No 229-347-8						
58.1. (Substances / mixtures) for use as a solid fertilizer, straight or compound						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Nitrogen	Hydrochloric acid solution of ammonium nitrate	BSS EN15750:2010 Method A; BSS 5172:1989 т.4.2		Distillation apparatus. Automatic titrator.	Reduction, hydrolysis, distillation, titration	A
Nitrogen	Aqueous solution of ammonium nitrate	BSS EN15475:2009; BSS 5172:1989 т.4.2		Distillation apparatus. Automatic titrator.	Distillation, titration	A
Nitrogen		Calculative method according to 2003/2003, Annex IV method 2.6.2		Calculative method		A
Nitrogen	Aqueous solution of carbamide and ammonium nitrate	BSS EN15750:2010 Method A; BSS 1378:1977 т.3.1		Distillation apparatus. Automatic titrator.	Reduction, hydrolysis, distillation, titration	A

Restriction (Annex XVII entry number and analyte/s covered)
59. Dichloromethane CAS No 75-09-2 EC No: 200-838-9

59.1. Paint strippers						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Dichloromethane	Mixtures (non-aqueous liquids)	EPA METHOD 8260C		GC-MS	EPA Method 5035A (solvent extraction - water dilution) / EPA Method 5021 (Headspace analysis)	A
Dichloromethane	Adhesives, paints,			GC-MS	~ 0,05 g sample / 100 ml solv.	D / 0.04%
Dichloromethane	Paint strippers	Internal method	UNI EN ISO 11890-2:2013 *The last version of the standard used as reference for the internal methos is EN ISO 11890-2:2020*	GC-MS	Solvent dilution	B
Dichloromethane	Liquid matrix	UNI EN ISO 10301:1999 UNI EN ISO 10301:1997 *The last version of the standard is EN ISO 11890-2:2020Paints and varnishes - Determination of volatile organic compounds(VOC) and/or semi volatile organic compounds (SVOC) content - Part 2: Gas-chromatographic method (ISO 11890-2:2020)*		GC-MS	Head Space vials	
Dichloromethane	Liquid and solid matrix	EPA5021A:2014+ EPA8260D:2018		GC-MS	Liquid:Head Space vials Solid a)Head Space vials b) Methanol extraction	B
Dichloromethane	Liquid	EPA 5035A 2002 ; EPA 8260D 2018		GC-MS	Purge & Trap, Solvent extraction	B

Restriction (Annex XVII entry number and analyte/s covered)
60. Acrylamide CAS No 79-06-1
60. Substance / mixtures

Analyte	Matrix/ Product	Analytical method	Reference for internal methods	Analytical technique	Sample preparation	Note
Acrylamide	Aqueous extract of solid samples	EPA 8032A		GC-ECD	Brominated derivative extraction into ethyl acetate	A
Acrylamide	Aqueous extract of solid samples	EPA 8032/A 1996		GC-ECD Derivatization by addition of bromine and gas chromatography analysis with electron capture detector	Dissolution in water, derivatisation, extraction	A

Restriction (Annex XVII entry number and analyte/s covered)						
61. Dimethylfumarate (DMF) CAS No 624-49-7 EC 210-849-0						
61. Articles / parts thereof						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
DMF	Leather, desiccant, textiles	Internal method	1.Biomed, Chromatograpy, 2011;25,1315-1318 2.ISO/TS 16186	HPLC-DAD	1,000 g extraction in methanol in an ultrasonic bath for 60 min	B
DMF	Shoes/ leather/ plastics	Internal method	ISO/TS 16186	GC-MS	1g sample+10 ml acetone+Istd	A
DMF	Leather and textiles			HPLC-DAD	Extraction with methanol	D / 0.02 [mg/kg]
DMF	Footware materials/ leather/ polymers	СД CEN ISO/TS 16186		GC-MS		D/0.1 mg/kg

DMF	Footwear	GB/T 26713-2011 "Footwear. Chemical tests. Determination of dimethyl fumarate (DMF)"		GC-MS	Ethyl acetate extraction	A
DMF	Textile/ leather/ artificial leather	ISO/TS 16186:2012 "Footwear -- Critical substances potentially present in footwear and footwear components -- Test method to quantitatively determine dimethyl fumarate (DMFU) in footwear materials"		GC-MS	According to ISO/TS 16186:2012	A

Restriction (Annex XVII entry number and analyte/s covered)						
63. Lead CAS No 7439-92-1 ; EC No 231-100-4 and its compounds						
63.1. Individual parts of jewellery articles						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Lead	metals	Internal method	Aufschluss: - ASU §64 LFGB K 84.00-29 (2011) Messung: - J. Nölte: ICP-Emissionsspektrometrie für Praktiker, Wiley-VCH Verlag GmbH, Weinheim, 2002 - DIN EN ISO 11885: 2008 (D)	ICP-OES	ASU §64 LFGB K 84.00-29 (2011) (ca. 100 mg Material + 3 ml HNO3 + 0,5 ml HCl bei 200°C in Mikrowelle)	A
Lead	metals	EPA 6020A		ICP-MS	EPA 3051A: microwave digestion with HNO3 and HCl 3:1	A

Lead	metals	CPSC-CH-E1001-08.3: metal		ICP-OES	Microwave digestion	A
Lead	metals			XRF or XRD		D / Lead 0.01 % Lead compounds 5 %
63.7. Articles supplied to the general public						
Lead	Plastic: PE, PVC, metal (not steel)	Internal method	SFS-EN 62321-5 Determination of certain substances in electrotechnical products - Part 5:2014	ICP-OES	Acid digestion	A
Lead	Water solutions of metals and alloys	Internal method	ВВЛМ 02:2013. Standardisation bodies convention	AAS with graphite furnace	acid decomposition of metal	A
Lead	CPSC-CH-E1003-09.1: paint and surface coating CPSC-CH-E1001-08.3: metal CPSC-CH-E1002-08.3: non-metal	CPSC-CH-E1003-09.1 CPSC-CH-E1001-08.3 CPSC-CH-E1002-08.3		ICP-OES	microwave digestion	A
Lead	Cooper/alloys/silver/leather/artificial leather/PP	Internal method	• Test method: CPSC-CH-E1002-08.3 Standard Operating Procedurę for Determining Total Lead (Pb) in Nonmetal Children's Products, • Test Method: CPSC-CH-E1001-08.3 Standard Operating Procedurę for Determining Total Lead (Pb) in Children's Metal Products (Including Children's Metal Jewelry)	AAS	cut in to small pieces	A

Restriction (Annex XVII entry number and analyte/s covered)						
64. 1,4-dichlorobenzene CAS No 106-46-7 EC No 203-400-5						
64. substance / mixtures / air fresheners / deodorisers						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
1,4 Dichlorobenzene; 1,3 Dichlorobenzene; 1,2 Dichlorobenzene	Liquid and solid matrix	EPA5021A: 2014 "Volatile organic compounds in various sample matrices using equilibrium head space analysis"+ EPA8260D: 2018 (Volatile organic compounds by gas chromatography/ mass spectrometry)		GC-MS	Liquid: Head-Space vials Solid: a)Head Space vials b) Methanol extraction	A
1,4-dichlorobenzene	Air freshener or deodoriser	Internal method - The standard has been updated EN ISO 11890-2:2020 Title : Paints and varnishes - Determination of volatile organic compounds(VOC) and/or semi volatile organic compounds (SVOC) content - Part 2: Gas-chromatographic method (ISO 11890-2:2020))	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	B

Restriction (Annex XVII entry number and analyte/s covered)						
66. Bisphenol A CAS No 80-05-7 EC No 201-245-8						
66. Thermal paper						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Bisphenol A	Thermal Paper	Internal method	ВЛМ	HPLC; GC-MS		D/0.0002

Restriction (Annex XVII entry number and analyte/s covered)						
69. Methanol CAS No 67-56-1 EC No 200-659-6						
69. windscreen washing or defrosting fluids						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Methanol	Windscreen washing	Internal method	COMMISSION REGULATION (EC) No 2870/2000 laying down Community reference methods for the analysis of spirits drinks, Annex III.2 (Gas Chromatographic determination of volatile congeners:aldehydes, higher, alcohols, ethyl acetate and methanol)	GC-FID		A
Methanol	Spirits and bottled spirit, preparations based on ethyl alcohol	PN-A-79529-7:2005		GC-FID	Homogenization by shaking	A
Methanol	Windscreen washing fluids	Internal method	instrumental analysis - Phenomenex App ID: 16133	GC-FID	No sample preparation, dilute if needed	A
Methanol	Windscreen washing or defrosting fluids	Internal method *Remark: The last version of the standard is EN ISO 11890-2:2020Paints and varnishes - Determination of volatile organic compounds(VOC) and/or semi volatile organic compounds (SVOC) content - Part 2: Gas-chromatographic method (ISO 11890-2:2020)*	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	A

Restriction (Annex XVII entry number and analyte/s covered)						
70. Octamethylcyclotetrasiloxane (D4) CAS No 556-67-2 EC No 209-136-7 Decamethylcyclopentasiloxane (D5) CAS No 541-02-6 EC No 208-764-9						
70. Wash-off cosmetic products						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
D4 / D5	Commercially available conditioners, shampoos and body lotions	Internal method	Brothers HM, Boehmer T, Campbell RA, Dorn S, Kerbleski JJ, Lewis S, et al. Determination of cyclic volatile methylsiloxanes in personal care products by gas chromatography. Int J Cosmet Sci. 2017;39:580–8. https://doi.org/10.1111/ics.12411 . and Brothers, H.M. Jr, Bovens, E., Bruni, A. et al. A practical gas chromatography flame ionization detection method for the determination of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, and dodecamethylcyclohexasiloxane in silicone emulsions. J. Chromatogr. A 1441, 116–125 (2016).	combination of emulsion break, liquid–liquid extraction and silylation sample preparation followed by GC-FID analysis	An internal standard solvent solution was prepared by placing 400 mg of n-dodecane into a 200-mL volumetric flask. Subsequently, 50 mL of dimethylacetamide was added and the solution was diluted to the mark with acetonitrile. A 400-mg sample weighed to the nearest 0.1 mg was placed into a 15-mL screw-cap glass and treated with 2 mL of the of 75/25 acetonitrile/dimethylacetamide internal standard solution and dispersed by gentle shaking. Next, 8 mL of hexane was added, and the closed vial was vigorously shaken on a vortex mixer for one minute. After phase separation, 1 mL of the upper hexane phase was transferred into a GC autosampler vial and treated with 100 lL of MSTFA. The mixture was then incubated for 30 min at 80°C. A one microlitre aliquot was used for GC analysis.	A

Restriction (Annex XVII entry number and analyte/s covered)						
71. 1-methyl-2-pyrrolidone (NMP) CAS No 872-50-4 EC No 212-828-1						
71. In mixtures						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
NMP	Aqueous and non-acqueous liquids	Internal method	UNI EN ISO 11890-2:2013	GC-MS	Solvent dilution	A

Restriction (Annex XVII entry number and analyte/s covered)						
72. The substances listed in column 1 of the Table in Appendix 12						
72. clothing / textiles / footwear /						
72. Cadmium and its compounds (listed in Annex XVII, Entry 28, 29, 30, Appendices 1-6)						
Analyte	**Matrix/ Product**	**Analytical method**	**Reference for internal methods**	**Analytical technique**	**Sample preparation**	**Note**
Cd	Textile	Internal method	ВЛМ 141:2015; ISO 105-E04:2013 OKO- Tex Standard 100; EN ISO 17072:2011	ICP/MS NexION	Extraction in acid perspiration solution	A
72. Chromium VI compounds (listed in Annex XVII, Entry 28, 29, 30, Appendices 1-6)						
Chromium VI	Leather	DIN/EN/ISO 17075-1		Photometric	According to DIN 17075-1	A
Chromium VI	Leather	Internal method	Metrohm DIN 17075-1	Dialysis-ion chromatography-vis	According to DIN 17075-1	A
Chromium VI	Leather	БДС EN ISO 17075-1:2017		Spectrophotometer UV/VIS Lambda2, Perkin Elmer, SR No 3541	Solution extraction	A
Chromium VI	Textile	Internal method	ВЛМ 141:2015; ISO 105-E04:2013 OKO- Tex Standard 100; EN ISO 17072:2011	ICP/MS NexION	Extraction in acid perspiration solution	A
Chromium VI	Leather	ISO 17075-1:2017 ISO 17075-2:2017		ISO 17075-1:2017 - colorimetric ISO 17075-2:2017 - IC	Solvent extraction	A

72. Arsenic compounds Arsenic compounds (listed in Annex XVII, Entry 28, 29, 30, Appendices 1-6) (listed in Annex XVII, Entry 28, 29, 30, Appendices 1-6)						
Arsenic	Textile	Internal method	ВЛМ 141:2015; ISO 105-E04:2013 OKO- Tex Standard 100; EN ISO 17072:2011	ICP/MS NexION	Extraction in acid perspiration solution	A
Arsenic	Plastics	БДС EN ISO 8124-3:2010		ICP/OES Optima 7000 DV	Solution extraction	A
Arsenic	Silicate surfaces	БДС EN 1388-1/-2:2004		ICP/OES Optima 7000 DV	Solution extraction	A
72. Lead and its compounds (listed in Annex XVII, Entry 28, 29, 30, Appendices 1-6)						
Lead	EN 16711-1: textile, plastic, coating, metal ISO 17072-2: leather	EN 16711-1: textile, plastic, coating, metal ISO 17072-2: leather		ICP-MS	Microwave digestion	A
Lead	Textile	Internal method	ВЛМ 141:2015; ISO 105-E04:2013 OKO- Tex Standard 100; EN ISO 17072:2011	ICP/MS NexION	Extraction in acid perspiration solution	A
Lead	Plastics	БДС EN ISO 8124-3:2010		ICP/OES Optima 7000 DV	Solution extraction	A
Lead	Silicate surfaces	БДС EN ISO 8124-3:2010		ICP/OES Optima 7000 DV	Solution extraction	A
Lead	**PSC-CH-E1003-09.1: paint and surface coating CPSC-CH-E1001-08.3: metal CPSC-CH-E1002-08.3: non-metal**	CPSC-CH-E1003-09.1 CPSC-CH-E1001-08.3 CPSC-CH-E1002-08.3		ICP-OES	Microwave digestion	A
72. Benzene CAS No 71-43-2; EC N0 200-753-7						
Benzene	Liquid matrix	ISO 11423-1:1997		GC-MS	Head Space vials	A

Benzene	Liquid and solid matrix	EPA5021A:2014+EPA8260D:2018		GC-MS	Liquid: Head-Space vials Solid a)Head-Space vials b) Methanol extraction	A
Benzene	Only solid powdered matrix	ISO 22155:2016		GC-MS	Methanol extraction and head space GC/MS	A
72. Polycyclic-aromatic hydrocarbons (PAH) (a) Benzo[a]pyrene (BaP) CAS No 50-32-8 (b) Benzo[e]pyrene (BeP) CAS No 192-97-2 (c) Benzo[a]anthracene (BaA) CAS No 56-55-3 (d) Chrysen (CHR) CAS No 218-01-9 (e) Benzo[b]fluoranthene (BbFA) CAS No 205-99-2 (f) Benzo[j]fluoranthene (BjFA) CAS No 205-82-3 (g) Benzo[k]fluoranthene (BkFA) CAS No 207-08-9 (h) Dibenzo[a,h]anthracene (DBAhA) CAS No 53-70-3						
PAH	Plastic, rubber	AfPS GS 2019:01 PAK		GC-MS	Toluene extraction followed by silica gel clean up	A
72. Formaldehyde CAS No 50-00-0, EC No 200-001-8						
Formaldehyde	textile	БДС EN ISO 14184-1:2011		Spectrophotometer UV/VIS Lambda2, Perkin Elmer, SR No 3541	Water extraction	A
Formaldehyde	leather	БДС EN ISO 17226-2:2019		Spectrophotometer UV/VIS Lambda2, Perkin Elmer, SR No 3541	Solution extraction	A
Formaldehyde	paper	БДС EN 1541:2001		Spectrophotometer Pharo 300 UV-VIS Spectroquant	Solution extraction	A
Fomaldehyde	Plastics	БДС EN 4614:1977		Spectrophotometer Pharo 300 UV-VIS Spectroquant	Solution extraction	A
Fomaldehyde	plastics	CEN/TS 13130-23:2005		Spectrophotometer Pharo 300 UV-VIS Spectroquant	Solution extraction	A

Fomaldehyde	Nail condition er	Ordinance no 14/2014 Annex II point XI in connection Regulation (EO) no 1223/2009		molecular spectrophoto metry	Formaldehyde reacts with pentane-2,4-dione in the presence of ammonium acetate to form 3,5-diacetyl-l,4-dihydrolutidine. This is extracted with butan-1-ol and the absorbance of the extract is measured at 410 nm.	A
formaldehyde	textile	ISO 14184-1:2011		UV-VIS spectrophoto meter	water extraction	A
formaldehyde	textile	PN-EN ISO 14184-1:2011		UV-VIS	according to PN-EN ISO 14184-1:2011	A
72. Bis(2-methoxyethyl) phthalate						
Bis(2-methoxyethyl) phthalate	Textiles, paper plastics, paints	Internal method	ISO /TC 181/WG 06 Phthalate plasticizers in toys	GC-MS, GC-FID	ASE with n-hexane or Soxhlet extraction with diethylethe	A
DMEP	Textile	LFGB 82.08:2016 from DIN EN ISO 14389:2014		GC-MS	Extraction with THF and sonication	A
DMEP	Textile	БДС EN ISO 14389:2014		GC 7890A/MSD 5975C	Solution extraction	A
DMEP	Plastics	Internal method	ВЛМ 143:2015	GC 7890A/MSD 5975C	Solution extraction	A
DMEP	Plastics	Internal method	ВЛМ 144:2015	GC 7890A/MSD 5975C	Solution extraction	A
72. Diisopentylphthalate						
Di-n-pentyl phthalate (DPP)	Textiles, paper plastics, paints	Internal method	ISO /TC 181/WG 06 Phthalate plasticizers in toys	GC-MS, GC-FID	ASE with n-hexane or Soxhlet extraction with diethylethe	A
72. Di-n-pentyl phthalate (DPP)						
DPP	Textile	Internal method	LFGB 82.08:2016 from DIN EN ISO 14389:2014	GC-MS	Extraction with THF and sonication	A
DPP	Textile	БДС EN ISO 14389:2014		GC-MS	Extraction with THF and sonication	A
DPP	Plastics	Internal method	ВЛМ 143:2015	GC 7890A/MSD 5975C	Solution extraction	A
DPP	Plastics	Internal method	ВЛМ 144:2015	GC 7890A/MSD 5975C	Solution extraction	A

DPP	Textile	GB/T 20388-2006		GC-MS	Chloroform extraction	A
72. Di-n-hexyl phthalate (DnHP)						
DnHP	Textiles, paper plastics, paints	Internal method	ISO /TC 181/WG 06 Phthalate plasticizers in toys	GC-MS, GC-FID	ASE with n-hexane or Soxhlet extraction with diethylethe	A
DnHP	Textile	БДС EN ISO 14389:2014		GC 7890A/MSD 5975C	Solution extraction	A
DnHP	Plastics	Internal method	ВЛМ 143:2015	GC 7890A/MSD 5975C	Solution extraction	A
DnHP	Plastics	Internal method	ВЛМ 144:2015	GC 7890A/MSD 5975C	Solution extraction	A
DnHP	Textile	GB/T 20388-2006		GC-MS	Chloroform extraction	A
72. N-methyl-2-pyrrolidone; 1- methyl-2-pyrrolidone (NMP)						
NMP	Footwear	ISO/TS 16189:2013		GC-MS	methanol extraction	A
72. N,N-dimethylacetamide (DMAC)						
DMAC	Footwear	ISO/TS 16189:2013		GC-MS	methanol extraction	A
72. N,N-dimethylformamide; dimethyl formamide (DMF)						
DMF	Footwear	ISO/TS 16189:2013		GC-MS	methanol extraction	A
72. 1,4,5,8-tetraaminoanthraquinone; C.I. Disperse Blue 1						
Disperse Blue 1	Textile	Internal method	UNI EN ISO 16373-2:2014	LC-MS	Extraction with microwave using pyridine:water =1:1	A
Disperse Blue 1	Textile	DIN 54231:2005		UPLC/MS/MS	Solution extraction	A
C.I. disperse blue 1	Textile	DIN 54231:2005		LC-MS	Methanol extraction	A
72. Benzenamine, 4,4'-(4-iminocyclohexa-2,5- dienylidenemethylene)dianiline hydrochloride; C.I. Basic Red 9						
Basic Red 9	Textile	Internal method	UNI EN ISO 16373-2:2014	LC-MS	Extraction with microwave using pyridine:water =1:1	A
Basic Red 9	Textile	DIN 54231:2005		UPLC/MS/MS	Solution extraction	A
C.I. Basic Red 9	Textile	DIN 54231:2005		LC-MS	Methanol extraction	A

72. [4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien- 1-ylidene]dimethylammonium chloride; C.I. Basic Violet 3 with ≥ 0,1 % of Michler's ketone (EC no. 202-027-5)						
Basic Violet 3	Textile	DIN 54231:2005		UPLC/MS/MS	Solution extraction	A
C.I. basic violet 3	Textile	DIN 54231:2005		LC-MS	Methanol extraction	A
72. 4-chloro-o-toluidinium chloride						
4-chloro-o-toluidine	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	solvent extraction followed by reductive cleavage	A
72. 2-Naphthylammoniumacetate						
2-Naphthyl-ammonium-acetate	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	Solvent extraction followed by reductive cleavage	A
72. 4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate						
2,4-diamino-anisole	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	solvent extraction followed by reductive cleavage	A

72. 2,4,5-trimethylaniline hydrochloride						
2,4,5-trimethyl-aniline hydrochloride	ISO 14362-1:2017: textile BS EN 14362-1:2012: textile GB/T 17592:2011: textile ISO 17234-1:2015: leather	ISO 14362-1:2017 BS EN 14362-1:2012 GB/T 17592:2011 ISO 17234-1:2015		GC-MS	solvent extraction followed by reductive cleavage	A

5. Appendix 1-Glossary

a. List of acronyms

Term or abbreviation	Definition
AAS	Atomic absorption spectroscopy
ASTM standards	Standards developed by the American Society for Testing and Materials
DAD	Diode array detector
DIN standards	Standards developed by the "Deutsches Institut für Normung" (German Institute for Standardisation)
ECD	Electron capture detector
ECHA	European Chemicals Agency
EDXFR	Energy dispersive X-ray fluorescence
EI	Electron Ionisation
EN Standards	Standards developed by the European Committee for Standardisation
EU	European Union
FID	Flame ionisation detector
GC-ECD	Gas chromatography with electron capture detector
GC-FID	Gas chromatography with flame ionisation detector
GC-MS	Gas chromatography mass spectrometry
HG-AAS	Hydride generator atomic absorption spectroscopy
HPLC	High performance liquid chromatography
HPLC-DAD	High performance liquid chromatography diode array detector
HPLC-FLD	High-performance liquid chromatography with fluorescence detection
HSGC	Headspace gas chromatography
ICP-MS	Inductively coupled plasma mass spectroscopy
ICP-OES	Inductively coupled plasma optical emission spectroscopy
ISO standards	Standards developed by the International Organisation for Standardisation

Term or abbreviation	Definition
LOD	Limit of detection
MS	Mass Spectrometry
MSZ standard	Standard developed by the Hungarian Standards Institution
MTBE	Methyl Tertiary Butyl Ether
NEA	National enforcement authority
NIOSH	National Institute for Occupational Safety and Health of the United States of America
NLV	REACH Annex XVII restrictions without a limit value
PBB	Polybrominated biphenyl
PCA	Polycyclic aromatics
PMU products	Permanent Makeup Products
PVC	Polyvinyl chloride
REACH	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
SEM-EDS	Scanning Electron Microscopy and Energy Dispersive Spectrometry
SPE	Solid Phase Extraction
US EPA	Environmental Protection Agency of the United States of America
UV	Ultraviolet
XRD	X-ray diffraction
XRF	X-ray fluorescence

b. Key terms

Applicability: the set of information about the identity of analyte(s), the concentration range and the kind of matrix/material/item of a specific analytical method for its intended application.

Limit of detection (LOD): the lowest concentration or mass of an analyte, which can be detected with acceptable certainty, even though it cannot be quantified with acceptable precision.

Measurement uncertainty: the non-negative parameter characterising the dispersion of the quantity values being attributed to a measure and based on the information used

Qualitative methods: analytical methods which allow to identify the presence of a substance on the basis of its chemical, biological or physical properties. These methods do not enable a conclusive judgement for enforcement purpose and entail a confirmatory analysis

Performance characteristic: functional quality that can be attributed to an analytical method. This may be for instance accuracy, trueness, precision, repeatability, reproducibility, recovery, LOD and LOQ.

Performance requirements: requirements for a performance characteristic according to which it can be judged that the analytical method is fit for the purpose and generates reliable results.

Recovery: the fraction of the analyte that is recovered after addition of a known amount of the analyte, under defined conditions to the sample, when the test sample is analysed using the entire method.

Reproducibility: precision under reproducibility conditions, namely the distribution of measurement results obtained under reproducibility conditions.

Reproducibility conditions: conditions where test results are obtained with the same method on identical test items in different laboratories with different operators using different equipment.

Screening methods: analytical methods that are used to detect the presence of a substance or class of substances at the level of interest. These methods have the capability for a high sample throughput and are used to sift large numbers of samples for potential non-compliant results.

6. Appendix 2- Sample preparation analysis of asbestos fibres (entry 6 referring to method NIOSH 9002 + HSG 248)

Sample preparation for the analysis of asbestos fibres:

Examine samples in the container and with a low-magnification stereomicroscope in a fume cabinet (speed v > 0.5m/s). Break off a portion of the sample and examine the edges for emergent fibers. Note the homogeneity of the sample. Open sample container and with tweezers remove small, representative portions of the sample. If there are obvious separable layers, sample and analyze each layer separately. After placing a few drops of RI liquid on the slide, put a small portion of sample in the liquid.

Tease apart with a needle or smash small clumps with the flat end of a spatula or probe, producing a uniform thickness or particles so that better estimates of projected area percentages can be made. Mix the fibers and particles on the slide so that they are as homogeneous as possible. The refractive index of the mounting liquid will be written onto the glass slide if more than one refractive index liquid is being used to identify a fibre type. The unique id of the sample shall be written on the slide to enable mount numbers to be cross checked in order to support in house qc procedures ie the completion of the 'Daily RI liquid mount record' spreadsheet.

Fibres will be dry and relatively free from other particulate matter. Representative fibres or fibre bundles are chosen and are placed on a clean microscope slide into a drop of RI liquid, and a clean cover slip is lowered gently onto the slide. Only slides prepared in this way may be removed from the fume cupboard ie the suspected asbestos fibres are sealed by fluid and cover slip.

The RI of the liquids used will be as follows:-
1.550 For Chrysotile
1.605 For Anthophyllite
1.605 For Tremolite
1.640 For Actinolite
1.670 For Amosite
1.700 For Crocidolite

For bulk samples in which no fibres have been seen using the stereo microscope, tweezers or probes should be used to take two random sub-samples. At least two microscope slide preparations should be made with appropriate RI liquids for examination by PLM.

The amount of sample distributed should be such that the appearance and properties of individual fibres are not obscured by other particles.

Asbestos identification by PLM: Identification of asbestos fibre will normally be conducted in the following order and the assessment of the following properties will be noted on the analysis work sheet.

Morphology will be assessed and recorded in all modes.

Pleochroism will be assessed and recorded in plain polarised light (PPL). Birefringence will be assessed and recorded in crossed polars (XP).
Extinction characteristics will be assessed and recorded in crossed polars (XP) Elongation will be recorded in crossed polars with 1st order red compensator (530 µm).

The microscope is set so that length slow (positive) fibres are blue in the NE – SW orientation. All of the above will be conducted with the McCrone dispersion staining lens set to no stop. McCrone dispersion staining assessment will be conducted in plain polarised light with the dispersion staining lens set to the central stop position. The sequence may be altered at the analyst's discretion to aid in the determination of difficult to find fibres or assessments of non-asbestos mounts so long as all properties are observed and recorded.

Identification is based on comparing the recorded observations on the fibres selected for analysis (and mounted in the appropriate RI liquid) against the properties of asbestos reference standards. Further

representative fibres will need to be analysed if the observations are inconclusive, or if more than one type of fibre was found in the stereo or PLM analysis (see table). The result of “inconclusive” may be reported where the examinations do not provide a conclusive result.

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