

**Y K K**

**Rules for Control of Chemical Substances  
Contained in Products**

《 **Ver. 2.1** 》

Revised December, 2017

Supply Chain Management Center  
Quality & Environment Management Department  
Fastening Products Group  
YKK Corporation

Version	Date	History																				
Ver.1.0	Oct. 2014	Preparation																				
Ver.1.1	Jan. 2015	Change of Exhibit contents in accordance with revision of Oeko-Tex Standard 100																				
Ver.1.2	Apr. 2016	Change of Exhibit contents in accordance with revision of Oeko-Tex Standard 100																				
Ver.2.0	Apr.2017	<ul style="list-style-type: none"> <li>•According to Appendix 6 &amp; 7 of OEKO-TEX Standard 100, Exhibit 4 "Detailed Substance List(Limit values and test method)" has been added.</li> </ul> <p>The name of the department in charge of creating this document has been changed to Quality &amp; Environment Management department.</p>																				
Ver.2.1	Dec.2017	<ul style="list-style-type: none"> <li>•Added 3 substance due to mis posting OEKO-TEX Std 100               <ul style="list-style-type: none"> <li>•exhibit P6 : 4-Chlorophenol (Cas No:106-48-9)</li> <li>•exhibit P8 : 2,4-Diaminoanisole (Cas No:615-05-4)</li> <li>•exhibit P9 : C.I. Disperse Blue 7 (Cas No:3179-90-6)</li> </ul> </li> <li>•Correction of substance name               <table border="1" data-bbox="660 958 1417 1220"> <thead> <tr> <th>exhibit</th> <th>contents</th> <th>previous</th> <th>after</th> </tr> </thead> <tbody> <tr> <td>P8</td> <td>Perfluorohexanoic acid acronym(Cas No:307-24-4)</td> <td>PFHpA</td> <td>PFHxA</td> </tr> <tr> <td>P8</td> <td>2H, 2H, 3H, 3H - Perfluoroundecanoic acid acronym(Cas No:34598-33-9)</td> <td>HPFUnA</td> <td>4HPFUnA</td> </tr> </tbody> </table> </li> <li>•Amendment to "3. Conditional restricted substance listing"               <ul style="list-style-type: none"> <li>•Exhibit P5:Zinc and manganese has been added to metal material check list</li> </ul> </li> <li>•Revised standard due to OEKO-TEX Std 100 revision               <table border="1" data-bbox="660 1440 1417 1615"> <thead> <tr> <th>exhibit</th> <th>contents</th> <th>previous</th> <th>after</th> </tr> </thead> <tbody> <tr> <td>P6</td> <td>Extractable heavy metal : Zinc (Cas No:7440-66-6) change of regulation</td> <td>90ppm</td> <td>750ppm</td> </tr> </tbody> </table> </li> </ul>	exhibit	contents	previous	after	P8	Perfluorohexanoic acid acronym(Cas No:307-24-4)	PFHpA	PFHxA	P8	2H, 2H, 3H, 3H - Perfluoroundecanoic acid acronym(Cas No:34598-33-9)	HPFUnA	4HPFUnA	exhibit	contents	previous	after	P6	Extractable heavy metal : Zinc (Cas No:7440-66-6) change of regulation	90ppm	750ppm
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exhibit	contents	previous	after																			
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Exhibit (Restricted substance listing and details)

## **Introduction**

The market currently faces very strong demand from laws and regulations of relevant countries and customers that products not contain restricted chemical substances, either at all or above certain specified limitations.

YKK Fastening Products Group will comply with legal regulations and wishes to be responsive to customer requirements relating to chemical substances in its products.

For this reason, we require you, as our supplier, to ensure that NO chemical substance whose use in products is prohibited or restricted by law or by these Rules will be CONTAINED, in any amount or above the permitted level, as applicable, in procured parts and materials provided to YKK or any of its affiliates.

We appreciate your understanding and cooperation in our product chemical substance control activities.

## 1. Purpose

The purpose of these Rules is to define restricted chemical substances that may not be contained at all or above specified limits in raw materials, parts, and products composing YKK products, and communicate them to YKK's suppliers/business partners for raw materials, parts, and products, to ensure compliance regarding respective products.

## 2. Scope of Application

These Rules apply to any and all products, partial products, parts, and raw materials composing products designed, manufactured, or sold by YKK and to each supplier (Supplier) providing any such items to YKK or its affiliates.

\* Please refer to the separate Exhibit for examples of relevant products, etc.

## 3. Definition of Terms

<u>Legal Regulations</u>	Laws, regulations, and other requirements adopted by national, state or local governments and competent government agencies.
<u>Delivered Products</u>	Products, partial products, parts, and raw materials delivered by Supplier to YKK CORPORATION or any of its affiliates.
<u>Contain(ed)</u>	To add (or added), fill (or filled), incorporate (or incorporated), adhere (or adhered) a certain substance to products, partial products, parts, or raw materials. Any such substance found will be treated as "being Contained" regardless of whether it is intentionally used or not.
<u>Restricted Substance</u>	Substance groups designated in the Oeko-tex Standard 100 (appendix6 & 7).
<u>Control Value</u>	Contained value limit and conditional contained value limit set forth in the Oeko-tex Standard 100(appendix6 & 7). (with some exceptions)

## 4. Rules for Control of Chemical Substances Contained in Products

### 4.1 Compliance with Restricted Chemical Substance Control

- 1) Supplier hereby commits to comply with the Legal Regulations of all relevant countries and regions regarding prohibited and restricted Contained chemical substances, and ensure that the Delivered Products will not Contain any Restricted Chemical Substance over the Control Value limit. Further, Supplier will follow any other direction given by YKK. (refer to Exhibit Restricted Substance List /Individual Substance List )
- 2) In the event Supplier determines that compliance with any provision in this Article is difficult, Supplier agrees to notify YKK thereof immediately and discuss the response.

#### **4. 2 Confirmation of Substance Control**

- 1) Supplier will submit to YKK such reports and other documents, samples of Delivered Products, and measured data as directed by YKK for control of chemical substances contained in products.
- 2) Supplier will promote, as required by these Rules, thorough control of chemical substances contained in products at its suppliers and implement through audit or investigations, etc. on a regular basis.
- 3) In case any substance Contained in Delivered Products may be changed as a result of a change in the manufacturing process and materials, etc. related to Delivered Products, Supplier agrees to notify YKK's contact person of such change in advance in writing after fully confirming the Rules for Control of Chemical Substances Contained in YKK Products.

#### **4. 3 Notice of Nonconformity**

- 1) In the event that any Delivered Products does or may Contain restricted chemical substances over the Control Value allowed in products as defined by YKK, Supplier will notify YKK immediately and take corrective measures immediately.

#### **4. 4 Compensation for Damage**

- 1) In the event that Supplier is in breach of any provision of these Rules and causes damage to YKK, Supplier agrees to compensate YKK for such damage upon consultation with YKK.

#### **4. 5 Revision of Rules**

- 1) Supplier will comply with any revised Rules for Control of Chemical Substances Contained in YKK Products communicated by YKK and approved by Supplier, such approval to be deemed given upon the sale of raw materials, components, or other parts or products to YKK or any of its affiliates after the date of such communication.
- 2) In case Supplier cannot approve the revised Rules for Control of Chemical Substances Contained in YKK Products communicated by YKK, Supplier will notify YKK thereof no later than the effective date of such revised Rules, and discuss the response in good faith.

#### **4. 6 Consultation**

- 1) Any matter not set forth or any questions will be discussed with YKK in good faith.

## Agreement on YKK Rules for Control of Chemical Substances Contained in Products

We, the undersigned Supplier, hereby promise and agree to comply with the provisions of the YKK Rules for Control of Chemical Substances Contained in Products Ver.2.1, including but not limited to the YKK Restricted Substances List.

Date of Agreement:

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Company Address:

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Company Name:

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Representative Name:

Signature:

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Tel:

Fax:

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Contact Person:

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Contact Tel:

E-mail:

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\* We will not use any information you include in this document except for business related to YKK Rules for Control of Chemical Substances Contained in Products.

## **Exhibit**

# **Restricted substance list and details**

《 **Ver. 2.1** 》

Revised December, 2017

Supply Chain Management Center  
Quality & Environment Management Department  
Fastening Products Group  
YKK Corporation

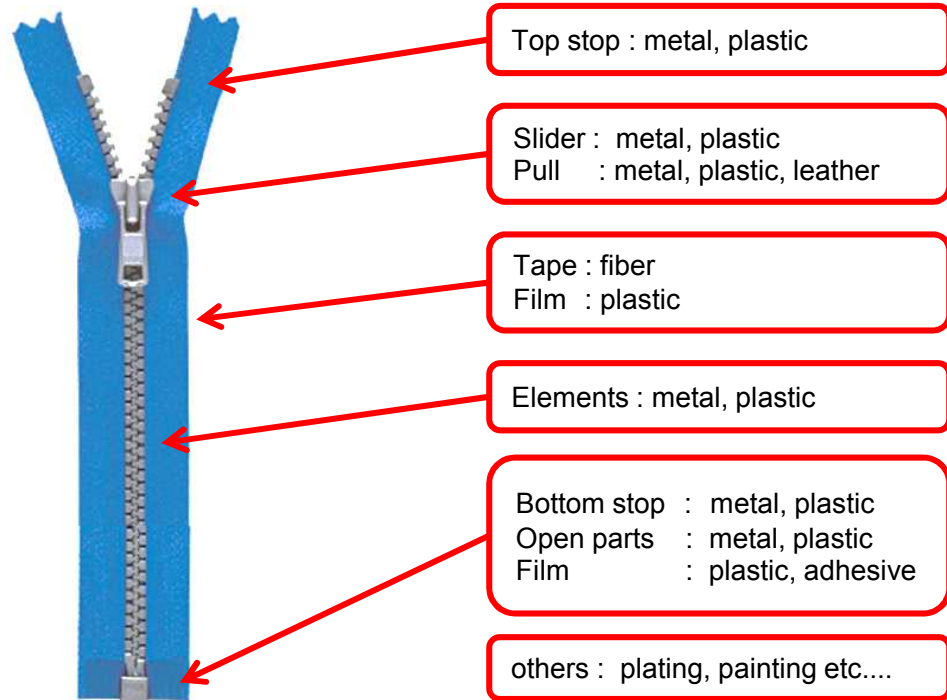


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## 1. List of YKK Product's Materials

### ◆Fastener



### ◆Hook and Loop



### ◆Plastic hard ware



### ◆Snap and Button



### ◆Ballchain



### ◆Rail fastener



metal, plastic, fiber etc....

\* There are exemptions depending on the production method or usage.  
For any eceptions, contact regional QA department is a must.

## 2. Restricted Contained Substance List

Category	Sub-Category	Unit	YKK Standard	Material					Testing Method
				Plastic (including rubber)	Metal (including plating)	Fiber	Leather	Surface coating	
Heavy metals (total content)	Pb (Lead)	ppm	90	●	●	●	●	●	Total digestion // ISO 17294-2 (2003) or DIN EN ISO 11885 (2009)
	Pb at plastic, coating etc.	ppm	75	●	●	●	●	●	
	Cd (Cadmium)	ppm	40 *2	●	●	*See previous page	●	●	
Pesticides *1	Sum	ppm	0.5	●	-	●	●	-	ASE or Soxhlet Extraction with Acetone/Hexane // GC-MS or LC-MC
Chlorinated phenols *1	Penta / tetra chlorphenol (PCP),(TeCP) Sum	ppm	0.05	●	-	●	●	●	ISO 17070 GC-ECD GC-MS
	Trichlorophenols (TrCP) Sum	ppm	0.2	●	-	●	●	●	
	Di / Mono chlorophenols (DCP),(MCP) Sum	ppm	0.5	●	-	●	●	●	
	Orthophenylphenol (OPP)	ppm	50	●	-	●	●	●	
PVC plasticizers (phthalates) *1	Sum	ppm	250	●	-	-	●	●	EN15777 GC-MS LC-MS
Organic tin compounds *1	TPhT, TBT	ppm	0.5	●	-	●	●	●	ISO/TS 16179 (2012)
	other substances (except above)	ppm	0.5	●	-	●	●	●	
Perfluorinated compounds *1	PFOS, PFOA, PFOSA, PFOSE / POSF, N-Me-FOSA, N-Et-FOSA, N-Me-FOSE, N-Et-FOSE	µg/m <sup>2</sup>	1	●	-	●	●	●	CEN/TS 15968
	25 substances (except above)	ppm	0.05	●	-	●	●	●	
UV stabilizers *1	UV 320、UV 327、UV 328、UV 350	ppm	no usage	●	-	●	●	●	soxhlet extraction GC-MS
Colorants	Cleavable arylamines *1	*3	no usage	●	-	●	●	●	ISO 14362-1 ISO 17234-1
	Carcinogens *1	*4	no usage	●	-	●	●	●	DIN 54231
	Allergens *1			●	-	●	●	●	
	Other banned dyestuffs *1			●	-	●	●	●	
Chloro organic carriers *1	Sum	ppm	1	●	-	●	●	DIN 54232	

\*1 : Refer to Exhibit 4 for the Detailed Substance List (Limit values and test method)

\*2 : ※For Fiber, YKK standard will be 1ppm

\*3 : Determination Limit: 20ppm for arylamines

\*4 : Determination Limit: 20ppm for dyestuffs

\*5 : Except for flame retardant substances approved by Oeko-Tex Association

Category	Sub-Category	Unit	YKK Standard	Material					Testing Method
				Plastic (including rubber)	Metal (including plating)	Fiber	Leather	Surface coating	
Polycyclic aromatic hydrocarbons (PAH) *1	General	ppm	0.5	●	-	-	-	●	EPA 8310 EPA 8270D EPA 8275A AfPS GS 2014:01
	Naphthalene	ppm	2	●	-	-	-	●	
	Sum	ppm	5	●	-	-	-	●	
Treatment with biological active substances	DMFu	ppm	0.1	●	●	●	●	●	ISO/TS 16186 (2012) GC-MS
Treatment with flame retardant substances *1	General	*5	no usage	●	-	●	●	●	Extraction following IEC 62321-6 (2015) LC-MS, GC-MS, GC-NCI
	Short Chain chloroparaffines C10 to C13 (SCCP)	ppm	50	●	-	●	●	●	ISO 18219 (2015)
	Tris(2-chloroethyl)phosphate (TCEP)	ppm	10	●	-	●	●	●	Extraction following IEC 62321-6 (2015) LC-MS, GC-MS, GC-NCI
Solvent residues *1	NMP	ppm	500	●	-	●	●	●	GC-MS For DMF: ISO/TS 16189
	DMAc	ppm	500	●	-	●	●	●	
	DMF	ppm	500	●	-	●	●	●	
	Formamide	ppm	200	●	-	●	●	●	
Surfactant, wetting agent residues *1	OP, NP Sum	ppm	5	●	-	●	●	●	ISO 18254-1 (2016)
	NP, OP, NPEO, OPEO Sum	ppm	50	●	-	●	●	●	
Banned fibers	Asbestos	ppm	no usage	●	-	●	●	●	declaration of no usage
Other VOC and glycols *1	General	ppm	10	●	-	●	●	●	GC-MS or LC-MS For DMF: ISO/TS 16189
	Benzene	ppm	1	●	-	●	●	●	
Cresol *1	General	ppm	10	●	-	●	●	●	Extraction with KOH GC-MS
Chlorinated solvents *1	General	ppm	1	●	-	●	●	●	Headspace GC-MS
	Sum	ppm	5	●	-	●	●	●	

\*1 : Refer to Exhibit 4 for the Detailed Substance List (Limit values and test method)

\*2 : ※For Fiber, YKK standard will be 1ppm

\*3 : Determination Limit: 20ppm for arylamines

\*4 : Determination Limit: 20ppm for dyestuffs

\*5 : Except for flame retardant substances approved by Oeko-Tex Association

### 3. Conditional Restricted Contained Substance List

Category	Sub-Category	Unit	YKK Standard	Material					Testing Method
				Plastic (including rubber)	Metal (including plating)	Fiber	Leather	Surface coating	
pH			4.0-7.5	●	-	●	●	-	ISO 3071 ISO 4045
Formaldehyde	Act on Control of Household Products Containing Harmful Substances Act No. 112	ppm	Undetectable *6	●	-	●	●	●	ISO 14184-1 ISO 14184-2
Extractable heavy metals	Sb (Antimony)	ppm	30	●	●	●	●	●	EN1811 (ISO 105-E04 inacid solution)  Cr(VI) : ISO 17075
	As (Arsenic)	ppm	0.2	●	●	●	●	●	
	Pb (Lead)	ppm	0.2	●	●	●	●	●	
	Cd (Cadmium)	ppm	0.1	●	●	●	●	●	
	Cr (Chromium)	ppm	1	●	●	●	●	●	
	Cr (Chromium (VI))	ppm	Undetectable *7	●	●	●	●	●	
	Co (Cobalt)	ppm	1	●	●	●	●	●	
	Cu (Copper)	ppm	25	●	-	●	●	●	
	Ni (Nickel)	ppm	1	●	*8	●	●	●	
	Hg (Mercury)	ppm	0.02	●	●	●	●	●	
	Zn (Zinc)	ppm	750	●	●	●	●	●	
	Mn (mangaese)	ppm	90	●	●	●	●	●	

\*6 : Undetectable: Compliant <16ppm when absorbance difference is <0.05ppm, which is based on the test method in the Japanese law Act No. 112  
20ppm for Leather

\*7 : Detection Limit: 0.5ppm \*3.0ppm for Leather

\*8 : For metallic accessories and metallized surfaces:0.5mg/kg

#### 4. Detailed Substance List (Limit values and test method)

Extractable heavy-metals	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method	
Antimony	Sb	7440-36-0	No change	30ppm	30ppm	EN1811 (ISO 105-E04 inacid solution)  Cr(VI) : ISO 17075	
Arsenic	As	7440-38-2		0.2ppm	0.2ppm		
Lead	Pb	7439-92-1		0.2ppm	0.2ppm		
Cadmium	Cd	7440-43-9		0.1ppm	0.1ppm		
Chromium	Cr	7440-47-3		1ppm	1ppm		
Cr VI		18540-29-9		Undetectable	Undetectable		
Cobalt	Co	7440-48-4		1ppm	1ppm		
Copper	Cu	7440-50-8		25ppm	25ppm		
Nickel	Ni	7440-02-0		1ppm	1ppm		
Mercury	Hg	7439-97-6		0.02ppm	0.02ppm		
Zinc	Zn	7440-66-6		Limit change	90ppm		750ppm
Mangan	Mn	7439-96-5		No change	90ppm		90ppm

Heavy metals in digested sample	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Lead at metal material	Pb	7439-92-1	No change	90ppm	90ppm	Total digestion ISO 17294-2(2003) or DIN EN ISO 11885 (2009)
Lead at plastic, coating etc	Pb	7439-92-1		75ppm	75ppm	
Cadmium	Cd	7440-43-9		40ppm	40ppm	

Chlorinated phenols	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Pentachlorophenol	PCP	87-86-5	No change	0.05ppm	0.05ppm	1M KOH extraction, 12-15 hours at 90° C, derivatized and analysis § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015
2,3,5,6-Tetrachlorophenol		935-95-5		0.05ppm (sum)	0.05ppm (sum)	
2,3,4,6-Tetrachlorophenol		58-90-2				
2,3,4,5-Tetrachlorophenol		4901-51-3				
2,3,4-Trichlorophenol		15950-66-0		0.2ppm (sum)	0.2ppm (sum)	
2,3,5-Trichlorophenol		933-78-8				
2,3,6-Trichlorophenol		933-75-5				
2,4,5-Trichlorophenol		95-95-4				
2,4,6-Trichlorophenol		88-06-2				
3,4,5-Trichlorophenol		609-19-8				
2,3-Dichlorophenol		576-24-9		0.5ppm (sum)	0.5ppm (sum)	
2,4-Dichlorophenol		120-83-2				
2,5-Dichlorophenol		583-78-8				
2,6-Dichlorophenol		87-65-0				
3,4-Dichlorophenol		95-77-2				
3,5-Dichlorophenol		591-35-5				
2-Chlorophenol		95-57-8				
3-Chlorophenol		108-43-0		0.5ppm (sum)	0.5ppm (sum)	
4-Chlorophenol		106-48-9				

Phthalates	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Butylbenzylphthalate	BBP	85-68-7	No change	250ppm (sum)	250ppm (sum)	EN15777 GC-MS LC-MS
Dibutylphthalate	DBP	84-74-2				
Di-(2-ethylhexyl)-phthalate	DEHP	117-81-7				
Di-(2-methoxyethyl)-phthalate	DMEP	117-82-8				
Di-C6-8-branched alkylphthalates, C7 rich	DIHP	71888-89-6				
Di-C7-11-branched and linear alkylphthalates	DHNUP	68515-42-4				
Di-cyclohexylphthalate	DCHP	84-61-7				
Di-hexylphthalate, branched and linear	DHxP	68515-50-4				
Di-iso-butylphthalate	DIBP	84-69-5				
Di-iso-decylphthalate	DIDP	26761-40-0				
Di-iso-hexylphthalate	DIHxP	68515-49-1				
Di-iso-nonylphthalate	DINP	28553-12-0				
Di-n-hexylphthalate	DHP	68515-48-0				
Di-n-octylphthalate	DNOP	84-75-3				
Di-pentylphthalate (n-, iso-, or mixed)	DPP	117-84-0				
		131-18-0				
		605-50-5				
		776297-69-9				
		84777-06-0				
Di-n-nonylphthalate	DNP	84-76-4				
Di-ethylphthalate	DEP	84-66-2				
Di-n-propylphthalate	DPRP	131-16-8				
Di-iso-octylphthalate	DIOP	27554-26-3				
1,2-Benzenedicarboxylic acid, di-C6-10 alkyl esters		68515-51-5				
1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters		68648-93-1				

UV stabilizers	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
2-(2H-Benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol	UV 350	36437-37-3	No change	usage ban (1000ppm)	usage ban (1000ppm)	soxhletextraction GC-MS
2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol	UV 328	25973-55-1				
2,4-Di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol	UV 327	3864-99-1				
2-Benzotriazol-2-yl-4,6-di-tert-butylphenol	UV 320	3846-71-7				

Pesticides	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
2,4,5-T		93-76-5	No change	0.5ppm (sum)	0.5ppm (sum)	ASE or Soxhlet Extraction with Acetone/Hexane GC-MS or LC-MC
2,4-D		94-75-7				
Acetamiprid		135410-20-7				
		160430-64-8				
Aldicarb		116-06-3				
Aldrine		309-00-2				
Azinophosmethyl		86-50-0				
Azinophosethyl		2642-71-9				
Bromophos-ethyl		4824-78-6				
Captafol		2425-06-1				
Carbaryl		63-25-2				
Chlorbenzilate		510-15-6				
Chlordane		57-74-9				
Chlordimeform		6164-98-3				
Chlorfenvinphos		470-90-6				
Clothianidin		210880-92-5				
Coumaphos		56-72-4				
Cyfluthrin		68359-37-5				
Cyhalothrin		91465-08-6				
Cypermethrin		52315-07-8				
DEF		78-48-8				
Deltamethrin		52918-63-5				
DDD		53-19-0				
		72-54-8				
DDE		3424-82-6				
		72-55-9				
DDT		50-29-3				
		789-02-6				
Diazinon		333-41-5				
Dichlorprop		120-36-5				
Dicrotophos		141-66-2				
Dieldrine		60-57-1				
Dimethoate		60-51-5				
Dinoseb, its salts and acetate		88-85-7 et al				
Dinotefuran		165252-70-0				
Endosulfan, α-		959-98-8				
Endosulfan, β-		33213-65-9				
Endrine		72-20-8				
Esfenvalerate		66230-04-4				
Fenvalerate		51630-58-1				
Heptachlor		76-44-8				
Heptachloroepoxide		1024-57-3				
Heptachloroepoxide		28044-83-9				
Hexachlorobenzene		118-74-1				
Hexachlorocyclohexane, α-		319-84-6				
Hexachlorocyclohexane, β-		319-85-7				
Hexachlorocyclohexane, δ-		319-86-8				
		105827-78-9				
Imidacloprid		138261-41-3				
Isodrine		465-73-6				
Kelevane		4234-79-1				
Kepone		143-50-0				
Lindane		58-89-9				
Malathion		121-75-5				
MCPA		94-74-6				
MCPB		94-81-5				
Mecoprop		93-65-2				
Metamidophos		10265-92-6				
Methoxychlor		72-43-5				
Mirex		2385-85-5				
Monocrotophos		6923-22-4				
		150824-47-8				
Nitenpyram		120738-89-8				
Parathion		56-38-2				
Parathion-methyl		298-00-0				
Perthane		72-56-0				
Phosdrin/Mevinphos		7786-34-7				
Phosphamidone		13171-21-6				
Propethamphos		31218-83-4				
Profenophos		41198-08-7				
Quinalphos		13593-03-8				
Strobane		8001-50-1				
Telodrine		297-78-9				
Thiacloprid		111988-49-9				
Thiamethoxam		153719-23-4				
Toxaphene		8001-35-2				
Trifluralin		1582-09-8				

Organic tin compounds (organotin)	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Dibutyltin	DBT		No change	0.5ppm (each)	0.5ppm (each)	ISO/TS 16179 (2012)
Dimethyltin	DMT					
Diocetyl tin	DOT					
Diphenyltin	DPhT					
Dipropyltin	DPT					
Methyltin	MT					
Monomethyltin	MMT					
Monobutyltin	MBT					
Monooctyltin	MOT					
Monophenyltin	MPhT					
Tetrabutyltin	TeBT					
Tetraethyltin	TeET					
Tributyltin	TBT					
Tricyclohexyltin	TCyHT					
Trimethyltin	TMT					
Trioctyltin	TOT					
Triphenyltin	TPhT					
Tripropyltin	TPT					

PFCs Perfluorinated Compounds	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Perfluorooctanoic acid	PFOA	Various	No change	1µg/m <sup>3</sup>	1µg/m <sup>3</sup>	CEN/TS 15968:2014
Perfluorooctane sulfonates	PFOS	Various				
Perfluorooctane sulfonamide 754-91-6 PFOSA	PFOSA	754-91-6				
Perfluorooctane sulfonfluoride	PFOSF / POSF	307-35-7				
N-Methyl perfluorooctane sulfonamide	N-Me-FOSA	31506-32-8				
N-Ethyl perfluorooctane sulfonamide	N-Et-FOSA	4151-50-2				
N-Methyl perfluorooctane sulfonamide ethanol	N-Me-FOSE	24448-09-7				
N-Ethyl perfluorooctane sulfonamide ethanol	N-Et-FOSE	1691-99-2				
Perfluoroheptanoic acids	PFHpA	Various				
Perfluorononanoic acids	PFNA	Various				
Perfluorodecanoic acids	PFDA	Various	No change	0.05ppm	0.05ppm (each)	
Henicosafuoroundecanoic acid	PFUDA	2058-94-8				
Tricosafuorododecanoic acid	PFDoA	307-55-1				
Pentacosafuorotridecanoic acid	PFTTrDA	72629-94-8				
Heptacosafuorotetradecanoic acid	PFTeDA	376-06-7				
Perfluorobutanoic acid	PFBA	375-22-4				
Perfluoropentanoic acid	PFPeA	2706-90-3				
Perfluorohexanoic acid	PFHxA	307-24-4				
Perfluoro(3,7-dimethyloctanoic acid)	PF-3,7-DMOA	172155-07-6				
Perfluorobutane sulfonic acid	PFBS	375-73-5 59933-66-3				No change
Perfluorohexane sulfonic acid	PFHxS	355-46-4				
Perfluoroheptane sulfonic acid	PFHpS	375-92-8				
Henicosafuorodecane sulfonic acid	PFDS	335-77-3				
7H-Perfluoro heptanoic acid	7HPFHpA	1546-95-8				
2H,2H,3H,3H-Perfluoroundecanoic acid	4HPFUnA	34598-33-9				
1H,1H,2H,2H-Perfluorooctane sulfonic acid	1H, 1H, 2H, 2H-PFOS	27619-97-2				
1H,1H,2H,2H-Perfluoro-1-hexanol	4:2 FTOH	2043-47-2				
1H,1H,2H,2H-Perfluoro-1-octanol	6:2 FTOH	647-42-7				
1H,1H,2H,2H-Perfluoro-1-decanol	8:2 FTOH	678-39-7				
1H,1H,2H,2H-Perfluoro-1-dodecanol	10:2 FTOH	865-86-1	No change	0.5ppm	0.5ppm (each)	
1H,1H,2H,2H-Perfluorooctyl acrylate	6:2 FTA	17527-29-6				
1H,1H,2H,2H-Perfluorodecyl acrylate	8:2 FTA	27905-45-9				
1H,1H,2H,2H-Perfluorododecyl acrylate	10:2 FR	17741-60-5				

Arylamines having carcinogenic properties	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method	
<b>MAK III, category 1</b>							
4-Aminobiphenyl		92-67-1	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231	
Benzidine		92-87-5					
4-Chloro-o-toluidine		95-69-2					
2-Naphthylamine		91-59-8					
<b>MAK III, category 2</b>							
o-Aminoazotoluene		97-56-3	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231	
2-Amino-4-nitrotoluene		99-55-8					
p-Chloroaniline		106-47-8					
2,4-Diaminoanisole		615-05-4					New chemical
4,4'-Diaminodiphenylmethane		101-77-9					
3,3'-Dichlorobenzidine		91-94-1					
3,3'-Dimethoxybenzidine		119-90-4					
3,3'-Dimethylbenzidine		119-93-7					
4,4'-Methylenedi-o-toluidine		838-88-0					
p-Cresidine		120-71-8					
4,4'-Methylene-bis-(2-chloroaniline)		101-14-4	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231	
4,4'-Oxydianiline		101-80-4					
4,4'-Thiodianiline		139-65-1					
o-Toluidine		95-53-4					
2,4-Toluylenediamine		95-80-7					
2,4,5-Trimethylaniline		137-17-7					
o-Anisidine (2-Methoxyaniline)		90-04-0					
2,4-Xylidine		95-68-1					
2,6-Xylidine		87-62-7					
4-Aminoazobenzene		60-09-3					



Dyestuffs classified as carcinogenic	C.I. Structure number	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
C.I. Acid Red 26	C.I. 16 150	3761-53-3	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231
C.I. Basic Red 9	C.I. 42 500	569-61-9				
C.I. Basic Violet 14	C.I. 42 510	632-99-5				
C.I. Direct Black 38	C.I. 30 235	1937-37-7				
C.I. Direct Blue 6	C.I. 22 610	2602-46-2				
C.I. Pigment Red 104	C.I. 77 605	12656-85-8				
C.I. Direct Red 28	C.I. 22 120	573-58-0				
C.I. Disperse Blue 1	C.I. 64 500	2475-45-8				
C.I. Disperse Orange 11	C.I. 60 700	82-28-0				
C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8				
C.I. Pigment Yellow 34	C.I. 77 603	1344-37-2				
C.I. Basic Blue 26 (with ≥ 0.1 % Michler's ketone or base)		2580-56-5				
C.I. Basic Violet 3 (with ≥ 0.1 % Michler's ketone or base)		548-62-9				
C.I. Disperse Blue 3	C.I. 61 505	2475-46-9				
C.I. Basic Green 4 (malachite green chloride)		569-64-2				
C.I. Basic Green 4 (malachite green oxalate)		2437-29-8				
C.I. Basic Green 4 (malachite green oxalate)		18015-76-4				
C.I. Basic Green 4 (malachite green)		10309-95-2				
C.I. Solvent Yellow 1 (4-Aminoazobenzene)	C.I. 11100	60-09-3				
C.I. Solvent Yellow 3 (o-Aminoazotoluene)		97-56-3				
C.I. Direct Brown 95		16071-86-6				
C.I. Direct Blue 15		2429-74-5				
C.I. Acid Red 114		6459-94-5				

Dyestuffs classified as allergenic	C.I. Structure number	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
C.I. Disperse Blue 1	C.I. 64 500	2475-45-8	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231
C.I. Disperse Blue 3	C.I. 61 505	2475-46-9				
C.I. Disperse Blue 7	C.I. 62 500	3179-90-6	New chemical			
C.I. Disperse Blue 26	C.I. 63 305	3860-63-7	No change			
C.I. Disperse Blue 35		12222-75-2				
C.I. Disperse Blue 102		12222-97-8				
C.I. Disperse Blue 106		12223-01-7				
C.I. Disperse Blue 124		61951-51-7				
C.I. Disperse Brown 1		23355-64-8				
C.I. Disperse Orange 1	C.I. 11 080	2581-69-3				
C.I. Disperse Orange 3	C.I. 11 005	730-40-5				
C.I. Disperse Orange 37	C.I. 11 132	13301-61-6				
C.I. Disperse Orange 59						
C.I. Disperse Orange 76						
C.I. Disperse Red 1	C.I. 11 110	2872-52-8				
C.I. Disperse Red 11	C.I. 62 015	2872-48-2				
C.I. Disperse Red 17	C.I. 11 210	3179-89-3				
C.I. Disperse Yellow 1	C.I. 10 345	119-15-3				
C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8				
C.I. Disperse Yellow 9	C.I. 10 375	6373-73-5				
C.I. Disperse Yellow 39		12236-29-2				
C.I. Disperse Yellow 49		54824-37-2				
C.I. Disperse Dark Blue 35		56524-77-7				

Other banned dyestuffs	C.I. Structure number	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
C.I. Disperse Orange 149		85136-74-9	No change	usage ban (Determination Limit: 20ppm)	usage ban (Determination Limit: 20ppm)	DIN 54231
C.I. Disperse Yellow 23	C.I. 26 070	6250-23-3				
Component 1: C39H23ClCrN7O12S 2Na		118685-33-9				
Component 2: C46H30CrN10O20S2 3Na		Various				
C.I. Basic Green 4 (oxalate)		2437-29-8				
C.I. Basic Green 4 (chloride)		18015-76-4				
C.I. Basic Green 4 (free)		569-64-2				
C.I. Solvent Yellow 2		10309-95-2				
C.I. Solvent Yellow 14		60-11-7				
C.I. Solvent Yellow 14		842-07-9				
C.I. Basic Violet 1		8004-87-3				
C.I. Direct Blue 218		28407-37-6				
C.I. Acid Violet 49		1649-09-3				

Chlorinated benzenes and toluenes	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Dichlorobenzenes		95-50-1	No change	1ppm (sum)	1ppm (sum)	DIN 54232
		541-73-1				
		106-46-7				
Chlorobenzene		108-90-7				
Trichlorobenzenes		87-61-6				
		108-70-3				
		120-82-1				
Tetrachlorobenzenes		634-66-2				
		634-90-2				
		95-94-3				
Pentachlorobenzene		608-93-5				
Hexachlorobenzene		118-74-1				
Chlorotoluenes		95-49-8				
		108-41-8				
		106-43-4				
Dichlorotoluenes		32768-54-0				
		19398-61-9				
		25186-47-4				
		95-73-8				
		118-69-4				
Trichlorotoluenes		7359-72-0				
		6639-30-1				
		23749-65-7				
		21472-86-6				
		2077-46-5				
Tetrachlorotoluenes		98-07-0				
		76057-12-0				
		29733-70-8				
		875-40-1				
		5216-25-1				
Pentachlorotoluene		877-11-2				

Polycyclic aromatic hydrocarbons (PAH)	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method	
Benzo[a]pyrene	BaP	50-32-8	No change	0.5ppm (each)	0.5ppm (each)	EPA 8310 EPA 8270D EPA 8275A AfPS GS 2014:01	
Benzo[e]pyrene		192-97-2					
Benzo[a]anthracene		56-55-3					
Chrysene		218-01-9					
Benzo[b]fluoranthene		205-99-2					
Benzo[j]fluoranthene		205-82-3					
Benzo[k]fluoranthene		207-08-9					
Dibenzo[a,h]anthracene		53-70-3					
Acenaphthene		83-32-9					
Acenaphthylene		208-96-8					
Anthracene		120-12-7					
Benzo[ghi]perylene		191-24-2					
Cyclopenta[c,d]pyrene		27208-37-3					
Dibenzo[a,e]pyrene		192-65-4					
Dibenzo[a,h]pyrene		189-64-0					
Dibenzo[a,i]pyrene		189-55-9					
Dibenzo[a,j]pyrene		191-30-0					
Fluoranthene		206-44-0					
Fluorene		86-73-7					
Indeno[1,2,3-cd]pyrene		193-39-5					
1-Methylpyrene		2381-21-7					
Phenanthrene		85-01-8					
Pyrene		129-00-0					
Naphthalene		91-20-3					
sum							
					2ppm		2ppm
					5ppm (sum)		5ppm (sum)

Solvent residues	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
1-Methyl-2-pyrrolidone	NMP	872-50-4	No change	500ppm (each)	500ppm (each)	Extraction with MeOH GC-MS or LC-MS
N,N-Dimethylacetamide	DMAc	127-19-5				
Dimethylformamide	DMF	68-12-2				
Formamide		75-12-7				
				200ppm	200ppm	ISO/TS 16189 (2013)
						Extraction with MeOH GC-MS

Forbidden flame retardant substances	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Short chain chlorinated paraffins (C10 - C13)	SCCP	85535-84-8	No change	50ppm	50ppm	ISO 18219 (2016)
Tris-(2-chloroethyl)phosphate	TCEP	115-96-8		10ppm	10ppm	
2,2-bis(bromomethyl)-1,3-propanediol	BBMP	3296-90-0		usage ban (With exception of treatments accepted by OEKO-TEX)	usage ban (With exception of treatments accepted by OEKO-TEX)	Extraction following IEC 62321-6 (2015) LC-MS, GC-MS, GC-NC
Bis-(2,3-dibromopropyl)phosphate	BIS	5412-25-9				Indirect testing via Boron (DL for Boron: 25 mg/kg) ICP-OES or ICP-MS
Boric acid		10043-35-3				Extraction following IEC 62321-6 (2015) LC-MS, GC-MS, GC-NCI
		11113-50-1				
Tetrabromodiphenylether	tetraBDE	various (40088-47-9)				
Pentabromodiphenylether	penta BDE	32534-81-9				
Hexabromodiphenylether	hexaBDE	36483-60-0				
Heptabromodiphenylether	heptaBDE	various (68928-80-3)				
Octabromodiphenylether	octaBDE	32536-52-0				
Tribromodiphenylether	triBDE	various				
Dibromodiphenylether	diBDE	various				
monobromodiphenylether	monoBDE	various				
Decabromodiphenylether	decaBDE	1163-19-5				
Nonabromodiphenylether	nonaBDE	63936-56-1				
Diboron trioxide		1303-86-2				GC-ECD (GC-MS or LC-MS)
		1303-96-4				
Disodium tetraborate, anhydrous		1330-43-4				
		12179-04-3				
Hexabromocyclododecane	HBCDD	25637-99-4, various				
Polybrominated biphenyles	PBB	59536-65-1				
Tetraboron disodium heptaoxide, hydrate		12267-73-1				
Tetrabromobisphenol A	TBBPA	79-94-7				
Tri-(2,3-dibromopropyl)-phosphate	TRIS	126-72-7				
Tris-(1,3-dichloro-2-propyl)phosphate	TDCPP	13674-87-8				
Tris-(aziridinyl)-phosphin oxide	TEPA	545-55-1				
Trixylylphosphate	TXP	25155-23-1				
Antimony trioxide		1309-64-4				
Antimony pentoxide		1314-60-9				
Tri-o-cresyl phosphate		78-30-8				

Surfactant, wetting agent residues	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Nonylphenol	NP	Various	No change	5ppm (sum)	5ppm (sum)	ISO 18254-1 (2016)
		104-40-5				
		11066-49-2				
		25154-52-3				
		84852-15-3				
Octylphenol	OP	Various				
		140-66-9				
		1806-26-4				
		27193-28-8				
Nonylphenoethoxylates	NP(EO) NPEO	Various	No change	50ppm (sum)	50ppm (sum)	
		9016-45-9				
		26027-38-3				
		37205-87-1				
		68412-54-4				
Octylphenoethoxylates	OP(EO) OPEO	Various				
		9002-93-1				
		9036-19-5				
		68987-90-6				

Other chemical residues	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
o-Phenylphenol	OPP	90-43-7	No change	50ppm	50ppm	Sample Preparation: §64 BVL B 82.02.08 Measurement: GC-MS, LC-MS for confirmation
Short chained chlorinated paraffines (C10 - C13)	SCCP	85535-84-8		50ppm	50ppm	ISO 18219 (2016)
Tris(2-chloroethyl)phosphate	TCEP	115-96-8		10ppm	10ppm	
Dimethylfumarate	DMFu	624-49-7		0.1ppm	0.1ppm	CEN ISO/TS 16186:2012

Cresol	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
o-cresol		95-48-7	No change	10ppm (each)	10ppm (each)	Extraction with KOH* GC-MS
p-cresol		106-44-5				
m-cresol		108-39-4				

Other VOCs and glycols	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Methylethylketone	MEK	78-93-3	No change	10ppm (each)	10ppm (each)	EN71-11
Ethylbenzene		100-41-4				
Xylene		95-47-6				
		108-38-3				
		106-42-3				
		1330-20-7 (Mixture/Mischung)				
Cyclohexanone		108-94-1				
2-ethoxyethyl acetate		111-15-9				
1,2,3-Trichloropropane		96-18-4				
Acetophenone		98-86-2				
Naphthalene		91-20-3		2ppm	2ppm	EPA 8310 EPA 8270D EPA 8275A AfPS GS 2014:01
2-Phenyl-2-propanole		617-94-7				Extraction in acetone GC/MS, sonication for 30 minutes at 60°C
Bis(2-methoxyethyl)-ether		111-96-6		10ppm (each)	10ppm (each)	EN71-11
Styrene		100-42-5				120°C for one hour headspace solvent extraction GC-MS; Methanol extraction at 60 degrees
Benzene / Benzol		71-43-2		1ppm	1ppm	EN71-11
Toluene		108-88-3		10ppm	10ppm	
1-Methyl-2-pyrrolidone (NMP)		872-50-4				2-Step Extraction with THF and MeOH GC-MS
N,N-Dimethylacetamide (DMAC)		127-19-5		500ppm (each)	500ppm (each)	For general V OC screening: GC/MS headspace 120 °C,45 minutes. Except for DMAC: DIN CEN ISO/TS 16189:2013
N,N-Dimethylformamide (DMF)		68-12-2				DIN CEN ISO/TS 16189:2013
2-ethoxyethanol		110-80-5				EN71-11
Ethylene glycol dimethyl ether		110-71-4			Extraction with MeOH GC-MS	
2-methoxyethanol		109-86-4				
2-methoxyethylacetate		110-49-6			EN71-11	
2-methoxypropylacetate		70657-70-4				
Triethylene glycol dimethyl ether		112-49-2			Extraction with MeOH GC-MS	

chlorinated solvents	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method			
Dichloromethane(Methylene chloride)	DCM	75-09-2	No change	1ppm	1ppm	For general V OC screening: GC/MS headspace 120 °C, 45 minutes.			
Chloroform (Trichloromethane)		67-66-3							
Tetrachloromethane		56-23-5							
1,1-Dichloroethane		75-34-3							
1,2-Dichloroethane		107-06-2							
1,1,1-Trichloroethane		71-55-6							
1,1,2-Trichloroethane		79-00-5							
1,1,1,2-Tetrachloroethane		630-20-6							
1,1,2,2-Tetrachloroethane		79-34-5							
Pentachloroethane		76-01-7							
1,1-Dichloroethylene		75-35-4							
1,2-Dichloroethylene		540-59-0							
1,2-Dichloroethylene		156-59-2							
1,2-Dichloroethylene		156-60-5							
Trichloroethylene		79-01-6							
Tetra(per)chloroethylene		127-18-4							
sum(上記14物質)							5ppm(sum)	5ppm(sum)	

pH value	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
	pH		No change	4.0-7.5	4.0-7.5	ISO3071 ISO4045

Formaldehyde	Acronym	CAS No.	Update Content	YKK RSL ver 2.0	YKK RSL ver 2.1	test method
Formaldehyde		50-00-0	No change	16ppm	16ppm	ISO 14184-1 ISO 14184-2